

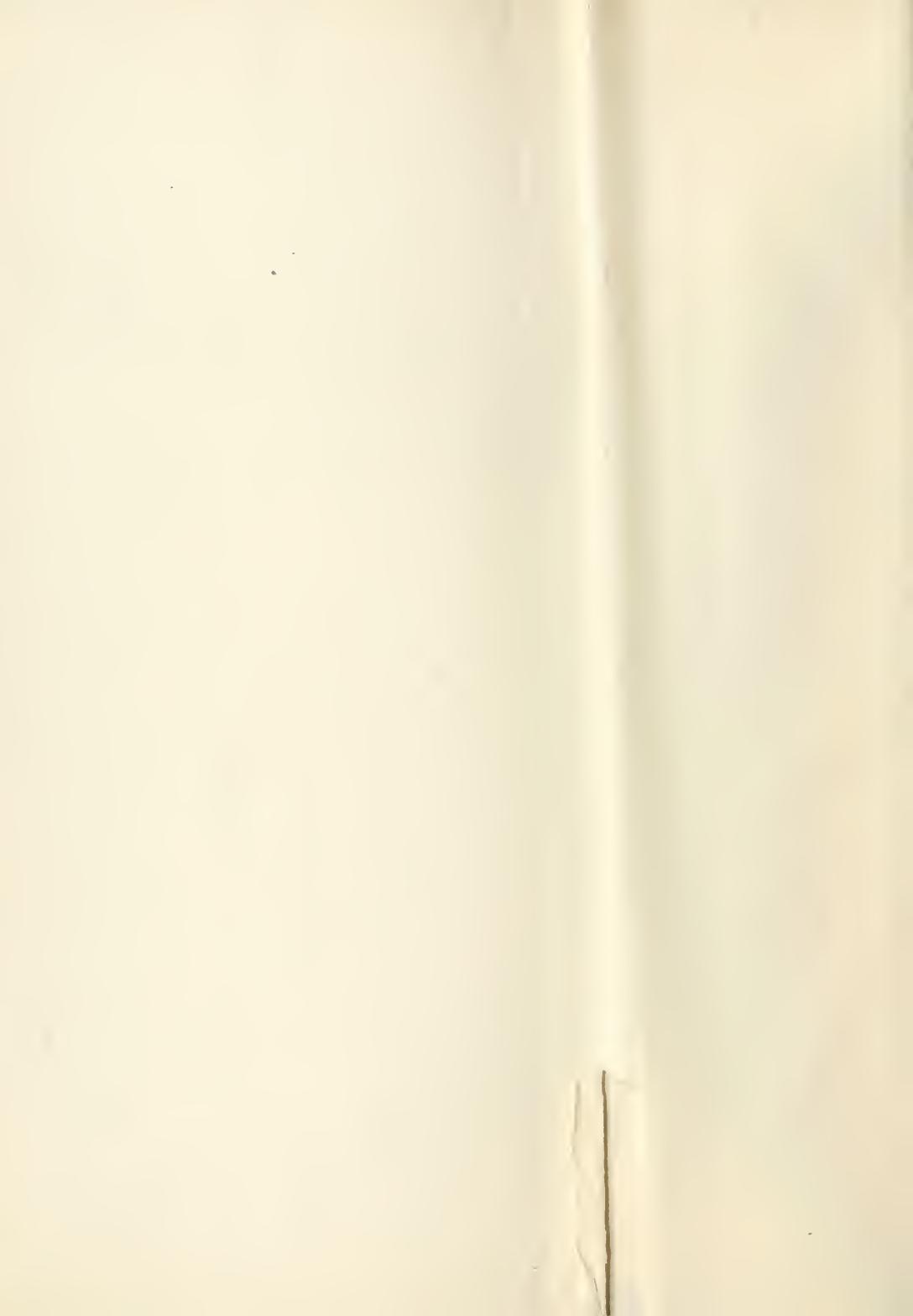




Digitized by the Internet Archive  
in 2010 with funding from  
University of Toronto

<http://www.archive.org/details/railwayage71newy>

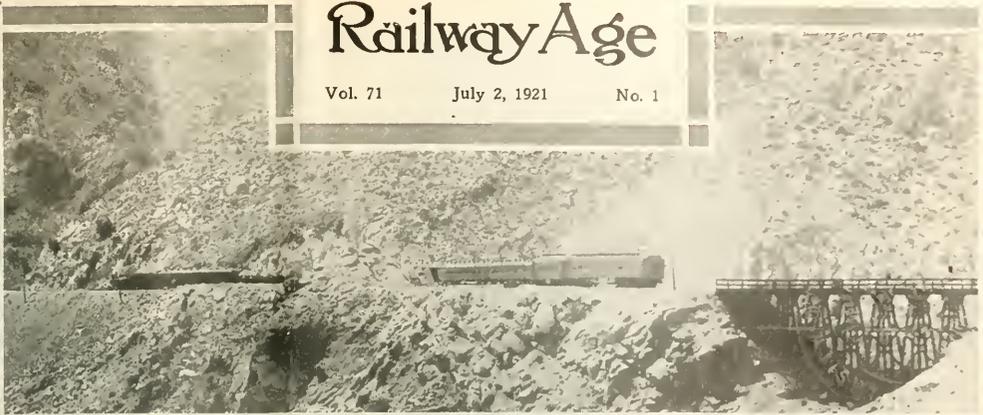




Rechnol  
R.

# Railway Age

Vol. 71 July 2, 1921 No. 1



Through Carriso Gorge, on the San Diego & Arizona. Photo from Underwood & Underwood, N. Y.

195453  
16.4.25

## Contents

### Reconstructing a Tunnel With Modern Methods ..... Page 5

In Work on Tunnel Under Fairmount Park, Philadelphia, Baltimore & Ohio Has Employed Locomotive Cranes for Complicated Work, Requiring Few Men.

### Scope of Wage Reduction Extended in New Order ..... 13

Labor Board Makes 92 Carriers Party to Decision 147—Many Disputes Over Rules Docketed—Board Continues National Agreements and Temporarily Ends Punitive Over-time.

### Heavy Locomotives for the Southern Pacific ..... 15

Pacific Type Handles 11 Passenger Cars on 1.5 Per Cent. Grade—New Santa Fe Type Increases Tonnage.

#### EDITORIALS

Bad Order Cars Not Included in Surplus Reports.....	1
Machine Tool Depreciation .....	1
Locomotive Inspection and Repairs at Terminals .....	1
President Harding's Opportunity .....	2
Future Railway Expenses and Rates .....	3

#### NEW BOOKS ..... 4

#### GENERAL ARTICLES

Reconstructing a Tunnel With Modern Methods.....	5
Progress in Rate Reductions .....	6
Settlements With Government Under Consideration.....	9
Signs of the Times in the American Railroad World .....	11
Scope of Wage Reduction Extended in New Order.....	13
The Pennsylvania and Its Employees; Elisha Lee.....	14

#### GENERAL ARTICLES—Continued

Heavy Locomotives for the Southern Pacific.....	15
Railway Business Association Places Railway Problems Before President .....	17
Railroads and Public Utilities Urged to Buy Coal .....	17
Railroad Hearings Before Senate Committee; H. E. Johnson .....	19
Shippers Aid in Claim Prevention .....	24
New Traffic Lacking on C. & O. Relieves Congestion .....	25
Tentative Valuations Issued .....	26
Freight Station Section of A. R. A. Holds First Meeting .....	27
Seasonal Coal Rates .....	29
What Is a Living Wage? .....	28
Freight Car Loading .....	30
War Left Belgian Railways in Fair Condition.....	31
A Report on the Railroad Situation .....	32
A New Idea in Ticket Cabinets .....	33

#### GENERAL NEWS DEPARTMENT..... 35

Published every Saturday and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building CLEVELAND: 4300 Euclid Ave. LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
PHILADELPHIA: 407 Bulletin Bldg. Cable address: Urasmigec, London  
CINCINNATI: First National Bank Building WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

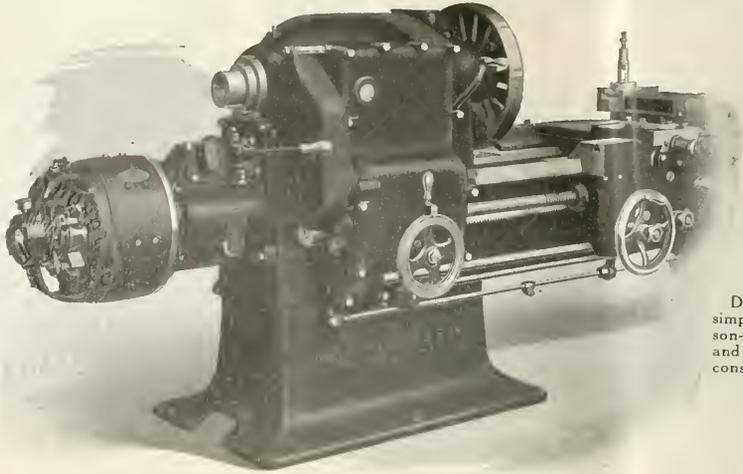
E. T. HOWSON	A. F. STUEBING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. JANE	K. E. KELLERBERGER	I. F. CHLE
R. F. THAYER	ALFRED G. OEHLE	L. M. SANDWICK
C. B. PSCK	P. W. KRARGER	I. G. LYNE
W. S. LACHER	HOLCOMBE PARKER	J. H. DUNN
J. G. LITTLE	C. N. WINTER	D. A. STEEL

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in any other than New York, payable in advance and postage free, United States, Mexico and Canada, \$8.00. Foreign Cash orders payable in daily editions, \$10.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue, 9,000 copies were printed, that of these 9,000 copies, 8,084 were mailed to regular subscribers, 72 were provided for counter and news company sales, 204 were mailed to advertisers, 82 were mailed to employees and correspondents, and 386 were provided for new subscribers. Sales, copies lost in the mail and office use; that the total copies printed this year to date were 257,200, an average of 9,892 copies a week.



Direct Motor Drive  
simplifies the Ryerson-Conradson Lathe  
and reduces power  
consumption.

## QUICK REPAIR LATHES REDUCE IDLE TIME

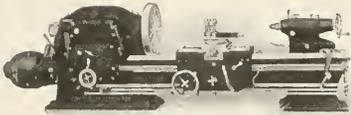
77  
1  
R2  
v. 71

Only 40% of freight locomotive time is actually spent hauling trains. Speeding up railroad shops with modern machine tools, quickly returns locomotives to revenue service and saves some of this valuable time. On all kinds of locomotive repairs, Ryerson-Conradson Railroad Lathes do a quicker, better job because

- 1.—Liberal bearings give a firm foundation to take the wide range of work heavy modern motive power calls for.
- 2.—All controls are on the apron, at the operator's finger tips.

3.—Gears are always in mesh—speed and feed changes are made without stopping the lathe—no chance of gears stripping.

Have this time saver in your shop when the load comes on again.



Production with accuracy results from the new features of Ryerson-Conradson lathe design.

*A Bulletin describes each tool. Ask for copies.*

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

In the *Railway Age* of June 10, page 1304, there was published an editorial calling attention to the importance of making a careful survey of freight car conditions to determine which cars are to be repaired and which replaced with new equipment in view of the recent increases in freight car loading and

### Bad Order Cars Not Included in Surplus Reports

decreases in the freight car surplus. The editorial referred to the large increase in the number of bad order cars, which was 324,969 on May 15 and which has increased to 341,337 on June 1, and to the rapid reduction of the number of surplus cars, which was 450,164 on May 15 and which has since been reduced to 381,746 for the week of June 15. Our statements gave the impression that the bad order cars are included in the surplus cars, but it should be understood that bad order cars as reported by the Car Service Division of the American Railway Association are not included in its count of surplus cars. This is supposed to cover only cars other than those reported as in bad order which are not required for service during the period covered by the report, although as cars are taken from the surplus for service, many are found to be in bad order. The situation as to the number of freight cars not required for service during the present slump in general business conditions is therefore much worse than is generally understood, as the total of the cars out of service both because of their bad condition and because there is no demand for them is over 700,000, or about 28 per cent of the total car equipment. While the large number of bad order cars represents a serious situation, the margin of available surplus cars of most kinds is still very large. Past experience has shown, however, that a substantial revival of general business will wipe out a large car surplus in a short time.

It is said that "any machine that will run" is good enough for a railroad shop and while most railroad men realize the

### Machine Tool Depreciation

falsity of this statement, it is seemingly borne out by the large number of obsolete, worn-out machines now in use. In many cases, particularly at the present time, it is impossible to get the capital necessary to replace obsolete machines, but that the fundamental economics of the situation are not fully understood is evidenced by the large number of such machines still in operation. It would be far better practice and less expensive to shut down many of them and transfer the work to other shops where modern machinery is available. Take, for example, a powerful, modern wheel lathe as compared to one built 30 or 40, or maybe 50 years ago. The former, using feeds up to  $\frac{5}{8}$  in., removes all the stock in one cut and on an average turns a pair of tires every hour, depending on the operator's skill and the toughness of the cutting tool. The antiquated machine, however, struggles along under a feed of  $\frac{1}{8}$  in., requires several cuts if the tires are badly worn and has difficulty in turning a pair in three or four hours. It is evidently false economy to run old machines of this type since the resultant cost of labor, power and delayed equipment is three or four times as much as necessary. The difficulty in obtaining capital for new ma-

chinery can be overcome by establishing adequate depreciation accounts, a matter which has been woefully neglected in the past judging by the 1920 statistics of the Bureau of Railway Economics. According to the analysis, 191 Class 1 companies had set aside for shop machinery depreciation the sum of \$236,157, or less than one per cent of the value of all railroad shop machinery. This assumes that machines have an effective life of 100 years and is obviously absurd. Some competitive industries find it necessary to renew machine tools inside of two or three years or be left hopelessly behind in the race and, while conditions are different in the railroad business, some reasonable life should be assumed for machine tools not exceeding 10 or 15 years and 10 per cent, or 6.66 per cent, of the value of railroad shop machinery be set aside annually. Then at the end of 10 or 15 years, as the case may be, it will be possible for the shops and roundhouses to benefit by the installation of new and improved machinery which will not be held up because of difficulty in obtaining the necessary capital.

The vital relation of machinery, equipment and design to efficient locomotive terminal operation is generally conceded.

### Locomotive In- spection and Repairs at Terminals

It is true that no terminal can be operated economically without adequate coal and ash handling facilities, machine tools, boiler washing and refilling systems, drop pits, etc. The arrangement of this equipment also is important as a determining factor in promptly handling locomotives, but it should not be forgotten that the prime object of any terminal development is to maintain locomotives in condition to earn revenue as large a proportion of the time as possible. For the accomplishment of this purpose, methods are fully as important as physical equipment and the methods of handling locomotives at terminals are worthy of the closest study. It is especially important to develop highly trained inspection forces for the careful, periodical inspection of all equipment. To quote a statement made recently by a mechanical officer on the firing line: "The time to cure an engine failure is before, not after it occurs. This is where adequate inspection comes in—to learn to look beneath the surface, to locate the unseen cause, to anticipate a developing weakness." The present opportunity should be taken to develop and train engine terminal inspection forces because at most points more time than usual is available for this purpose. Repair men also should be taught the best methods of doing their work and be shown the need for care and thoroughness. Future savings will be assured by assigning men to the inspection forces to make minor repairs promptly. This will avoid making out work-report slips and hunting up men to attend to small jobs which can be handled more readily at the time of inspection. For the heavier work it has been found advisable to post work-report sheets and issue individual slips to each man who has a defect to repair. This eliminates picking easy jobs and fixes the responsibility. In many cases the work of the outside inspectors, with their assistant repair men, in looking after minor defects as found will make it unnecessary to put certain locomotives over the turntable and will allow for their immediate return

to service, thereby increasing the capacity of the terminal. Unquestionably the present offers a splendid opportunity for the development and training of engine terminal inspection and repair forces, thus establishing a potential engine house capacity which will undoubtedly be needed in the future.

## President Harding's Opportunity

THE RAILROAD situation presents to President Harding his greatest opportunity for rendering speedily a most important public service. Whether his rendering of this service would bring him an immediate increase of popularity is speculative. It would take courage; and the American people admire courage. The doing of what he can quickly do to improve the railroad situation would stimulate a return to normalcy and prosperity more perhaps than anything else he could do. Public men seldom have been hurt by doing things that improved general business.

Under normal conditions the railroads are among the largest purchasers of numerous classes of commodities. For months they practically have been out of the market. Profound depression prevails in every industry which sells a large part of its product to them. With traffic and total earnings increasing and substantial reductions in wages and other expenses coming there is bound to be soon a substantial increase of railway purchases. But the increase should be more than substantial. It should be extremely large. A very large increase in railway purchases would stimulate business of all kinds. Directly, it would cause an increase of employment and production in the iron and steel industry in the lumber industry, in the coal industry, etc. Larger production and employment in these industries would in turn cause increased production and employment in all the industries from which they buy.

Increased purchases by the railroads are needed immediately not only to stimulate general business activity but to enable the carriers to equip themselves to handle the large traffic which will be offered to them when general business does revive, as sooner or later it is bound to revive.

The very small purchases made by the railways for several months have been due, broadly speaking, to two reasons. One of these has been the inadequacy of their earnings because of excessive operating costs and the severe decline of traffic. The other, which is not so obvious and generally understood, is their financial relations to the government.

Under government control the government invested over a billion dollars in the railroads. If the war and government control had not come part or all of this would have been invested by the railroad companies which would have raised most of it by the issuance of securities. The larger part of it now constitutes a debt to the government which sooner or later the companies must pay. They would raise money by the issuance of securities and pay it at once if securities in sufficient amounts could now be sold. Owing, however, to the present bad financial condition of most railroads, which is chiefly due to the war and government control, they cannot sell enough securities to pay it.

While the companies owe many millions of dollars to the government, the government in turn owes many millions to the companies. The government guaranteed adequately to maintain the properties while it had them and in addition to pay the same net return the roads earned in the three "test" years. It authorized the companies themselves adequately to maintain the properties during the first six months of private operation and guaranteed in addition to pay them any part of the standard return which they did not earn in those months. The government did not adequately maintain the properties while it had them and under its guarantees it owes the companies large sums, the exact amount of which, however, it will take a long time to determine.

Some officers of the Railroad Administration have taken the position that the indebtedness of the government to the companies should be used currently to offset the indebtedness of the companies to the government—that if, for example, a railway owes the government one million dollars for money invested under government control in permanent improvements, and the government owes the railroad one million dollars for under-maintenance or as part of its standard return they should settle by neither paying the other anything now. The railways contend that the government should loan them, or in effect take their notes, for a period of ten or fifteen years for what they owe it, and determine and pay them as soon as practicable the amounts it owes them for under-maintenance and as standard return.

To many persons the policy favored by some administration officials may seem logical and fair; but it is not logical or fair, and if carried out would have a very bad effect not only on the railroads but on general business. When the government took the railroads their properties were in good physical condition. Their net earnings were as large as in previous years and they had sufficient working capital to do their current business. It returned them in deteriorated physical condition and with greatly reduced working capital; and since the guarantees of net return were withdrawn, owing to excessive operating expenses and the violent decline in traffic, their properties have further deteriorated and they have practically been stripped of working capital. If the government loans them for ten or fifteen years what they owe it and at the same time as rapidly as practicable pays them what it owes them they will be able to begin at once using what it pays them to liquidate their large floating indebtedness to supply and material companies, to replenish their working capital and to make up the large amounts of deferred maintenance which have accrued. They must pay the government interest on what they owe it, and as it is only fair to assume they are to be allowed in the next ten or fifteen years to earn reasonable net returns, it is also only fair to assume that at the end of this time they would be able to raise enough by selling securities to pay the government off.

Since the government ultimately would get back its money, and in the meantime would get interest on it, it would not lose anything. On the other hand, if the railroads are required now to offset what the government owes them with what they owe the government they will be largely deprived for years to come of power adequately to increase their working capital, to pay promptly their debts to material and supply companies, and to rehabilitate and improve their properties.

If the government should adopt the policy of loaning to the railways for a term of years what they owe it and at the same time paying as promptly as practicable what it owes them, it would be necessary for Congress to make a special appropriation to provide funds with which to pay the railroads. Apprehension has been expressed lest Congress would be unwilling to make the appropriation. Why, however, should Congress be unwilling to make an appropriation necessary to do justice to the railways and carry out a sound business policy which would be beneficial to the entire country? For the government to loan to the railways for a period of years the capital invested by it in their properties would be to follow practically the same policy that the government actually is following in not insisting upon payment by foreign governments of the principal or even the interest upon the ten billion dollars which this government loaned to foreign governments to help its allies in the war. Why should the government of the United States deal more leniently with foreign governments in respect to money it loaned them for war purposes than with the railroads of this country respecting money which in effect it loaned them for war purposes?

The President undoubtedly has great influence with Congress. If he should outspokenly and energetically favor a policy in dealing with the railroads which business conditions and the welfare of the public demand he undoubtedly could get Congress to pass the legislation and make the appropriation necessary to carry out that policy. If the right policy in dealing with the railroad situation is adopted under his administration it will do more to restore normalcy and prosperity than anything else that is done. On the other hand, if the right policy in dealing with the railroads is not adopted the restoration of normalcy and prosperity will be hindered far more than most people appreciate.

The great economic problem of President Wilson's administration was the currency problem. It was solved and the country has benefited immeasurably. The great economic problem of the present administration is the railroad problem.

The judgment, courage and leadership of President Harding will be tested by the way he deals with it.

## Future Railway Expenses and Rates

THE GENERAL reduction in railway wages authorized by the Railroad Labor Board went into effect on July 1. On the basis of the number of employees in 1920 this would mean a reduction of expenses of over \$400,000,000 a year. But the number of employees is now less than last year. On the basis of the number on the payroll in the first three months of 1921 it would mean a reduction in operating expenses of about \$365,000,000. Other reductions of expenses are occurring. The prices of materials and supplies and of fuel have declined somewhat. The amount of freight being shipped, and, consequently, the total earnings, are increasing.

These developments are, from a railway standpoint, very favorable. But they do not solve the railway problem. Because of inability to get large amounts of money the government owes them, and of very small net earnings since the guarantees were withdrawn, the railways are extremely short of money.

Furthermore, at present a widespread agitation for general reductions of rates is going on. Many classes of shippers are not in sympathy with it. The National Industrial Traffic League, composed of the traffic managers of the great industrial concerns and commercial organizations, has adopted resolutions opposing any general reductions until the railways have had a chance to get on their feet financially and to make a good start with the rehabilitation and increase of their facilities.

On the other hand, there is widespread discontent among the farmers regarding the present rates. The farmers as a class are suffering severely from present conditions. The prices of their products have declined until, according to government reports, they average only about 15 per cent more than before the war. The prices of most of the things they buy have not declined anywhere near in proportion. Their present situation is due in only a small measure to the present rates. But the farmers and their organizations, especially those in the west and south, for over forty years have tended to attribute a disproportionate part of their troubles to alleged excessive railway rates. Many of them are doing this now.

They are the most important, and, when they exert themselves, the most powerful class of our people. It is probably no exaggeration to say the future of the railways is in their hands. In the long run they will largely dictate the country's policy of regulation and even determine whether we shall have private or public ownership. It would be folly to ignore their attitude. No legitimate effort should be spared by the railways to make plain to the public, and especially

the farmers, the railways' own attitude regarding rates and the reasons for it.

It is not the position of the railways that no reduction of rates should be made. Their spokesmen all concede that owing to the horizontal percentage advances which were made in 1918 under government control, and again in 1920, there are now many rates which are unfairly discriminatory or too high. They agree that these unfair and harmful adjustments of rates should be rapidly eliminated, and chiefly by reductions. They hope and believe that in time increases in traffic and reductions of operating expenses will make practicable and desirable some general reductions of rates. They are opposed to general reductions in the immediate future because they believe they would be not only unfair and harmful to the railways, but contrary to the public welfare.

One argument widely used in favor of general reductions is that the rates are preventing revival of general business and an increase of traffic. But, as heretofore pointed out by the *Railway Age*, the freight being shipped has been increasing as rapidly since the recent slump in traffic as in 1919 before the last advance in rates was made. The increase in car loadings since the end of February has been about 20 per cent.

Even more convincing evidence is afforded by the statistics regarding the shipments of farm products. The prices of these products are relatively lower as compared with pre-war prices than those of any other large class of commodities. The advances in the rates on them were relatively the same as on other commodities. Therefore, comparing with pre-war times, the rates on farm products are higher relatively to present prices than on almost any other commodities. Nevertheless, shipments of farm products have increased more relatively within recent months than almost any others. From January 1 to June 11, 1921, the total carloads of grain shipped was 876,581. This was 61,805 carloads more than in the same part of 1919, and 119,628 carloads more than in the same part of 1920. The number of carloads of fruits and vegetables shipped in the present season up to June 20 was 361,471, an increase over last season of 58,670 carloads. A few weeks ago propaganda was started to show that canteloupes could not be shipped under the present rates from the Imperial Valley of California. Up to June 20 of this year the total shipments were 5,170 carloads, as against 4,497 last year.

Demonstration that commodities can be and are shipped in increased volume under the present rates will not, however, make the producers satisfied with the rates. Many of the producers are not making as large profits as they did last year, or even reasonable profits, because they are receiving much lower prices. Many of them believe these reduced prices are mainly due to the higher rates, and unless shown that this is not the case, and that in the long run early general reductions in rates will be against their interest, they will insist on them.

Valuable testimony regarding the relationship of freight rates to prices of farm products was given recently by W. H. Williams, chairman of the Wabash, in the hearings before the Senate Committee on Interstate Commerce. He showed that on cattle sold in Chicago at \$8.60 per 100 lb., the rate from Sioux City, Iowa, to Chicago, was 44 cents per 100 lb., or only about 5 per cent of the price. On hogs sold at \$9.25 the rate from Des Moines was 40 cents, or about 4 per cent of the price. On a bushel of wheat sold in Chicago for \$1.47, the rate from St. Cloud, Minn., to Chicago was 15.6 cents, or less than 11 per cent of the price. Another example that may be cited is that on a canteloupe selling at retail in Chicago for 35 cents, the freight rate from California was about 4 cents. The consumer paid enough for it to cover the transportation charge, reasonable profits to the retailer and the produce merchant, and a fair price to the grower.

If the grower did not get a fair price this was not due to the railway rate.

On most commodities of general consumption the freight rates, although higher than for years, are still low compared with the value of the commodities. Mr. Williams showed a 40 per cent increase on a box of apples from the State of Washington to Toledo amounted to only 32 cents; on a crate of 30 dozen eggs from Kansas City to Detroit only 18 cents; on a pair of shoes from New England to Chicago only 1.8 cents; on a barrel of flour from Minneapolis to Toledo only 16.33 cents.

Shippers, including the farmers, are as much concerned regarding the service the railways can render as regarding the rates. However low the rates may be in proportion to the prices of commodities, the shippers might in their own interest be justified in demanding immediate general reductions if these would not be practically certain unfavorably to affect the railway service that could be rendered. But the quality and the adequacy of railway service will necessarily depend upon the earnings the railways make. If they are not able to earn enough to maintain their properties and get a net return which will make it possible for them to raise large amounts of new capital to provide additional facilities, they will not be able to give good and adequate service.

Past experience repeatedly has shown that whether traffic can be moved satisfactorily, or even at all, depends more on the ability of the railways to furnish cars and other facilities than on the rates charged. What is the present condition of railway facilities? In every period of active business for years there have been congestions and car shortages. The railways today have about 340,000 freight cars in bad order, because for months they have not earned enough to maintain them. Their net return during the eight months the present rates have been in effect has averaged only 2.4 per cent. Without a large reduction in their operating costs, and a large increase in their net returns, they cannot prepare to render more and better service.

It may be said, the increases in traffic which are occurring, and the reductions of wages and other expenses which are being made, will enable them to rehabilitate their properties, raise new capital, and, in addition, make general reductions of rates. But nobody will know what the total amount of the reductions of expenses, or the effects produced by them on the financial condition of the railways, will be for some time. The farmers and other producers have been suffering greatly from bad business conditions recently, but the railways have been suffering even more. Why, therefore, not refrain from agitating for general reductions in rates until there has been opportunity to find out what financial results the railways can get on the present rates and with reduced expenses? If the outcome justifies reductions of rates, the Interstate Commerce Commission can be relied on to require them.

The advance in rates granted last August was based upon estimates of future operating expenses. These proved so far wrong that even when the railways were handling a large business they were failing at the rate of \$500,000,000 a year to earn the net return expected. This shows the hazards involved in estimates based upon numerous uncertain factors of great importance. A large part of the recent losses the railways have incurred have been due to these mistaken estimates. Any general reduction of rates proposed would have to be based on estimates of future traffic and expenses, which might prove to be equally erroneous.

Fairness to the railways and the welfare of the country demand that future changes in rates shall be based on actual experience, and the only experience on which they can reasonably be based will be experience under the existing general scales of rates and the new scale of expenses which is now in process of being established.

## New Books

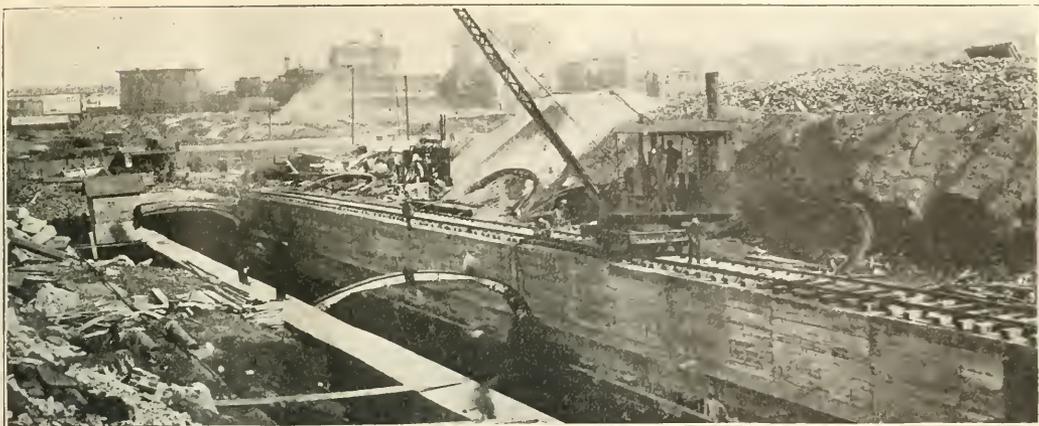
*Railway Signal Engineer.* By Leonard P. Lewis, of the *Calcdonian Railway (Scotland)*. Cloth, 358 pages, 5½ in. by 8½ in.; 251 illustrations. Published by D. Van Nostrand Company, 25 Park Place, New York.

This is a second edition of the well-known work of Mr. Lewis, lecturer at the Royal Technical College, Glasgow. The first edition was noticed in the *Railway Age* of July 11, 1913. Being a lecturer, Mr. Lewis has a careful habit of anticipating the questions of the reader. As the book is devoted practically to mechanical interlocking and the manual block system, there is nothing about power interlocking nor about automatic block signals, but it is a very careful and detailed treatment of English practice in all parts of the field which is covered.

The preface to the second edition says that the extensive installation of track circuits constitutes the principal advance made in English signaling practice since the publication of the first edition, but only four pages are given to track circuits.

*Fuel Economy on Locomotives.* 51 pages; 3¼ by 5¾, cloth backed paper binding. Published by the American Railway Association, V. R. Hawthorne, Secretary, Mechanical Division, 431 South Dearborn street, Chicago.

The need for a manual of firing practice and of instructions in the principles of fuel economy for locomotive engineers and firemen has long been recognized. Early in its history the International Railway Fuel Association gave considerable attention to this subject and at the 1912 and 1914 conventions laid the foundation for such a manual which it was proposed later to develop more fully. The first actual results, however, other than the development of such manuals by a few individual railroads, was accomplished by the adoption of the report of the Committee on Fuel Economy of the American Railway Master Mechanics' Association as recommended practice following the 1915 convention of that organization. This manual has stood as the recommended practice of the Master Mechanics' Association and its successor, the Mechanical Division of the American Railway Association, until the revision which was made and adopted by the Mechanical Division in 1920, to be followed by the further revision effected by the Joint Committee on Fuel Conservation of the Operating, Mechanical, and Purchases and Stores divisions this year. The principle revisions are the elimination of the text references to and the illustrations of cross firing and the addition of material concerning the proper firing of anthracite coal and fuel oil, the bringing up to date of the special instructions for the operation of superheater locomotives and the addition of about 15 pages of general information largely dealing with locomotive conditions affecting fuel economy, a small part of which is of more interest to roundhouse forces than to the engine crews and might, therefore, not improperly be omitted from a discussion of the subject intended primarily for distribution among engineers and firemen. The book is well bound for pocket use, is well illustrated with colored plates showing various firebox conditions affecting proper combustion, and altogether is a material improvement over its predecessor. It is furnished by the association to members in lots of 100 copies or more for \$20 per hundred, in lots of 50 copies for \$12.50 and in less than lots of 50 copies at 30 cents each. Single copies are 60 cents each to non-members. The book will be of particular interest to those roads that have not already developed manuals of their own and any railroad that desires special printing on the cover or title page or wishes to incorporate these rules in a more extensive book in which are included special rules to meet local conditions, may arrange for such special printing.



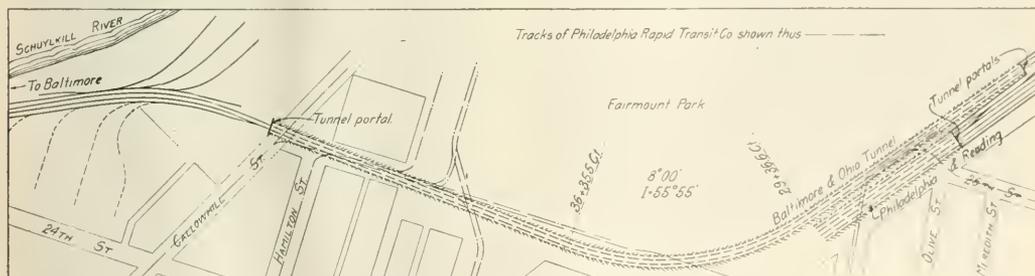
A General View Showing the Design and Method of Construction

## Reconstructing a Tunnel With Modern Methods

The Baltimore & Ohio Employed Locomotive Cranes for Complicated Work, Requiring Few Men

THE BALTIMORE & OHIO has recently rebuilt the west end of its tunnel under Fairmount Park at Philadelphia, Pa., and is now engaged in rebuilding the east end. Built under particularly adverse conditions, originally as a double-track tunnel with a central section of six-ring brick arch and end sections of I-beam construction and limited clearance, the ends are being rebuilt in the form of a three-centered arch of more modern design. Since the clearance was restricted by the grades of the streets over the tunnel

between the Baltimore & Ohio and the Philadelphia & Reading. All freight and passenger traffic of the Baltimore & Ohio to and from New York or other points north of Philadelphia as well as the interchange between that road and the Reading is handled over this piece of double track. This connection is about two miles long between the Chestnut street station of the B. & O. and the junction with the Reading and passes through the outskirts of Fairmount Park. The tunnel itself passes under the junction of several of the



Map Showing the Location of the Tunnel

an interesting method was devised to construct and handle the forms as well as the materials. New side walls as well as parts of the arches and in some places the complete arch itself were constructed of concrete. Locomotive cranes were utilized to handle and move the materials. As a result of the methods adopted the labor force was kept at a minimum throughout the work of rebuilding. The tunnel was opened from the top and all new work carried on from the level of the surrounding ground.

The tunnel has a total length of 2,300 ft. of which approximately 700 ft. of the central section is on an eight-degree curve. It carries two tracks which form the connecting line

busiest entrances to the Park where it carries street railway lines and an exceptionally heavy automobile traffic.

It was originally constructed and built in two separate and distinct types of tunnel design. The central part, extending from a point 246 ft. from one end to a point 478 ft. from the other or a total length of about 1,576 ft. was built as a six-ring brick arch, supported on masonry walls having a clear width of 30 ft. between faces. The clearance above the top of rail was 20 ft. The two end sections were provided with a roof construction consisting of built-up wrought-iron I-beams spaced three feet center to center and giving an average clearance of 17 ft. 6 in. The tunnel roof itself was

built up of 3-ft. square galvanized steel buckle plates butted against each other and riveted to the I-beams as well as to longitudinal lines of wrought-iron angle bars. A three-inch layer of asphalt had been applied on top of this as a protective covering or waterproofing. When this asphalt covering was removed after 35 years of service, the surface of the plates were found to be in a condition equal to that of new material.

The greatest deterioration and in fact practically the only deterioration was in the I-beams. These had naturally been affected by the locomotive gases and were, as a result, in a condition justifying renewal. While this was an influencing factor in the determination to rebuild the two end sections of the tunnel at this time the chief cause was the decision of the city to extend its limits for Fairmount Park to include the land adjoining and surrounding the line of the tunnel. In order to carry out this work the city planned to fill in and terrace certain sections of this land, making in some cases, a fill of about 13 ft. over parts of the tunnel. While the old roof construction was considered to have a life of at least five or six years longer, there was an element of doubt as to whether it could carry this additional load and still have the same life. In addition there was the certainty that its reconstruction at some future time would have to be carried out from the inside. It was therefore decided to rebuild before the fill was placed.

### Conditions Necessitate Special Design of Arch

The type of arch decided upon varies slightly from the regular standard of the road since it was necessary to secure some increased clearance while at the same time keeping the top of the outside of the roof of the tunnel at about the same grade as before. This led to the adoption of a three-centered arch with radii of 7 ft. 9 in. and 32 ft. The springing line is 9 ft. 5 $\frac{1}{8}$  in. above the top of rail and marks the line to which the old masonry side walls were removed and replaced



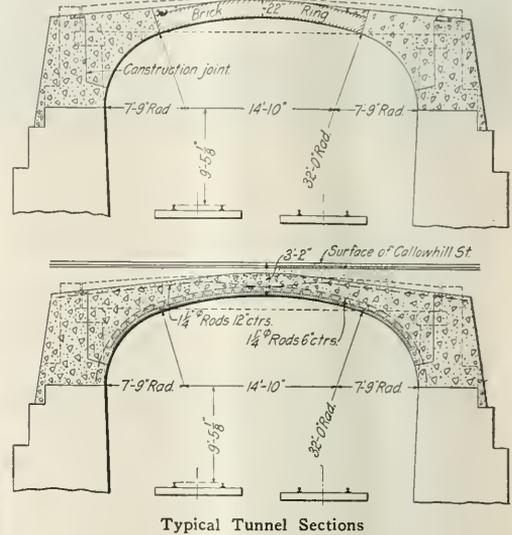
Tearing Out the Old Work with a Crane and Traveler

with concrete. The old walls, constructed of Conshohocken stone, were carried on the solid rock which underlies the ground in this section at about three feet below the top of rail. The inner surface had been given a slight batter while the rear had been carried up in a series of steps. The design adopted required that the old masonry be removed down to the new springing line and that a new concrete wall in the form of a skew-back be carried up to practically the same height as the old walls.

In all sections except under Callohill street, at the extreme west end of the tunnel, the two 7-ft. 9-in. segments were poured with concrete. The 32-ft. radius arch was built up of five rings of brick with a herringbone bond at every fifth brick. The concrete segments were lined with a row of bricks,

every fifth brick being a header. The solid arch under Callohill street was of the same general cross-section. One row of brick was laid with every fifth brick a header as in the 7-ft. 9-in. arches of the main design. However, the entire arch was poured as one unit and reinforced by long 1 $\frac{1}{4}$  in. corrugated round iron rods laid 6 in. center to center. Each alternate rod followed the contour of the arch, the remaining rods running comparatively straight across the arch proper.

As stated previously, the west section of the tunnel lies under one of the streets leading into Fairmount Park or specifically under Twenty-fifth street. Two streets also crossed at right angles, one of which had to be kept open at a time. The work was started at the junction of the old



Typical Tunnel Sections

I-beam construction with the original brick arch and proceeded toward the portal. In order to keep one street open, work under an intermediate street, Callohill street being at the portal, was carried on simultaneously with the first part in order that that street could be opened for traffic and the remaining one closed in sufficient time as to not interrupt the continuity of the work.

### Two Cranes Greatly Facilitate the Work

Prior to the beginning of this reconstruction two 15-ton cranes, concrete mixers, one-yard buckets and other equipment were brought to the site. The concrete mixer was fixed in one location and was never moved during the progress of the work. The first crane was brought in alongside the end of the old brick arch, where it remained until it had removed the street car rails, the pavement and other miscellaneous material covering the old tunnel roof. It was also used in removing the old roof structure which it picked up and swung to one side, opening up the tunnel itself. With the tunnel once opened up, the crane was run up on a traveler extending the full width between the tunnel walls and operating upon tracks laid along the old walls. This materially facilitated the work of this crane since it could pick up and deposit either new or old material from a considerable distance on either side of the tunnel.

With a section of the tunnel roof thus removed and one crane mounted on a traveler free to move longitudinally, the work of reconstruction was really begun. The old masonry walls were torn out down to the springing line and forms

constructed for the new. The old masonry was in this case removed by the second crane which operated on a track laid partly on the line of the old wall and partly on the adjoining land. This crane operated between the mixing plant and the section of wall torn out and, after removing the masonry on both sides, placed the concrete in the forms. For this purpose one-yard buckets were used. These were filled at the mixing plant after which they were picked up by the crane,



The Concrete Work Was Kept Close Up to the Masonry

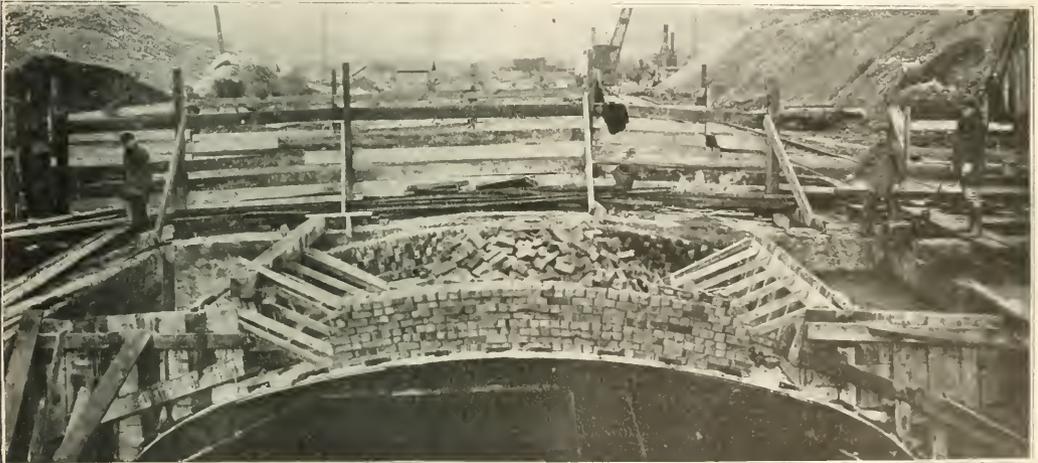
carried to the forms and dumped. As each section of new wall was completed, additional track was laid so that the crane could always operate up to the point where the masonry had been torn out.

**Light Steel Centering Proves Readily Adaptable**

While this work was under way, the first crane on the traveler was continuing to tear out the old roof structure, opening

sary to carry the lagging flush with the surface of the centering rather than over the top, as it is usually done. This was accomplished as follows: The centering was made in sections consisting of four of the steel centers spaced five feet apart and held in these relative positions by means of light steel bracing. Heavy wooden blocks were bolted to the web of the I-beam section, their upper edges being brought to the proper height so that 3-in. by 4-in. lagging notched to fit around the flanges could rest securely on them and at the same time be flush with the surface of the centering. This gave a section 15 ft. long, three such sections being used.

Before work on the new arches was commenced a line of timbering was built along the masonry wall and capped with an eight-inch timber. These lines of timbers, one on each side of the tunnel, supported the centering in position and also acted as runways upon which it could be moved ahead as needed. They were also used as supports for the concrete forms. The steel centers were lowered into position by means of the crane operating on the track along the wall, after which they were tied together and the lagging installed. Eight-inch wedge blocks under each steel arch were used to bring them to the required height. Once in position they were loaded at the center to keep them sprung tightly against the skew-backs, after which forms were erected for each of the 7-ft. 9-in. radius arches. These were then poured and allowed to set, a single row of brick being laid previous to the pouring, as already described in the design. When the concrete had set sufficiently the forms were removed and the remainder of the arch completed in the manner customary for brick arches. As each section was completed, the wedges were knocked out and the centering lowered approximately five inches on to a series of three-inch rollers. At the same time adjustable rollers mounted on the sides of the steel centering were run out to thrust against the concrete side walls, thus steadying the centering and preventing it from binding or



The Centers Were Loaded While Pouring the 7 ft. 9 in. Radius Arches

up more and more of the tunnels. The work of building the new arches then followed. As the clearance was very limited it was necessary to design and build special centering for the work. This consisted of light built-up steel forms, the outer surface of which was made to correspond to the finished curve of the arch down to the line of the haunches. From this point it extended straight down, thus giving a small clearance which, when the forms were dropped, facilitated their being moved readily. Again because of the clearance it was neces-

twisting as it was moved forward. In this way it was possible to drop the centering, move it forward to the next set-up and raise it to position, all in a very short time and with very little labor effort.

At Callohill street a reinforced concrete arch was built. In this case a single row of brick was laid, after which the entire arch was poured at one time, no construction joints being made except at the skew-backs. At this street there were several water, gas and electric light pipes and cables

which had to be carried across on temporary bridges or cables. When the arches were completed these lines were rearranged to follow the sidewalks. As a finishing covering and to waterproof the tunnel construction a three-inch layer of asphalt was spread over the entire roof structure, overlapping the joints between the side walls and the arches.

The force required for this work was very small, chiefly because of the advantageous use of the cranes for handling and placing all the materials, etc. During the period when all classes of work were being carried on at one time only about



A Locomotive Crane Was Used in Placing the Centers

32 unskilled and 15 skilled laborers, including carpenters, hoisting engineers, etc., and a supervising force of approximately 8 men were employed.

This work was designed by and carried out under the direction of the engineering department of the Baltimore & Ohio, H. A. Lane, chief engineer, Richard Mather, district engineer and J. G. Teders, assistant engineer in active charge of the work in the field. The contractor on the work was the Empire Engineering Co., Inc., Baltimore, Md.

## Progress in Rate Reductions

**F**OLLOWING UP the statement recently made before the Senate Committee on Inter-state Commerce by Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, that thousands of rate reductions had been and were being made by the railroads, American Railroads, published by authority of the Association of Railway Executives, has obtained from various freight bureaus further information as to the progress in rate adjustments.

Mr. Chambers' data were to May 1. The reports now published cover the period to June, and show that the process of eliminating rate maladjustments is proceeding at a rapid pace.

The Transcontinental Freight Bureau (Chicago) reports that up to June 9, 1,272 reductions have been made in west-bound domestic rates, 153,319 reductions in eastbound rates, and 120 reductions in export and import rates. The reductions affect grain, iron and steel, food products, lumber and many other commodities.

Since June, 1920, the Western Trunk Line Committee has considered 1,200 subjects; over 90 per cent of these were reductions and nearly all affected rates increased last year. These reductions concern more particularly crushed rock,

gravel, building materials, grain, coal, lumber, live stock feeds and molasses. The reductions range from 5 to 70 per cent, this maximum reduction being on paper and lumber. As representative of the action of this and other traffic associations, the following table is presented:

	Number of applications on which reductions were approved	Range of percentage reduction
Products of agriculture:		
Grain, hay, fruits, vegetables and seeds.....	70	10 to 50
Products of animals:		
Live stock, fresh meats, packing house products and green salted hides.....	16	15 to 33½
Products of mines:		
Coal (hard and soft), ores, sand, gravel and crushed stone.....	70	10 to 60
Products of forests:		
Lumber, logs, sash, doors and blinds.....	13	5 to 70
Manufactures:		
Petroleum oil.....	9	8 to 30
Brick, cement and lime.....	24	7 to 60
Iron and steel rails, structural iron and ferro-manganese.....	15	10 to 50
Sugar and molasses.....	6	12 to 45
Paper and paper articles.....	17	14 to 70
Miscellaneous commodities:		
Not specified above (car-loads).....	73	6 to 70
Less carload rates.....	10	8 to 30
Industrial switching rates.....	20	22 to 50
Total.....	343	

In the month of May, F. A. Leland, chairman of the Southwestern Freight Bureau, says that 159 out of 168 cases acted upon involved rate reductions.

"In this statement," Mr. Leland says, "we have made no effort to multiply the number of rate reductions by reason of the fact that some of the rates apply from a large number of points, or to a large number of points. Technically, a reduction in a rate applying from 10 points to 100 points is 1,000 reductions. Such situations as that we treat as only one reduction."

According to a report, dated June 11, from N. W. Hawkes, chairman, New England Freight Association, for the period August 25, 1920, up to June 1, 1921, that association has considered 695 freight rate proposals, and has in the same period issued 348 recommendation advices, of which it is estimated that 80 per cent are reductions.

The Trunk Line Association (New York) states that in trunk line territory from September 1, 1920, to May 31, 1921, 2,662 rate proposals were taken up, of which 2,463 were approved and recommendation advices issued.

An accurate calculation has been made of the number of reductions in the month of May, which is fairly representative of the whole number of transactions involved. In that month 98 per cent of the changes in rates passed upon by the Trunk Line Association were reductions, according to advices from the secretary of the association.

Commenting upon the rate situation in general, American Railroads says:

"With all the savings that the railroads can hope to make as a result of wage reductions and other economies, it is only with the utmost difficulty that they can hope to earn the \$475,000,000 necessary to meet their fixed charges for 1921. "There can, therefore, be no general reduction of rates this year.

"The best the roads can do is to readjust rates on the existing level so as to remove inequalities and maladjustments that have resulted from successive blanket increases.

"This issue of American Railroads is devoted largely to showing the extent to which—within the lines of possible action—the roads are meeting the needs of shippers."

THE SAFETY DEPARTMENT of the Missouri Pacific, which is conducting a campaign to reduce accidents among its employees, awarded first place in its "Safety First League" to the shops at De Soto, Mo., for the month of May. During this period the 382 employees at the De Soto shops worked without an injury of any kind.

# Settlements With Government Under Consideration

Administration Again Interested in Railroad Situation—I. C. C.  
and U. S. R. A. Apparently Disagree

WASHINGTON, D. C.

THE PRESIDENT and the administration are again interesting themselves in the railroad situation, this time in an effort to bring about an earlier settlement of the claims of the railroads against the Railroad Administration and their claims for the six months' guaranty period, with a view to giving the roads some relief which will enable them to pay their bills, get their equipment in condition for a heavy crop season, and to help put an end to the buyer's strike by resuming purchases. For a long time the administration has been looking at the railroad problem principally from the standpoint of rates, but the frequent postponement of dividends recently and the rapid approach of another interest date has served to draw its attention back to the financial aspect of the situation. The question of the settlements between the railroads and the government was the subject of an extended discussion at a dinner given by President Harding to a group of western bankers on June 23, and it was the main theme at the cabinet meeting the next day, after which the President held a conference on the subject with Director General Davis of the Railroad Administration, Chairman Clark of the Interstate Commerce Commission, Secretary Mellon of the Treasury, and Secretary Hoover of the Department of Commerce. While no definite conclusions were reached, it was stated at the White House that the administration wants to do anything it consistently can to expedite a settlement which will help put the railroads in a position to "break the jam" but that it is a question of negotiating a settlement which the administration thinks fair and that an important question of policy is in dispute. In a formal statement given out after the bankers' dinner it was stated:

"The greater discussion in the conference hinged on the relief of the railroad situation. There was no disguising the serious nature of the railway problem. It was generally reported that unless there was some relief worked out in the settlement of the government's obligations to the railroads, which date from the federal war operation, not only could nothing be expected in the way of a railway contribution to the revival of business, but their own recovery would be long delayed."

## Railroads Key to Resumption of General Business

There was a very general agreement among the bankers that the railroads represent in large measure the key to the resumption of general business and they promised to interest themselves in the matter by joining the government in an effort to expedite a fair settlement. From the Washington viewpoint this apparently means that the railroads will be asked to scale down their claims considerably in return for an agreement that the government will pay them much more promptly than it could if it is necessary to carry on a protracted controversy over the amounts and then take a test case through the courts. In fact, a number of large roads have recently made settlements by which they have accepted much less than the amount of their claims.

The "important question of policy" referred to, which is responsible for much of the delay in settlement, has to do with the interpretation of the contract governing the government's obligation to maintain the railroad property during the period of federal control, and the same standard of maintenance as provided in the contract is, by the transportation act, made the measure of the amount the Interstate Commerce Commission may allow for maintenance expenditures in computing the guaranty for the six months beginning March 1, 1920. The Railroad Administration under

Director General Davis is adhering to the same interpretation of this contract as to maintenance as was adopted by Mr. McAdoo, Mr. Hines and Judge Payne while they held the office of director general, namely, that the government's maintenance obligation was to be measured by the maintenance expenditures of the test period multiplied by a factor to represent the increased wages or increased cost of material. The railroads, on the other hand, are insisting on a basis of the cost of actual physical reparation, which would require an allowance for the inefficiency of labor, because the actual cost of putting a tie in the track, for example, was increased by more than the increased cost of the tie itself and the wage increase. The claims are much more complicated than this when it comes to maintenance of equipment.

The Railroad Administration has estimated on the basis of the claims already filed by the railroads that their total claims will amount to \$1,250,000,000, of which \$700,000,000 to \$800,000,000 is for undermaintenance, and most of this represents the difference between the roads and the Railroad Administration on the interpretation of the contract. The same question is the principal cause of delay in settling the railroad claims for the six months' guaranty period and the difference in interpretation of the maintenance contract for that period is said to represent about \$300,000,000. The commission has already certified partial payments on account of the guaranty amounting to about \$430,000,000.

## Claims for Undermaintenance

The railroads have worked out an elaborate and complicated formula for calculating their claims for undermaintenance, which requires a great deal of time for the preparation of a claim and also would involve a correspondingly long time for the Railroad Administration to check it. Therefore, most of the larger roads have not yet presented their full claims and most of those that have made early settlements have had to settle practically on the administration's theory. It is understood that some of these roads consider that they have received some allowance for undermaintenance, but the amount can not be distinguished in the lump sum settlements. The Railroad Administration is willing to admit that there was some shortage of maintenance such as ties, rails and ballast, which should be compensated for, but it adheres to its theory of paying for them on the basis of "price" rather than of "cost" and will not accept the railroad theory without a court decision and as it naturally considers it necessary to check the claims in detail it would require some time to get a final adjudication.

For the six months' guaranty period the Interstate Commerce Commission is the arbiter as to the amount which the railroads may charge against the government for maintenance. If a road during the six months' period spent more for maintenance than the commission finds was necessary to maintain the standard of the test period the excess is at the expense of the company.

## I. C. C. and Railroad Administration

Apparently Do Not Agree

Apparently the commission and the Railroad Administration do not agree as to the method of calculating this amount. The commission has not yet issued its ruling on the subject, which is one reason for the delay in settling the guaranty, but Director Colston of the Bureau of Finance has adopted a set of tentative principles which he outlined in an address

before the Railway Accounting Officers Association (*Railway Age*, June 17, page 1403) which in general agrees with the contention of the carriers and it is reported that the commissioners have tentatively approved these principles in general by a vote of 6 to 5.

The commission's decision on this point, however, will not be binding upon the Railroad Administration for the federal control period, although it might encourage the railroads to expect a decision in their favor from the courts, and it would not tend to expedite their settlements with the Railroad Administration. The Interstate Commerce Commission does not have to worry particularly where the money is coming from to pay whatever it decides is due the roads for the guaranty period because the guaranty is payable on the commission's certificate, from an open appropriation, that is, from any funds in the Treasury, otherwise unappropriated, while the Railroad Administration has to get any additional money it needs from Congress by way of a special appropriation. Even if it were inclined to allow the theory of the carriers, it would have to defend its action before a Congressional committee and to convince the committee before getting the appropriation desired. It naturally, therefore, wants to have good proof for any claim that it allows, and it claims to have already saved the government some \$60,000,000 by checking the railroad claims for errors.

A good many people in Washington believe that some of the railroads are filing excessive claims, either as a result of haste in trying to prepare them or in the belief that they will have to trade away a large percentage anyway to get a settlement. It is understood that one large system has a claim of \$75,000,000 for maintenance or at the rate of some \$7,500 per mile after the Railroad Administration had spent about twice as much on its property as the same officers had spent on the average during the test period.

### Root of Trouble Deeper Than Freight Rates

For some time the administration seemed to be actuated by the opinion that the principal cause of the business depression was the high freight rates and that business could be stimulated and the condition of the railroads consequently improved by a reduction of rates. A more intensive study has apparently shown that the root of the trouble is far deeper than that and the present idea seems to be that what is needed is something to stimulate buying and that if the railroads themselves, as large purchasers, can be brought back into the market a great deal will have been done to increase business generally, which will in turn improve the condition of the railroads and make possible later a restoration of rates more nearly normal. For this reason the President would like to see the railroads receive promptly the money that is due them and it is understood that he looked very favorably upon the proposal to fund the capital expenditures charged against the railroads for the federal control period until he learned that, as these amounts have been offset by the Railroad Administration against the sums it owes the railroads, a large appropriation would be required to enable the Railroad Administration to pay the roads in full. In view of the campaign to reduce government expenditures, the President is naturally very reluctant to ask Congress for a very large appropriation but neither the prospect of a return to normalcy or the record of the Republican party would be at all improved by a series of railroad receiverships and if the railroads could be induced to abate their claims the amount of the appropriation required to settle would be so reduced that he might be willing to ask for the money.

If the funding plan is adopted, the government would accept railroad securities for the additions and betterments instead of deducting them from the amounts it owes the roads. The Railroad Administration has been making some payments to the railroads on account.

The net amount due the railroads from the government on May 24 was approximately \$600,000,000, according to an estimate prepared by Julius H. Parmelee, director of the Bureau of Railway Economics, and incorporated in a letter to L. F. Loree, president of the Delaware & Hudson. This amount includes an estimate of \$383,000,000 for the period of federal control and a balance of approximately \$229,000,000 still to be paid for the guaranty period following the return of the carriers to their own management.

Mr. Parmelee's letter says in part:

"The director general estimates that the total claims of the railways against the Railroad Administration will aggregate a little more than \$1,250,000,000. He states that the 44 creditor roads whose accounts with the Railroad Administration have already been settled were allowed in final settlement 43.68 per cent of the amount claimed.

"Three debtor roads, having claims amounting to \$27,000,000, were disposed of by funding on account of additions and betterments to the amount of \$6,800,000. That is, final settlement has been made with 47 roads. The total claims of these roads amounted to \$124,040,867, of which \$35,486,914, or 28.61 per cent, was allowed by the Railroad Administration. Applying this percentage to the total estimated amount of the claims against the Railroad Administration (\$1,250,000,000) it would appear that the Railroad Administration will owe the railroads, above and beyond offsets, approximately \$358,000,000.

"In addition to this \$358,000,000 there is also owed an approximate amount of \$25,000,000 to the short line railroads. This makes a total net debt of the Railroad Administration to the railways of approximately \$383,000,000.

"With reference to the guaranty period the standard return of the roads accepting the guarantee amounted to approximately \$431,000,000. The net railway operating income of these roads for this period was a deficit of \$201,000,000, so there is due from the government approximately \$632,000,000. Of this amount \$403,000,000 has been paid by the treasury up to May 24, leaving a balance due the railways of \$229,000,000.

"It is impossible to obtain exact and definite information as to the actual financial status of the railways and the government as the Railroad Administration and the Interstate Commerce Commission have to this date definitely settled only a relatively small portion of the amounts claimed by both the railway and the government. The foregoing figures, although the most comprehensive and accurate that could be obtained, can be considered at best but rough approximations of the existing situation. There are, in all probability, additional items on both sides which the above estimate does not take into consideration and on this basis it seems logical to conclude that the net amount due the railways from the government is somewhere between \$575,000,000 and \$600,000,000."

T. De Witt Cuyler, Alfred P. Thom, Hale Holden, Howard Elliott, Daniel Willard, Samuel Rea, R. S. Lovett, E. N. Brown and S. T. Bledsoe, members of the steering committee of the Association of Railway Executives, called on the President on Wednesday at his invitation and discussed the entire question of the settlement of the accounts and the funding proposition. No announcement was made of any definite conclusions, but the matter was to be further discussed at a meeting of the executives in New York on Friday.

A TABULATION of 40,804 answers to a questionnaire sent out by the American Farm Bureau Federation to farmers, shows that 96.9 per cent of the farmers believe they will be able "to move a materially large amount of agricultural products" if a reduction on freight rates is secured. The returns are complete from five states and incomplete returns were received from six other states

# Signs of the Times in the American Railroad World\*

Discriminating Review by a Prominent Operating Officer—Thinks  
the Corner Has Been Turned

By Elisha Lee

Vice-President of the Pennsylvania Railroad

THE RAILROADS of the United States have cost \$20,000,000,000 and are mortgaged for less than \$10,000,000,000. A man who has helped someone else build a home or a factory by lending the owner half of its original cost and taking a mortgage for security is commonly looked upon as having made a very safe and sure investment; and the legal and moral obligation of the borrower to repay is held to be of the highest order. Any action, governmental or otherwise, calculated to impair his ability to fulfill that duty would be justly and universally resented and condemned. Is the man who has lent his savings to help build a railroad any less deserving of fair treatment? Are the property investment accounts of the railroads, collectively, free from inflation? These accounts have been kept since 1907 under the direct supervision of the Interstate Commerce Commission, and upon a uniform system for all roads. In determining value for rate-making last summer, the Commission accepted practically the maximum sum claimed by the railroads, as appearing upon their books—a remarkable testimony to the reliability of these figures, in view of the Commission's extreme conservatism and the certainty that any utterance favoring the roads would lay the Commission open to immediate and severe political attack. The pending physical valuation of the railroads is pretty sure to show a present worth for the railroads as a whole substantially in excess not only of their capitalization, but of their combined property investment accounts.

### Three Deceptive Phrases

"Watered stock" is one of three widely circulated and glibly repeated phrases that have done the railroads incalculable and unmerited harm. The other two are, "The public be damned" and "What the traffic will bear." The former was a hideous error if ever uttered by a responsible railroad executive. The latter is a clumsy expression of a perfectly sound economic principle: that the total expenses of railroad operation must be apportioned among the articles shipped, with due regard to the proportion of the total cost which each is commercially able to bear.

It is interesting, although not exhilarating, to speculate on the losses which railroad investors have suffered through the misuse, misunderstanding, misquotation and misapplication of these three phrases, but such considerations would lead far afield from the subject we are discussing. There have regrettably been a few cases in which railroad securities have been issued to represent not physical property but prospective or anticipated earning power. I have no desire to appear as an apologist for such practices, but their extent and relative importance have been grossly exaggerated.

Among those who have notably suffered in this respect have been the holders of Pennsylvania Railroad stock who not only paid in more than \$40,000,000 in cash premiums above par value, but have, in the more prosperous past, reinvested in their property, without adding to the capitalization, far larger sums out of net earnings which legally and morally might have been distributed as dividends. It is more than conservative to say that for every dollar of Pennsylvania Railroad stock there are at least two dollars' worth

of equity in tangible property over and above indebtedness, yet Pennsylvania stock is sold today at a depreciation of one-third its par value; and the directors have had no choice but to reduce for the time at least the long-established and moderate dividend of six per cent. The bondholders, too, have suffered with the stockholders through the declining market value of their securities. These injustices reflect in no small measure the effects of the false propaganda which has long been carried on to create the impression that railroad securities as a whole are watered.

In the hearings before the Railroad Labor Board, one of the chief representatives of the labor organizations a few weeks ago presented a list of security issues purporting to show altogether \$500,000,000 of railroad over-capitalization. The representative who submitted the list was one of the most resourceful, highly skilled and highly paid of the labor advocates and we may assume that the list was as good and impressive a one as ingenuity could compile. It went to the public, of course, without any analysis or adequate explanation of its significance. If it left any impression at all in the public mind it was merely a general one of the existence of a large amount of fictitious capitalization; and that, doubtless, was just the impression it was intended to leave. Nothing was said of the fact that the \$500,000,000—even if every penny was correct—represented only about 3 per cent of the total net capitalization of the railroads; nor was attention directed to the fact that the under-capitalization in one single railroad system [the Pennsylvania] would wipe out all the water which the labor representative succeeded in finding in others. It is a fact that there has been invested in the Pennsylvania Railroad system about a half billion dollars more than its net outstanding capitalization.

In all substantial, well-planned railroad systems the supposed over-capitalization will be found to be totally without foundation. You may look over all the balance sheets you please and you will not find any items covering patents or good will or other unrealizable assets. Railroad property is represented by "road and equipment" and its existence is verifiable by the eye.

### Stability of Railroad Investments

Many railroad bonds have long periods to run. Some have been drawn to mature in a century. Have their holders any reason to fear that the railroads are in danger of being superseded by other forms of transportation and their security value thus impaired? My judgment is that we have no cause to prepare against such a contingency, either for ourselves or our dependents. The motor car and the aeroplane are more likely to develop new transportation fields of their own, rather than extensively to invade those of the railroads. The telephone did not wipe out the telegraph; typewriters have not eliminated pens and pencils. Think of the great development of rail transportation; and yet we are greater road builders than were even the Romans of antiquity. Indeed, the permanence of human institutions, once well established, is one of the most interesting phenomena of history. It seems to be a sort of general law of progress that new developments in any useful art or field of endeavor, instead of crowding out the old, often

\*Abstract of an address before the Philadelphia Bond Men's Club, at Philadelphia, June 14.

tend rather to create entirely new fields of usefulness for themselves. To the extent to which motor cars are likely to take over the short-haul freight traffic, the railroads will probably be immediately benefited financially, because short-haul business is becoming increasingly unremunerative on account of the high proportion of terminal costs which it must sustain. Altogether, I am not afraid of motor cars and aeroplanes making railroads obsolete.

I think we are justified in three general conclusions regarding the funded debt of railroads: 1. Outstanding railroad bonds as a whole represent the real investment of real money; 2. They are secured by property worth more than double their face value; 3. The property so pledged may be counted upon to retain its practical value and utility indefinitely. The owners of railroad bonds may justly claim not only the highest conceivable legal but also moral right to expect that the integrity of their investments will be fully protected. The elder J. P. Morgan said that "Character is the best collateral." The fact that the moral character of the American people is the highest in the world appears to me as one of the most dependable and substantial safeguards which railroad investors have, because it must be remembered that under the system of public regulation which has developed in this country, particularly now that its fields extend not only to rates but to wages, the final moral responsibility for the integrity of railroad investments rests with the people as a whole. Most of what I have said applies just as aptly to the stockholders of the railroads as to the bondholders. \* \* \* We must bring about a very different relationship between income and outgo from that which has prevailed in recent years.

#### The Outlook

I cannot help feeling that the corner has been turned, and that we can begin to discern something which has at least the appearance of daylight ahead. The Labor Board realizes that substantial downward adjustment is necessary. Its action with respect to the national agreements constitutes a clear recognition of their economic unsoundness. President Harding believes in a fair deal for the railroads and is not afraid to say so. There is a growing friendly and constructive attitude in Congress, particularly exemplified in the present helpful Senate inquiry. Back of all of this and more fundamental in its nature lies the really remarkable change which has taken place in public sentiment toward the railroads. I think it very questionable whether at any time within the last decade it has been really popular to "bait" the railroads, though the volubility of an organized minority may have misled those who have been courting popularity. The press and public were almost unanimous in their condemnation of the Adamson Law of 1916, upon the enactment of which many persons lay the original blame for the subsequent wage and labor troubles of the railroads. Had Congress submitted the Adamson Law to popular referendum it is as near a certainty as anything can be that it would never have gone into effect. Country-wide questionnaires have shown over 80 per cent of the people favoring a return to private ownership and against a continuance of government ownership as a permanent policy.

Since the return of the railroads to their owners the press and people are overwhelmingly for fair treatment of the railroads; for a liberal adjustment of their claims for deterioration sustained while they were being used for war purposes; for prompt payment of the remaining balances of the government guarantees; for funding of their indebtedness on account of permanent investments made by the government during federal control; for complete abrogation of the national agreements; and for a readjustment of railroad wages to reasonable levels. The public has become educated. It realizes that in the end it pays all the costs of railroad operation, including every unnecessary dollar spent as a result of unduly high wages, full crew laws or other uneco-

nomie conditions. And the effect of public sentiment on political action affecting the railroads has not as yet exerted its full force.

The railroads are not seeking additional legislation. The Transportation Act of 1920 is no doubt capable of amendment, but for the present I believe that the law as it stands should receive a more extended trial. Those who blame the business depression on railroad rates forget that it is a world-wide condition, much less severe in this country than in Europe. With respect to railroad wages, we feel that the Labor Board has not ordered as great a reduction as it will be found the circumstances demand, and there is little doubt that conditions will inevitably bring this subject before the Board again. The United States is too big and its population too diversified to have wages and working conditions alike in all parts, and it has never been attempted in any important industry except railroading. If each individual company had clear and unequivocal authority to negotiate wages and working conditions directly with its own employes, half the battle would be won. A large part of our trouble has been due to the belief that legislation or other governmental action can reverse the functioning of economic laws.

In the rawer days of the West it came to the notice of a law-maker in one of the Trans-Mississippi commonwealths that arithmetic was sometimes made troublesome by the fact that the ratio of the circumference of a circle to its diameter can never be expressed exactly either in decimals or common fractions. To get rid of this annoyance, he is said to have introduced a bill decreeing that thenceforth the ratio should be exactly as three is to one. The bill, I believe, was defeated; but it may possibly have provided Mr. Bryan with his inspiration when some years later he sought to revise by Act of Congress the exchange values of gold and silver. Railroad legislation should conform to, and not seek to overthrow, economic law. There will for a long time be abundant need for us to "watch our step," but I think reasons are not wanting to justify a thoughtful man in taking a hopeful view of what is ahead.

\* \* \* \* \*



Photo by Keystone

Victoria Station, Bombay, India

# Scope of Wage Reduction Extended in New Order

## Labor Board Makes 92 Carriers Party to Decision 147—National Agreements Continued Temporarily

THE RAILROAD LABOR BOARD on June 27 added 92 carriers and one labor organization as parties to its wage reduction order, Decision No. 147, an abstract of which appeared in the *Railway Age* of June 3 (page 1259). The 12 per cent wage cut decrease now applies to practically all of the larger carriers and all classes of employees and will result, according to the Board, in cutting off approximately \$400,000,000 from the annual pay roll.

Several sections of Decision No. 147 have been enlarged to cover wage reductions for certain workers not specifically noted before. Article X of Decision No. 147 pertaining to floating equipment employees has been enlarged so that the rates of pay in various ports such as New York, Philadelphia, Pa., Hampton Roads, New Orleans, La., Natchez, Miss., Cairo, Ill., St. Louis, Mo., and Duluth, Minn., are fixed according to the conditions prevailing at each point. The rates fixed are highest at Duluth and lowest at St. Louis, the range in the rates between these points being approximately \$60 per month.

Article XII of Decision No. 147 was also enlarged by the addition of the following provisions:

For the specific classes of employees listed in the following sections of this article and named or referred to in connection with a carrier affected by this decision, deduct from the amount of increases granted since February 29, 1920, the following per cent of such increases:

Sec. 3. Chefs in bridge and building department and chefs in extra gangs.....60 per cent.

Sec. 4. (a) *Restaurants*.—Managers, assistant managers, cashiers, head waiters and head waitresses, waiters and waitresses, bus boys and scrub girls, chefs, cooks, bakers, dishwashers, yardmen, carvers and cold-meat men, vegetable man, storeroom man, linenroom man, pantry men and pantry girls, lunch-counter clerk, houseman, housekeeper, maids and porters.....60 per cent.

(b) *Dining cars*.—Stewards, chefs, cooks, waiters, and buffet porters.....60 per cent.

(c) *Laundry Workers*.—Washmen, assistant washmen, foreladies, seamstresses, body ironers and manglers.....60 per cent.

Sec. 5. Cooks in maintenance of way department.....60 per cent.

Sec. 6. Cooks and campmen in extra gangs, cooks in carpenter gangs, and cooks in Russellton Hotel.....60 per cent.

Sec. 7. Dining car stewards.....60 per cent.

Sec. 8. Stewards, cooks, waiters, and porters.....60 per cent.

Sec. 9. (a) *Restaurants and Hotels*.—Stewards, managers, chefs, cooks, dishwashers, pantry men, waiters, porters, bedmakers, and barbers.....60 per cent.

(b) *Ferry Restaurants*.—Stewards, chefs, cooks, waiters, porters, and dishwashers.....60 per cent.

(c) *Dining Cars*.—Stewards, chefs, cooks, pantry men, waiters, bus boys, and cabinet, buffet, and chair car porters.....60 per cent.

(d) *Miscellaneous*.—Commissary helpers, laundry workers, and chauffeurs.....60 per cent.

Sec. 10. (a) *Restaurants*.—Managers, cooks, waiters, maids, and porters.....60 per cent.

(b) *Dining Cars*.—Cooks and waiters.....60 per cent.

Sec. 11. Stewards, chefs, cooks, pantry men and waiters.....60 per cent.

Sec. 12. Waitresses, parlor car chefs, and porters.....60 per cent.

### Many Disputes Over National Agreements Reach Board

The Labor Board during the past week has been flooded with the submission of controversies over rules and working conditions. The character of the submissions made to the Board indicates very clearly that the employees on the majority of roads have submitted the terms of their national agreements as practically the "irreducible minimum" and stood flatly for the perpetuation of the punitive and restrictive clauses against which the railroads have strenuously ob-

jected. In a few cases, particularly those in which smaller roads are concerned, the submissions to the Board indicate that there has been an attempt to negotiate and in these cases the points in controversy are comparatively few.

### Employees Take Referendum on Wage Cuts

The employees' organizations affected by Decision 147 have been taking referendums during the past week, the results of which are to be announced when the general chairmen of the various organizations meet in Chicago on July 1. Labor leaders have consistently declined to comment on the trend of the voting. However, the press has reported that the returns already in indicate a disinclination to accept the wage cuts ordered by the Labor Board. On June 28 it was reported unofficially that the shop men, first of the organizations to complete its vote, had rejected the Board's ruling by a large vote.

### Labor Board Continues National Agreements and Temporarily Ends Punitive Overtime

The Labor Board on June 28 issued a "surprise" order continuing all National Agreements "until such time as such rules are considered and decided by the Labor Board" and ending temporarily the payment of time and one-half for overtime until this point in the controversy between the carriers and their employees is decided by the Board. Overtime in the meantime is to be paid at the pro-rata rates except on those carriers where overtime was paid for at punitive rates prior to federal control.

The Board's order, issued as an addendum to Decision No. 119, said:

Reports of the results of conferences held in accordance with the directions contained in Decision 119 have been and are now being received in considerable number. In some instances the carriers and the employees have arrived at an agreement upon all rules. In a considerable number of instances there remain certain rules upon which no agreement has been reached, while in others conferences have not as yet been begun. Under these circumstances, in order that no misunderstanding may exist or unnecessary controversy arise, it appears necessary, purely as a modus vivendi, that the Labor Board establish a uniform policy to be pursued with regard to the undecided rules until such time as it is possible to make a decision.

In the available reports from the conferences held in accordance with the direction contained in Decision 119, it is found that the principal rules still the subject of dispute are those governing payment of overtime. The Labor Board directs as follows, effective July 1, 1921, with the understanding that if the rules promulgated by the Labor Board to be effective July 1 are more favorable to the employees, adjustment in compensation due the employees will be made by the carrier:

1. All overtime in excess of the established hours of service shall be paid for at the pro rata rate, provided that this will not affect classes of employees on any carrier which have reached an agreement as to overtime rates, nor to classes of employees on any carrier who by agreement or practice were receiving a rate higher than pro rata prior to the promulgation of any general order of the United States Railroad Administration relating to wages and working conditions. Inasmuch as this Board has not as yet given consideration to any dispute on overtime rates, this order should not be construed to indicate the final action and decision of the Labor Board on disputes as to overtime rates which have been or may be referred to the Board.
2. In lieu of any other rules not agreed to in the conferences held under Decision 119, the rules established by or under the authority of the United States Railroad Administration are continued in effect until such time as such rules are considered and decided by the Labor Board.
3. This direction shall not be understood to modify Decision 119

- in any respect other than is specifically provided for herein.
4. Rules agreed upon by carriers and employees to be effective as of July 1.

### Employees in General Offices

Another interpretation of decision 119 was handed down by the Labor Board on June 29, ruling that agreements as to working conditions of employees in the general offices should not be separate from the agreements negotiated with the Brotherhood of Railroad and Steamship Clerks, Freight Handlers, Express and Station Employees. In the negotiations now taking place under decision 119, several disagreements have resulted over the question of the right of the employees in the general offices to negotiate their own agreement independently of the clerks' organization, where this organization represents the majority of all clerks and station employees in the service of the carrier, but not the majority of the general office force. On one carrier the general office force expressed a desire not to be included in the agreement and negotiations between the clerks' organization and the carrier and asked permission of the board to negotiate a separate agreement. The question was referred to the board by the employees and the carrier, the latter favoring such separation on the ground that the general office force is a separate class.

The Labor Board, in its decision, recognized the difference in the character of work performed by the clerks in the general offices, but ruled that but one agreement should be made in which could be incorporated the exceptions in which the general office forces would be included.

The decision of the Board, however, ruled that the employees in the general offices do not constitute a class and, therefore, but one agreement should be made. It added, "This decision will not operate to prevent the exclusion of the personal office force and the confidential positions in the general offices from the application of the agreement."

## The Pennsylvania and Its Employees

NOTICE has been given to the United States Railroad Labor Board that the Pennsylvania Railroad and the representatives of its employees in engine and train service have mutually agreed on regulations and working conditions. These enginemen, firemen, hostlers, conductors, trainmen and switch-tenders, number more than 40,000. Heretofore the men in engine and train service have been working under two different schedules, one for the former lines east and one for the former lines west. The successful outcome of these negotiations is a source of gratification to the Pennsylvania officers, who are endeavoring to establish similar arrangements for employees in other branches of the service, not only for the negotiation of regulations to take the place of the so-called national agreements but also for the amicable settlement of all matters of controversy that may arise.

E. T. Whiter, assistant to the vice-president in charge of personnel, in an address before the Manufacturers' Club at Philadelphia on June 29, discussed at length the labor problems now engaging the attention of railroads and their employees everywhere, and gave interesting data concerning the Pennsylvania. He said in part:

Under the decision of the Labor Board we have asked our employees to select, by secret ballot, representatives from among their own number in each of the various classes, representatives of their own selection, to speak for them in negotiations with the management. We have, already, the "Joint Reviewing Committee of the Pennsylvania System," established early in January of this year, with representatives of the engine and train service, which deals with about 50,000 employees. It has been in operation now for six

months, and the record of its work is one of which not only the management but the men themselves are very proud. It has actually demonstrated what we have been contending for before the Labor Board, namely, that it is possible, if we are permitted to do so, to get together with our own men and to settle our own affairs within the family.

That is what we have in mind for all other classes of employees. We have absolutely no quarrel with the unions. Nothing could be farther from the truth than any statement that the Pennsylvania, in proposing this plan to its employees, is trying to disrupt labor organizations. There are about 185,000 persons now employed on the Pennsylvania System, of whom between 165,000 and 170,000 have been involved in the present controversy. Of these, about 40,000 are in the train service and they have mutually agreed with the company on working conditions.

A majority of the shop employees at Altoona have also agreed on fundamentals, including piece-work, and negotiations between those men and the company are continuing with every prospect of a mutually satisfactory arrangement being consummated. The maintenance of way employees are now voting. The signalmen, the clerks, the telegraphers, and the freight handlers have taken their vote, making in all a total of about 100,000 that have either completed their negotiations or are now choosing their representatives.

Outside of Altoona, a majority of the shop crafts have declined to vote, and the management feels that it can assume no other course than to deal with the committee chosen by those who did vote. Many of the foremen have announced that they consider themselves officers and do not want a committee to represent them.

We have not been blind to the difficulties that obstruct our way, but we feel that, from the result of the voting, substantial progress has been made. We earnestly request co-operation on the part of the public generally in our efforts to reach a basis of harmonious relationship with our employees. Notwithstanding our endeavors, the Labor Board and the public will have this problem before them for some time to come, unless the American public is determined that these national agreements, or schedules based upon the principles of the national agreements, shall not continue to be imposed upon the railroads under some other form. \* \* \* There is an evident disposition on the part of railroad managers, as well as employers in other industries, to recognize the employee as a factor in industry and to treat him fairly; and insofar as there is a spirit of friendliness and co-operation between employers and employees, the country will prosper.

The American Federation of Labor at Denver has just re-affirmed its stand for government ownership of railroads with democratic operation. That means the Plumb Plan. The executive council was instructed to draw up proposed legislation giving railroad workers equal rights and privileges with capital. If their efforts should prove successful, it is only a short step farther to include all industries organized under corporate grants, and again only another step to include all the basic industries, such as coal, iron, steel and perhaps others. Such resolutions are not idle words. They should not be treated lightly. They call for most serious consideration on the part of business men. Railroad managers are trying to operate their properties honestly, efficiently and economically, and have set for themselves a high standard of public service; but they need your support.

NEW ENGLAND must have adequate service from its transportation system, at reasonable rates, or the prosperity of millions of Americans will be imperilled. This was the main point of an address by Vice-president Calvin Coolidge in New York City on June 27. The speaker intimated that this question deserved the serious attention of some railroads outside of New England.



Waiting to Take an Express Train Over the Mountains

## Heavy Locomotives for the Southern Pacific

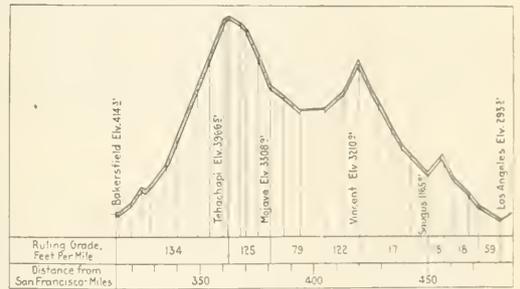
Pacific Type Handles 11 Passenger Cars on 1.5 Per Cent Grade—  
New Santa Fe Type Increases Tonnage

**D**URING the early part of the year, the Southern Pacific received from the Baldwin Locomotive Works 15 locomotives each of the 4-6-2 and 2-10-2 types. The 4-6-2 type was built particularly for use on heavy passenger trains between Ogden, Utah, and Carlin, Nev.; and the 2-10-2 type on heavy freight trains between Los Angeles, Calif., and Bakersfield.

Between Ogden and Carlin, a distance of 247 miles, the maximum grade is 1.5 per cent, 10 miles of which is encountered going east, and 20 miles going west, the remaining grades varying from 0.15 per cent to 0.6 per cent. These 4-6-2 type locomotives are capable of handling on this district, without helper service, a passenger train consisting of 11 cars, including Pullman cars, which weighs 875 tons. Locomotives of the lighter design of the 4-6-2 type, which the new locomotives displace, require helpers when going west from Montello to Valley Pass and from Wells to Moor going east.

Between Los Angeles and Bakersfield, a distance of 171 miles, there are 64 miles over grades of from 2.2 per cent to 2.37 per cent going west, and 73 miles over grades of from 2.23 per cent to 2.54 per cent going east, the remaining grades varying from 1.0 per cent to 1.5 per cent. The tonnage hauled by these 2-10-2 type locomotives is 1,005 tons going west, and 865 tons going east, or about 13 per cent over that handled by the former lighter 2-10-2 type locomotives.

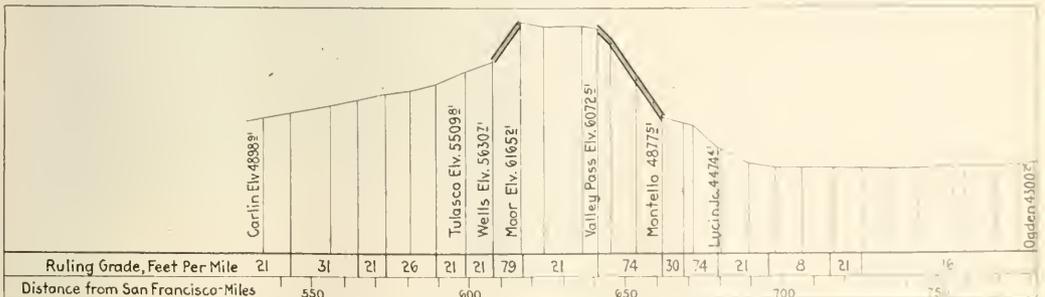
The specifications and general designs for these locomotives were worked up under the supervision of George McCormick, general superintendent of motive power, and F. E.



Profile of Road Between Bakersfield, Calif., and Los Angeles

Russell, assistant mechanical engineer, the designs being completed and details worked out by the builders.

The 4-6-2 type locomotives have a rated tractive effort of 43,660 lb., with 180,000 lb. on drivers, the ratio of adhesion being 4.12. The total equivalent heating surface is 4,605 sq.

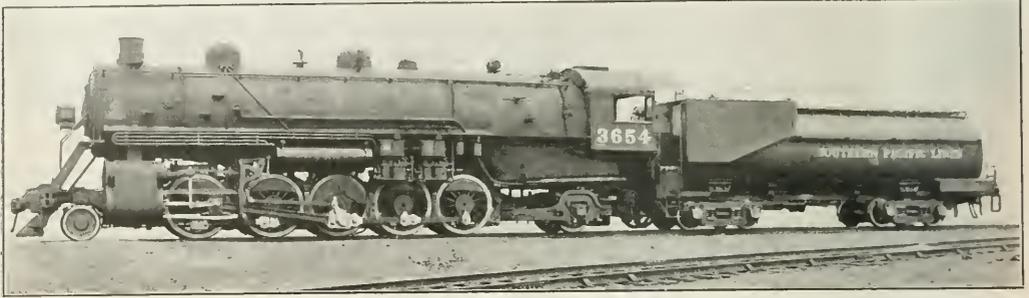


Profile of Road Between Carlin, Nev., and Ogden, Utah

ft., or 1 sq. ft. for each 9.5 lb. of tractive effort, this ratio indicating good steaming capacity. The boiler is of the extended wagontop type with a wide firebox placed back of the drivers and over the rear trucks. A combustion chamber 3 ft. long extends forward into the boiler barrel, and the tubes have a length of 18 ft. The superheater consists of 40 units and has a superheating surface of 836 sq. ft. The cylinders have a stroke of 30 in., which is a departure from the usual practice in passenger locomotive design. The long stroke was based on the results of numerous tests of locomotives

6,933 sq. ft., or 1 sq. ft. for each 10.8 lb. of tractive effort, this ratio likewise indicating excellent steaming capacity. The boiler is of the straight top type with a firebox 90 in. wide placed over the rear truck. The combustion chamber is 5 ft. 4 in. long, and the tubes have a length of 21 ft. The cylinders have a stroke of 32 in. and lateral motion driving boxes are provided on the first pair of drivers.

Among the specialties applied to both types of these locomotives are Commonwealth cast steel tender frames, four-wheel equalizing swing motion tender trucks, Delta type



Santa Fe Type Locomotive for Handling 1,000 Tons on 2.6 Per Cent Grades

with superheaters made by the Southern Pacific, which justified the use of the longer stroke with superheated steam. The performance of these 4-6-2 type locomotives since going into service has proved that no mistake was made in adopting a longer stroke for passenger locomotives.

The 2-10-2 type locomotives have a rated tractive effort of 75,150 lb., with 297,300 lb. on drivers, the ratio of adhesion being 3.96. The total equivalent heating surface is

trailing truck frames, radial buffers, Unit type safety bars, Ragonnet power reverse gears, extended main driving boxes and Nathan non-lifting injectors. A complete installation of F.B.C. flexible staybolts is made in the breaking zone of the firebox and in the combustion chamber around the belly of the boiler.

Both types are oil burners and are equipped with Walshaert valve gear with the link block in the bottom of the

	4-6-2 Type locomotives		2-10-2 Type locomotives	
	1912	1921	1917-19	1921
Date built.....	29,920 lb.	43,660 lb.	63,300 lb.	75,150 lb.
Tractive effort.....	22 in. by 28 in.	25 in. by 30 in.	27½ in. by 32 in.	29½ in. by 32 in.
Cylinders.....				
Weights:				
Total engine.....	220,900 lb.	297,800 lb.	348,000 lb.	385,900 lb.
On driving wheels.....	141,400 lb.	180,000 lb.	273,000 lb.	297,300 lb.
On trailing truck.....	38,000 lb.	59,700 lb.	29,000 lb.	29,800 lb.
On leading truck.....	41,500 lb.	58,100 lb.	46,000 lb.	58,800 lb.
Engine and tender.....	359,000 lb.	519,800 lb.	521,460 lb.	607,900 lb.
Wheel base, driving.....	13 ft. 4 in.	13 ft.	22 ft. 6 in.	22 ft. 10 in.
Wheel base, total.....	33 ft. 4 in.	35 ft. 6 in.	41 ft. 6 in.	43 ft. 4 in.
Wheel base, engine and tender.....	63 ft. ¼ in.	75 ft. 9½ in.	80 ft. 2½ in.	82 ft. 7½ in.
Ratios:				
Weight on drivers, tractive effort.....	4.72	4.12	4.18	3.96
Equivalent heating surface—Grate area.....	72.3	65.4	93.8	84.1
Per cent firebox heating surface to evaporative surface.....	6.34	8.41	7.34	7.79
Per cent superheating surface to evaporative surface.....	20.25	24.95	21.8	23.6
Total evaporative surface—Volume of cylinders.....	222.8	196.7	202.5	202.4
Wheels:				
Driving, diameter over tires.....	77½ in.	73¼ in.	63½ in.	63½ in.
Driving, thickness of tires.....	3¼ in.	3¼ in.	3¼ in.	3¼ in.
Driving journals, main.....	10 in. by 12 in.	12 in. by 22 in.	12 in. by 22 in.	13 in. by 22 in.
Driving journals, front.....	9 in. by 12 in.	11 in. by 13 in.	10 in. by 20 in.	11 in. by 20 in.
Driving journals, others.....	9 in. by 12 in.	11 in. by 13 in.	10 in. by 13 in.	11 in. by 13 in.
Engine truck wheels, diameter.....	33 in.	36 in.	33 in.	33 in.
Engine truck journals.....	6 in. by 10 in.	7 in. by 12 in.	6 in. by 12 in.	6 in. by 12 in.
Trailing truck wheels, diameter.....	45½ in.	51½ in.	45½ in.	45½ in.
Trailing truck journals.....	8 in. by 14 in.	9 in. by 14 in.	8 in. by 14 in.	9 in. by 14 in.
Boiler:				
Style.....	Straight Top	Ext. Wagontop	Ext. Wagontop	Straight Top
Working pressure.....	200 lb.	200 lb.	200 lb.	200 lb.
Outside diameter, first ring.....	70 in.	78 in.	82½ in.	90 in.
Firebox, length and width.....	108 in. by 66 in.	120½ in. by 84 in.	120½ in. by 75¼ in.	132 in. by 90 in.
Tubes.....	182—2 in.	193—2¼ in.	279—2 in.	261—2¼ in.
Flues.....	24—3¼ in.	40—5½ in.	40—5¼ in.	50—5½ in.
Tubes and flues, length.....	20 ft.	18 ft.	20 ft. 6 in.	21 ft.
Heating surface, tubes and flues.....	2,571 sq. ft.	3,069 sq. ft.	4,130 sq. ft.	4,722 sq. ft.
Heating surface, firebox.....	174 sq. ft.	282 sq. ft.	327 sq. ft.	399 sq. ft.
Evaporating heating surface, total.....	2,745 sq. ft.	3,351 sq. ft.	4,457 sq. ft.	5,121 sq. ft.
Superheating surface.....	556 sq. ft.	836 sq. ft.	972 sq. ft.	1,208 sq. ft.
Equivalent heating surface,* total.....	3,579 sq. ft.	4,605 sq. ft.	5,915 sq. ft.	6,933 sq. ft.
Grate area.....	49.5 sq. ft.	70.4 sq. ft.	63 sq. ft.	82.5 sq. ft.
Tender:				
Tank.....	Cylindrical	Cylindrical	Cylindrical	Cylindrical
Water capacity.....	7,000 gal.	12,000 gal.	10,050 gal.	12,000 gal.
Oil capacity.....	2,940 gal.	4,060 gal.	3,120 gal.	4,000 gal.

\*Equivalent heating surface equals total evaporating heating surface plus 1.5 times the superheating surface.

link in forward motion, the gear being so arranged as to give equal cut-off at 55 per cent of the stroke. The lead is  $\frac{1}{4}$  in., lap  $1\frac{1}{4}$  in., exhaust clearance  $\frac{1}{8}$  in., and valve travel for the 4-6-2 type  $6\frac{1}{2}$  in. and for the 2-10-2 type, 7 in. These valve events were decided upon from experiments made during the locomotive tests above referred to, proving to be the most efficient of the numerous combinations tried.

The counterbalance is designed to balance only 50 per cent of reciprocating parts and to produce a dynamic augment at diameter speed not exceeding 50 per cent of the static wheel load. The reciprocating parts are very light, the piston heads being of the built-up type with cast iron bull-rings, and the piston rods of open-hearth steel, heat-treated, and hollow bored. The main and side rods are also of very light design, all being of I-section except the side rods on the 2-10-2 type locomotives, which are rectangular. All driving axles and main and forward crank pins are made of open-hearth heat-treated steel, and are also hollow bored. Constant resistance leading trucks are applied to both types of locomotives.

The trailing trucks on the two types of locomotives are interchangeable and are equalized with the drivers by means of equalizing beams which are fulcrumed on the truck frame. With this arrangement, which is a new departure for this type of truck, the load is transferred to the truck frame at the radius bar pin and through two sliding bearings placed on the right and left sides back of the truck wheels. In previous designs the entire weight on the truck was carried on fulcrums between the radius bar pin and the wheels.

The tenders, which are of the Vanderbilt type, are unusually large, having a capacity of 12,000 gal. of water and 4,000 gal. of oil. The tender trucks are of the equalized type with journals  $6\frac{1}{2}$  in. by 12 in.

The following tabulation shows the principal dimensions, weights and ratios of the two new types, and, for comparison, of lighter locomotives of the same types which were superseded by the new power between the points mentioned.

## Railway Business Association Places Railway Problems Before President

WASHINGTON, D. C.

THE FOLLOWING statement was presented to President Harding at the White House on Monday morning, June 27, by Alba B. Johnson, of Philadelphia, president, and associates speaking for the Railway Business Association, the national organization of concerns selling goods or services to railroads:

"The Railway Business Association invites your consideration of two important aspects of the railway problem.

"We refer first to the industrial unemployment. This is aggravated and protracted by inability of the railroads to pay the bills of railway supply manufacturers or to order necessities. Without entering into the causes thereof depletion of railway treasuries is due to delay in reaching an adjustment of railway accounts with the government. Railroad orders being held to the minimum, many plants are on part time or closed down, throwing their forces out of work, while local banks carry manufacturers with credit which would ordinarily be available to other borrowers. Measures for relief are reported by the press to be under official consideration. We earnestly urge that proposed appropriations by Congress to expedite adjustments shall be viewed as the fulfillment of a government obligation. For every sum properly appropriated to stabilize the roads and cognate business the people of the country will realize very much more in prosperity and the government treasury in taxes. Meantime the railroads will be preparing to handle the increased volume of traffic which must be expected in due course.

"Second, we refer to the practice, increasingly prevalent among users of transportation during the present business depression, of carrying their proposals for railway rate changes to executive and legislative officers of the federal government and to the public and press, instead of as heretofore to the carriers and on appeal from them when necessary to the Interstate Commerce Commission.

"Rehabilitation of our railways and subsequently their maintenance and operation will depend upon the foresight and business judgment which are applied to the regulation of rates. The problem must be dealt with as a whole in accordance with a comprehensive program steadily pursued. Such a program can be carried forward in no other way except through concentration of responsibility. The Interstate Commerce Commission is the body to which Congress has delegated the task. The commission can serve the whole country in the long run successfully only if it retains the prestige and esteem to which its quasi-judicial character entitles it. The survival of privately owned and operated railways requires general abstinence from agitation and political pressure in connection with any matter over which the commission has jurisdiction.

"We earnestly deprecate appeals by shippers and travelers to the President, his advisers and to members of Congress for relief which under the statute is to be sought from a quasi-judicial administrative tribunal.

"In our judgment this practice if continued will harm every interest. It will bring misfortune upon the political officers whose intervention is enlisted, because they are rarely either chosen or trained for the regulation of railway rates and are not occupied in its daily study; yet if they intervene and the public believes such intervention to have been influential, they will in case of bad results be held to a responsibility which is no part of their official duty. It will break down the regard in which the Interstate Commerce Commission is held and deprive the country of a trusted and indispensable agency which has required 30 years to develop. Upon users of the railways, consumers of things transported, in other words the whole public, it will inflict calamity, since it will make difficult and embarrassing to the commission the task which Congress has delegated to it and to nobody else, that of planning comprehensively and foresightedly the financial rehabilitation of these carriers through a stable rate policy designed to yield in the average year adequate net income and hence the ability to furnish satisfactory facilities and service.

"The Railway Business Association is, as you well know, composed of manufacturers engaged in supplying the railways with their necessities. Comprising a group of industries which in good times employ as many men and probably as much capital as the railways themselves, our members on behalf of their employees, managers and stockholders are deeply concerned in the increase and stability of railway purchasing power which would stimulate not only our own industries but all industry and general business in the interest of the whole public. We believe the Transportation Act of 1920 makes it possible to put the roads on a firm foundation. We equally believe this purpose can be frustrated if through any mischance the administration of the act shall be deprived of its quasi-judicial character and subjected to the pressure of groups through political agencies.

"During many years before federal control the Interstate Commerce Commission was regarded as judicial or semi-judicial. Its dockets were considered litigation. Testimony and argument were conducted as in a court. Its decisions became precedents. Publicity or other campaigns of agitation were deemed improper, and intervention by political personages not to be thought of.

"Federal control absorbed into the political executive this rate-making function which had previously been quasi-judicial. Citizens acquired the habit of employing the same

approaches in the matter of railway rates and practices to which they were accustomed in matters normally within the executive or legislative scope. Upon the relinquishment of the roads and the resumption of regulation, the commission found that principles which had required years to establish and which had been regarded and treated as settled and applicable without argument had been overturned and the whole process had to be started anew. At the same time shippers continued the war-time habit of political pressure.

"From the complaints of shippers discussed in that way a large part of the public has obtained the impression that the regular mechanism of negotiation with carriers or their committees and of appeal to the commission has broken down. Press dispatches purporting to be based upon the official view express satisfaction with the progress already made by the commission in the amelioration of hardships arising out of the horizontal advances of 1920 but the same articles proceed to characterize such adjustment as a problem confronting the administration. It seems inevitable that such interpretations will confirm the idea that rates are to be made in the light of popular opinion instead of in the light of expert and legally responsible opinion, and further encourage shippers of commodities to make their case with executive and legislative officials and in the newspapers instead of with the commission.

"The Railway Business Association from the beginning of large-scale rate advance cases in 1910 to date has refrained from suggesting rate schedules to the commission. Our steadfast attitude was that of urging the public and business organizations to make clear beforehand their acquiescence in whatever judgment the commission might reach. On March 31, 1921, in annual meeting, our association adopted the following resolution:

"The Interstate Commerce Commission on March 1, 1922, under the statute, acquires authority to fix from time to time the rate of return upon railway property which transportation rates are to be designed to yield. It therefore becomes the duty of the commission to define the purposes for which new capital is desirable. The United States needs a transportation program that looks further ahead than a few months, and a financial program upon which to base the rebuilding program. The Interstate Commerce Commission, entering upon a far-reaching experiment with a given level of rates to see whether it will bring to the roads the income, the capital and the improvements which the country requires, those who are tempted to agitate for rate reductions each on his own commodity should bear in mind that if everybody was accorded the reduction he would like, railway facilities would be inevitably diminished below the requirements of our nation's commerce. A broad policy requires the fullest support of all our citizens."

"The National Association of Manufacturers on May 18 in annual convention adopted a resolution which declared, 'It is prudent for shippers to desist from agitation for a general reduction of rates, and instead for each shipper or association of shippers who feel that they have a grievance to endeavor to compose the matter with the carrier involved, and failing that, to take the case in the orderly way to the Interstate Commerce Commission.'

"The National Industrial Traffic League on May 25, in general meeting, adopted a resolution which cites that 'there appears to be a disposition on the part of some shippers and some organizations to bring pressure to bear upon the commission, through political channels, to influence its actions with respect to certain of these adjustments'; hence the league 'respectfully submits to its membership and to the shippers of the country generally, the wisdom of proceeding in all these matters in an orderly manner, as provided in the Act to Regulate Commerce,' and reaffirms 'confidence in the Interstate Commerce Commission to act in this grave situation for the good of all interests and urges that the Interstate Commerce Commission be left free to exercise its judgment in making such readjustments of the rate structure as necessity and conditions warrant.'

"Certainty that the Interstate Commerce Commission will retain its freedom of judgment with respect to proposed rate adjustments will substantially strengthen the tendency toward business resumption. Traffic is increasing. Weekly car loadings show a steady and wholesome gain. Loadings on January 1 had fallen more than 40 per cent below

the October peak. As of the middle of June they have risen to within about 22 per cent of the high point last fall. If shippers could feel sure that the rate policy which is to prevail is the policy known to be that of the commission, such certainty would invigorate and hasten general recovery.

"Not the least item, but perhaps the greatest, is purchases by the railways themselves. July 1 will bring important new factors of encouragement. Labor cost will be reduced in several directions. Increased traffic should bring enlargement of earnings. Convincing signs that shippers and the general public are disposed to acquiesce in the rate program which the commission deems essential will put courage and vigor into railway purchasing. This will do more than any other one thing could to restore general business activity."

## Railroads and Public Utilities

### Urged to Buy Coal

WASHINGTON, D. C.

CHAIRMAN CLARK of the Interstate Commerce Commission has addressed letters to Thomas DeWitt Cuyler, chairman of the Association of Railway Executives; G. W. Elliott, secretary of the National Committee on Gas and Electric Service; M. H. Aylesworth, executive manager of the National Electric Light Association, and C. L. Henry, president of the American Electric Railway Association, urging the importance of having the railroads and other large users of coal acquire a reasonably liberal reserve supply of fuel now in order to prevent a possibly serious situation if all the coal consumers rush into the market at once during the latter part of the year. The letter to Mr. Cuyler, which is similar to that sent to the others, is as follows:

As you doubtless know, the production and transportation of bituminous coal has been disappointingly small this summer and is now at a disappointingly low stage. The commission requests that I write, suggesting the importance, in the interest of the conditions which may exist during the late summer and fall, of having the railroads and other large users of coal acquire now while conditions are easy a reasonably liberal reserve supply. We suggest that this matter be brought to the attention of the members of your association, together with a recommendation that in so far as is practicable they act thereon. We realize, of course, that it is not practicable to store a full winter's supply, but if a reasonable reserve is now accumulated it will help out greatly when and if a period of so-called car shortage occurs later which is in any respects comparable with that which we experienced last year. We are taking this matter up with associations of public utilities, etc., that use large quantities of coal and that need a dependable supply.

Will you kindly act on this suggestion and will you be good enough to advise us of the results?

Production of soft coal fell off sharply during the third week of June, according to the weekly bulletin of the Geological Survey. For five consecutive weeks the output had been about 8,000,000 tons. In the week ended June 18 it dropped back to 7,549,000 net tons, the lowest output reported for any full time week since the middle of May. The Geological Survey says that the cause of the decrease is not yet apparent. Shipments of lake cargo coal, on which a reduction of 28 cents a ton was made some time ago, now stand at 8,019,733 tons. This is in excess of both 1918 and 1920, but is 25,000 tons behind 1919.

TWENTY-THREE PERSONS KILLED and 42 injured, is the record of a derailment, reported on June 25, of an express train at Albert, France, on the line from Lille to Paris.

THE NEW YORK BARGE CANAL, and the problems connected with promoting navigation on the canal, were announced as the subject for discussion at an informal gathering of lake, canal and ocean transportation men, appointed to be held in Buffalo, N. Y., on June 29 and 30. The promoters aim to launch an extensive "ship-by-water" movement.

# Railroad Hearings Before Senate Committee

## Witnesses for Association of Security Owners Outline Economies to Be Effected by Co-operation

WASHINGTON, D. C.

VARIOUS ASPECTS of the Warfield plan for "co-ordinating" the railroads were presented before the Senate Committee on Interstate Commerce on June 23, 24, 27 and 28 by Forney Johnston, of counsel for the National Association of Owners of Railroad Securities and members of its Board of Economics and Engineering.

### Forney Johnston Presents Outline of Legislation Proposed by Security Owners

Mr. Johnston gave an outline of the legislation which the association proposes to provide adequate organization among the railroads themselves for the introduction of economies in railway operation. The proposal calls for organization of the carriers by groups for intensive studies of railway economies and for a central organization, made up of members of the railway officials composing the several group organizations and an equal number of financial representatives, the purpose of the central organization being to systematize and harmonize the functions of the group organizations.

It is proposed that these organizations should have a wide measure of jurisdiction so far as investigations and recommendations are concerned, but without power of direct interference with railway management, which it was stated would not be necessary to make the economies and studies of the organization available. The chief purpose of the organization was to introduce modern methods into the study and development of transportation, regarded from its national standpoint and particularly in respect in which individual railway systems could not be expected to function as serviceably as the proposed method.

### "The War College of American Transportation"

It is proposed that these organizations be authorized to act as agencies of the Interstate Commerce Commission in any matters delegated by the commission. They would constitute, in the language of Mr. Johnston, "the war college of American transportation," affording facilities for intensive laboratory methods in the production of railway economies.

The title of the bill proposed was "An Act to further economies and efficiency in railway transportation." Mr. Johnston also presented a proposed bill for the incorporation of National Railway Service Corporation to take up the work begun by the Maryland corporation bearing the same name, of supplying equipment to carriers. Mr. Johnston stated that the Maryland corporation had gone forward with the financing of railway equipment to the extent of about \$30,000,000 and desired to extend its functions; that it had been designated by the commission as an agency appropriate in the public interest to receive loans from the United States under the Transportation Act, and that its incorporation by Congress as an agency of the United States, to be operated without profit in the interest of transportation, was desirable for a number of reasons stated by Mr. Johnston. This act also proposed an extension of the power of the commission to make or refund loans to carriers out of payments on account of principal made by the carriers in settlement of their liabilities arising out of federal control or upon loans made to carriers out of the revolving fund created by the Transportation Act, as the present act limits the power of the commission to make loans to applications made before March 1, 1922. Mr. Johnston proposed that this be extended to March 1, 1930. The bill provides for the management of the cor-

poration by the present trustees, who are named in the bill, and additional trustees to be selected in accordance with its provisions.

### The Financing of Equipment

The proposed bill also would authorize the recording of equipment trust agreements with the commission, thus avoiding delay and expense and the doubtful legalities arising out of the necessity for filing these instruments in all states in which the railway operates. Mr. Johnston pointed out the diversity of statutes and court opinions as to the effect of equipment trust instruments under existing laws and asserted that if the procedure to give effect to these instruments could be simplified the market for equipment obligations would be very materially extended at a time when the credit of the railroads ordinarily available to produce substantial cash payments on equipment was restricted. For the same purpose, the witness suggested that Congress should exercise its jurisdiction to require equipment obligations to be recognized by receivers in federal courts to the extent that the revenues coming into the hands of the receiver and available for such application may be available, the witness stating that provisions of this character would make it possible for the railroads to market their equipment obligations on terms which would encourage the acquisition of equipment and said that some stimulation of this character was indispensable to invite the purchase of equipment by the carriers sufficient to handle commerce satisfactorily in the event of appreciable increase in the tonnage offered.

Senators Kellogg and Pomerene asked questions indicating that they did not think much of the idea of multiplying existing agencies for dealing with transportation matters.

### What the Proposed Bill Provides

The proposed bill provides that the National Railway Service Corporation shall be an agency of the United States, to be operated in the interest of the commerce of the people of the United States. The objects and purposes for which it would be created and the general powers and functions which it may exercise and discharge are stated as follows:

To aid, assist, further and supplement the service of transportation by carriers by railroad subject to the Interstate Commerce Act.

To assist such carriers in their financial and refunding operations and in the acquisition or use of terminals and other facilities.

To carry on the enterprise and business of constructing, acquiring by purchase or lease or otherwise, selling, leasing, and otherwise contracting with reference to, maintaining, managing, repairing, disposing of and dealing in locomotives, cars, rolling stock, equipment, appliances, materials and supplies required by carriers by railroad.

To acquire, own, and operate terminals and facilities of all kinds useful in or in connection with interstate transportation whenever and on such conditions, if any, as the commission may authorize or prescribe.

To receive, administer, invest, lend or otherwise employ or deal with any fund or other assets which may be loaned or made available to the Corporation by the Interstate Commerce Commission pursuant to the provisions of the Transportation Act, 1920, as now or hereafter amended or by any other act, or by the United States or by any other party or from any source.

To act as an agency of the Interstate Commerce Commission in the matter of loans for the purchase of equipment and to act as an agent or agency of, assist or serve the commission in all such matters, to such extent and in such respects as the commission may by general or specific or less provisions

To advise and to co-operate with the commission in the

matter of, and to supplement in whole or in part, refunding or new loans to or for the benefit of carriers from the proceeds of principal paid or repaid from time to time upon indebtedness of carriers to the United States arising out of Federal Control or upon loans made in pursuance of Section 210, Transportation Act, 1920, as amended, which are hereby authorized and directed to be made by the Secretary of the Treasury to such carriers and to the corporation on certificate of the commission on the terms and conditions provided by said Section 210, from time to time as the commission may find desirable in the interest of railway transportation, until March 1, 1930.

To borrow and lend money and to mortgage, pledge or hypothecate any property or interest of the corporation may own.

To issue, buy, sell, mortgage, pledge, exchange and deal in the bonds, stock, debentures, certificates, evidence of obligation or indebtedness or representing an interest in or secured by property used or useful in interstate commerce or commonly associated or dealt with in connection therewith; and securities of carriers engaged in interstate commerce or to act as general or special, fiscal or financial agent, trustee, receiver, syndicate manager, underwriter, or of for any carrier or property used in interstate commerce or owned and held as incidental or accessory thereto, such as the properties commonly owned by interstate carriers or described in mortgages of interstate railroads; and to undertake and discharge the functions aforesaid as transactions in interstate commerce or accessory thereto without being required to qualify under the laws of any state for the transaction of local business in respect thereof.

It is made the duty of the corporation to the extent that it may find the same useful and appropriate "to invite and encourage the use of the corporation by all carriers as their common or general agency in all matters of general interest, such as the clearing and interchange of cars, reciprocal service, the clearing of accounts, the settlement and allocation of loss and damage claims, the arbitration of differences, and in all matters in which a common agency would be desirable; to act as a bureau of complaints to which the public may apply for prompt assistance in securing attention to just grievances; to keep constantly informed as to the traffic and operating conditions of the railroads, and to anticipate and make provision for car supply and distribution; to investigate and report to the commission and to the carriers interested plans or suggestions for advancement of the commerce of the United States, for unification of service where beneficial, for joint use of terminals or facilities, for the construction of additional facilities, and in respect to all matters as to which the commission has authority to act; and to provide at all times an efficient organization available for any national or regional emergency affecting interstate commerce."

It would have the right and authority to acquire, condemn, or subordinate private property, easements, or franchises to the public use in such cases and to the extent of such easement and so conditioned and qualified as may have been authorized by the commission as compatible with the interest of the public and the commerce of the nation and consistent with the purposes of the corporation; and "may proceed for the enforcement of such right in any state court having jurisdiction of the property or defendants and jurisdiction of such matters or in any federal district court having jurisdiction of the property or of the adverse interests or any one of them, under direct authority of this act."

## Co-ordinating the Purchase of Coal

Statement by Edwin Ludlow

Edwin Ludlow, president of the American Institute of Mining and Metallurgical Engineers, outlined the advantages of co-ordinating the purchasing of fuel supplies for the railroads by groups as follows:

The allocation to each railroad of a uniform grade of coal.

The avoidance of cross hauls, supplying each road from the most available supply with a minimum of mileage.

Placing of the fuel supply on a scientific basis, with the employment of inspectors to maintain the quality of coal shipped and the checking up of the results from the performances obtained.

The close co-operation that such a committee could have

with the coal operators, obtaining in that way co-operative results of economy and efficiency that cannot be obtained under the individual basis of buying as at present.

Stabilization of the bituminous industry through purchasing greater amounts of coal during the summer months and storing it for use, with diminished shipments in the winter months. The advantages of this may be summarized as follows:

The direct saving to the railroads in the lower cost of their fuel supply, taking into consideration the cost of storing and rehandling.

The direct saving to the operators in the cost of producing the coal, due to steadier work, enabling them to make lower prices for the railroad supply.

The general advantage that will accrue to the whole bituminous industry from the stabilization of production, reducing the amount of idle times at the mines and enabling the mine laborer to have full time employment throughout the year.

The advantage to the railroads in the utilization of the empty cars during the summer and reducing the movement of their own fuel coal during the winter months when the cost of operation is highest and the demand is greatest for coal cars for domestic supply.

By making long-term contracts with producing mines they will be able not only to equip their mines better for the extraction of coal, but also for the housing and welfare of their employees, being sure of a defined all-the-year-round tonnage that will warrant their making the necessary capital expenditures.

### Advantages to the Public

The public will be greatly benefited through an arrangement of this kind, releasing the mines under contract to the railroads from a proportion of their tonnage in the winter months when the coal is needed for domestic purposes. The stabilization of the industry in this way will avoid the serious fluctuations which have occurred in the coal business during the past few years.

Some railroads have fuel agents that are carefully studying the subject, but in the majority of cases the fuel purchases are handled through the purchasing agent, who buys the coal as he buys other supplies—either taking what appears to him to be the cheapest, or else buying some special quality of coal that his operating men consider essential for use on their divisions.

### Locomotives Require Coal of Uniform Grade

In many cases this means that various coaling stations on the same lines of road often receive different qualities of coal, some of it of high volatile and some of it of low, making it impossible for the same locomotive to obtain efficient results, as each type of coal requires special drafting arrangements in order to obtain the most economical consumption. There is also a very large amount of unnecessary mileage used by the various railroads in the purchase of their coal. Some roads in the West, for example, are satisfied that they are obtaining the best results from Illinois coal; other roads in the West consider that Illinois coal is of too poor a quality and that they must purchase their coal in West Virginia or Pennsylvania, necessitating the long haul through states that are producing coal that could be used.

### Advantages of Buying by Groups

If the railroads of the country could be divided into four or more groups in the same manner that they are arranged for tariff purposes and a competent fuel engineer selected in each group to supervise the purchases very large economies could be obtained—

He could, with a competent staff of inspectors under him, give an intensive study of the requirements of the group of which he was in charge and also the sources of supply both as to quantity and quality. The work that has already been done in the way of forming what is known as pools of similar qualities of coals to enable vessels to buy a uniform cargo while receiving coal from many mines will be the greatest assistance in purchasing uniform grades for use on the divisions avoiding the economic loss that occurs when an engine receives a grade of coal different to the kind for which it has been drafted.

The fuel directors in each group will be able to co-operate with each other and the fuel resources can be mapped out and the distribution made from a scientific basis, avoiding unnecessary hauls.

The value of coal will be based on the number of B. T. U.'s that can be purchased for a dollar at the point of delivery considering not only the cost at the mine but the freight haul.

### Storage

The purchasing also is done on a consumption basis and the railroads buy 1,500,000 tons more per month in winter than they do in summer and no attempt is made to store coal except

in a few cases of railroads who have no mines on their own lines and have felt the difficulty and expense of trying to obtain coal during the winter months when the traffic of the railroads is congested and the mines are only working half time for want of cars. The position of the coal operator is that, during the spring and early summer, his mines are running on about half time for want of orders, that he gets his high peak of output about October, and that during the winter months, when the demand for domestic fuel is the greatest, his operating time is cut down for want of empty cars, due to congested transportation, so that his output is again reduced to about 50 per cent of his capacity.

It will be claimed by many roads that they have attempted to put in storage and found it a failure. This matter was also examined into by Eugene McAuliffe when acting for the Fuel Administration, who found that, in spite of the careful instructions that had been sent out as to how this storage was to be accomplished, in 90 per cent of the cases no attention had been paid to the instructions. The coal had simply been thrown out of the cars by section men, without any preparation of the ground, and the result was that in picking up this coal the locomotive crane usually gathered enough of the soft surface on which it was thrown to show a recovery greater than the amount of coal put down.

### Advantages of Long-Term Contracts

If the railroad companies would enter into long-term contracts with mines and would arrange such contracts on a basis of permitting excess shipments during the four dull months of April, May, June, July, and a reduction in shipments during the congested months of November, December, January and February, such companies would be willing to make a very much lower price that would materially decrease the railroad's fuel cost, and if these contracts went over a period of years, with a sliding scale arranged on the basis of the cost of labor, they would have the incentive to equip their mines thoroughly, not only for the most efficient mining of coal, but also for the proper housing of their employees, and with the steadier period of operation throughout the year that such shipments would permit, the working time of the miners and their annual earnings would materially increase, eliminating a great deal of the discount which now comes where mines are operated for less than 200 days in a year. Such action by the railroads would go a long way to stabilizing the coal industry, as it would not only keep the mines in more continuous operation, but, at the same time, would permit these mines to supply the domestic demand that the country requires during the winter months.

### Increased Freight Earnings

Another advantage to the railroads would be a more uniform freight traffic, and the records show that the earnings of the railroads follow closely as a whole the movement of bituminous coal. They would have during the congested winter months the cars needed for the domestic demand and would, at the same time, have a storage of their own, relieving them from the necessity of confiscation, which is now one of the most demoralizing elements in the coal business and further avoiding the necessity of assigning cars to keep up their fuel supply in winter.

### Conclusion

The whole situation of the purchase of coal should be one of co-operation with the mines and, by helping the mines during the dull summer months to carry their overhead expenses, the railroads would receive their coal at a much lower price not only sufficiently lower to pay for the expenses of storing and picking up, but also at a considerable saving on the total fuel cost, and the whole country would be relieved of the congestion and uncertainty in the coal business, which has happened so frequently in late years, and of which 1920 was our worst example. The stabilizing of the coal industry is recognized as one of the necessities for the real prosperity of this country, and the railroads, using 33 per cent of the entire output of our bituminous mines, are the ones who can do the most towards stabilizing, if they will work in co-operation with the coal miners to that end.

## Joint Terminals and Facilities

### Statement by John F. Wallace

John F. Wallace, of Chicago, told the committee that the application of the competitive principle to the development of railway terminal facilities at large commercial and industrial centers has resulted in the duplication of terminal facilities and railroad service, and as a consequence of this, these competitive developments have resulted in the burdening of

the railroads with unnecessary capital expenditures and greatly increased operating expenses. He said in part:

The complete application of the competitive system to railway freight terminals falls of its own weight. Each road cannot secure and maintain terminal facilities covering the entire terminal area. It cannot secure, maintain and operate adequate terminal facilities in each and every section or district within the metropolitan terminal areas where important freight traffic originates. Nevertheless, the attempt is made under existing methods to cover as much as possible of the entire field by separate and competitive terminals, with the resultant complication of facilities and a duplication of financial investment.

In the terminal district of Chicago as a whole—and the same thing applies to other cities—the unnecessary complication and duplications of terminal facilities is so extensive that it is a burden upon the railroads, the shippers and the public.

The investment by railroads in unused or little used property to protect real or fancied present or future competitive conditions is also a source of great expense to the railroads and ultimately to the public—although not often fully realized as such. The interest on these investments is absorbed in the general interest charges on the entire property and is lost sight of as being an expense due to unproductive investments.

### Should Be Treated Co-operatively

If the terminal situation were treated co-operatively instead of competitively there could be a simplification of the tangled network of tracks that now exists, the release to general commercial purposes of large and valuable property now held by railroads for competitive purposes or prospective competitive needs, the reduction of operating costs in the terminal handling of freight, and an increase of efficiency.

To the public this would mean not only the improvement of service to the shippers, but the reduction of street congestion and the removal of existing obstacles to the growth and development of the city.

An outstanding example of the disastrous effect of the application of the competitive principle to railway terminal operations is found at Chicago. This is true, first, because of the size of the Chicago terminal district in point of area covered, number of railroads entering, and volume of traffic; second, because of topographic and geographic conditions.

Chicago is served by 26 trunk line railroads and five major belt lines, besides several small roads performing terminal functions. Railroad developments occurred in all sections of the city and there was nothing in a physical way to prevent a railroad entering the city at one point from attempting to reach and duplicate the facilities of a railroad entering from the opposite side. It is because of this situation at Chicago that more attention has been directed to the terminal problem there, but the same problems exist in a lesser extent at all of the great railroad centers of the country, and the principle which would apply to the proper solution of this terminal problem at Chicago would be equally applicable to the terminal problems at all other large centers. There is practically a unanimous opinion among railroad executives that the unified or co-operative operation of railway terminals is not only desirable, but will eventually be necessary. It is doubtful, however, if the railroads left to their own resources will be able to evolve through independent effort a satisfactory co-operative railway terminal operating plant.

### The Situation at Chicago

During the period of government control, primarily at the suggestion of the Chicago Railway Terminal Commission, the operation of the terminals at Chicago and other large centers was placed in the hands of terminal managers for the purpose of operating these terminals as units and in order to secure the greatest possible efficiency. Economies were secured through the unified operation put into effect by the terminal managers, but the results obtained were not at all indicative of what could be secured through the complete unified operation of the terminals in normal times.

Nevertheless, even under the conditions outlined above, substantial economies were effected and the movement of freight was expedited, and the experience fully justified the argument in favor of unified terminal operation.

The statements herein made are simply my individual conception of the terminal problem and ideas suggested to the Board of Economics and Engineering for investigation. It is the formulated policy of the Board of Economics and Engineering that the individual members thereof shall submit their personal investigations and opinions to the board for its final analysis before any reports are made that will require the sanction of the board as a whole. In other words, it is the plan and policy of the board to act as a unit, and the presentation which I am making

of this subject is merely intended to give your committee a general idea of the scope and purpose of our future investigation, with a few illustrations necessary to clarify the situation.

Mr. Wallace said it was not proposed that the Board of Economics and Engineering should be a disturbing element in the situation in any way. It proposed to analyze the various problems and to try to be helpful by making suggestions. He said there is not a railroad executive in the United States that is not loaded down with routine daily duties which give him little time for the consideration of larger problems. Their staffs are also overloaded, he said, and if Mr. Willard or Mr. Rea or Mr. Smith could "sit down and put their feet on the table and smoke a cigar for two or three hours a day they would be better executives." He thought the board might be able to make some suggestions that the executives would recognize as helpful, but it has no idea of trying to inject another complicating element into the railroad situation.

## The Interest of the Savings Banks

George E. Brock, president of the Home Savings Bank of Boston, and president of the National Association of Mutual Savings Banks, said that these banks own approximately \$900,000,000 of railroad bonds and have been greatly concerned over their investments while scarcely any railroad bonds are being purchased by savings banks now. They are willing to own more railroad bonds if proper safeguards can be placed around railroad investments and for this reason they have supported the work of the National Association of Owners of Railroad Securities which they thought had been very helpful. He expressed the hope that the committee would give careful consideration to the plan suggested by Mr. Warfield, although in reply to a question by Senator Cummins he said he did not consider himself a competent judge of the details of the plan. Mr. Brock said that mutual savings banks and life insurance companies are the two most prominent sources from which future capital for the railroads can come and that under proper circumstances the mutual savings banks might furnish \$100,000,000 a year of new capital. He thought Mr. Warfield's plan applies to the railroad system a plan similar to the Federal Reserve System applied to the banking system, which has worked out well.

## Equipment Standardization

### Statement by L. B. Stillwell

L. B. Stillwell, consulting electrical engineer, said that the board has been instructed to report on railroad rolling stock with a view to standardization and improvements in construction and maintenance. He believed that many improvements can be effected, which he outlined, although he said the board had merely begun its study of the subject. He said the American Railway Association, Mechanical Division, has recommended standards which have been adopted to a considerable extent, but the American Railway Association cannot enforce its recommendations and the standardization that has been adopted mainly applied to the parts of cars. He thought that through the medium of the service corporation to acquire new equipment it would be possible to attain results which the railroads have not been able to attain. The board is studying the further standardization of freight and passenger cars, the establishment of a system of periodic repairs, the strengthening of weak cars or their restriction to local lines, and other similar subjects. He said that a limited number of standard types and sizes of cars should be adopted, although he thought the Railroad Administration went too far in the direction of standardization. Very little has been done, he said, in the direction of standardization for the purpose of economy either in construction or maintenance and the present large number of varieties of cars required the keeping of many kinds of repair parts or a delay

until the part needed can be obtained. He referred to the present system of car repairing as "theoretically almost impossible" and said that the fact that cars spend so much of their time on foreign lines where they are inadequately repaired makes them wear out quickly. He said standardization should be accomplished by selecting a few of the best types now in use, possibly with some improvements, such as a design that would give a car of less weight in proportion to the carrying capacity.

Mr. Stillwell's statement follows in part:

From the experience gained in operating these cars, a limited number of standard types and sizes should be selected or developed for interchange service and thereafter adhered to, except in special cases where the reasons for deviation may unquestionably be controlling.

Standardization should not preclude development and improvement in design and material, but should secure interchangeability as regards component parts, and it should define minimum limits of strength of essential parts. This can be done without sacrificing the advantages of competition between manufacturers in the development and sale of their specialties, as the establishment of minimum limits in no way precludes progress by improvement of material or design within the dimension limits fixed by the interchangeability rule.

Standardization will enable the manufacturer to reduce his costs by reducing the number of rolled forms, sizes of plates, special pressed members and also dies and templates which he must provide. It will also reduce his costs by saving time and consequently overhead expense. What is perhaps still more important, it will effect a great saving of time and overhead expense when the cars are repaired.

In selecting or developing standard cars, life and weight are of the greatest economic importance. For illustration, if the country has 2,500,000 freight cars and the average life is 20 years, 125,000 cars per annum must be purchased for replacement. If the average life could be increased to 30 years, by improved design and systematic maintenance, the same result would be accomplished by purchasing 83,000 cars per annum. The difference, namely, 42,000 cars, at present prices would cost about \$100,000,000.

As cars now in use become worn out to a point where it will no longer pay to repair them, they will be replaced in general by cars of larger capacity and less aggregate weight as compared to the load carried.

As regards weight of freight cars, its relation to the cost of operating railroads and the wide divergence of opinion as to what weights are necessary are illustrated by the fact that the standard box car designed by the United States Railroad Administration was criticised in a statement issued by the executive committee of one of our most important railroad companies.

According to the Interstate Commerce Commission Report for 1918, there were at that time on Class 1 roads, 1,038,751 box cars. Within the next 20 or 25 years practically all of these cars will be replaced by new equipment and obviously it is of very great importance that the weight of new cars should receive most careful consideration.

Broadly speaking, durability (life) points toward an increase of weight in design, but weight does not necessarily mean strength, and it is obvious that the interests of the railroads call for a complete study and action which will secure durability without excessive weight.

Much good work has been accomplished by the mechanical departments of the railroads, but it is inevitable that where each railroad practically determines its own standards of design, a considerable variety in the degree of excellency attained must result.

The time certainly has arrived when the state of the art in car design and construction should make it possible to select or design a limited number of the best types and sizes and avoid the losses which must result from further construction of cars of inferior design. Moreover, aside from difference in mechanical excellence, or deficiency, it is obvious that the mere reduction in the number of designs of cars of a given type will tend to secure a reduction in first cost and in cost of maintenance.

Under present conditions, each railroad specifies its own design, which may be good or otherwise, and normally less than one-half of these cars will be found in operation on the lines of the railroad company which owns them, the rest being scattered over the country in interchange service. When traffic is heavy the percentage of cars on lines of the company owning them drops in some cases, as low as 25

per cent. Under these conditions a majority of the repairs must be made by foreign lines and the cost of such repairs in time and money is greatly increased by the variety of designs and of specialties used.

If standardization from the standpoint of the railroads as a whole can be established and sound maintenance and retirement policies fixed, savings very large in the aggregate will undoubtedly be secured. In this connection the mere cost of unloading and re-loading cars which require repairs is a heavy item of expense charged against traffic and frequently involving delay and indirect expense serious to the shipper.

In 1920 the cost of maintaining freight cars owned by Class 1 railroads was over \$600,000,000. Looking to the future, there is every reason to expect that if a policy of standardization can be adopted by the railroads as a whole, a very large saving in cost of maintenance will gradually become effective as present rolling stock is replaced.

Obviously standardization which will secure interchangeability of parts and also establish adequate standards of strength of material and methods of construction will effect important economy in the cost of maintenance. Standardization will also be of great value in reducing the number of cars temporarily out of service for repairs, much time being lost under present conditions by the frequent necessity of awaiting arrival of spare parts at interchange points where repairs are made.

STABILIZING ORDERS FOR CARS

A great reduction in builders' costs and in prices to the railroads would result if it were possible to stabilize the placing of orders for both new cars and for replacement parts. Under present practice when railroad earnings fall off, orders for equipment are curtailed, and when earnings increase, orders in large quantity are placed. The very wide fluctuation in output of the manufacturers of equipment which results, operates to increase greatly the average cost.

STABILIZING MAINTENANCE

A condition which results in a very great increase in cost of railroad operation exists in present repair practice, each road being supposed to repair all cars which develop the need of repairs while on its lines.

For best results, maintenance should be pushed especially during periods of light traffic. Present methods tend to make repairs keep step with the monthly earnings of the railroads.

If it were possible to carry on repairs systematically at all seasons regardless of the earnings or losses of individual roads, a great saving could be effected. This would not only mean a reduction in the cost of maintenance, but would secure greater reliability of service and freedom from breakdown and would stabilize labor conditions in the shops. On May 15, 1921, the Car Service Division of the American Railway Association reported 324,969 freight cars in bad order. This is approximately 13 per cent of the total number of freight cars in this country. This percentage is abnormally great, but there is little relief in sight.

Obviously the best interests of the railway industry as a whole require that in slack periods when cars are plenty such cars should be put into good condition in order that they may be available when heavy traffic returns. Under present conditions, repairs are often postponed because of lack of available funds.

It has been estimated that 15 per cent of the cars in railroad ownership are structurally too weak for modern service conditions in interchange service. Such cars should either be adequately reinforced or withdrawn from such service, as their maintenance is now abnormally expensive and they are responsible for a large proportion of loss and damage claims.

PASSENGER CARS

As regards passenger cars the economies which can be effected by further standardization of design, material and methods of construction are less than in the case of freight cars for the reason that the former are comparatively few in number. Nevertheless, important savings are possible in this department. The wide variation in practice under the present system which permits each railroad to evolve or select that particular steel passenger coach which it may prefer may be illustrated by an example.

Three Class A railroads are today operating between two important points in this country, 70 foot passenger coaches, identical or practically identical in dimensions, having respectively the following weights:

Railroad "A" .....	142,000 lb.
Railroad "B" .....	124,000 lb.
Railroad "C" .....	119,000 lb.

In this instance, the railroad which uses the heaviest car is operating under conditions which in general are less difficult

as regards grades and curves than those of the railroads which operate lighter equipment. The difference between the heaviest car and the lightest is 23,000 pounds, and the cost of hauling this difference of weight on the basis of over 40,000 car miles per annum at high speed becomes a considerable item of expense. The difference in the cost of coal required for the operation of 50,000 cars like those operated by Railroad "C" on the one hand and those operated by Railroad "A" on the other would be approximately \$24,000,000. Without expressing here an opinion as to whether the heavier car is or is not justified, it is obvious that both cannot be right.

As regards the advantages of stabilizing orders for passenger cars and of standardizing and so reducing the number of rolled forms, sizes of plates, pressed members, dies and templates which the manufacturer must provide, the advantages which would result are like in kind with those which apply to freight cars, although less in amount.

LOCOMOTIVES

The Board of Economics and Engineering is not prepared at this time to suggest any program relative to locomotive improvements. Its present view is that great caution must be exercised in any attempt to standardize design at this time when under the stimulus of high fuel cost both the manufacturers and some of the railroads are making substantial progress in developing more efficient locomotives. Moreover, the fact that locomotives, except in rare instances, are operated exclusively upon the lines of the company owning them and are repaired in the shops of the company under contract by locomotive builders, avoids in great part the expense and delay which result in the case of freight cars from the fact that more than half of all repairs are made in shops of foreign lines.

PROPOSED METHOD OF SECURING THE ECONOMIES

The Board of Economics and Engineering understands that the National Railway Service Corporation, in financing further purchases of equipment, proposes to—

(a) Insist upon the adoption of standards of design approved by it.

(b) Provide systematic and competent inspection during construction of the equipment so financed to ensure the best practicable material and workmanship.

(c) Establish and maintain systematic and competent inspection of repairs to its cars at interchange points, in order that the interests of the equipment note holders may be protected against the losses and delays incident to the methods of maintaining car equipment which now prevail.

It is the opinion of the board that the establishment of such a policy by the Service Corporation will assist materially in financing equipment and can be made effective in securing far-reaching economies.

The board also believes it is reasonable to expect that the establishment of such policies and methods would receive the approval of the Interstate Commerce Commission, and if this is given there can be no question of their general adoption by the railroads.

ELECTRIFICATION

The board is not prepared at this time to state any conclusions in regard to electrification of railroads. It recognizes the fact that the economic possibilities of electrification as applied to local conditions of heavy grade and dense traffic and to terminal operation are such as will justify very careful examination, but feels that its attention should be concentrated at present upon other features of the railroad problem which appear to present opportunities for greater saving in operating costs as compared to new capital required. Mr. Stillwell said that to electrify the railroads of the country would cost seven to eight billion dollars and he did not expect to see the whole job undertaken.

Director Colston Testifies

At the request of the security owners' association, W. A. Colston, director of the Bureau of Finance of the Interstate Commerce Commission, testified before the committee on June 29 to explain that in his opinion the National Railway Service Corporation had been very helpful in financing purchases of equipment for certain roads with the help of funds provided from the revolving fund. He said that it had enabled some carriers to get loans which otherwise could not have raised the part of the money which it was necessary to

finance outside at a rate of interest which would have been approved by the commission. When a road said it expected to pay more than 7 per cent for outside money, Mr. Colston said, it had been told that Mr. Warfield's corporation would furnish it at 7 per cent, 40 per cent of the cost being provided from the loan fund. Mr. Colston thought that the extension of the powers and scope of the service corporation as proposed by Mr. Warfield would enable it to perform an important service in financing railroad equipment and other improvements and that it could save a large part of the expenses of financing. If this corporation, he said, working in the public interest and under the direction of the Interstate Commerce Commission, could be allowed to administer the \$300,000,000 revolving fund and the various railroad assets now held "frozen" in the United States Treasury or by the Railroad Administration or the War Finance Corporation it could accomplish much more than it had and if to this amount should be added the \$750,000,000 which the carriers now propose that the government fund it would have a capital of about \$1,500,000,000 and on this basis it could probably raise \$3,000,000,000 additional, or a total of \$4,500,000,000, which would be enough to finance all the railroads in the United States at 6 per cent or less. He referred to the large amount of railroad financing carried on during the early part of 1920 at a cost of about 7½ per cent or more and he referred to the recent refunding of the Great Northern-Northern Pacific joint bonds. Two hundred and thirty million dollars of new 6½ per cent bonds, he said, were sold at 91½ to provide the money to pay off \$215,000,000 of the old 4 per cent bonds and nothing was added to the railroad facilities of the country. Whereas the issue of 4 per cent bonds had originally cost \$3,000,000, the cost of the refunding had been \$21,000,000, of which \$11,500,000 went to the syndicate. J. P. Morgan & Co. received 1½ per cent as syndicate manager and the syndicate received a gross profit of 3½ per cent. If the National Railway Service Corporation had been able to handle this transaction, he said, many of the old bonds could have been exchanged for the new without any cost and a great deal of money could have been saved.

#### Work of the Bureau of Finance

Mr. Colston, in explaining the work of the Bureau of Finance of the Interstate Commerce Commission since its organization about a year ago, said that it has received 102 applications for certificates authorizing the construction of a new line or the abandonment of an old line, involving 3,318 miles, and it has acted on 56 applications involving 2,310 miles. It has received 9 applications involving 1,056 miles for authority to assume control of roads or to consolidate them, and it has acted on two, involving 503 miles. It has received 308 applications for authority to issue securities, of which 11 have been withdrawn, 245 disposed of and 52 are still pending. The total securities authorized in this way have amounted to \$561,000,000, which, however, include some duplications in the case of bonds to be pledged as security for other bonds. The total includes \$91,000,000 of equipment obligations, \$5,000,000 of debentures, \$2,392,000 of receivers' certificates, \$51,000,000 of notes and \$411,878,000 of bonds. Mr. Colston said that the state of Michigan and several middle western states have protested against the commission's jurisdiction to authorize security issues. He also said that except in matters plainly involving the public interest, the commission had not attempted to substitute its judgment for that of the companies. The commission has issued certificates for approximately \$431,000,000 on account of the six months' guaranty and the administration of the guaranty provisions of the law represent the principal work of the bureau now that most of the loan fund has been exhausted. The \$300,000,000 loan fund, he said, has been increased to \$304,652,000 by interest pay-

ments, etc. Forty million dollars of the amount is reserved for judgments against the Railroad Administration and the commission has certified loans to the amount of \$228,000,000, approved additional loans to the amount of \$10,000,000 not yet certified, and is tentatively committed to \$25,000,000 more, leaving a balance of \$935,000 of the fund now available.

### Shippers Aid in Claim Prevention

THE FREIGHT CLAIM DIVISION of the American Railway Association, which launched a campaign to cut loss and damage claims in half at its 1921 annual session in Chicago, will not work unaided if a recent circular issued by the Illinois Manufacturers' Association is any indication. The substance of the circular, which is entitled "Plugging Up the Loss and Damage Leaks," follows:

"Freight claims against the railroads are a source of endless annoyance to all shippers. Even if shippers ultimately get all the money that is due them, the delay and bother are irritating. Furthermore, it costs the railroads more money than they can afford to pay in these days of high labor costs and diminishing returns. In 1919 the carriers paid out \$107,000,000 in freight claims.

It is in the interest of shippers to avoid damage claims. Here are some of the ways by which injury to shipments can be avoided:

1. Test containers to be sure that they are sufficiently strong to stand ordinary abuses in transit.
2. See that commodities are securely packed in containers.
3. Do not use a crate, where a box should be used; it is more expensive in the long run.
4. Make sure that marking is legible and that it includes all information necessary. It also should include shipment date.
5. See that shipments are securely stowed in your cars when you load them. If necessary, brace with substantial material. This will prevent shifting of the load. A piece of electrical machinery that cost nearly \$200,000 that was shipped to a Chicago firm was practically ruined, because a six-inch space was left in the shaft blocking which caused the load to shift in transit. In this instance the shipper was held responsible for careless blocking.
6. If identification marks will be inclosed inside the package, consisting of the date of shipment, name and address of consignee and the name and address of the shipper, difficulty in tracing shipments will be obviated to a large extent.
7. It is a good idea to put two tags instead of one on bundles, bars, baskets and other shipments which require the marks to be shown on tags. A reinforced tag should be used. Include packing list with shipment where possible.
8. It is suggested that on small packages, freight, express and parcel post shipments the labels be typewritten and made in triplicate, placing the original on the outside of the package, the second copy inside the package, retaining the third copy for future reference. This helps to substantiate claims on shipments. Where there are cities and towns of the same name in more than one state, it frequently happens that the carrier forwards the shipments to the wrong state and then contends that the package was erroneously marked."

THE ILLINOIS CENTRAL transported a record movement of strawberries from the Louisiana district this year, 1,389 cars being moved in 1921, as compared with 967 last year.

THE FIRST MEETING of the New York University Transportation Club was held at the Wall street division of the University, 90 Trinity place, New York, on June 2. The meeting was addressed by the following speakers on the subjects indicated: J. H. Butler, manager loss and damage department, American Railway Express, on the "Right Way" Movement and some of the results it has accomplished; A. J. DeHaas, of the faculty of New York University, on the Relation of Foreign Trade to American Transportation; H. T. Young, general agent, freight department of the Erie, on the Development of Package Car Service. The Transportation Club has been organized for the purpose of enabling those who are or have been connected with New York University to keep closely in touch with all phases of foreign and domestic transportation. The club is under the direction of Asa Colton, lecturer on trade and transportation in the University.

# New Traffic Locking on C. & O. Relieves Congestion

New Signal Facilities Obviated the Necessity of Constructing an Expensive Second Track

By H. E. Johnson

Signal Inspector, Chesapeake & Ohio, Richmond, Va.

**T**RAFFIC HAS BEEN greatly facilitated on congested stretches of track on the Chesapeake & Ohio by the recent installation of a new system of traffic locking. On account of tunnels and narrow gorges the expense of the construction of a second track at certain points was prohibitive. The new system has proved so reliable and free

frequency, the apparatus being immune from the effects of direct current and inoperative on alternating currents having commercial frequencies of 80 cycles or less. It is believed that, as installed, the scheme guarantees absolute integrity of operation and is as nearly foolproof as it can be designed. The apparatus consists primarily of a generator, hand driven where power is not obtainable, a selective switch, a selective frequency lock, a push button and an a.c. buzzer. This apparatus, except the generator and the selective switch, is duplicated for each traffic lever.

The arrangement of the locking segment or slot is such that the indication latch can be raised only when the traffic lever is at the indication position, and that when the lever is returned to the normal position the indication latch is mechanically forced to the de-energized position.

## Cotton Hill to Gauley Installation

Traffic locking of this type was first installed on a four-mile stretch of single track on the Hinton division between Cotton Hill, W. Va., and Gauley, in conjunction with A. P. B. signaling. This single track, which runs through a narrow gorge or canyon, connects the ends of double track at Cotton Hill and at Gauley. The river, which is on one side of the track, is very close throughout the entire length, while on the other side are high cliffs of solid rock. The course of the river, is irregular, making necessary many sharp curves in the track and permitting but few tangents, the longest of which is about 1,000 ft. It was necessary to construct three tunnels on the course of this difficult length of single track.

All main line eastward and westward traffic must pass over this single track, which presented a serious operating problem worthy of careful consideration. It had been proposed at various times to build a second track in order that the "neck of the bottle" might be eliminated, but the cost of the proposed second track was considered prohibitive. Traffic was formerly controlled by means of an absolute train staff system with mechanical interlocking at Cotton Hill and at Gauley, there being no automatic signals on the single track, but with the present installation of A. P. B. signals and traffic locking, operating officers claim that the



Approaching Cotton Hill Interlocking From the East

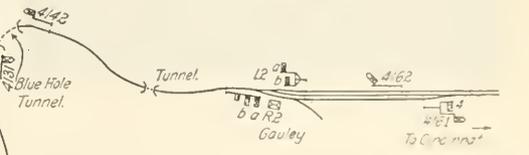
from chances of false indications that all classes of traffic are now diverted on double track and controlled in both directions on single track by signal indications exclusively, written train orders being eliminated.

The consensus of opinion of those interested was that none of the existing schemes could guarantee safety because of their inherent faults, the first of which is the possibility of receiving energy from some foreign source. This contention is substantiated by the fact that on several occasions on various lines using some form of locking between towers, or traffic locking, false indications have been obtained, which have resulted in the loss of life and property in some cases.

After much study the scheme finally decided upon was one involving the use of alternating current of 125 cycles



Track and Signal Plan, Cotton Hill to Gauley



traffic conditions have been improved over 200 per cent. The track layout of this installation is shown in the diagram. The entrance or starting signals to the A. P. B. territory are interlocking home signals, L 2 at Gauley and R 5 at Cotton Hill, and these lock traffic levers 5 and 7 reverse, respectively. The home control of automatic signal 4132 is carried over the normal contact of traffic lever 7 at Cotton Hill and the home control of automatic signal 4131 is carried over the normal contact of traffic lever 5 at Gauley

This checks the absolute feature of the A. P. B. circuits. The permissive feature is obtained by the use of a relay of the selector type.

### The Track Plan and Circuit Diagram

One of the novel features of the scheme is that communication and unlocking is accomplished over the same wire. It was also found that, due to the change in tone of the buzzer at the generating end of the circuit when the lever was being unlocked, it was unnecessary for the operator to push the button signaling that the unlock had been obtained. The tone change is caused by the increased amount of current flowing through the buzzer when the traffic lever

W. Va., Milton and Barboursville, a distance of 20 miles, on double track, for operation of trains in either direction on signal indication. Electric and electro-mechanical interlockings with signals arranged for reverse traffic operation are located at the above points. Traffic is diverted with a minimum reduction of speed by the use of No. 16 crossovers. The circuits and the operation of the apparatus are the same as on the first installation. This installation has not been in service long enough to determine how great a saving has been effected. However, it is proposed to make a further extension of the installation for about 20 miles.

The foregoing method of locking between towers was developed by members of the signal department of the Chesapeake & Ohio. The apparatus was developed and manufactured by the Union Switch & Signal Company and is covered by patent rights.



The Generator and Selective Switch

is moved to the full reverse position opening the indication contact and closing the reverse contact, causing current to flow over the push button wire to the common wire.

It will be noted that the exciting current of the generator field is carried over a normal contact of the traffic levers. It is, therefore, impossible to generate current unless the traffic lever is normal, which insures that the unlocking energy must in all cases come from the generator at the other tower. As a further check it is mechanically impossible to raise the indication latch except when the lever is at the center or indication position.

Traffic locking has also been installed between Hurricane,

## Tentative Valuations Issued

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on June 29, issued a tentative valuation of the property of the Central of Georgia and its subsidiaries, in which the final value of the property used by the Central of Georgia including its leased lines was stated as \$79,083,523 and that of the property owned as \$64,231,034 as of the valuation date, June 30, 1915. The outstanding capitalization as of that date is stated as \$57,037,350. The property used covers 2,530 miles and the property owned 1,992. The investment in road and equipment as stated on the company's books is given as \$62,003,324. The commission reports that the original cost cannot be ascertained. The cost of reproduction new of the carrier property other than land is reported as \$75,428,870 for the property used and \$62,252,124 for that owned. The cost of reproduction less depreciation for the property used is given as \$58,826,776 and of that owned as \$48,139,304. The present value of the lands owned is given as \$11,512,915 and the excess cost of acquisition of the land as \$8,801,022. The value of materials and supplies was given as \$1,306,992.

The Interstate Commerce Commission on June 27 made public about 50 supplemental tentative valuations, in which, "after a careful consideration of all the facts contained in the tentative and supplemental tentative valuations, including the excess cost of carrier lines, appreciation, depreciation, going concern value and working capital and materials and supplies, and all other matters which appear to have a bearing upon the values reported," it proceeds to state the final value of the property owned and used and used but not owned devoted to common carrier purposes. The figures given for the final value of the property used as of the valuation dates, June 30, 1914, 1915 or 1916 are as follows:

T. nopath & Tidewater.....	1915	\$2,658,128
Rowdon .....	1915	110,383
Georgia, Southern & Florida.....	1915	9,860,191
Georgia Northern .....	1915	877,868
Death Valley .....	1915	357,546
Dover & Southbound.....	1914	170,000
Carolina .....	1914	169,680
Hampton & Branchville.....	1915	198,124
Arizona Southern .....	1915	332,288
New Mexico Midland.....	1916	140,265
Sylvania Central .....	1915	150,882
Texas Midland .....	1914	3,005,211
New Orleans, Texas & Mexico.....	1914	7,495,969
Elgin, Joliet & Eastern.....	1914	39,049,162
Wrightsville & Tennille.....	1915	1,597,924
Tootle Valley .....	1915	290,484
Alabama Central Railway.....	1915	78,095
St. John & Ophir.....	1915	123,951
Missouri Southern .....	1914	920,093
Ray & Gila Valley.....	1915	627,593
Quincy Western .....	1915	62,213
Norfolk Southern .....	1914	24,663,840
Farmers' Grain & Shipping Co.....	1914	742,822
Brandon, Devil's Lake & Southern.....	1914	170,000
Mississippi Railway.....	1916	576,632
Cape Girardeau & Northern.....	1914	1,257,216
Potomac, Fredericksburg & Piedmont.....	1916	561,234

Evansville & Indianapolis.....	1915	2,250,291
Santa Fe, Raton & Eastern.....	1916	226,227
Savannah & Northwestern.....	1915	1,817,271
Northern Dakota.....	1915	180,468
Talbotton.....	1915	78,957
Tiffin Union Depot.....	1914	586,708
Cimarron & Northwestern.....	1916	226,810
St. Francois County.....	1914	190,190
Mississippi River & Bonne Terre.....	1914	3,551,685
Hawkinsville & Florida Southern.....	1915	895,226
Alabama Northern.....	1914	92,400
Central Rv. of Arkansas.....	1916	201,924
Kinston-Carolina.....	1914	166,841
Carolina & Yorklin River.....	1915	236,755
Rome & Northern.....	1915	283,425
Greene County.....	1915	152,977
Tampa & Jacksonville.....	1915	500,000
Mississippi Eastern.....	1915	227,225
Macon & Birmingham.....	1915	1,646,967
Albany Passenger Terminal.....	1915	138,901
Louisville & Waller.....	1915	145,201

The commission also served eight tentative valuations giving the corporate history, cost of reproduction new, cost of reproduction less depreciation, original cost, etc., and also the final value as follows:

Bristol.....	1917	108,600
Kennecoe Central.....	1916	79,700
Bellfrog & Goldfield.....	1915	1,463,276
Washington, Potomac & Chesapeake.....	1916	853,750
Fellersville.....	1916	130,600
Goldboro Union Station.....	1914	145,008
Hardwick & Woburn.....	1916	237,966
Menson.....	1916	77,113

The commission has also issued tentative valuations giving the final value of the property used as follows:

Snoke Mountain 1915.....	143,794
Norfolk Terminal 1915.....	1,407,387
Sookeane and British Columbia 1915.....	722,443

# Freight Station Section of A. R. A. Holds First Meeting

## Former Freight Agents' Association Discusses Means of Reducing Claims and of Operating Houses

HOW TO IMPROVE the station service so as to eliminate many of the errors which are resulting in freight claims, was the principal problem which came before the Freight Station Section, Division I—Operating, of the American Railway Association, at its first annual session, which was held at the Hotel Sherman, Chicago, from June 21 to 23. More than 250 delegates attended the meeting, which was the first since the former Association of Freight Agents amalgamated with the American Railway Association. It was apparent in the discussion of the various subjects which came before the meeting, that those present had in mind the necessity for devising means of cutting down the 1920 freight claim total of \$109,000,000. In addition, it was manifest that the terminal freight agents are in an excellent position to know how this end can be accomplished. Representatives of the Freight Claim Section, A. R. A., as well as visitors from the Railway Accounting Officers' Association, attended throughout the sessions.

A noteworthy feature of the meeting was the presentation of most of the reports by topic. It had been decided that interest would be stimulated and a nation-wide viewpoint obtained, if various local freight associations throughout the country would prepare analyses and recommendations on specific topics. These papers, after being read from the floor, were thrown open for general discussion and action of the gathering.

### Opening Address by R. H. Aishton

The session was opened by the chairman of the division, C. E. Fish, terminal agent of the Baltimore & Ohio, at Cincinnati, Ohio. Mr. Fish introduced R. H. Aishton, president of the American Railway Association, who said in part:

"There is no factor that is going to be more prominent in the proper settling of the future of the railways than the public's attitude toward them. There is no body of railroad officers or employees which comes in contact with the public as you in this room do, or that is going to be such an important factor in maintaining that public interest in the welfare of the railroads, and that right conception of the railroad transportation situation. Nearly every step in transportation, the solicitation of the freight in the first place, the receipt of it, the seeing that the freight is in good order when it is received, the handling of it from the shipper to the car in which it is transported, the selection of the car in which the freight is transported, its receipt at the other end of the road, the decision that a claim shall be paid or refused, the collection of the revenue, the accounting of

the whole transaction from one end to the other, and the final delivery to the man at the other end, are all in your hands. You have eight or ten different points of contact with the public at either end. A failure to handle a shipment in an efficient and courteous manner results in an enemy for the transportation interests of this country, and what the transportation of this country needs is friends. You are in a position to get them.

"A year before the war, the claims on the railroads for freight, no personal injuries or anything of that kind included, amounted to about \$35,000,000. The last year of federal control, \$106,000,000 was paid out in claims; and last year, in spite of our utmost efforts, the total reached \$109,000,000, and the word that comes from the Freight Claim Prevention Committee is that it will be \$125,000,000 this year. If it had not been for the freight claim prevention movement and for the efforts of the individual railroads, we might have had claims amounting to \$120,000,000 last year, instead of \$109,000,000, and this year, instead of the total being \$130,000,000, it might have been \$160,000,000."

### Report of Committee on Operating

Two subjects of considerable importance were presented in the report of the Committee on Operating. The first was a paper by the Chicago Association on the "Tractor Method of Handling L. C. L. Freight." It was the consensus of opinion that the success or failure of tractors in this work depends entirely upon the conditions existing at the individual station. In some instances it was established that the use of tractors enabled the stations to load more cars than would otherwise have been possible, while in other cases, where the station itself had not been constructed for this method of operation, the tractors had been a failure. The subject was finally referred to the incoming Committee of Direction, with the provision that the use of tractors was to be recommended only in specific cases where justified by the prevailing conditions, and was not to be favored as a general practice.

The second section of this report, which received considerable attention, dealt with the problems of improving the receiving and delivery personnel at the various stations. This matter had been referred to the Freight Station Section by the secretary of the Freight Claim Division. A majority of the delegates were agreed that while the positions of receiving and delivery clerk are of first importance to the success of handling freight, it has become difficult to secure efficient men for the work for a number of reasons, first among which was the compensation. It appeared from the

discussion that in many instances it was futile to train men carefully for the work, since they were certain to be attracted by the higher pay in other lines. Another difficulty, it seemed, is the lack of avenues for promotion for the man of intelligence and training as an inducement to enter the station service. It was recommended, in consequence, that the incoming Committee on Operating handle the matter directly with the Freight Claim Section.

#### Report of Committee on Topics

The remainder of the time was devoted to the report of the Committee on Topics. To facilitate the effective handling of the committee's work, it had been divided into five general classes, as follows: (1) Freight Claim Prevention; (2) Station Settlements; (3) Station Traffic; (4) Operating; (5) General Topics.

It was found possible to refer back a large part of the topics for further investigation and report at the next session. Considerable interest, however, centered around the subject of freight claim prevention as brought out by an article prepared by the Chicago association, dealing with the causes and means of preventing losses of entire packages. The paper presented an exhaustive survey of the conditions, which might result in this type of claim, compiled in the general order of the freight movement, commencing with the errors occurring in the preparations of the package for shipment, and ending with the causes for claims through faulty delivery of the freight to the consignee. The meeting held that two causes in particular could be blamed for the heavy losses of entire packages. One was the faulty sealing devices generally used. For instance, it was established that many seals can be manipulated in as many as 19 different ways. Another cause of trouble, it was agreed, is the comparative ease with which many box car doors can be tampered with. These matters were turned over to the Committee of Direction, with specific instructions to endeavor to establish a higher standard through co-operation with the A. R. A.

#### Bonding Receiving Clerks

The St. Paul Association also presented a topic dealing with the proposal to bond receiving and delivery clerks. A part of this paper follows:

"It is claimed that our receiving and delivery clerks are the primary cause of the loss of entire packages, first, in delivering through a house more packages than the billing calls for, and second, in receipting for packages not actually received. Granting that the men do sign or deliver packages as stated above, what action on the part of the officer in charge will minimize the claims from this source? A constant change of employees is not going to bring about the desired results, as a new man has a much greater chance to make this kind of mistake than an older and more experienced man. Constant reminders to the men on this subject will no doubt help greatly. We recommend the bonding of this class of employees to protect the company in case of loss. In addition, this would tend to make the men in charge of these duties much more careful. The method has been tried out in some of the larger stations and found very satisfactory."

The division of opinion on this matter necessitated further investigation and action by the Committee of Direction.

At the final session of the Division, the location of the next meeting was left to the incoming Committee of Direction for decision. At the election of officers, J. C. Gilmore, agent of the Pennsylvania at Philadelphia, and chairman of the former Association of Freight Agents, was elected chairman; C. M. Teschemacher, general agent of the Chicago & Alton, at Chicago, was elected first vice-chairman; H. W. Maynard, Jr., agent of the Central of New Jersey, at Pier 10, North River, New York, was elected second vice-

chairman, and R. O. Wells, agent of the Illinois Central at Chicago, was re-elected secretary. In addition to C. E. Fish, former chairman of the Division, and E. L. Kemp, general agent, Union Stock Yards, Chicago, who will serve as hold-over members, the following were elected to the Committee of Direction: L. J. Brinkman, general agent, Michigan Central, Detroit, Mich.; E. J. Coffey, agent Southern Railway, East St. Louis, Ill.; C. Treat Spear, agent Chicago & North Western, St. Paul, Minn.; Frank Laughlin, agent Erie, Cleveland, Ohio; J. R. Hitchcock, assistant agent, Santa Fe, Kansas City, Mo.; J. L. Harrington, agent Chicago, Burlington & Quincy, Omaha, Neb., and C. E. Cochrane, agent Pennsylvania, Baltimore, Md.

#### Seasonal Coal Rates

WASHINGTON, D. C.

THE FRELINGHUYSEN seasonal coal rate bill has been intermittently debated in the Senate for the past week. Senator Frelinghuysen made a long speech on the bill, which he illustrated with charts hung around the walls of the Senate to illustrate the seasonal and yearly fluctuations in the coal business, and he argued that the country is facing a calamity in the coal situation unless steps are taken to stimulate production early in the season.

"The bill aims," he said, "to overcome the present seasonal irregularity in the production and transportation of coal by encouraging the purchase of coal in spring and summer for storage against fall and winter. The bill leaves the widest discretion to the commission in the application of the principle of seasonal rates. Rates may be promulgated to affect the carriers as a whole or to affect differently individual coal fields or rate groups. The commission is, however, instructed so to adjust the seasonal differential that the carrier will receive the same annual revenue as if no seasonal variations were provided."

The Senator said that the months of March, April, May, June and July are low points of production, the output amounting to 21,000,000 tons. The purpose is to take the 21,000,000 tons off the autumn and winter months, the high point of production, and equalize it by increasing the production in the summer months. Senator Willis asked if the benefit of the reduction would not go to the large consumers who have facilities for storing coal, while the small consumer would have the disadvantage of the higher rates in the winter time. Senator Frelinghuysen thought that the storing would be done by the wholesale or retail dealer and that the consumer would get the benefit. Senator Smoot said that a seasonal price on coal has been in effect in Utah for years and while it tends to promote the buying of coal in the summer time, the reduction is just about offset by the cost of storage and handling. Senator Kellogg pointed out that cash coal in Illinois and Indiana has recently been selling for 50 cents to a dollar a ton cheaper than coal for delivery late in the season but that did not cause the mines to be run to capacity. Senator Frelinghuysen said that there are now 150,000 coal cars idle and if the railroads could utilize them now for hauling coal the work would be done at lower cost than if the hauling of the coal were postponed. He said the people are not buying coal now on account of the present freight rates, but the lowering of the freight rates would, in his opinion, induce them to buy. Senator Jones of New Mexico said that one difficulty is that there is no stabilized market in the bituminous coal industry and that even if there were a reduction of 25 or 50 cents a ton at a given time the consumer would not know whether that would represent a lower price than would be available later. Senator Pomerene pointed out that coal cars are frequently used in the summer time for the handling of construction and road-building materials, but that there are many other consider-

ations that enter into the question besides the rate on coal.

"It looks to me," he said, "as if that would be simply a homeopathic dose, the benefits of which are not going to trickle through the fingers of the dealers to the consumers."

Senator Cummins said he feared some senators are looking at this proposed legislation from the point of view which is hardly warranted. He saw nothing in the bill that will reduce the price of coal, but thought the general purpose of the legislation is an economic and industrial one to enable the coal industry to dismiss 25 per cent of the miners who are employed in the mines 230 days in a year, but who must be maintained at or near the coal mines because at certain seasons of the year there is a demand for the entire capacity of the mines. He would not say that a reduction in freight rates would fully accomplish the object but thought no objection could be found against reposing the authority in the Interstate Commerce Commission.

"I assume," he said, "that if the dealer finds that he can store the coal in the summer and save money he will do it and he will have his coal stored, but I am not convinced that he will reduce the price to the consumer on that account. At any rate, the bill cannot increase the price of coal to any one."

Reference was made to the 28 cents a ton reduction in the rate of lake cargo coal and Senator Frelinghuysen read a letter from Chairman Clark of the Interstate Commerce Commission describing the purpose of the reduction as being largely to correct a competitive adjustment of the rates with relation to the rates from Illinois and Indiana. The Senator also read another letter from Chairman Clark approving the purpose of the bill. He also replied to arguments that many kinds of coal cannot be stored by saying that a large amount of coal is ordinarily stored on the lake docks and that at the end of the war there were some 63,000,000 tons of coal in storage. He also argued that a more even distribution of the coal shipments would reduce the number of coal cars which some of the railroads are obliged to own to accommodate the peak movement. The passage of this bill, he said, with the definite announcement of a seasonal cut in freight rates to be followed at a specific date in the autumn by a restoration of the present rate, would clarify the situation greatly. It would put an end to speculation as to what is going to happen to the transportation cost of coal and would result in the placing of thousands of orders at the mines.

Senator King asked whether Senator Frelinghuysen would consent to an amendment of the bill striking out the words which direct the commission to maintain rates which will provide as nearly as may be the same annual revenue as rates without seasonal variation. Senator Frelinghuysen said he would oppose such an amendment. Senator King asked if it would be an advantage to the railroads to haul the coal in the summer time why they should receive an increased rate in the winter time. Senator Stanley made a similar argument and offered an amendment to the bill to strike out the provision for a corresponding increase in the winter rates. This was opposed by Senator Kellogg, who said it would destroy the effect of the bill.

Senator Underwood of Alabama made a speech against the bill, on the ground that it would constitute another example of government regulation of business and he was unwilling to place so much power to regulate the movement of coal from various districts in the hands of a commission at Washington that might not be in touch with the local conditions. To illustrate this point, he said that during the war three successive officers in the Fuel Administration cut off the coal supply of one of his constituents who needed only 10 tons of coal a month to operate a steam shovel to furnish molder's sand for a number of iron furnaces. On three separate occasions this coal supply was cut off on the ground that sand was used only for houses and it was the policy

of the government to restrict the building of houses during the war. Three times the senator had had to go to the Fuel Administration, he said, and get them to look at the inside of the file to ascertain that the sand was to be used for molding purposes. He also objected to the bill on the ground that it would penalize the domestic consumer who buys his coal in the winter time. Senator Frelinghuysen said that an increase of 25 cents a ton to the man who buys 10 tons of coal would be a small matter if it would prevent the price of coal being run up from \$5 to \$15 a ton because of scarcity.

A number of amendments to the bill were proposed by senators who desired to use it as a vehicle for amendments to the transportation act which they have been unable to get through committee. Senator LaFollette offered a number of bills of this kind, including one to repeal the rate-making provisions of the transportation act and another to prevent the Interstate Commerce Commission from exercising jurisdiction over intrastate rates. Senator Fletcher of Florida took advantage of the opportunity to make a long speech objecting to the present freight rates.

On Wednesday afternoon the bill was referred back to the committee on interstate commerce on motion of Senator Borah by a vote of 36 to 26. The majority vote represents the enemies of the bill and the action is taken as practically killing the bill, as even its friends were not particularly interested in pressing it with the Stanley amendment.

Senator Fletcher was answered at several points by Chairman Cummins of the committee on interstate commerce, who pointed out that many of the effects which the Senator had attributed to high freight rates were due to other causes.

The Senate on June 28 adopted an amendment which the supporters of the bill declared would practically nullify the purpose of the bill, that proposed by Senator Stanley to strike out the provisions which would authorize the Interstate Commerce Commission to advance the rates during the winter months by an amount corresponding to the reduction made in the earlier months. This was adopted by a vote of 33 to 27 after Senator Frelinghuysen had read a letter from Chairman Clark of the Interstate Commerce Commission saying that the amendments proposed by Senators Stanley and King would weaken or complicate the legislation and its administration. He had been authorized by the legislative committee of the commission to say that the amendments are not in harmony with the purpose of the proposed legislation and that there are valid objections to the adoption of any of them.

## What Is a "Living Wage"?

**C**ITING MANY INSTANCES where governors and other high state officials receive lower wages than do engineers, firemen and even negro flagmen on the Nashville, Chattanooga & St. Louis, Fitzgerald Hall, general counsel of that road, in testifying recently before the Railroad Labor Board in a plea for wage reductions exploded a bomb under labor's theory of the "living wage."

"Railroad employees, as a whole," Mr. Hall said, "earn as much, and in some instances more, than the best trained men holding positions of greatest trust and responsibility in the four states through which we operate. The claim that any reduction will deprive railroad employees of a living wage or enough to live according to proper American standards is refuted by the facts.

"When our judges, college and university professors, high school and grammar school teachers, preachers, policemen and fire fighters receive, as a whole, very much less than railroad employees, as a whole, there can be no just claim that a reasonable reduction in compensation will deprive railroad employees of a proper living wage.

"A few examples will be illuminating. The principal of

the high school at Nashville, the capital of Tennessee, the educational center of the South, received \$250 per month, while yardmasters receive \$305 per month. High school teachers at Paducah, Ky., receive \$125 per month; at Chattanooga, Tenn., \$148 per month; at Huntsville, Ala., \$125 per month, while our blacksmiths receive \$185.51 per month and our yard switchmen \$188.56 per month. The average Presbyterian preacher in the South is paid \$1,600 per annum—less than one-half the earnings of yardmasters and passenger engineers; \$662.72 less than yard switch tenders.

"Vanderbilt University at Nashville pays its full professors \$3,750 per annum; the University of Tennessee at Knoxville \$2,684 per annum; the Georgia School of Technology at Atlanta \$3,600 per annum, while the conductor on our Rome branch, 18 miles long, receives \$5,735.88—a sum greater than that received by the judges of the Supreme Court of the State of Tennessee. Assistant professors and instructors in these colleges and universities receive a maximum of \$2,250 per annum—less than a car inspector receives—less than the baggageman on a passenger train receives.

"The judges of the Supreme Court of Tennessee are paid \$5,500 per annum, yet the engineer on our Rome branch, 18 miles long, receives \$5,997.04 per annum. The negro flagman and porter on our Columbia-Decherd branch train receives \$3,146.40 per annum, being \$146.40 more than the district attorney generals of the State of Tennessee, public prosecutors of the state, receive. The fireman on our Columbia-Decherd branch train receives \$3,925 per annum, being \$425 more than the assistant attorney general of the state of Tennessee, the man who represents the people of the state before its Supreme Court in practically every criminal case.

"The engineer on our Tullahoma accommodation receives \$4,371.92 per annum, being \$371.92 more than the salary of the governor of the state of Tennessee. The engineer on our Tracy City branch receives \$373 per month, a sum which is more than either the chief of police or chief of the fire departments at Atlanta, Ga., Memphis, Nashville and Chattanooga or Paducah receive. The fireman on our Pikeville train receives \$291 per month—more than twice as much as any fireman in the fire-fighting service in any city on our entire system is paid. The circuit judges and chancellors of Tennessee are paid \$4,000 per annum, which is over \$100 a year less than the conductor on our Tracy City branch is paid.

"These and similar facts refute the claim that either the

cost of living or maintenance of a proper living wage justify the present enormous wages paid to some classes of railroad employees."

## Freight Car Loading

WASHINGTON, D. C.

**F**REIGHT CAR LOADING for the week ending June 18 showed a decrease of 8,256 cars, as compared with the week before, the total number of cars loaded with revenue freight being 780,741, as compared with 916,736 in 1920 and 807,907 in 1919. The reduction was principally accounted for by the decrease in coal loading.

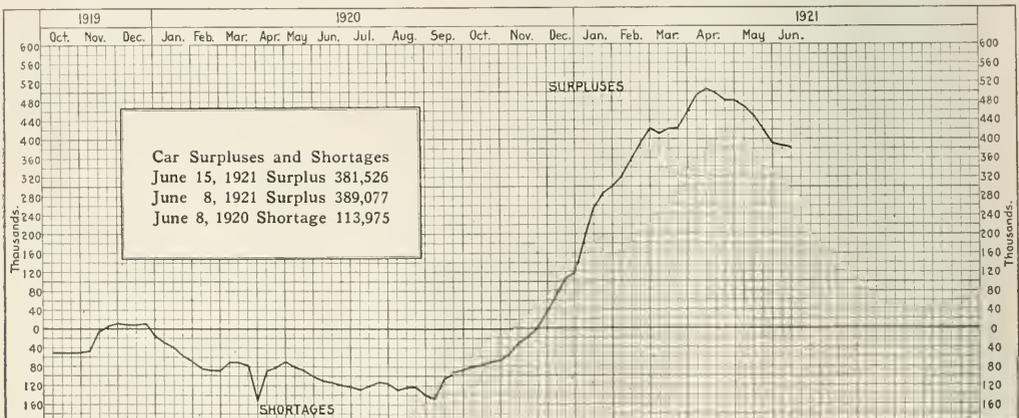
The report showed 157,243 cars loaded with coal during the week which was 5,845 cars less than were loaded during the previous week and 31,595 below the total for the corresponding week last year. It also was approximately 15,000 cars below the number loaded during the corresponding week in 1919. A total of 20,101 cars of coal were moved into Lake Erie ports for shipment up the lakes as compared with 19,767 cars the week before.

During the week 28,866 cars were loaded with ore which was a reduction of 1,313 compared with the week before. The loading of grain and grain products totaled 40,994 cars, live stock, 28,541 and forest products, 50,472 cars, all of which were slightly below the preceding week. Loading of merchandise and miscellaneous freight, which includes manufactured products, totaled 469,523, an increase of 228 cars over the week before, but more than 50,000 cars below what it was during the corresponding week one year ago. An increase of 314 cars was reported for coke, bringing the total for the week to 5,102 cars.

Compared with the corresponding week in 1920, the loading of grain and grain products was the only commodity to show an increase.

Slight increases in the number of cars loaded with freight were reported in the Pocahontas, Northwestern, Central western and Southwestern districts compared by regions with the previous week but a decrease of 5,500 was reported in the Eastern, 3,700 in the Allegheny and 1,100 in the southern districts. Except for the Pocahontas all were less than during the corresponding week in 1920.

The chart shown below has been compiled by the *Railway Age* to show the trend of net car shortages and surpluses for the past year and a half:



Curve of Net Car Surpluses and Shortages

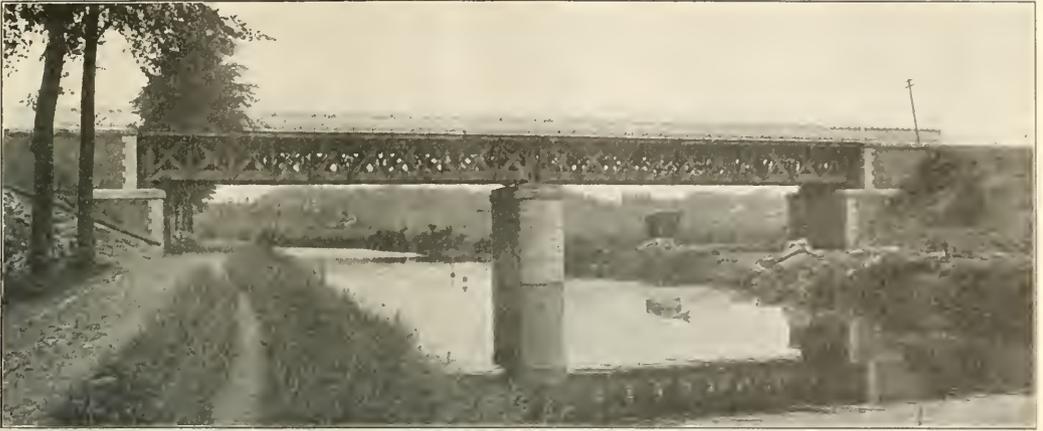


Fig. 1. Sambre Bridge. The Trestle Bridge Replacing the Temporary Structure in Fig. 2.

# War Left Belgian Railways in Fair Condition

Damage from Undermaintenance and Aerial Bombing—  
Improvements Planned and Made Since Armistice

By Oliver F. Allen

Formerly Major of Engineers, American Expeditionary Forces

THE fact that the greater part of Belgium was in the hands of the Germans all during the war and was not the theater of action was of material value in safeguarding the railways from the wholesale destruction which was their lot in northern France. The lines of most of the Belgian railways suffered very little from military destruction prior to the last weeks of the war. Near some industrial and transfer centers there were isolated cases of successful allied air raids and occasionally a German supply train was blown up by airplane bombs with coincident injury to the tracks, but devastation of that sort was easily repaired by the army of occupation. In the western part of Flanders including the Ypres sector, held by the Allies, the railroads were destroyed very much as in northern France, and some extensions were made for military purposes such as those from Dunkirk which were used for supplying the British army in Flanders. There was also extensive war destruction in the industrial district around Mons. The Germans worked the Belgian railways very hard during the war, and naturally made the minimum of repairs, so that the condition of both roadbed and rolling stock was very bad when the Boches moved out.

When the tide turned in the fall of 1918, the Germans destroyed the railways while retreating, as effectively as the time at their disposal permitted, and succeeded in injuring very seriously the lines going down the Sambre and Meuse valleys toward Charleroi and Namur. Much of the track and several bridges between Brussels, Antwerp and Ghent were also destroyed. For miles at a stretch they blew up the tracks in such a way as to injure the roadbed and twist the rails into the most fantastic shapes, making them absolutely worthless for relaying. There was a great deal of such wanton destruction of no military value.

As the Germans fell back the Belgian, British and French army engineers built temporary military bridges and recon-

structed lines to permit transportation of supplies for the rapidly advancing armies along the entire Belgian front. Following the armistice the railroads were used to carry the British army of occupation to Cologne and to provision it there, and as soon as possible the American army of occu-



Fig. 2. Temporary Wooden Bridge Over the Sambre River on the French Northern Railway Line, Running from the Frontier to Charleroi in Belgium. Note the Debris from the Old Bridge, at the Left of the Picture, to Be Utilized for the Reconstruction

pation at Coblenz was supplied over the Belgian railways from Antwerp, thus relieving the French railways across the devastated regions of that burden.

In accordance with the armistice, the Germans turned over

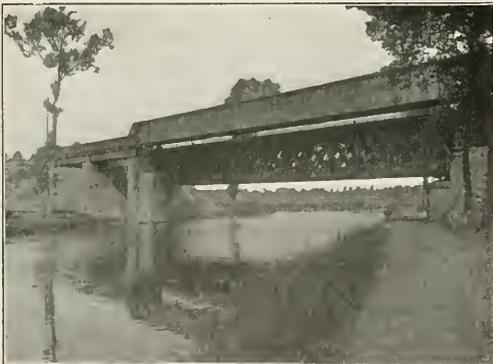
to the Belgians a great many freight and passenger cars. A Belgian train during the first year after the armistice was often a mixture of Belgian, French, German and English, and in the case of freight trains, American cars. While the Germans did turn over this large lot of cars they did not send any repair parts with them and the matter of maintenance became very serious. There were many exasperating delays due to accidents to the Boche cars and the difficulty



**Fig. 3. Another Sambre Bridge in Belgium. Temporary Trestle for One Track While the Permanent Bridge, at the Right of the Picture, Is Being Rebuilt. Here Both Piers and Abutments Are of Masonry**

of setting them out so that the rest of the train could go on. This enemy material has been of much less real use than its tabulation would indicate.

Considering the fact that all Belgium was occupied and used to the utmost by the enemy for over four years, and so



**Fig. 4. Sambre Bridge. The Temporary Wooden Structure Shown in Fig. 3 Replaced by a Military Single Track Girder to Permit the Passage of Barges on the River. The Permanent Girder for the Other Track Is Already in Place**

was left without the opportunity to plan and start reconstruction like the French, the railway administration and personnel deserve the highest praise for the rapidity with which they were able to resume operations and the promptness with which they moved freight even during 1919. The Belgians were not only able to restore their lines and rebuild their bridges, but to go ahead with the reconstruction of

stations and continue some general improvements planned before the war. This included such things as the rebuilding of the passenger station at Ghent with the entire elimination of grade crossings, improved arrangement of tracks, etc., the project for greater and better terminal and transfer facilities at Brussels and extensions into the new coal fields in the Limbourg district in the Meuse Valley.

The Belgian Government began rebuilding steam locomotives almost immediately after the armistice, utilizing (as is illustrated in Fig. 3, showing the Societe d'Electricite et de Mecanique factory at Ghent) some industrial plants which had not been used for locomotive work before the war. Later they purchased a number of American locomotives and placed contracts for a great many new cars.

While the restoration of the luxuries of passenger travel moved at about the same rate as in France, and the restrictions of poor fuel, roadbed, etc., kept the speeds very much



**Fig. 5. Assembly Room of the Ghent, Belgium, Factory Showing Societe d'Electricite et de Mecanique on April 1, 1920, in a Plant Which Has Been Used for Building Steam and Oil Engines Before the War and as an Artillery Repair Shop by the Germans During the War. It Is Now Again Building Oil Engines and Has Started the Production of Electrical Machinery**

below pre-war standards, the general restoration of the railway service was perhaps quicker in Belgium than in France. The Belgian railways have not suffered as much as the French from shortage of fuel, although they have been troubled almost as much by its poor quality and it has, perhaps, been easier for the Belgians to get the labor needed for reconstruction work than has been the case in France.

## A Report on the Railroad Situation

**A** REPORT ON GENERAL economic conditions in America submitted to the International Chamber of Commerce by the American committee of which A. C. Bedford, of the Standard Oil Company, is chairman, contains the following on the railroad situation:

"Such improvement in general business conditions and sentiment as has occurred since the first of the year, has been clouded to a considerable extent by the financial difficulties in which most of our railroads are now involved. It was known that during the time when their income was guaranteed most of the roads were not paying their way, and it was evident that difficulties would arise when the guaranty came to an end. Unfortunately, when this time arrived, business was on the down grade; and naturally railroad earnings were

seriously affected. While the cost of coal and other supplies has declined to some extent, wages have remained at the war level; and it has been impossible to cut down the number of employees sufficiently to reduce payrolls to the requirements of the situation.

"The first quarter of 1921, instead of bringing relief, saw matters go from bad to worse, and developed a situation that seemed to portend an era of receiverships even more serious than that which followed the panic of 1893.

"Fortunately, since the first of April there have been developments which promise relief from excessive labor costs; but, even now, it is a question whether changes can be made in time to avert a number of receiverships. It is a serious defect of our methods of regulating public utilities that relief from intolerable conditions can seldom be secured before deterioration of service and actual or impending bankruptcies force our regulating bodies to appropriate action.

"The present situation is that the country does not want government ownerships of railroads, and that relief from exorbitant wage demands must be had if government ownership and operation (at a huge deficit) is to be averted. Recent developments indicate that relief may be at hand, and justify a more hopeful view of the situation than it would have been reasonable to entertain a few months ago. Relief may not come in time to prevent some receiverships, but there is reason for hoping that it may be secured in time to avert a general collapse of railroad credit. If the next six months can bring a solution of the problem, they will dispel one of the most ominous clouds that now darken a difficult business situation."

### A New Idea In Ticket Cabinets

THE IMPROVED TICKET CASES introduced in the Grand Central Terminal, New York City, two years ago, and described briefly in the *Railway Age* of April 11, 1919, page 964, were but the beginning of a development which has now been amplified into an elaborate system of ticket office

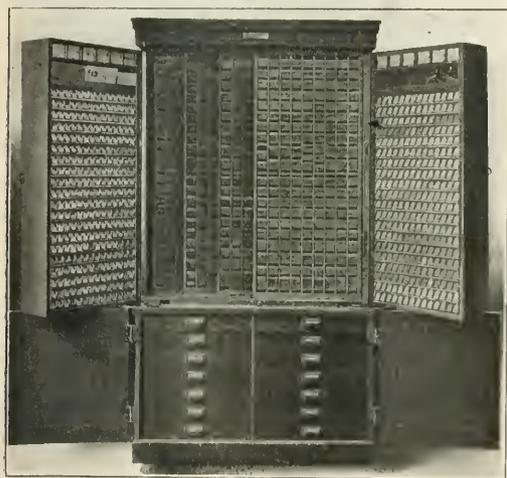


Fig. 1.—Individual Ticket Case Holding 6600 Forms

equipment; and the manufacturers—the Ticket Office Equipment Company, Grand Central Terminal, New York—have made cabinets and other furniture for offices in Chicago, Cleveland, Montreal and other cities which, like those in New York, have demonstrated marked economies for the railroads

and at the same time have ameliorated the condition of the hurried or worried ticket buyer.

It will be recalled that the primary idea was to provide each individual seller, in a large office, with a complete stock of railroad and Pullman tickets, and at the same time a ready means of transferring his job (at the same window), to the

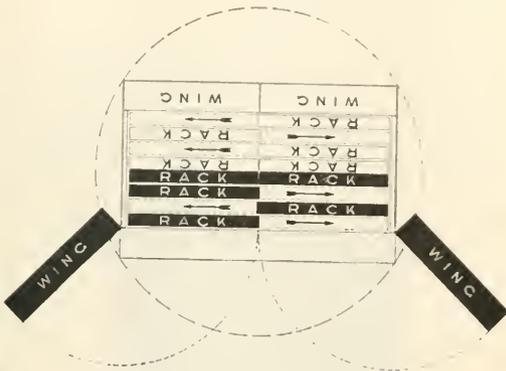


Fig. 2.—Plan of Cabinet Shown in Fig. 1

relieving clerk with no interruption of sales for the purpose of auditing or cash-counting.

The illustration, Fig. 1, shows the general appearance of the cabinet. It is in general the same as was described in the former account, the principal changes since made being



Fig. 3.—A Stack of Folded Tickets

the substitution of metal partitions and other parts, in place of wood, and the construction of two cabinets in one, back to back, as illustrated in the plan, Fig. 2. The different sections slide laterally, and those shown in the perspective (with only a part of each section in view), can each be brought fully

in view by sliding, as indicated in Fig. 2. The entire cabinet revolves on corner casters and a ball bearing center pivot, so that either one of the two stocks of tickets may front the selling window, as desired. The change of front can be made in a moment. Each ticket window thus may be in service two shifts each day, without auditing. The alternate closing of the two stocks allows ample time for making up the day's report and for replenishing stock.

The wings may be opened to any desired angle and the panel doors in front of the drawers in the lower part are connected to the wings above by a channel and pin device so that opening and closing the wings at the same time opens or closes the lower doors. Coupon tickets are machine folded so that they are stacked in vertical compartments in the same way that ordinary card tickets are stacked. The drawers in the lower section are for miscellaneous tickets, rubber stamps



Fig. 4.—Cabinet for Medium Size Station

and stationery. The cabinet shown has a capacity of 1,300 forms of local and Pullman tickets and 2,000 forms of interline and miscellaneous tickets in the side which is in view, and the other side has the same, making in a duplex cabinet a total capacity of 6,600 forms.

The sections of the cabinet devoted to interline tickets consist of vertical racks in which the shelf or horizontal part can be adjusted to different heights to provide for ticket stocks of different size. For example, where 100 tickets are to be kept in stock, the space may be double that allowed for a station which requires only 50 tickets. Interline tickets, of whatever length, are folded by machine to a uniform coupon size, 15 1/8 in. wide, and are kept in stacks as just noted. The folds can be instantly shaken out by the seller, when necessary to write or stamp on the coupons. The cost of folding is said to be no more than that of punching a hole in each ticket as is required in the old style of ticket case where the tickets are hung on pegs. Tickets which are folded keep much

cleaner than is common in the old fashioned racks. The folded system requires only a fraction of the space needed by the old style.

The illustration, Fig. 3, shows, but rather imperfectly, a single stack of folded tickets, one side of the partition being removed. The part holding the label is pivoted, and, when a ticket is pulled out, is pressed outward and downward.

The tin tube containers have a flexible spring lip which is opened by a slight downward pressure of the finger on the

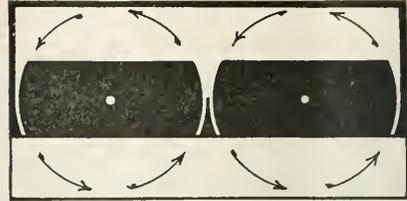


Fig. 5.—Plan of Medium Size Cabinet

front ticket. A ticket which may have been withdrawn by mistake may be quickly replaced. In place of the common marble follower a light wedge is used.

The Ticket Office Equipment Company makes cabinets of various sizes, for large or small stations. For a medium sized station a revolving cabinet is made on the plan shown in Fig. 5. The appearance of this smaller cabinet, when closed, is shown in Fig. 4. One of the two rotating sections is devoted to local and Pullman tickets, and the other to interline and miscellaneous tickets.

The efficiency claims of the makers are summarized as



Fig. 6.—Rock Island Ticket Office, Chicago

follows: All sellers are trained for universal selling service and not limited to special forms only. Elimination of uncomfortable enclosed booths, increasing the morale and therefore the energy of the seller. All windows utilized all the time if required. All tickets at each and every window. Each passenger completes all transactions with one seller at one time. In emergency, as all cabinets are mobile units, a complete ticket office can be transferred to any point and immediately opened up for business. The floor space required for the old style miscellaneous types and sizes of cases is ten times greater than this equipment carrying the same number of forms. All tickets are within arm's length of the seller.

# General News Department

The Chief Interchange Car Inspectors' and Car Foremen's Association convention for this year has been postponed.

The Erie Railroad is preparing to try an automatic train stop of the intermittent electrical contact type, and expects to make tests within the next two weeks. The apparatus is being put in position on the Northern Railroad of New Jersey, near New York City.

The Veterans' Association of the Lackawanna Railroad held its sixth annual reunion at Scranton, Pa., on June 19. The members of this association are those who have been in the employ of the road for 20 years or more; and more than 1,000 were present at the reunion. The president of the association for the ensuing year is John Draney, Jersey City, N. J.

The Tennessee & Cumberland River Railroad, on which regular traffic was long since suspended, is to be finally abandoned, and its track is being torn up. This road connects with the Louisville & Nashville at Tennessee Ridge, Tenn., about 100 miles west of Bowling Green, Ky., and extends thence 14 miles northward to Bear Spring. It was built to develop the timber and mineral properties of the Cumberland River Land Company.

Chairman Clark of the Interstate Commerce Commission has sent a letter to Chairman Norris of the Senate Committee on Agriculture opposing a provision in the bill for the creation of a billion dollar corporation to finance agricultural exports under which the proposed corporation would be authorized to negotiate with the railroads for reduced freight rates on shipments in which it is interested. Mr. Clark said the commission could not endorse any proposal to make the government directly or indirectly a preferred shipper when it is directly or indirectly in commercial competition with citizens who are attempting to carry on the same line of business. Senator Norris in discussing the letter said it would be easy for the commission to remove any such discrimination by reducing the freight rates on the other shipments.

## Railway Earnings for May

Preliminary compilations of the returns of 119 railroads operating 150,000 miles to the Interstate Commerce Commission for May show a net operating income of \$21,000,000 as compared with a deficit in May last year of \$6,512,000. The operating revenues of these roads were \$318,000,000, a decrease of 1.2 per cent and the operating expenses were \$268,000,000, a decrease of 14.2 per cent.

## Portraits on Tickets

The New York Central announces that buyers of commutation tickets, for use between New York City and certain points 50 miles or more from the city, are to be required to furnish a photograph, to be pasted on the ticket; this to prevent misuse of tickets, which has become common. On the Hudson division this order applies to Beacon and Poughkeepsie; on the Harlem division to Towners and Patterson, and on the River division to Newburgh.

## Flood on the Northern Pacific

One of the heaviest rainfalls on record occurred on June 16 in the region traversed by the Northern Pacific, between Medora, N. D., and Hathaway, Mont., a section of road 165 miles long. The nature of the soil prevented the water from being absorbed quickly, and this, together with the steep watersheds, caused a wall of water about 10 ft. high to flow through some of the cuts and along the roadbed in many places. Five section men were caught by the flow in one cut and three were drowned. The tracks were washed out at many points and considerable damage

was done to telegraph lines and signals. The line was reopened for traffic on June 25.

## Eastern Railroads to Cooperate in New York Port Problem

At a recent meeting of the presidents of the eastern railways a committee was appointed to work with the New York-New Jersey Port Authority in developing its plans toward the solution of the port and terminal problems at New York. The committee consists of the following 11 engineers: R. C. Falconer, assistant to the president and chief engineer, Erie; Edward Gagel, chief engineer, N. Y., N. H. & H.; G. T. Hand, chief engineer, L. V.; G. W. Kittredge, chief engineer, N. Y. C. Lines East; H. A. Lane, chief engineer, B. & O.; L. V. Morris, chief engineer, L. I.; J. H. Nuelle, general manager, N. Y. O. & W.; A. E. Owen, chief engineer, C. of N. J.; G. J. Ray, chief engineer, D., L. & W.; E. B. Temple, assistant chief engineer, Pennsylvania; and S. T. Wagner, chief engineer, P. & R.

## "What Every Employee Should Know"

The Illinois Central has distributed among the workers of that road, a book entitled, "What Every Employee Should Know," which tells how the Illinois Central System had its beginning in 1851, and leads up to the present intensive development of the road. The booklet narrates how the original company was organized and chartered "to build a railroad through central Illinois" and how during the five years following 1851 the charter lines, consisting of 705 miles of road, were completed. The first construction was a 14-mile strip of road between Chicago and Calumet, which was opened to traffic on May 15, 1852. During the next year a 60-mile stretch of road was opened between LaSalle and Bloomington, from which time the southward progress to New Orleans was constant. The road now has more than 8,000 miles of lines representing three and one-half per cent of the total railway mileage of the country; and it serves 15 states.

## Accident Investigations—January, February, March

The seventh quarterly issue of the summary of train-accident investigations, prepared by the Bureau of Safety of the Interstate Commerce Commission, for the months of January, February and March, 1921, has been issued. The 23 accidents reported on occurred as shown below, all except the first one being in the year 1921. The derailment of January 3, 1920, has also been made the subject of a special illustrated report, containing studies, made by the engineer-physicist of the commission, of the rail which broke and caused this derailment, and of other broken rails.

TRAIN ACCIDENTS INVESTIGATED, FIRST QUARTER 1921		
		1920
Derailement	Chicago Great Western.....Wyeth, Mo.	January 3
		1921
Collision	Tomopah & Tidewater.....Dumont, Cal.	January 14
Derailement	Denver & Salt Lake.....Tolland, Cal.	" 24
Collision	Union Pacific.....Knight, W. Va.	" 28
Collision	Illinois Central.....Wilke, Iowa	" 30
Collision	Pennsylvania.....Newark, Ohio	February 1
Collision	Wabash.....Moulton, Ia.	" 1
Collision	Seaboard.....Savannah, Ga.	" 8
Derailement	Missouri Pacific.....Gulpha, Ark.	" 10
Collision	Chicago & N. W.....W.S. Rapids, W. Va.	" 10
Collision	Louisville & Nashville.....La. Springs, Ky.	" 11
Derailement	Western Maryland.....Mount Savage, Md.	" 11
Collision	Long Island.....Autumn Avenue, N. Y.	" 11
Derailement	Texas & Pacific.....Marine City, Ia.	" 20
Derailement	Missouri, K. & Texas.....Dowers, Tex.	" 21
Derailement	Grand Trunk.....Shibley, Md.	January 2
Automobile	Maryland Electric.....Shibley, Md.	January 2
Derailement	Toledo & Ohio Central.....New Lexington, Ohio	February 20
Collision	New York Central and Michigan Central.....T. rter, Ind.	" 20
Collision	Pennsylvania.....Baileys Pa.	March 7
Collision	Chicago & Mten and Illinois Traction.....Venice, Ill.	" 9
Collision	N. Y., N. H. & H.....New York, N. Y.	" 17
Collision	Chicago, B. & O.....Red Oak, N. Y.	" 17

## Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.**—F. M. Nellis, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.**—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.**—F. A. Pontius, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.**—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa. Next meeting, July 12, Chicago.
- AMERICAN ASSOCIATION OF ENGINEERS.**—C. E. Drayer, 29 S. La Salle St., E. I. R. R., 332 South Michigan Ave., Chicago.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.**—S. C. Hope, C. R. of N. J., 143 Liberty St., New York. Annual meeting, November 21 and 22, Pinehurst, N. C.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—E. B. Buttrif, 8 W. 40th St., New York. Next convention, October 3, Atlantic City. Exhibits this year will be omitted.
- AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.**—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill. Next convention September 12-14, Hotel Sherman, Chicago, Ill.
- AMERICAN RAILROAD MASTER TIE AND TRACKING OFFICERS.**—S. W. Derr, 75 Church St., New York, N. Y. Next regular meeting, November 16, 1921.
- Division I—Operating.**  
Freight Stationing (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.  
Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.  
Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.  
Telegraph and Signal Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y.
- Division II—Transportation (including former activities of the Association of Railway Car Accounting Officers).** G. W. Covert, 431 South Dearborn St., Chicago, Ill.
- Division III—Traffic.** J. Gottschalk, 143 Liberty St., New York.
- Division IV—Engineering.** E. H. Fritch, 431 South Dearborn St., Chicago, Ill.
- Construction and Maintenance Section.** E. H. Fritch.  
Electrical Section. E. H. Fritch.  
Signal Section (including former activities of the Railway Signal Association). B. Wiegand (Chairman); H. S. Balliet, 75 Church St., New York, N. Y.
- Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).** V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Meeting postponed indefinitely.
- Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).** V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association).** J. P. Murphy, General Storekeeper, New York Central, Colliwood, Ohio.
- Division VII—Freight Claims (including former activities of the Freight Claim Association).** Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichtig, C. & N. W. Ry., 390 York Ave., Austin Station, Chicago, N. C. Next convention, October 18-20, 1921, New York City. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.**—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November 1st and 3d, Chicago.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.**—(See American Railway Association, Division 5.)
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—R. D. Fletcher, 1145 East Marquette Road, Chicago. Next convention, which was to have been held August 9-11, Hotel Sherman, Chicago, has been postponed. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN STREET LUMBER RAILROAD ASSOCIATION.**—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY FOR STEEL TREATING.**—W. H. Eiseaman, 4600 Prospect Ave., Cleveland, Ohio. Next convention, September 19-24, Indianapolis, Ind.
- AMERICAN SOCIETY FOR TESTING MATERIALS.**—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.**—E. M. Chandler (acting secretary), 35 W. York St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 19th St., New York.
- AMERICAN TRAIN DISPATCHERS' ASSOCIATION.**—C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—George M. Hunt, Chemist, Forest Products, Madison, Wis.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next annual meeting, May 19, 1922, Montreal.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucci, C. & N. W. Ry., 411 & N. W. Sta., Chicago. Next convention, October 18-21, Hotel La Salle, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.**—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.
- ASSOCIATION OF RAILWAY SUPPLY MEN.**—A. W. Clewley, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.**—(See American Railway Association, Division 1.)
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.**—(See American Railway Association, Division 2.)
- BRIDGE AND BUILDING ASSOCIATION.**—A. J. Filkins, Paul Dickenson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—W. A. Booth, 131 Charron St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Klins, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.**—Thomas B. Koenke, St. Louis. Regular meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.**—HARRY D. VOUGHT, 95 LIBERTY ST., NEW YORK. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.**—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill. Convention this year has been postponed.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.**—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.
- CINCINNATI RAILWAY CLUB.**—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio.
- EASTERN RAILROAD ASSOCIATION.**—E. N. Bessling, 614 F St., N. W., Washington, D. C.
- FREIGHT CLAIM ASSOCIATION.**—(See American Railway Association, Division 7.)
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 356, Insurance Exchange Bldg., Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, which was to have been held August 18-20, 1921, Hotel Sherman, Chicago, has been postponed. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.**—George W. Whitaker, Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—J. G. Crawford, 702 E. 51st St., Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn. Next convention, which was to have been held September 12-15, Hotel Sherman, Chicago, has been postponed. Exhibit by Association of Railway Supply Men.
- MAINSTREAM OF WHIT MASTER PAINTERS' ASSOCIATION.**—E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 4-6, 1921, Buffalo, N. Y.
- MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 95 Liberty St., New York.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.**—(See A. R. A., Division 5.)
- MASTER CAR BUILDERS' ASSOCIATION.**—(See A. R. A., Division 5.)
- NATIONAL ASSOCIATION OF RAILROAD TOOL PRODUCERS.**—E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo.
- NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.**—James B. Walker, 49 Lafayette St., New York.
- NATIONAL FOREIGN TRADE COUNCIL.**—O. K. Davis, 1 Hanover Square, New York.
- NATIONAL RAILWAY APPLIANCE ASSOCIATION.**—C. W. Kelly, Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.
- NEW YORK RAILROAD CLUB.**—HARRY D. VOUGHT, 95 LIBERTY ST., NEW YORK. Regular meeting, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.
- PACIFIC RAILWAY CLUB.**—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting, 2d Thursday in month, alternately in San Francisco and Oakland.
- RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.**—E. R. Woodson, 1116 Woodward Building, Washington, D. C.
- RAILWAY SECTION OF ASSOCIATION OF FRANK W. NOXON, 600 LIBERTY BLDG., BROAD AND CHESTNUT STS., PHILADELPHIA, PA.**
- RAILWAY CLUB OF PITTSBURGH.**—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Pittsburgh Club, 1000 Pittsburgh, Pa.
- RAILWAY DEVELOPMENT ASSOCIATION.**—(See Am. Ry. Development Assn.)
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
- RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.**—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.
- RAILWAY FIRE PROTECTION ASSOCIATION.**—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 18-20, Hotel Sherman, Chicago.
- RAILWAY REAL ESTATE ASSOCIATION.**—R. H. Morrison, C. & O. Ry., Richmond, Va.
- RAILWAY SIGN ASSOCIATION.**—(See A. R. A., Division 4, Signal Section.)
- RAILWAY STOREKEEPERS' ASSOCIATION.**—(See A. R. A., Division 6.)
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.**—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Exhibit at June convention of American Railway Association, has been cancelled.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.**—G. A. Nelson, 30 Church St., New York.
- ROADMASTERS AND MAINTENANCE OF WAY ASSOCIATION.**—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Auditorium Hotel, Chicago. Exhibit by Track Supply Association.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meeting, 2d Friday in month, except June, July and August.
- SIGNAL APPLIANCE ASSOCIATION.**—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.
- SOCIETY OF RAILWAY ACCOUNTING OFFICERS.**—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, P. O. Box 30, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—E. W. Sandwich, West-End Ry., Atlanta, Ga.
- SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—C. N. Thulin, 935 Peoples' Gas Bldg., Chicago.
- TRACK SUPPLY ASSOCIATION.**—W. C. Kidd, Ranpoo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.
- TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.
- WESTERN RAILWAY CLUB.**—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Meeting third Monday each month except June, July and August.

## Traffic News

The boats built by the Federal Government, for use on the New York State Barge Canal, have been sold to a New York and Chicago syndicate. These vessels have an aggregate capacity of 50,000 tons of freight, and are said to have cost the government \$3,695,000.

Tentative plans for a conference of the representatives of the railroads and the citrus fruit shippers of the Pacific Coast on the question of the reduction of transcontinental freight rates were announced at Washington by the "Producers and Shippers of Heavy Tonnage and Perishable Commodities from the Pacific Coast." The conference will be held July 1, according to present plans. The Interstate Commerce Commission has ordered the case of the California Citrus League against the railroads asking for lower rates on citrus fruits reopened. If the railroads and the shippers can come to an agreement a further hearing before the commission on the case will not be necessary. The shippers have objected to the latest increase of 33 $\frac{1}{3}$  per cent on transcontinental rates on citrus fruit shipments and are asking that this increase be removed so that the old rate of \$1.44 on oranges and \$1.25 on lemons will prevail.

### Conference with Shippers on

#### Proposed Changes in Freight Rates

The "Fourth Section Committee of Southern Carriers" which for several months has been engaged in a general revision of class freight rates, following the amendment of the Fourth Section of the Interstate Commerce law by the Transportation Act of 1920, has invited boards of trade, prominent shippers and others to attend a conference in Atlanta, Ga., beginning on July 11, for the purpose of having a full and free discussion, and to see how well the proposed changes suit the shippers. This invitation is accompanied by statements showing the present and the proposed rates, so arranged that shippers can readily make comparisons. The changes have to do with rates to and from Ohio river crossings, Memphis, Nashville, Gulf ports, Mississippi river crossings, south Atlantic port and Virginian cities.

The chairman of the Fourth Section Committee is G. M. Goodwyn, Transportation building, Atlanta, Ga.

### Southern Names Fast Freight Trains

The fast long-distance freight trains operated by the Southern Railway are now known by names, to enable shippers to identify them. There are 13 of them, as follows:

"Potomac Special."—New Orleans, Birmingham, Atlanta to Potomac Yards (near Washington, D. C.).

"Fruit Special."—Jacksonville, Columbia, Charlotte to Potomac Yards.

"Stock Special."—Chattanooga, Knoxville, Asheville to Potomac Yards.

"Long Leaf Special."—Selma, Anniston, Atlanta to Potomac Yards.

"Clyde Special."—Charleston, Columbia, Spartanburg to Atlanta and West.

"Wiregrass Special."—Atlanta, Macon to South Georgia and Florida points.

"Eastern Special."—Memphis, Chattanooga to Bristol and East over the Norfolk & Western through Hagerstown.

"Southwest Special."—From the East via Hagerstown, over the Norfolk & Western to Bristol; Southern Railway to Memphis.

"Florida-West Indian Special."—Cincinnati and Louisville to Jacksonville.

"Orange Special."—Jacksonville to Cincinnati and Louisville.

"Live Stock Special."—Birmingham to Cincinnati.

"Packing House Special."—Meridian to Atlanta.

"Petroleum Special."—Shreveport via "Vicksburg Route" to Meridian and Southern Railway to Atlanta.

## Commission and Court News

### Interstate Commerce Commission

#### Charges for Wharfage, Handling, Storage, Etc., at South Atlantic and Gulf Ports

The commission is in receipt of numerous inquiries as to whether or not it will give consideration to switching charges and free time allowances at the ports in connection with this proceeding. It has been concluded that the order instituting the investigation will be construed as including within its scope switching charges to and from the water terminals at the ports in question, and free time allowances on ocean traffic while in cars or in storage warehouses at the ports.

### Personnel of Commissions

H. G. Butler, power administrator, and former assistant chief engineer, of the Railroad Commission of California, has resigned and will engage in private practice.

### State Commissions

The legislature of the state of Illinois has passed the state administrations' bill, creating the "Illinois Commerce Commission" in place of the present State Utilities Commission. Although the main purpose of the bill was to provide "home" rule, it provides for appeal to the state body for final decision.

The Public Service Commission of Alabama has extended until October 31 the time within which the railroads of the state will be permitted to charge for freight on intrastate shipments 25 per cent more than the rates prescribed by the commission. This continuation was assented to by the traffic bureau of Montgomery, Mobile and Birmingham. Another hearing will be held on October 3.

The New York State Public Service Commission, W. A. Prendergast, chairman, announces that the work of the commission will be conducted in four divisions—administrative, legal, engineering and accounting. Francis E. Roberts, former assistant secretary of the commission for the second district, has been appointed secretary of the commission, and John J. Hubbard, assistant secretary. The office of Mr. Roberts will be at Albany and that of Mr. Hubbard at New York City.

A hearing began before the State Railroad Commission of California on June 16 on the petition of the railways entering Los Angeles for a re-hearing of the decision handed down by the commission, ordering the railways to build a joint terminal in that city. It is expected that the railroads will contend that the commission has authority only over grade crossings and has no jurisdiction to require joint terminal facilities, which authority, they claim, is delegated to the Interstate Commerce Commission in the Transportation Act.

## Court News

### Decisions Under the Federal

#### Employers' Liability Act

Where cars were loaded and they began to move, destined for another state or country, the New York Appellate Division holds that a railroad employee assisting therein as freight yard conductor was engaged in interstate commerce, although he did not know that the cars were destined for another state or country and although the cars had not yet received their billing, the shipper having arranged directly with another railroad, to which the cars were being delivered, for the shipment and billing.—Cott v. Erie, 179 N. Y. Supp. 488.

The Court of Errors and Appeals of New Jersey holds, the Chancellor and Kalisch, J., dissenting, that a baggage-

room used in handling interstate business, is an instrumentality of interstate commerce, though it was also used for interstate business and though, at the time of plaintiff's injury while painting it, it contained no interstate baggage.—Culp v. Atlantic City (N. J.), 110 Atl. 115.

The New York Appellate Division holds that a brakeman on an intrastate train, which, however, carried interstate freight, is engaged in interstate commerce when injured in attempting to load a barrel of oil for intrastate shipment.—Evans v. U. S. R. A. (New York Central), 191 App. Div. 704, 182 N. Y. S. 310.

The Circuit Court of Appeals, Second Circuit, holds that a railroad watchman on a pier used solely for interstate freight, who was injured while assisting in readjusting a door of the pier shed, to allow of delivery of freight to consignees, was engaged in interstate commerce.—Delaware, L. & W. v. Busse, 263 Fed. 516.

The Circuit Court of Appeals, Fifth Circuit, holds that a railroad employee, engaged in work on the ground unloading timber to be used by him and others in the reconstruction or repair of a bridge, part of a railroad used in interstate commerce, is within the act.—Kansas City Southern v. Martin, 262 Fed. 241.

The Arizona Supreme Court holds that an employee of an interstate railroad was engaged in interstate commerce when installing electric block signals along the main line to protect trains carrying both interstate and intrastate commerce.—Saxton v. E. P. & S. W. (Ariz.), 188 Pac. 257.

The New York Court of Appeals holds that a railroad shop employee, injured in falling against a saw while sawing timbers into pieces to be used for cross-ties, was not within the act, where it did not appear that the ties were prepared for any particular track, place, or work of repair.—Buynofsky v. L. V., 228 N. Y. 249, 126 N. E. 714.

The Pennsylvania Supreme Court holds, while the question has not been directly decided by the United States Supreme Court, and the rulings thereon by other courts are not in harmony, that a crossing watchman while flagging an intrastate train is not employed in interstate commerce, although trains engaged in such commerce use the same track.—Di Donato v. P. & R., 109 Atl. 627.

## United States Supreme Court

### Railroad May, After Merger, Sue for Transportation Balances Payable to Its Predecessor by Government

The Seaboard Air Line sued in the United States Court of Claims to recover balances for transportation services originally payable to the Florida Central & Peninsular, to whose rights it had succeeded through merger or consolidation. That court dismissed the petition, holding that because of Rev. Stat. 3477, declaring null and void transfers and assignments of claims upon the government, except after allowance and the issue of a warrant for payment thereof, the railroad could not maintain the action. The Supreme Court of the United States has reversed that judgment, holding that the case comes within the exceptions to the general language of the section which have been recognized in prior decisions as not within the evil at which the statute aimed, namely, frauds upon the Treasury. The court said in part: "We cannot believe that Congress intended to discourage, hinder or obstruct the orderly merger or consolidation of such corporations as the various States might authorize for the public interest. There is no probability that the United States could suffer injury in respect of outstanding claims from such union of interests and certainly the result would not be more deleterious than would follow their passing to heirs, devisees, assignees in bankruptcy, or receivers, all of which changes of ownership have been declared without the scope of the statute. The same principle which required the exceptions heretofore approved applies here."—Seaboard Air Line v. United States. Decided June 6, 1921. Opinion by Mr. Justice McReynolds.

## Foreign Railway News

### Krupps' Output

LONDON.

Recent visitors in Germany report that Krupps is working to capacity in its locomotive and car shops. Their output at present is 20 locomotives per month and it has recently completed its one thousandth freight car. This company is busy on locomotives for Russia and has a contract for tires for Russian locomotives. It is reported that the Prussian State Railways has a financial interest in the locomotive and car building division of the Krupp Works.

### Mexico Receiving Locomotives

Francisco Guerra, inspector general of locomotives of the National Railways of Mexico, has just finished receiving the locomotives which the Mexican Government recently purchased from the Illinois Central Railroad. These locomotives entered Mexico at Matamoros and are being placed in regular service as rapidly as possible.

"Heretofore there has been serious congestion in the yards at Matamoros, Piedras Negras, Nuevo Laredo, Juarez, Monterey, Tampico and the City of Mexico," said Mr. Guerra. "The congestion was caused chiefly by the lack of locomotives to move the freight. However, since the railroads of the United States have come to the aid of the Mexican lines by leasing or selling them a large number of engines we are able to begin relieving the congestion.

"There are now only about one hundred cars on hand in the Matamoros yards and as five locomotives are available these will be dispatched in the next few days. With our lines operating more efficiently we expect a large volume of traffic will go through Brownsville for points on the east coast and also for the interior."

### Another British Road in South America

#### Shows Improved Earnings

The Paraguay Central, a British road, operate 274 miles of line in Paraguay and is the only important road in that country. It runs southward from Asuncion to Encarnacion where it connects with lines in Argentina. On June 30, 1920, this road, according to Vice Consul Seltzer at Asuncion, had 24 locomotives, 46 passenger train cars and 470 freight cars. Its revenues are shown in the following table by fiscal years:

Year	Receipts	Expenses	Net
1913.....	\$712,043	\$391,590	\$320,453
1918.....	759,934	420,860	339,126
1919.....	1,108,624	639,246	469,378
1920.....	1,253,879	738,934	514,936
1920*.....	630,536	340,117	290,419

\*Six months ending December 31, 1920.

This road handled 509,369 passengers in 1920, as against 418,635 in 1919. Freight tonnage in 1920 amounted to 223,228 and in 1919 to 194,090. Forest products make up some 40 per cent of the road's freight tonnage while other agricultural products make up the bulk of the remainder.

### Railway Plans of the Argentine Government

LONDON.

The railway construction scheme decided upon by the Argentine government includes the completion of the State railways to La Quiaca on the Bolivian frontier in conjunction with the Bolivian government, the line from Rosario-de-Lerma in the Province of Salta to Huaytiquina on the Chilean frontier, a line from a station on the Central Northern State railway, near the city of San Juan, running due north to Jachal, passing through a portion of the Province of San Juan, and a railway extension in the Province of Buenos Aires to link up the Provincial Government line leading from San Nicolas, one of the ports on the Paraua River to Neridiano Quinto.

This wide scheme is designed to compete more or less with

foreign railway interests, especially British, but it is believed that its completion will bring some economic advantage to the country and may perhaps advance the traffic of some of the foreign lines whose tracks are in the vicinity. There are, however, many difficulties standing in the way of the Argentine government which are unsurmountable at the present time, but it is anticipated that these difficulties will be partially or wholly overcome within a few years.

April Car Exports

Exports of freight cars showed further declines in April. The total was 572, valued at \$808,982. Six passenger cars were shipped, valued at \$42,298. The totals by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries.	Passenger		Freight and other		Parts of Cars
	Number	Value	Number	Value	
Finland	.....	.....	.....	.....	536
France	.....	.....	.....	.....	238
Greece	.....	.....	.....	.....	5,590
Italy	.....	.....	.....	.....	1,858
Sweden	.....	.....	.....	.....	1,872
England	.....	.....	.....	.....	32,482
Canada	.....	.....	66	\$86,798	1,372
Guatemala	.....	.....	.....	.....	40,573
Honduras	.....	.....	.....	.....	1,225
Panama	.....	.....	.....	.....	75
Salvador	.....	.....	.....	.....	27,245
Mexico	3	\$22,098	79	148,407	1,152
Newfoundland and Labrador	.....	.....	.....	.....	437
Jamaica	.....	.....	.....	.....	297
Trinidad and Tobago	.....	.....	.....	.....	297
Cuba	.....	.....	244	274,159	122,704
Virgin Islands of U. S.	.....	.....	.....	.....	1,587
Dominican Republic	.....	.....	.....	.....	16,929
Argentina	.....	.....	.....	.....	221,232
Brazil	3	20,200	.....	.....	299,591
Chile	.....	.....	.....	.....	28,563
Colombia	.....	.....	.....	.....	263
Ecuador	.....	.....	.....	.....	4
Peru	.....	.....	43	25,220	27,740
Venezuela	.....	.....	20	11,283	317
China	.....	.....	.....	.....	328,190
Kwantung, leased territory	.....	.....	.....	.....	1,906
Chosen	.....	.....	.....	.....	777
Dutch East Indies	.....	.....	61	64,251	.....
Japan	.....	.....	57	187,664	13,915
Australia	.....	.....	2	11,200	41,120
New Zealand	.....	.....	.....	.....	.....
Philippine Islands	.....	.....	.....	.....	3,415
Portuguese Africa	.....	.....	.....	.....	880
Total	6	\$42,298	572	\$808,982	\$1,227,696

April Track Material Exports

Exports of steel rails in April totaled 31,392 tons, valued at \$1,838,002. Shipments of spikes were valued at \$129,313 and of miscellaneous track material at \$544,209. The totals by countries, as compiled by the Bureau of Foreign and Domestic Commerce follow:

Countries.	Railroad Spikes Pounds	Spikes	Rails of Steel Tons	Value	Switches, Frogs, Splice Bars, Etc.
Norway	.....	.....	54	3,265	\$308
Spain	.....	.....	1,854	119,953	7,044
England	.....	.....	1,870	185,719	2,824
Canada	91,883	4,315	487	26,961	27,649
Costa Rica	10,900	465	.....	.....	15
Guatemala	2,100	9	.....	.....	9
Honduras	33,000	1,228	111	4,878	11,161
Nicaragua	4,000	199	.....	.....	.....
Panama	.....	.....	.....	.....	.....
Mexico	294,256	22,864	146	7,078	19,792
Trinidad & Tobago	.....	.....	5	281	6,504
Cuba	188,732	7,779	2,382	89,265	60,105
Dominican Republic	.....	.....	5,425	.....	1,110
Argentina	.....	.....	.....	.....	460
Bolivia	.....	.....	45	2,202	81
Brazil	65,829	3,407	140	10,695	144,053
Chile	91,776	7,296	3,746	274,652	25,427
Colombia	.....	.....	.....	.....	1,419
British Guiana	.....	.....	26	1,437	160
Peru	93,500	7,181	95	6,000	10,538
Venezuela	6,400	269	38	2,855	3,051
China	888,700	59,619	6,622	284,004	117,232
Hollandia	.....	.....	.....	.....	81
Straits Settlements	.....	.....	644	41,860	1,715
British East Indies	.....	.....	.....	.....	1,297
Dutch East Indies	.....	.....	7,352	428,770	51,274
Hongkong	426	32	935	49,104	.....
Japan	141,343	8,607	318	24,808	8,933
Siam	.....	.....	.....	.....	117,900
Australia	.....	.....	121	11,260	34,046
New Zealand	.....	.....	734	51,455	1,796
Philippine Islands	.....	.....	.....	.....	10,158
British South Africa	.....	.....	62	2,844	8,933
British West Africa	.....	.....	649	30,957	2,413
French Africa	.....	.....	1,300	65	762
Portuguese Africa	.....	.....	.....	.....	4,742
Other British West Indies	.....	.....	458	125	377
Total	2,017,806	129,313	31,392	\$1,838,002	\$544,209

Extent of China's Railways

Hsu Shih-chang, president of China, in a recent book entitled "China After the War," discusses the railways of the country at some length. He calls attention to the mileage of the country, 7,000 miles operated as 24 lines. "Of this 2,600 miles are foreign-concessioned lines, namely, the Chinese Eastern, the South Manchuria, the Kiaochow-Tsinan, the Canton-Kowloon, the Yunnan Railway and the Lung-chen—while the Chinese Government lines number only 18, and extend over about 4,500 miles. This is certainly altogether insufficient. The United States with a territory of about the same size, and with only one-fourth of our population has 266,000 miles of railways, or 60 times as long as ours. Moreover many of our lines, though now nationalized were at first built with foreign capital. The diversity of foreign interests has made it impossible to lay out lines according to some comprehensive plan for the whole country.

"Such being the case, part of the capital seems to have been invested in unimportant routes, while many more important regions are without any modern means of communication. Ever since the first construction of railways in China 40 years ago, no less than \$400,000,000 has been expended. Yet trunk lines are found only north of the Yangtse River and East of the Honan Province, leaving the great plains to the South and West practically untraversed. In this way such portions of the country as Shensi, Kansu, Szechuan and Kweichow, are inaccessible to the coast, and their development is consequently retarded, industrially as well as commercially. Nor is this all, for in recent years railway loans made to China have often partaken of the nature of politico-commercial transactions. This not only hinders the proper industrial development of the country, but it also sows the seeds for future international complications. Therefore, in the interests of all concerned, such arrangements should be modified so as to preclude all undesirable possibilities."

Importance of Exports of American Locomotives

Exports of locomotives from this country in 1913 amounted to 491, valued at \$4,475,429. In 1919 the total was 959, valued at \$30,275,728. In 1920 the high mark of 1,711, valued at \$53,629,847, was reached. Over one-half of last year's exports (in value) went to European countries—primarily Italy, Poland, Belgium and France. Outside of Europe the most important buyers were Cuba, Brazil, China, South Africa and Argentina. The details by countries are given in the following table prepared by the Bureau of Foreign and Domestic Commerce:

Countries.	Number	Value	
Azores and Madeira Islands	.....	3	\$75,300
Belgium	155	8,764,488	
Denmark	16	619,680	
France	162	3,859,417	
Italy	175	4,184,947	
Poland and Danzig	139	6,348,059	
Rumania	25	1,025,000	
Spain	45	1,680,550	
Sweden	1	18,992	
Canada	78	786,108	
Honduras	7	21,281	
Nicaragua	1	9,400	
Panama	5	8,541	
Salvador	4	84,875	
Mexico	65	866,054	
Newfoundland and Labrador	1	39,735	
Jamaica	7	191,010	
Trinidad and Tobago	6	98,646	
Other British West Indies	1	5,785	
Cuba	283	8,369,682	
Dutch West Indies	1	3,114	
French West Indies	2	11,130	
Dominican Republic	8	99,340	
Argentina	33	1,131,070	
Bolivia	1	21,410	
Brazil	147	4,277,713	
Chile	24	445,669	
Colombia	18	417,081	
Ecuador	3	98,025	
British Guiana	1	22,700	
Peru	13	199,291	
Venezuela	2	24,465	
China	86	3,375,510	
Kwantung	11	1,478,410	
Chosen	4	18,900	
British India	15	363,921	
Dutch East Indies	26	420,006	
Japan	23	244,149	
Australia	2	82,600	
New Zealand	2	2,450	
Philippine Islands	3	2,859	
British West Africa	1	84,662	
British South Africa	33	1,811,400	
French Africa	10	388,800	
Portuguese Africa	4	83,000	
Egypt	25	1,847,211	
Total	1,711	\$53,629,847	

## Equipment and Supplies

### Locomotives

THE FERROCARRIL DE MONTEREY (Mexico) has ordered 4, 2-8-0 type locomotives from the American Locomotive Company.

THE SOUTH AFRICAN RAILWAYS are negotiating with the American Locomotive Company for the purchase of 78 locomotives.

THE PARIS-ORLEANS RAILWAY is negotiating with the American Locomotive Company for the purchase of electrical equipment.

THE SOVIET GOVERNMENT OF RUSSIA has placed orders for about 600 locomotives to be manufactured by the following companies: Nydquist & Holm, Inc., of Trollhattan, and Munktelles Mekaniska Verkstads, Inc., of Eskilstuna, Sweden.

### Freight Cars

THE NEW YORK CENTRAL is asking for prices on the repairs of 1,000 steel hopper or gondola cars of 50 tons' capacity.

THE MONTEREY STEEL COMPANY, Mexico, has ordered 50 all steel hopper cars, from the General American Car Company.

THE ILLINOIS CENTRAL has awarded a contract to the General American Car Company, for rebuilding 600 all steel gondola cars.

THE CHICAGO & ILLINOIS MIDLAND has given a contract to the General American Car Company for rebuilding 725 composite gondola cars.

THE MISSOURI PACIFIC, reported in the *Railway Age* of June 10 as inquiring for prices on the repair of 2,000 cars, will have repairs made to 500 wooden box cars by the Sheffield Car Company.

### Iron and Steel

MITSUI & Co., New York, has ordered from the Consolidated Steel Corporation, 350 tons of 25-lb. rail and accessories, for export to Japan.

THE NEW YORK CENTRAL is asking for bids until 12 o'clock noon, July 6, for 100 gross tons of offset side incline type E, under-running third rail; also 1,500 pairs of angle bars.

### Machinery and Tools

THE CHINESE GOVERNMENT RAILWAYS are inquiring through the New York export houses, for machine tools, to cost about \$200,000.

### Track Specialties

THE NEW YORK CENTRAL will receive bids until 12 o'clock, noon, July 13, for a quantity of frogs and crossings, offset splices, stock and lock rails, center points, switches, repair parts for switch stands, switch tongues, switch box covers and repair parts for switches.

### Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, July 12, for bridge parts, steel and material for track scales and bridge repairs.

THE LORAIN STEEL COMPANY, Johnstown, Pa., recently made a shipment of about 1,500 tons of switch crossings and track accessories, to Buenos Aires, for use on the railroads in the Argentine Republic.

THE NEW YORK CENTRAL will receive bids until 12 o'clock, noon, July 14, for a minimum of 300,000 gal. and a maximum of 400,000 gal. of Asphaltum base fuel oil with gravity of 18-20 degree Baume, cold test 10 degree.

THE BOSTON & ALBANY will receive bids until 12 o'clock noon, July 12, at Boston, Mass., for 1 complete type E turntable center; 2 cast steel wheel bearings and caps for turntable wheels, one right and left, for 85 ft. turntable; 16 Bearings B, pattern M-452, and 1 complete type E turntable center with exception of saddle casting.

THE ATCHISON, TOPEKA & SANTA FE has placed an order with the Babcock & Wilcox Company, New York, for boilers to be installed in its proposed power plant at Albuquerque, N. M. The company has also ordered engines to be installed in connection with the same project from the Skinner Company, Erie, Pa.

### Signaling

THE MISSOURI, KANSAS & TEXAS has placed an order with the Union Switch & Signal Co., Swissvale, Pa., for 55 style "S" one-arm three-position semaphore signals and necessary apparatus for installation between Labette, Okla., and Vinita. All work will be carried out by railroad company forces.

### Trade Publications

VISCOSIMETER CONVERSION CHARTS.—The May, 1921, issue of *Lubrication*, published by the Texas Company, contains a chart for converting viscosimeter readings from one standard to another. By means of the diagram, the time or degrees can be read directly for the Saybolt, Engler, Redwood Admiralty, Saybolt Furol, or Barbey instruments.

HOISTING EQUIPMENT.—The Dake Engine Company, Grand Haven, Mich., has recently issued a new catalogue of its complete line of air and steam motor hoisting equipment, steam boilers, etc. This catalogue comprises 72 pages, attractively arranged and bound. The catalogue is devoted chiefly to the describing and illustrating of the Dake steam or air operated motor as an integral part of various hoisting equipment, blower fans and centrifugal pumps.

POWER PLANT PIPING.—Valuable data concerning the design, manufacture and installation of complete power plant piping systems are contained in a 130-page, illustrated book recently issued by the M. W. Kellogg Company, New York. Information on the bending and welding of pipe, valves and fittings is presented in a thorough and interesting manner, as well as considerable tabulated matter on the properties of saturated steam, flow of steam and water in pipes, loss of head in pipe by friction, circumferences and areas of circles, etc. Several conversion tables are included.

THE ILLINOIS CENTRAL made a record for passenger train performance during the month of May, when a total of 13,567 trains were operated, 13,461, or 92.2 per cent, of which maintained scheduled time.

EIGHTY-ONE PER CENT REDUCTION in the number of casualties per 1,000 man-hours worked, was the result of a recent 60-day prevention-of-accident campaign conducted on the Baltimore & Ohio by John T. Broderick, Superintendent of Safety, among employees at the principal terminals and shops. The East Side Terminal at Philadelphia, Pa., and the Toledo Terminal, Toledo, Ohio, were the winners of the banners offered by Vice-president C. W. Galloway. The boiler shop at Mount Clare and the maintenance of equipment department at New York won local banners. During the "drive" a record was kept of all bodily injuries and after each accident there was an investigation. The ratio of casualties to man-hours worked this year, as compared with last year during the same period, was the basis on which the winners were determined. On the whole system there was an increase of 231 per cent in man-hours worked per casualty.

## Supply Trade News

R. H. Blackall, Farmers Bank building, Pittsburgh, Pa., will act as railway representative for Pittsburgh and vicinity, for the Lowe Brothers Company, Dayton, Ohio.

The agency for time and motion study watches and other "instruments of precision," formerly held by M. J. Silberg, Chicago, has been taken over by Stein & Ellbogen Company, 31 N. State street, Chicago.

De Forest Lillis, who has been appointed western representative of the Dressel Manufacturing Corporation, New York, successor to the Dressel Railway Lamp Works, as was



De Forest Lillis

noted in the *Railway Age* of June 3, has opened an office in the Railway Exchange building, Chicago. Mr. Lillis has had several years' experience as salesman of railway supplies, and has acted as eastern representative of various western railway supply manufacturers in New York. Before entering the supply field, he was in railroad service on the New York Central, his last assignment being that of chief clerk to the general superintendent of motive power.

P. L. Laughlin, assistant district sales manager of the Verona Tool Works at Chicago, has been promoted to district sales manager, succeeding John B. Seymour, whose appointment as sales manager of the Superior Supply Company, Chicago, was announced in the *Railway Age* of June 17 (page 1422).

H. A. Paarman, assistant to secretary of the Burden Iron Company, Railroad & Steamship division, 3711 Grand Central Terminal, New York City, has been appointed secretary to succeed W. J. Caton, whose death was noted in our issue of June 24. Mr. Paarman will also continue to serve in the sales department of the Sanitation & Supply Company, New York City.

C. J. Burkholder and Frank H. Cunningham have been appointed special engineers of the Franklin Railway Supply Company, Inc., New York. Mr. Burkholder began railroad work at Tyrone, Pa., and subsequently served first as locomotive fireman and then as locomotive engineman on the Union Pacific. He then went with the Kansas City Southern, as locomotive engineman, later serving consecutively as traveling engineer, trainmaster, general road foreman of engines and division superintendent. He then became mechanical representative of the Economy Devices Corporation, which later merged into the Franklin Railway Supply Company, Inc. In November, 1918, he resigned from the position of western sales manager of the Franklin Railway Supply Company to become master mechanic of the Kansas City Southern, which position he held until his appointment as above noted. Mr. Cunningham was born in Roanoke, Va., on May 23, 1886. After serving an apprenticeship as machinist on the Norfolk & Western, he attended the University of Virginia. Following his graduation with the degree of mechanical engineer, he returned to the Norfolk & Western as machinist, subsequently becoming material inspector, mechanical inspector, assistant engineer of tests and supervisor of locomotive

stokers. In 1914, he went with the Standard Stoker Company as fuel engineer, being appointed later to plant manager at Erie, Pa., and assistant general manager, from which position he now resigned to enter the services of the Franklin Railway Supply Company, Inc., as above noted.

## Obituary

Alvin T. Hert, president of the American Creosoting Company, Louisville, Ky., and affiliated companies, died on June 7.

Will H. Bloss, manager steam railroad sales, of the Ohio Brass Company, Mansfield, Ohio, died suddenly from heart failure at his home in Mansfield on June 22. Mr. Bloss was born on April 4, 1869, and received his engineering training at the Indiana University. He started his career in railroad work and subsequently was division engineer on the Santa Fe. He later served as chief engineer of the Indiana Union Traction Company. In 1906 he went to the Ohio Brass Company from the Buda Company of Chicago and was district sales manager in some of the central states until about a year ago. From that time he had devoted his effort to electrification development and other steam railroad problems.

E. E. Hudson, who was elected president of the Waterbury Battery Company, Waterbury, Conn., in March, 1921, died on June 27, at his home in Maplewood, N. J.



E. E. Hudson

Hudson for the past 22 years, with the exception of a little over a year's time, had been in the sales and managerial departments of concerns manufacturing primary batteries and had been identified with the installation of the primary battery. In July, 1898, he served as chief clerk in the primary battery sales department of the Edison Manufacturing Company, remaining in that position until June, 1902. Shortly afterward, he served as an accountant in the controller's department of the United States Steel

Company. In December, 1903, he became secretary and treasurer of the Battery Supplies Company, Newark, N. J., and in 1905 was appointed sales manager of that company. When the Edison company absorbed the Battery Supplies Company, in 1908, he was appointed assistant manager of sales in the primary battery department. He became sales manager of that department in February, 1909, and in September, 1913, was elected also vice-president. In October, 1914, in addition to these duties, he was given charge of the manufacturing, as well as the sales, and in March, 1915, was made division manager in general charge of the entire primary battery business of Thomas A. Edison, Inc. In 1914 he was chairman of the Railway Telephone & Telegraph Appliance Association, and in 1916 he was chairman of the Signal Appliance Association, previously having been a director. On January 1, 1917, he was elected vice-president and general manager of the Waterbury Battery Company and since March of this year was president of the same company as above noted.

THE OFFICERS of the Reid-Newfoundland Railway say that all business will have to be suspended at once if the government does not come to their relief. During the war the railroad was taken over by the government. Recently it was returned to its owners, who declare that expenses now so greatly exceed income that it is impossible to continue operation without government aid.

## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company, which was noted in the *Railway Age* of June 24 (page 1470), as about to accept bids for the installation of a new 120 ft. turntable at Winslow, Ariz., is carrying out this project with company forces.

**CHICAGO, BURLINGTON & QUINCY.**—This company is planning an addition to its yards at Centralia, Ill.

**CHICAGO, BURLINGTON & QUINCY.**—This company has resumed work, with company forces, on the street subway structures in connection with the track elevation project at Aurora, Ill.

**CHICAGO, BURLINGTON & QUINCY.**—This company has awarded a contract to G. A. Johnson & Co., Chicago, for the construction of an addition to its railway mail terminal at Omaha, Neb. The company is also accepting bids for the construction of a new grain elevator at St. Joseph, Mo.

**CHICAGO GREAT WESTERN.**—This company has awarded a contract to Charles Weitz, Des Moines, Iowa, for the construction of a frame freight station with dimensions of 40 ft. by 480 ft., at Des Moines, to cost about \$40,000.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.**—This company contemplates the construction of a new freight station at French Lick, Ind.

**CHICAGO UNION STATION.**—This company will shortly accept bids for wrecking the old Chicago & Alton freight house south of Van Buren street, Chicago. The company will also accept bids shortly for grading the new station site between Madison and Adams streets, and for laying a 12-duct conduit line between Harrison and Van Buren streets.

**GREAT NORTHERN.**—This company is installing, with company forces, a new low voltage power interlocking plant at Bridge A-8, near Saunders, Wis. The new low voltage layout will be controlled from the Saunders interlocking plant, located about one mile away, and will replace the present manual interlocking plant at the bridge.

**ILLINOIS CENTRAL.**—This company is accepting bids for the construction of two water-treating plants, one at La Salle, Ill., and the other at Assumption, Ill.

**ILLINOIS CENTRAL.**—This company, which contemplated the construction of a new pumping station at Amboy, Ill., with company forces, has decided to award a contract for this work and is accepting bids.

**ILLINOIS CENTRAL.**—This company has awarded a contract to the Railway Water & Coal Handling Company, Chicago, for water piping and sewer work in connection with the construction of additions and improvements to its roundhouse at Dubuque, Iowa.

**INTERNATIONAL & GREAT NORTHERN.**—This company is accepting bids for the construction of a new hospital building at Palestine, Tex., to cost about \$100,000.

**LOUISVILLE & NASHVILLE.**—This company has awarded a contract to Rommel Brothers, Louisville, Ky., for the construction of a brick and steel power plant at Paris, Tenn.

**LOUISIANA RAILWAY & NAVIGATION.**—This company contemplates the construction of a new passenger station at Girod and Rampart streets, New Orleans, La., on a site purchased by the road some time ago.

**MISSOURI, KANSAS & TEXAS.**—This company contemplates the enlargement of its terminal at Denison, Tex., including the construction of a new roundhouse, to be used for road locomotives, releasing the present roundhouse for switch engines. The company also plans to enlarge its yard, roundhouse and freight house at Fort Worth; improve its roundhouse facilities at Waco; add to its yards and roundhouse at Smithville; install additional roundhouse facilities at Houston, and add to its freight house at Wichita Falls.

## Railway Financial News

**ATCHISON, TOPEKA & SANTA FE.**—*Asks Authority to Abandon Branch.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to abandon its Burnett branch in Kay County, Okla., a distance of 4.67 miles.

**ATLANTA, BIRMINGHAM & ATLANTIC.**—*Special Master Appointed.*—Albert G. Foster, of Madison, Ga., has been appointed special master in the receivership of this road.

**BENNETTSVILLE & CHERAW.**—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of 10½ miles of track between Brownsville and Sellers, S. C.

**BOSTON & MAINE.**—*Application for a Loan.*—This company has applied to the Interstate Commerce Commission for a loan of \$3,049,000 for 15 years to enable it to pay the obligation of subsidiary companies about to fall due.

**CHICAGO, MILWAUKEE & ST. PAUL.**—*Acquisition of C. T. H. & S. Approved.*—See Chicago, Terre Haute & Southeastern.

**CHICAGO, ROCK ISLAND & PACIFIC.**—*Loan for Equipment Approved.*—The Interstate Commerce Commission has approved a loan to this company of \$1,568,540 for equipment to be purchased through the National Railway Service Corporation, including 15 Santa Fe locomotives at a cost of \$78,673 each, 10 Mikado locomotives at \$66,705, 10 mountain type locomotives at \$70,103, 50 cabooses at \$4,463 and 500 50-ton gondolas at \$2,300. The Rock Island had originally asked for a loan of \$17,866,503. Commissioner Daniels wrote a dissenting opinion in which he said the fundamental inherent weakness of the leasing basis of financing proposed is its failure to make allowance for possible, not to say probable, fall in the price of equipment during the early years of the trust duration. Should even a moderate fall in price occur, he said, the value of the assets would become materially short of the certificates outstanding.

**CHICAGO, TERRE HAUTE & SOUTHEASTERN.**—*Acquisition by C. M. & St. P. Approved.*—The Interstate Commerce Commission has approved and authorized the acquisition by the Chicago, Milwaukee & St. Paul of control of this company by lease and by the purchase of its capital stock. Authority was also granted to the Chicago, Milwaukee & St. Paul to assume as liability in respect of the payment of the principal and interest of equipment bonds, promissory notes, and mortgage bonds of the Chicago, Terre Haute & Southeastern and bonds of the Bedford Belt and the Southern Indiana. That part of the application requesting a certificate of public convenience and necessity for the abandonment by the Chicago, Terre Haute & Southeastern of the operation of its line was dismissed as unnecessary.

**CUBA RAILROAD.**—*New Director.*—William H. Woodin, president of the American Car & Foundry Company, has been elected a director, thereby increasing the board from ten to eleven members.

**DELTA SOUTHERN.**—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to abandon its line of 52 miles in Mississippi.

**FLINT BELT.**—*Asks Authority to Issue Capital Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue \$1,000,000 of capital stock, the proceeds to be used in the construction of its railroad. The stock is to be acquired by the Pere Marquette.

**GREENE COUNTY.**—*Loan Approved.*—The Interstate Commerce Commission has approved a loan of \$60,000 to this company to assist it in meeting maturing indebtedness.

**ILLINOIS CENTRAL.**—*Bond Issue.*—Kuhn, Loeb & Co. have sold an issue of \$8,000,000 fifteen-year 6½ per cent secured gold bonds. The issue was formally offered for public subscription on Mon-

(Continued on page 49)

# Annual Report

## Southern Pacific Company—Thirty-seventh Annual Report

New York, N. Y., June 23, 1921.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:  
Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1920.

As stated in last year's report, the Federal Government, which took over the railroads and steamship lines of your company on December 28, 1917, relinquished control of such properties at 12:01 A.M., March 1, 1920. Your properties, therefore, were operated by the Director General of Railroads during the first two months of the year, and by your company during the last ten months of the year. In the following table showing the net railway operating income of the Southern Pacific Transportation System for the year 1920, compared with that for the year 1919, the figures for 1920 include the results from the operation of your properties for the entire year, regardless of the change in the form of control. To make the figures for 1919 comparable, they have been revised to include, in addition to Federal operations, \$1,457,685.84, corporate operating expenses, and \$2,433,617.90, war taxes, which, in the report for last year, were included in the deductions from Corporate income.

	Calendar Year 1920	Calendar Year 1919	+ Increase - Decrease	Per Cent
1. Average miles of road operated.....	11,151.60	11,043.31	+ 108.49	.98
<b>RAILWAY OPERATING REVENUES</b>				
2. Freight .....	\$183,416,522.60	\$163,011,660.07	+\$20,404,862.53	12.52
3. Passenger .....	71,701,637.26	59,371,140.37	+ 12,330,496.89	20.77
4. Mail and express .....	13,660,156.92	7,838,257.82	+ 5,821,899.10	74.28
5. All other transportation .....	5,074,092.84	2,446,116.63	+ 2,627,976.21	107.43
6. Incidental .....	8,342,712.13	6,886,516.60	+ 1,456,195.53	21.15
7. Joint facility—Credit .....	105,349.51	128,988.99	- 23,639.48	18.33
8. Joint facility—Debit .....	30,967.01	25,408.13	+ 5,558.88	21.88
9. Total railway operating revenues .....	\$282,269,504.25	\$239,657,272.35	+\$42,612,231.90	17.78
<b>RAILWAY OPERATING EXPENSES</b>				
10. Maintenance of way and structures .....	\$48,465,465.26	\$34,894,157.31	+\$13,571,307.95	38.89
11. Maintenance of equipment .....	\$9,548,392.36	48,011,453.31	+ 11,536,939.05	24.03
12. Total maintenance .....	\$108,013,857.62	\$82,905,610.62	+\$25,108,247.00	30.29
13. Traffic .....	3,490,706.53	2,256,660.61	+ 1,234,045.92	54.68
14. Transportation .....	117,227,797.91	93,280,330.78	+ 23,947,467.13	25.67
15. Miscellaneous operations .....	5,609,062.74	4,231,266.21	+ 1,377,796.53	32.56
16. General .....	8,112,651.83	6,101,739.76	+ 2,010,912.07	32.96
17. Transportation for investment—Credit .....	340,286.57	390,435.63	- 50,149.06	12.84
18. Total railway operating expenses .....	\$242,113,790.06	\$188,385,172.35	+\$53,728,617.71	28.52
19. Net revenue from railway operations .....	\$40,155,714.19	\$51,272,100.00	- \$11,116,385.81	21.68
20. Railway tax accruals .....	\$14,792,063.67	\$11,911,994.62	+ \$2,880,069.05	24.13
21. Uncollected railway revenues .....	112,945.09	51,694.91	+ 61,250.18	118.48
22. Railway operating income .....	\$25,250,705.43	\$39,308,410.47	- \$14,057,705.04	35.76
23. Equipment rents—Net .....	4,496,775.66	\$378,081.20	+ 4,874,856.86	—
24. Joint facility rents—Net .....	\$58,414.27	9,423.90	+ 4,871,838.17	—
25. Net railway operating income .....	\$21,312,344.04	\$39,677,067.77	- \$18,364,723.73	46.28

\*Credit.  
The Director General of Railroads operated your properties during the months of January and February, 1920. The net income for those months amounted to \$4,869,374.25.

The following table shows the results of Federal operations during the whole period of Federal control—January 1, 1918, to February 29, 1920—compared with the standard return compensation payable by the United States Government for the use of your properties.

	Federal Income in excess of Standard Return	Standard Return in excess of Federal Income
1918 .....	\$7,757,935.04	—
1919 .....	—	\$4,334,355.44
January and February, 1920 .....	—	3,173,713.78
*Federal income in excess of Standard Return entire period of Federal control .....	\$249,865.82	—

\*This result may be changed when the accounts between the Director General of Railroads and the various corporations are finally settled.

	1920	1919	1918	1917
Operating revenues.....	\$282,269,504.25	\$239,657,272.35	\$221,611,266.11	\$200,489,543.82
Operating expenses.....	242,113,790.06	188,385,172.35	162,723,371.84	170,601,822.82
Net revenue from railway operations.....	40,155,714.19	51,272,100.00	58,887,894.27	73,369,721.00
Operating ratio, per cent.....	85.77	78.61	73.43	85.78
Total train miles.....	51,890,806	46,865,000	49,701,385	64,924,753
Traffic units (ton miles plus 3 times passenger miles).....	22,010,457,900	20,198,015,285	20,536,032,602	23,872,853,317

The status of the accounts of your Company and its Proprietary Company at December 31, 1920, with the United States Railroad Administration, incident to the period of Federal operations, is shown in the balance sheet. The net balance of \$1,695,262.66 due from the Government, as shown by such accounts, is made up as follows:

Due from Government on account of depreciation reserves, and road and equipment retirements.....	\$10,879,165.36
Less:	
Amounts advanced by Government for additions and betterments; expenses prior to January 1, 1918, and other corporate liabilities in excess of cash, agents' and conductors' balances; revenues prior to January 1, 1918; balance due on standard return; and other corporate assets collected.....	\$8,217,508.62
Agents' and conductors' balances at February 29, 1920 .....	594,037.01
Book value of materials and supplies turned over by Director General on February 29, 1920, in excess of the book value of materials and supplies taken over by him on January 1, 1918 (subject to adjustment as noted below) .....	372,357.07
Balance due from Government.....	\$1,695,262.66

Under the contract with the Director General he is required to return to the companies at the end of Federal control, the materials and supplies equal in quantity, quality and relative usefulness to the materials and supplies which he received, or to pay for any deficiency at prices prevailing at the end of Federal control. Pending final settlements of the accounts, the value of the materials and supplies, returned by the Director General on March 1, 1920, has been temporarily credited to the Government accounts. Owing to the high prices prevailing during, and at the end of, Federal control, the value of the materials and supplies returned by the Director General was considerably in excess of the value of the materials and supplies taken over by him; but as the quantity returned was less as a whole, there will be a considerable amount due from the Government on account of materials and supplies, instead of an amount due to the Government, as indicated by the foregoing statement.

### GUARANTY PERIOD OPERATIONS

As stated in last year's report, your company accepted, for itself and all its system lines, the guaranty offered by the Government under the terms of the Transportation Act of 1920, to the effect that the railway operating income for the six months' period beginning March 1, 1920, should not be less than one-half of the annual compensation fixed in the contract made with the Director General of Railroads under the Federal Control Act, including additional compensation for use of additions and betterments.

One of the provisions of such guaranty was, that there should not be included in operating expenses for maintenance of way and structures, or for maintenance of equipment, during the guaranty period, more than an amount fixed by the Interstate Commerce Commission. The Commission has not yet fixed the amount of such maintenance expenditures to be included in operating expenses, and in determining the results of operation and the amount due from the Government for the guaranty period as shown below, there has been included in maintenance expenses only the actual expenditures for maintenance during the guaranty period, and the known unaudited expenses attributable to such period.

### AMOUNT DUE FROM U. S. GOVERNMENT UNDER ITS GUARANTY

Amount of Government's guaranty for the six months' period from March 1 to August 31, 1920, being one-half of the amount annually fixed in the contract of February 19, 1919, with the Director General, as computed by the Interstate Commerce Commission up to December 31, 1920..... \$23,979,110.92

Net railway operating income for the above period as booked to December 31, 1920..... 3,488,683.42

Estimated balance due from the Government, as determined above, taken into the year's income account..... \$20,490,427.50

The amount of the Government's guaranty, as shown above, does not include any additional compensation for the use of additions and betterments, new equipment, and road extensions, as complete data for computing such additions and betterments were not available at the time the income account for the year was closed.

Under the Transportation Act the Interstate Commerce Commission is required, as soon as practicable after the expiration of the guaranty period, to certify to the Secretary of the Treasury the amount necessary to make good the guaranty to each carrier, and on October 18, 1920, the Commission issued an order requiring each carrier which had accepted the guaranty offered by the Government to file a statement showing the amount due to the company by the Government under the latter's guaranty as computed by the Commission. In its order the Commission stated it had adopted no formula for computing the maintenance allowance for the guaranty period, and suggested that each carrier should prepare and submit for the consideration of the Commission such data in connection with the maintenance allowance proposed by the carrier as the latter should consider proper. Since the close of the year your company has prepared and filed its claim in accordance with such order, and it is hoped that an early settlement will be obtained.

Following is a summary of operating revenues, operating expenses and net revenue from railway operations, also traffic volume, showing the results of transportation operations for 1920 compared with 1919 and 1918 under Federal control, and with 1917, the last year of private operation prior to Government control:

	1920	1919	1918	1917
Operating revenues.....	\$282,269,504.25	\$239,657,272.35	\$221,611,266.11	\$200,489,543.82
Operating expenses.....	242,113,790.06	188,385,172.35	162,723,371.84	170,601,822.82
Net revenue from railway operations.....	40,155,714.19	51,272,100.00	58,887,894.27	73,369,721.00
Operating ratio, per cent.....	85.77	78.61	73.43	85.78
Total train miles.....	51,890,806	46,865,000	49,701,385	64,924,753
Traffic units (ton miles plus 3 times passenger miles).....	22,010,457,900	20,198,015,285	20,536,032,602	23,872,853,317

The above table illustrates the constant and enormous growth of operating expenses since 1917, which is the result of changed conditions commencing with Federal control, the net revenue of 1920 being 45.2% less than 1917 despite movement of 5.4% more traffic units with 3.9% less train miles. Average railway wages were increased by governmental agencies, either during or subsequent to Federal control, to a figure 92% above the average for 1917. The expense of operating your property has been profoundly affected by this cause and by increases in prices of fuel, ties, lumber and all other kinds of material used in operation. The net revenues of 1920 were further decreased through the failure to advance freight and passenger rates to cover added prices until the end of August, whereas the large wage award made by the United States Railroad Labor Board was retroactive from May 1, 1920. Expenses of 1920 were augmented through

various agreements of a national character executed by the Director General in 1919 establishing working rules under which compensation is allowed in excess of the value of services performed, and time and one-half punitive overtime is paid after 8 hours in various classes of service, including operation of freight trains where delay to such trains is rewarded by premium payments for overtime.

Since the return of your lines on March 1, 1920, the initiative of your organization has resumed effect, normal service has been restored, unfair rate relationships have been corrected and progress has been made in recovering diverted traffic.

Comparing 1920 with 1919, ton miles of revenue freight increased 8.53%; revenue passengers carried one mile increased 7%, augmented by increased tourist travel and large conventions on the Pacific Coast, and operating

**INCOME ACCOUNT**  
SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED  
(Excluding offsetting accounts)

	Year Ended		+ Increase - Decrease	Per Cent
	December 31, 1920	December 31, 1919		
OPERATING INCOME (March 1 to December 31, 1920, inclusive)				
1. Freight .....	\$157,220,043.42		+\$157,220,043.42	
2. Passenger .....	61,607,126.86		+ 61,607,126.86	
3. Main .....	3,764,550.44	See	+ 3,764,550.44	
4. Express .....	6,054,466.52		+ 6,054,466.52	
5. All other transportation .....	4,639,538.20	Explanation	+ 4,639,538.20	
6. Incidental .....	7,038,752.12		+ 7,038,752.12	
7. Joint facility—Credit .....	81,889.56	Below	+ 81,889.56	
8. Joint facility—Debit .....	24,874.94		+ 24,874.94	
9. Railway operating revenues .....	\$240,381,492.18		+\$240,381,492.18	
RAILWAY OPERATING EXPENSES:				
10. Maintenance of way and structures .....	\$41,938,579.91	\$94,614.60	+ \$41,843,965.31	
11. Maintenance of equipment .....	49,921,811.29	42,079.56	+ 49,879,731.73	
12. Total maintenance .....	\$91,860,391.20	\$136,694.16	+ \$91,723,697.04	
13. Traffic .....	3,097,893.12	94,474.15	+ 3,003,418.97	
14. Transportation .....	100,486,655.12	5,664.15	+ 100,480,990.97	
15. Miscellaneous operations .....	4,830,833.96		+ 4,830,833.96	
16. General .....	7,247,152.52	1,220,857.38	+ 6,026,295.14	
17. Transportation for investment—Credit .....	536,066.68		+ 536,066.68	
18. Railway operating expenses .....	\$207,186,859.24	(a) \$1,457,689.84	+\$205,729,169.40	
19. Net revenue from railway operations .....	\$33,194,632.94	(b) \$1,457,689.84	+ \$34,652,322.78	
20. RAILWAY TAX ACCRUALS .....	13,006,696.07	(a) 2,433,617.90	+ 10,573,078.17	
21. UNCOLLECTIBLE RAILWAY REVENUES .....	95,346.40		+ 95,346.40	
22. Equipment rents—Net .....	4,060,345.12		+ 4,060,345.12	
23. Joint facility rents—Net .....	492,695.98	(c)	+ (c) 492,695.98	
24. Net railway operating income .....	\$16,524,941.33	(b) \$3,891,307.74	+ \$20,416,249.07	
25. REVENUES FROM MISCELLANEOUS OPERATIONS .....	\$2,581,763.93	\$14,033,155.75	— \$11,451,391.82	81.60
26. EXPENSES OF MISCELLANEOUS OPERATIONS .....	1,342,255.38	7,565,331.96	— 6,223,076.58	82.26
27. Net revenues from miscellaneous operations .....	\$1,239,508.55	\$6,467,823.79	— \$5,228,315.24	80.84
28. TAXES ON MISCELLANEOUS OPERATING PROPERTY .....	46,346.16	223,706.38	— 177,360.22	79.28
29. Miscellaneous operating income .....	\$1,193,162.39	\$6,244,117.21	— \$5,050,954.82	80.89
30. Total operating income .....	\$17,718,103.72	\$2,352,809.47	+ \$15,365,294.25	
NONOPERATING INCOME				
31. Income from lease of road—Standard return .....	(d) \$8,043,288.03	\$48,244,660.03	— \$40,201,372.00	83.33
32. Other income from lease of road .....	34,705.27	28,497.04	+ 6,208.23	21.29
33. Miscellaneous rent income .....	809,388.70	731,015.97	+ 78,372.73	10.72
34. Miscellaneous nonoperating physical property .....	373,830.41	360,669.30	+ 13,161.11	3.82
35. Separately operated properties—Profit .....	31,269.12	24,909.46	+ 6,359.66	25.53
36. Dividend income .....	5,251,325.94	1,182,038.97	+ 4,069,286.97	34.26
37. Income from funded securities—bonds and notes—affiliated and other companies .....	1,921,964.07	2,370,301.11	— 448,337.04	18.91
38. Income from funded securities—investment advances—affiliated companies .....	389,226.77	443,942.36	— 54,715.59	12.32
39. Income from unfunded securities and accounts .....	1,370,528.34	355,563.95	+ 1,014,964.39	285.45
40. Income from sinking and other reserve funds .....	774,710.08	742,040.20	+ 32,669.88	4.40
41. Miscellaneous income—U. S. Government guaranty .....	(e) 20,490,427.50	—	+ 20,490,427.50	
42. Other miscellaneous income .....	(f) 401,949.71	622,172.08	— 220,222.37	35.40
43. Total nonoperating income .....	\$39,892,611.94	\$55,105,210.47	— \$15,212,598.53	27.61
44. Gross income .....	\$57,610,715.66	\$57,458,019.94	+ \$152,695.72	.27
DEDUCTIONS FROM GROSS INCOME				
45. Rent for leased roads .....	\$26,277.70	\$267,019.89	— \$240,742.19	15.26
46. Miscellaneous rents .....	600,925.75	717,692.48	— 116,766.73	16.27
47. Miscellaneous tax accruals .....	138,367.78	706,591.76	— 568,223.98	18.65
48. Interest on funded debt .....	23,533,488.13	22,701,121.61	+ 832,366.52	3.53
49. Interest on funded debt—nonnegotiable debt to affiliated companies .....	136,478.00	147,496.30	— 11,018.30	7.47
50. Interest on unfunded debt .....	51,303.51	375,066.92	— 323,763.41	86.32
51. Amortization of discount on funded debt .....	169,228.14	292,131.27	— 122,903.13	42.07
52. Maintenance of investment organization .....	24,789.83	32,154.99	— 7,365.16	22.90
53. Other miscellaneous income charges .....	(g) 959,582.09	670,138.21	+ 289,443.88	43.19
54. Total deductions from gross income .....	\$25,540,441.03	\$25,909,412.88	— \$368,971.85	1.42
55. Net income .....	\$32,070,274.63	\$31,548,607.63	+ \$521,667.57	1.65
DISPOSITION OF NET INCOME				
56. Income applied to sinking and other reserve funds .....	\$1,053,945.19	\$1,022,863.92	+ \$31,081.27	3.04
57. Dividend appropriations of income .....	—	(h) 17,478,459.12	— 17,478,459.12	—
58. Total appropriations .....	\$1,053,945.19	\$18,501,323.04	— \$17,447,377.85	94.30
59. Income balance transferred to credit of profit and loss .....	\$31,016,329.44	\$13,047,284.02	+ \$17,969,045.42	137.72
60. Per cent of net income on average amount of outstanding capital stock of Southern Pacific Company .....	10.57	10.45	+ .12	1.15

(a) The \$1,457,689.84 of operating expenses for 1919 (lines 10 to 18) together with the \$32,154.99 of Maintenance of investment organization (line 52) make up the corporate operating expenses reported last year; and the \$2,433,617.90 of Railway tax accruals for 1919 (line 20) are the war taxes reported last year. These figures are reported this year against lines 10 to 20 for comparative purposes. (b) Loss. (c) Credit. (d) Represents the proportion for January and February, 1920, of annual compensation payable by United States Government for use of Southern Pacific Transportation System, as fixed in the agreement with the Director General of Railroads. (e) Represents the approximate amount due from United States Government, under its guaranty, for six months ended August 31, 1920. (f) This year's figures include \$121,432.25 and last year's figures \$414,843.46 representing investment organization. (g) This year's figures include \$7,739.05 and last year's figures \$37,836.85 representing expenses prior to January 1, 1918. (h) Includes \$334.00 representing dividends on stocks of Proprietary Companies held by the Public.

revenue increased \$42,612,532 or 18%. These results were adversely affected by a protracted strike of longshoremen, coastwise steamship line extending from March until August (in which the demands of the strikers were successfully resisted) and an increasing diversion of trans-continental tonnage to the Panama Canal during the latter part of the year. On the other hand, increased freight and passenger rates were authorized by the Interstate Commerce Commission to become effective August 26, 1920, the benefits of which accrued during the last four months of the year except that some of the states denied corresponding increases on intrastate traffic which (upon appeal to the Interstate Commerce Commission) with unimportant exceptions, have been more recently authorized.

The increase of \$53,728,617.71, or 28.52%, in railway operating expenses was largely due to higher wage schedules effective May 1, 1920, established by the United States Railroad Labor Board, to the national labor agreement, and to the expense of moving 7.28% heavier passenger traffic and 9.90% heavier freight traffic than in previous year, the traffic volume of 1920 having been the greatest in the Company's history.

Maintenance of Way and Structures increased \$13,571,307.95, or 38.89%. Materials used in maintenance included \$276 miles of new steel rail; 4,887,913 ties, equal to 1,704.89 miles of continuous track, and 3,316,915, or 578.46 miles of tie plates.

Maintenance of Equipment increased \$11,536,939.05, or 24.03%, the greater equipment mileage incident to heavier traffic necessitating more maintenance expenditures at higher prices for labor and material. Your Company shares with other railroads the disastrous effect of under-maintenance of freight cars during Federal control. These cars were used by the Railroad Administration regardless of ownership and were operated by parties who had no ownership interest in their proper maintenance, 87.5% of the Company's box cars being away from home when the roads were returned to private management. With the return of these cars to home lines in large numbers at the close of 1920 and in the early part of 1921, the great extent of their under-maintenance has become developed, and on June 1, 1921, with 80% of our cars on home lines, we find 16% of them are in bad order and require repairs, as compared with 4.6% out of service for repairs when the road went under Federal control at the end of the work of placing this equipment in better condition than was undertaken during the current year, at very heavy cost.

Traffic Expenses increased \$1,234,045.92, or 54.68%, due to the higher price conditions affecting all expenses and to the restoration of traffic agencies and bureaus of information for the convenience of the public and to regain traffic diverted from the Company's lines during Government control.

Transportation Expenses increased \$23,947,467.13, or 25.67%, incident to an increase of 10.72% in train mileage required to move the greater traffic of 1920 and to higher wages and increased cost of fuel and other materials incident to restoration of car and train service of which the public had been deprived during Federal control and to the lack of which they were unwilling to submit when no longer urged by patriotic motives, there was a slight decrease of 0.71% in average freight car load and of 3.89% in the average freight train freight but the passing train load increased 4.6%. The gross ton mileage moved per pound of fuel (oil equated to coal on basis of four barrels of oil to one ton of coal) shows a slight decrease in freight service and an increase in passenger service. Compared with 1919, the more efficient use of fuel in 1920 is equivalent to a saving of \$5,475,000 and for the seven years 1914 to 1920, inclusive, the saving amounts to \$18,669,000.

Miscellaneous operations increased \$1,377,769.53, or 32.56%, allocating to dining cars, hotels and restaurants, the increases being generally offset by increased revenue received from these sources. General expenses increased \$2,010,912.07, or 32.96%, due to increased charges for Federal valuation work, increased accounting requirements incident to Government control and guaranty periods, and higher wage scales.

Item No. 23, Equipment Rents, shows an increase of \$4,874,856.86. This increase allocates to rentals received in 1919, but not in 1920, for ocean steamships leased to the United States Government; to increased rental payments made to the Pacific Fruit Express Company, in which this Company has a half interest; and to the omission during Federal control of rentals for equipment interchanged between railroads.

The increase shown in Net Railway Operating Income (line 24) is due to the fact that during the year 1919, and for the months of January and February, 1920, your properties were operated by the U. S. Railroad Administration, under the Federal Control Act, and all operating revenues accrued, and all operating expenses were borne by the U. S. Government. For that period your Company received the standard return rental, shown on line 31, as fixed in the agreement with the Director General of Railroads. During the ten months, March 1 to December 31, 1920, the properties were operated by your Company, and the amounts reported in column "Year ended December 31, 1920" (lines 1 to 24), represent the operating revenues and operating expenses for those ten months. As the Government received the revenues and paid the expenses during 1919, with the exception of corporate expenses and what income there was, the figures shown as increased are increased.

The increase of \$10,573,078.17 in Railway Tax Accruals (line 20) is due to the fact that during the year 1919, and for the months of January and February, 1920, all taxes except war income taxes were assumed by the U. S. Railroad Administration, while subsequent to March 1, 1920, the date on which the Government relinquished control of your properties, all taxes were borne by the Company.

The decrease of \$5,050,954.82 in Miscellaneous Operating Income (line No. 29) is due to the fact that this year's figures include only two months of operations of the California Fuel Oil Department, the property having been sold to Southern Pacific Land Company on February 29, 1920. There is, however, an increase in dividend income of \$4,000,000 on account of dividends received from Southern Pacific Land Company.

The decrease of \$40,201,372.00 in Income from Lease of Road—Standard Return (line No. 31) is due to the fact that this year's figures include the standard return for the months of January and February only while the property was operated by the Government. This decrease is offset by the increase of \$20,416,249.07 in Net Railway Operating Income (line No. 24) and the increased amount of \$20,390,427.50 in Miscellaneous Income—U. S. Government Guaranty (line No. 30).

The increase of \$1,014,964.39 in Income from Unfunded Securities and Accounts (line No. 39) represents interest on U. S. Government Certificates of Indebtedness, bank acceptances, and increased bank deposits, resulting principally from the sale of about \$8,500,000 of Liberty Loan bonds in January, 1920, and the unapplied proceeds of the sale in June, 1920, of \$15,000,000 of Series "E," Equipment Trust Certificates.

The decrease of \$20,222.37 in Other Miscellaneous Income (line No. 42) is the result, principally, of a decrease in the credit for lap-over items of revenue prior to January 1, 1918, but not included in the decrease in such items, but also to the fact that since the end of Federal Control such items have been included in the appropriate operating revenue accounts instead of in Miscellaneous Income, in accordance with regulations of the Interstate Commerce Commission.

DEDUCTIONS FROM GROSS INCOME

The decrease of \$40,742.19 in Rent for Leased Roads (line No. 45) is the result, principally, of a payment made last year on account of rental for the year 1918.

The decrease of \$116,766.73 in Miscellaneous Rents (line No. 46) is the result, principally, of a decrease in the rental for pipe line for use of California Fuel Oil Department, the latter having been sold to Southern Pacific Land Company on February 29, 1920.

The increase of \$131,776.02 in Miscellaneous Tax Accruals (line No. 47) is the result, principally, of a general increase in the rate of taxation. Interest on Funded Debt—Bonds and Notes (line No. 48) shows a decrease for the year of \$167,632.93. The interest was increased \$707,221.67 by the issue this year of the \$15,000,000 of Seven Per Cent. Equipment Trust Certificates, Series "E," and of the \$2,814,000 of Six Per Cent. Equipment Trust obligations issued in payment for equipment assigned by the Director General of Railroads. It was decreased \$619,135.11 by the conversion of Southern Pacific Company Four and Five Per Cent. Twenty-year Convertible Bonds; \$126,095.36 by the retirement of bonds through sinking funds, etc.; and \$129,109.93 by the acquisition of bonds by Southern Pacific Company and Proprietary Companies.

The decrease of \$233,763.41 in Interest on Unfunded Debt (line No. 50) represents, principally, interest paid last year on funds borrowed for the purchase of Liberty Loan Bonds.

The decrease of \$122,903.13 in Amortization of Discount on Funded Debt (line No. 51) is the result, principally, of the conversion during the year of \$24,416,500 par value, of Five Per Cent. Twenty-year Convertible bonds into Common Stock, the unextinguished discount on such bonds having been charged to Profit and Loss.

The increase of \$289,443.88 in Other Miscellaneous Income Charges (line No. 53) is due to an adjustment made this year correcting an erroneous debit to Expense prior to January 1, 1918, made in December, 1918. The dividends paid during 1920 were appropriated from the profit and loss surplus, and therefore do not appear in the Income Account. They amount to \$18,209,596.82 for the year, an increase of \$731,137.70. The increase is due to the dividends on stock issued against Five Per Cent. Convertible bonds retired. The figures for this year include \$316,000, and those for last year \$334,000, representing dividends on stocks of Proprietary Companies held by the public.

On December 31, 1920, the principal of advances to the Southern Pacific Company of Mexico amounted to \$38,799,747.41. The interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to..... \$302,024,905.64

Common stock issued in exchange for a like amount of Five Per Cent. Twenty-year Convertible Gold Bonds surrendered and cancelled..... 24,416,500.00

Amount of Southern Pacific Company capital stock outstanding December 31, 1920..... \$326,441,405.64

There was no change during the year in the capital stocks of the Proprietary Companies. The amounts outstanding December 31, 1920, are as follows:  
Preferred stock..... \$29,400,000.00  
Common stock..... 317,432,400.00  
\$346,832,400.00

Capital stocks of Proprietary Companies outstanding December 31, 1920, were held as follows:

In hands of public..... \$75,600.00  
Owned by Southern Pacific Company..... \$346,456,800.00  
Owned by Morgan's Louisiana & Texas Railroad & Steamship Company..... 300,000.00  
\$462,056,800.00  
\$346,832,400.00

FUNDED DEBT

On June 1, 1920, to provide for the construction and acquisition of new rolling stock, an equipment trust, known as "Southern Pacific Equipment Trust, Series E," was created and an issue of \$15,000,000, par value, Seven Per Cent. Equipment Trust Certificates authorized, all of which were issued during the year. The certificates are dated June 1, 1920, and mature serially in lots of \$1,250,000 on June 1 of each year from 1924 to 1935, both inclusive. In accordance with the terms of the trust all of the certificates were guaranteed by the Southern Pacific Company.

The \$2,814,000 of Six Per Cent. Equipment Trust Notes to be issued in payment for the 1,000 box cars which the company was compelled to take over from the Director General, as explained in last year's report, were also issued during the year. As the purchase price of such equipment is finally determined upon only slightly exceeding the minimum purchase price, the difference was paid in cash, so that no further equipment notes are to be issued in connection with such equipment.

The funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1919, was as follows:

Southern Pacific Company..... \$167,608,760.00  
Proprietary Companies..... 444,479,901.73

Total outstanding December 31, 1919..... \$612,088,661.73  
Issued during the year..... \$15,000,000.00

Southern Pacific Company:  
Seven Per Cent. Equipment Trust Certificates, Series "E"..... \$15,000,000.00  
Six Per Cent. Temporary Equipment Trust Notes..... 2,814,000.00  
Gold Notes..... 17,814,000.00

Retired during the year:  
Southern Pacific Company:  
San Francisco Terminal First Mortgage Four Per Cent Bonds:  
Purchased from payments to sinking fund..... \$7,100,000.00  
Five Per Cent. Twenty-Year Convertible Gold Bonds:  
Retired in exchange for a like amount of common stock issued..... 24,416,500.00

BALANCE SHEET  
SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED  
ASSETS—DECEMBER 31, 1920, COMPARED WITH DECEMBER 31, 1919, EXCLUDING OFFSETTING ACCOUNTS

ASSETS	DECEMBER 31, 1920	DECEMBER 31, 1919	INCREASE	DECREASE
<b>INVESTMENTS</b>				
Investment in road and equipment.....	\$1,023,128,725.51	\$1,007,467,713.46	\$15,661,012.05	
Improvements on leased railway property.....	4,307,067.10	4,181,212.60	125,854.50	
Sinking funds.....	15,894,531.86	15,072,957.66	821,574.20	
Deposits in lieu of mortgaged property sold.....	14,406,620.76	954.00	14,405,666.67	
Miscellaneous physical property..... (a)	13,785,215.46	32,550,029.13	—	\$18,764,813.67
Investments in affiliated companies:				
Stocks.....	328,460,971.48	276,077,877.61	52,383,093.87	
Bonds.....	148,424,714.44	142,891,570.60	5,533,143.84	
Stocks } Cost inseparable.....	11,267,951.70	11,917,751.70	—	649,800.00
Bonds }.....	1,551,407.54	1,208,529.17	342,878.37	
Notes.....	107,281,536.58	107,990,144.96	—	708,608.38
Other investments:				
Stocks.....	156,710.29	156,710.29	—	
Bonds.....	9,021,311.91	15,649,902.44	—	6,628,590.53
Notes.....	2,032,491.77	2,328,227.78	—	295,736.01
Advances.....	294,019.97	381,240.98	—	87,221.01
Miscellaneous.....	2,295,565.08	2,115,678.98	179,886.10	
<b>Total</b> .....	<b>\$1,682,308,841.45</b>	<b>\$1,619,990,541.45</b>	<b>\$62,318,300.00</b>	
<b>CURRENT ASSETS</b>				
Cash.....	\$16,452,542.35	\$12,281,635.76	\$4,170,906.59	
Special deposits.....	224,116.25	37,875.78	186,242.42	
Loans and bills receivable.....	59,268.34	194,590.05	—	\$135,321.71
Traffic and car-service balances receivable.....	6,212,714.73	183,363.95	6,029,350.78	
Net balance receivable from agents and conductors.....	5,694,542.13	3,256,128.77	2,438,413.36	
Miscellaneous accounts receivable.....	17,169,403.64	(b) 1,555,151.07	15,614,252.57	
Material and supplies.....	40,263,359.08	2,230,709.00	38,032,650.08	
Interest and dividends receivable.....	2,269,418.00	1,221,141.82	1,048,276.18	
Rents receivable.....	1,163,745.30	237,226.95	926,518.35	57,396.52
Other current assets.....	481,779.82	—	481,779.82	
<b>Total</b> .....	<b>\$89,981,891.59</b>	<b>\$20,984,324.15</b>	<b>\$68,997,567.44</b>	
<b>ACCOUNTS WITH U. S. RAILROAD ADMINISTRATION</b>				
Standard return.....	\$104,532,608.09	\$96,489,320.06	\$8,043,288.03	
Less received on account.....	74,125,000.00	61,625,000.00	12,500,000.00	
<b>Total</b> .....	<b>\$30,407,608.09</b>	<b>\$34,864,320.06</b>	<b>—</b>	\$4,456,711.97
<b>U. S. GOVERNMENT</b>				
U. S. Government deficit in guaranty income..... (d)	\$20,490,427.50	—	—	\$20,490,427.50
<b>DEFERRED ASSETS</b>				
Working fund advances.....	\$193,392.66	\$43,008.18	\$150,384.48	
Insurance and other funds.....	16,360.00	—	16,360.00	
Other deferred assets.....	8,382,913.27	7,177,875.02	1,205,038.25	
<b>Total</b> .....	<b>\$8,592,665.93</b>	<b>\$7,237,243.20</b>	<b>\$1,355,422.73</b>	
<b>UNADJUSTED DEBITS</b>				
Rents and insurance premiums paid in advance.....	\$202,706.36	\$90,285.79	\$112,420.57	
Discount on capital stock.....	3,988,600.00	3,988,600.00	—	
Discount on funded debt.....	2,400,830.37	3,039,679.78	—	\$638,859.41
Other unadjusted debits.....	22,343,697.62	3,811,020.76	18,532,676.86	
Securities issued or assumed—Unpledged.....	5,985,175.00	5,924,675.00	60,500.00	
Securities issued or assumed—Pledged..... (e)	156,300.00	156,500.00	—	
<b>Total</b> .....	<b>\$28,935,824.35</b>	<b>\$10,699,586.33</b>	<b>\$18,236,238.02</b>	
<b>Total assets</b> .....	<b>\$1,933,291,368.70</b>	<b>\$1,764,947,577.43</b>	<b>\$168,343,791.27</b>	

(a) The value of the unused Central Pacific Railway Company and Oregon & California Railroad Company land grant lands is not included in the above statement of assets. (b) Represents material and supplies of California Fuel Oil Department. (c) See explanatory remarks regarding Guaranty Period Operations. (d) Excluded from total assets and a corresponding amount excluded from outstanding funded debt in accordance with regulations of the Interstate Commerce Commission.

Four and One-half Per Cent Equipment Trust Certificates: Series A, due March 1, 1920, paid off.....	\$1,012,000.00	
Series B, due September 1, 1920, paid off.....	201,000.00	
Series C, due December 1, 1920, paid off.....	117,000.00	
Series D, due May 1, 1920, paid off.....	511,000.00	
	<b>1,841,000.00</b>	
<b>CENTRAL PACIFIC RAILWAY COMPANY</b>	<b>\$26,264,600.00</b>	
First Refunding Mortgage Four Per Cent Bonds: Purchased from payments to sinking fund.....	\$34,500.00	
Three and One-half Per Cent Mortgage Gold Bonds: Purchased from proceeds of sale of lands.....	\$929,000.00	
Purchased from payments to sinking fund.....	30,000.00	959,000.00
		<b>993,500.00</b>
<b>OREGON &amp; CALIFORNIA RAILROAD COMPANY</b>		
First Mortgage Five Per Cent Bonds: Purchased from payments to sinking fund.....	70,000.00	
<b>SOUTH PACIFIC COAST RAILWAY COMPANY</b>		
First Mortgage Four Per Cent Bonds: Purchased from payments to sinking fund.....		238,000.00
<b>SOUTHERN PACIFIC RAILROAD COMPANY</b>		
First Refunding Mortgage Four Per Cent Gold Bonds: Purchased from payments to sinking fund.....		16,000.00
<b>TEXAS &amp; NEW ORLEANS RAILROAD COMPANY</b>		
Payment to State of Texas account of School Fund Debt.....		4,790.78
<b>Total retired during the year.....</b>		<b>27,586,890.78</b>
Amount of funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1920.....		<b>\$602,315,770.95</b>
The outstanding securities were held as follows:		
In hands of public.....		\$491,582,870.50
Owned by Southern Pacific Company.....		\$94,876,900.45
Owned by Proprietary Companies.....		2,125,000.00
Held in sinking funds of Proprietary Companies.....		13,731,000.00
<b>Total</b> .....		<b>\$602,315,770.95</b>

BALANCE SHEET

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED  
LIABILITIES—DECEMBER 31, 1920, COMPARED WITH DECEMBER 31, 1919, EXCLUDING OFFSETTING ACCOUNTS

LIABILITIES	DECEMBER 31, 1920	DECEMBER 31, 1919	INCREASE	DECREASE
<b>STOCK</b>				
Capital stock of Southern Pacific Company	\$326,441,405.64	\$302,024,905.64	\$24,416,500.00	
Capital stock of Proprietary Companies (a)	346,832,400.00	346,832,400.00		
Total stock outstanding	\$673,273,805.64	\$648,857,305.64	\$24,416,500.00	
Premium on capital stock of Southern Pacific Company	\$6,304,440.00	\$6,304,440.00		
Total	\$679,578,245.64	\$655,161,745.64	\$24,416,500.00	
<b>LONG TERM DEBT</b>				
Funded debt unamortized:				
Book liability	\$608,457,445.95	\$618,169,836.73		\$9,712,390.78
Less held by or for companies	6,141,675.00	6,081,175.00	\$60,500.00	
Actually outstanding:				
Southern Pacific Company	\$159,158,160.00	\$167,608,760.00		\$8,450,600.00
Proprietary Companies (a)	443,157,610.95	444,479,901.73		1,322,290.78
Total funded debt	\$602,315,770.95	\$612,088,661.73		\$9,772,890.78
Nonnegotiable debt to affiliated companies:				
Open accounts	47,792,526.82	5,482,434.97	\$42,310,091.85	
Total	\$650,108,297.77	\$617,571,096.70	\$32,537,201.07	
<b>CURRENT LIABILITIES</b>				
Loans and bills payable	\$5,000,000.00		\$5,000,000.00	
Traffic and car-service balances payable	10,112,285.10	\$82,354.41	10,029,930.69	
Audited accounts and wages payable	28,517,473.11	1,134,611.16	27,382,861.95	
Miscellaneous accounts payable	3,395,273.09	1,654,735.02	1,740,538.07	
Interest matured unpaid	4,554,099.33	5,030,633.14		\$476,623.81
Dividends matured unpaid	4,683,119.58	4,622,115.76	61,003.82	
Funded debt matured unpaid	29,213,923.92	62,213.92		33,000.00
Unmatured interest accrued	4,979,378.44	4,813,872.14	165,506.30	
Unmatured rents accrued	294,176.59	288,393.77	5,782.82	
Other current liabilities	898,064.18	51,492.17	846,572.01	
Total	\$62,462,993.34	\$17,740,421.49	\$44,722,571.85	
<b>ACCOUNTS WITH U. S. RAILROAD ADMINISTRATION</b>				
Advances for additions and betterments	\$25,463,867.72	\$24,592,835.48	\$871,032.24	
Advances for expenses prior to January 1, 1918, and other corporate liabilities paid, etc.	51,166,637.10	47,811,802.81	3,354,834.29	
Agents' and conductors' balances February 29, 1920	594,037.01		594,037.01	
Federal material and supplies February 29, 1920	24,061,913.39		24,061,913.39	
Total	\$101,286,455.22	\$72,404,638.29	\$28,881,816.93	
<b>DEFERRED LIABILITIES</b>				
Other deferred liabilities	\$208,864.09	\$53,476.61	\$155,387.48	
<b>UNADJUSTED CREDITS</b>				
Tax liability	\$1,878,273.38	\$4,166,294.49		\$2,288,021.11
Insurance and casualty reserves	3,182,874.69	3,309,723.29		126,918.60
Operating reserves	4,342,531.64		\$4,342,531.64	
Accrued depreciation—Road	1,489,080.76	1,322,017.17	167,063.59	
Accrued depreciation—Equipment	54,583,951.21	51,348,247.38	3,235,703.83	
Accrued depreciation—Miscellaneous physical property		8,541,207.84		8,541,207.84
Other unadjusted credits (c)	86,553,083.02	58,439,936.81	28,113,146.21	
Total	\$152,029,444.70	\$127,127,426.98	\$24,902,017.72	
<b>CORPORATE SURPLUS</b>				
Additions to property through income and surplus	\$1,575,921.21	\$1,404,504.31	\$171,416.93	
Funded debt retired through income and surplus	23,333,510.55	22,302,877.20	1,030,633.35	
Sinking fund reserves	11,602,665.84	11,177,795.69	424,870.15	
Appropriated surplus not specifically invested	3,818,177.83	3,818,177.83		
Total appropriated surplus	\$40,330,275.46	\$38,703,356.03	\$1,626,920.43	
Profit and loss—Balance	247,286,791.48	236,185,415.69	11,101,375.79	
Total corporate surplus	\$287,617,066.94	\$274,888,771.72	\$12,728,295.22	
Total liabilities	\$1,933,291,369.70	\$1,764,947,577.43	\$168,343,792.27	

(a) The outstanding capital stock and funded debt include capital stocks and funded debt of Proprietary Companies of the par value of \$346,756,500 and \$110,732,900.45, respectively, a total of \$457,489,700.45, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown above. Of the said amount, stocks of the par value of \$249,653,161, which stand charged on the books at \$232,932,667.41, are pledged against the issue of Southern Pacific Company stock and bonds. (b) Represents accrued depreciation on electric power plants and substations, general office building at San Francisco, wood preserving works, Sacramento rolling mill, oil storage plants, grain elevators, and similar facilities. (c) Represents, principally, interest on construction advances which have not been repaid.

ADDITIONAL ROLLING STOCK AND FLOATING EQUIPMENT

As indicated in last year's report, the following rolling stock, ordered to provide for increased requirements and to replace vacated equipment, was included in Southern Pacific Equipment Trust, Series E, created June 1, 1920:

- 72 locomotives
- 4,815 freight-train cars
- 50 passenger-train cars
- 140 electric cars

The total estimated purchase price of such equipment is \$22,500,000. Of this amount the sum of \$15,000,000 has been provided by the equipment trust certificates issued under the above-named trust, and the remaining \$7,500,000 will be provided out of the general funds of the company. A part of such equipment has been placed in service, and it is expected that the remainder will be delivered and placed in service during the calendar year 1921.

In addition to the above equipment there were delivered by outside buyers or completed at company's shops during the year 3 locomotives, 16 passenger-train cars, 251 freight-train cars, and 4 electric cars, the total cost of which was \$971,000.

Of the four steamships mentioned in last year's report, the freighter El Estero was placed in service November 24, 1920; the freighter El Isleo, January 20, 1921; and the freighter El Lazo, March 14, 1921. It is expected that the tank steamer Tamiahua will be completed and delivered during the latter part of 1921. The contract price of these four steamers is \$7,430,000.

THE SUIT INVOLVING THE RIGHT OF THE SOUTHERN PACIFIC COMPANY TO OWN THE STOCK OF THE CENTRAL PACIFIC RAILWAY COMPANY

In last year's report (page 22) it was stated that this case was pending before the Supreme Court of the United States on an appeal by the Government from a decision against it in the lower Court, and that it was expected that the case would be argued and submitted at the October Term, 1920. The case came up for hearing in the Supreme Court on April 17, 1921; and, after full oral argument, was submitted on April 19th and taken under advisement by the Court. An early decision is expected.

CONTROVERSY ARISING OUT OF THE OREGON & CALIFORNIA RAILROAD'S LAND GRANT

This is an accounting suit brought in 1917 by the United States seeking to offset against the compensation of \$2.50 per acre, due the Company if the unsold lands, moneys received by the Company, in excess of \$2.50 per acre, by reason of past sales, leases, and otherwise, as well as taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. This case is ready for trial and will probably be heard and decided in the United States District Court of Oregon some time during 1921.

SEPARATION OF CALIFORNIA OIL PROPERTIES—  
INCLUDING STOCKHOLDING IN ASSOCIATED OIL COMPANY—  
FROM RAILROAD PROPERTIES

At a meeting held December 1, 1920, your board of directors adopted the following plan for the separation of the California oil properties—including the stockholding in the Associated Oil Company—from the railroad properties.

A new company, known as the Pacific Oil Company, was organized under the laws of the State of Delaware with a capital stock of 3,300,000 shares of no par value, and the Southern Pacific Company subscribed for the entire capital stock at \$1.50 per share. Of the \$52,500,000 so realized the new company retained \$8,750,000 as working capital and expended the remainder, \$43,750,000, in purchasing from the Southern Pacific Land Company (the entire capital stock of which is owned by the Southern Pacific Company)—

- (a) About 259,000 acres of land owned by the Southern Pacific Land Company, situate in the State of California, of which about 25,000 acres are proven oil lands and the remainder lands heretofore withdrawn from sale as possible oil lands, together with existing field improvements and materials and supplies.
- (b) 200,590 shares, par value \$20,069,000, representing 50.48% of the outstanding capital stock of the Associated Oil Company.

Holders of the capital stock of the Southern Pacific Company registered as such on the books of the company at the close of business on January 14, 1921, were given the right to purchase at Fifteen Dollars (\$15.00) per share, payment to be made in full on or before March 1, 1921, one share of stock of the new company for each share of Southern Pacific Company stock so held.

The capital stock of the new company was fixed at 3,500,000 shares, to correspond as nearly as possible to the total number of shares of Southern Pacific Company stock outstanding together with the number of shares reserved for conversion of the company's 5% convertible bonds. Holders of \$38,329,500 of these bonds subsequently exchanged their bonds for Southern Pacific Company stock so that as of January 14, 1921, there were 3,443,809 shares of Southern Pacific Company stock outstanding.

Southern Pacific Company stockholders, or their assigns, purchased an aggregate of 3,414,604 shares of Pacific Oil Company stock, thus leaving in the company's treasury at this date 85,396 shares of such stock, which will be held subject to such disposition as your board of directors may determine.

LOS ANGELES UNION TERMINAL COMPANY

The Southern Pacific Company has acquired the entire capital stock, \$3,250,000 par value, of the Los Angeles Union Terminal Co. in exchange for value of lands transferred to the Terminal Company and a part of the construction costs incurred. This enterprise occupies nineteen acres of land at Seventh Street and Central Avenue, being in the heart of the newer wholesale district, and at the intersection of the principal east and west retail street of the city and the lines of your company. The major part of the wholesale produce and fruit business of the city is carried on at this terminal, and in addition a number of important manufacturing and jobbing firms have their plants established there. Two six-story reinforced concrete buildings, with basements, having a rentable floor area of 846,906 square feet, or 19.5 acres, have been erected, and a third is under construction. The market section is of two-story concrete buildings, supplied in part with basements and with a rentable floor area of 405,352 square feet, or 9.3 acres. The completed buildings are at this time 98.8 per cent. rented. The terminal company is served exclusively by the Southern Pacific Company and its subsidiary the Pacific Electric Railway Company, the latter under agreement doing all the switching for both companies. The enterprise is productive of a very large freight traffic for your company.

LOS ANGELES PUBLIC MARKET COMPANY

Your company has also acquired substantially all the stock of the Los Angeles Public Market Company owning fifteen and one-half acres of land at Sixth and Alameda Streets, one block from the site of the Los Angeles Union Terminal Company.

This property, formerly the site of the Los Angeles Produce Market until the produce business grew out its facilities, it is planned eventually to use for railway purposes.

At this time the buildings thereon are rented to 85% of capacity, the tenants including overflow from produce section of the Los Angeles Union Terminal Co., the terms of occupancy being such as to permit without delay the use of the property for railway purposes when needed.

PROPERTIES AND MILEAGE

The transportation lines of the Southern Pacific Company, and of certain affiliated companies herein referred to as "Proprietary Companies," constituting the Southern Pacific Transportation System, operated at December 31, 1920, were as follows:

In addition to the 11,209.07 miles above tabulated, the Southern Pacific

Divisions	First Main Track	Additional Main Track	Sidings	Ferries	Water Lines
<b>A—MILEAGE OF LINES OPERATED BY SOUTHERN PACIFIC COMPANY:</b>					
1. Owned by Southern Pacific Company:					
Rail lines.....	547.72	15.88	213.22	—	4,400.00
Water lines.....	—	—	—	—	—
2. Leased from Proprietary companies:					
(a) Central Pacific Railway.....	2,288.97	253.43	944.47	9.90	125.00
(b) Oregon & California Railroad.....	701.50	4.60	186.95	—	—
(c) Southern Pacific Railroad.....	3,491.07	207.83	1,525.49	3.00	—
(d) South Pacific Coast Railway.....	105.14	20.46	49.12	3.00	—
<b>B—MILEAGE OF LINES OPERATED BY THE FOLLOWING PROPRIETARY COMPANIES:</b>					
1. Arizona Eastern R. R. Co.....	382.66	—	82.52	—	—
2. Houston & Texas Central R. R. Co.....	932.82	14.56	274.34	—	—
3. Galveston, Harrisburg & San Antonio Ry. Co.....	1,380.03	45.25	438.44	—	—
4. Texas & New Orleans R. R. Co.....	475.54	11.83	218.88	—	—
5. Houston East & West Texas Ry. Co.....	191.60	.89	63.22	—	—
6. Houston & Shreveport R. R. Co.....	40.74	.69	6.94	—	—
7. Morgan's Louisiana & Texas R. R. & S. S. Co.....	400.67	58.35	250.74	3.00	—
8. Louisiana Western R. R. Co.....	207.74	—	87.72	—	—
9. Lake Charles & West Texas R. R. Co.....	2.26	—	1.20	—	—
10. Iberia & Vermilion R. R. Co.....	21.44	—	11.21	—	—
11. Southern Pacific Terminal Co.....	—	—	25.05	—	—
Total.....	11,240.30	633.77	4,392.81	18.90	4,525.00
Less mileage used in connection with property of two or more of above companies and included in mileage of each.....	31.23	29.99	69.07	—	—
Total miles of road operated at December 31, 1920.....	*11,209.07	603.78	4,323.74	18.90	4,525.00
Total miles of road operated at December 31, 1919.....	11,089.68	771.60	4,249.00	18.90	4,525.00
Increase.....	119.39	—	74.74	—	—
Decrease.....	—	167.82	—	—	—
Average miles of road operated during year 1920.....	11,151.60	618.93	—	—	—

\*Includes 11.05 miles owned jointly with other companies, 4.37 miles leased from other companies, and 160.63 miles operated under trackage rights, and excludes 41.34 miles of owned lines leased to other companies.

The carrying out of this plan has completely divorced the California oil properties from the railroad properties.

SOUTHERN PACIFIC RAILROAD COMPANY OF MEXICO

The value of the property damaged or destroyed from the beginning of the Madero revolution in 1910 down to December 31, 1920 (including that damaged or destroyed during the revolution against Carranza) now amounts to 5,421,326 pesos, equivalent to \$2,710,663. While the company has been unable to make any collections this year on account of these depreciation claims, the claims were checked during October, November and December, 1920, by representatives of the Government in connection with representatives of the Company and no serious objections were raised to the claims as originally filed. The Company has claims against the Mexican Government aggregating 15,935,586 pesos, equivalent to \$7,967,793, representing amounts due for freight and passenger service performed, for rental of road and equipment, and for materials furnished to or confiscated by the various military authorities. About one-half of these latter claims have been filed with the department of the Government in the City of Mexico and are being filed as rapidly as the congested condition of the departments will permit. Since the inauguration of President Obregon on December 1, 1920, payments amounting to 128,680 pesos have been made on account of these latter claims, while additional claims amounting to 587,350 pesos have been approved for payment.

The Company has also filed claims aggregating 5,908,816 pesos equivalent to \$2,954,408, for the cost of restoring the Alamos and Tonichi Branches and the main line from Acaponeta to Tepic, the operation of which were compelled to abandon in the spring of 1913. These claims are, of course, subject to correction when these lines are restored and again placed in operation and the actual cost can be determined.

The average miles of road operated during the year was 1,001.47 miles, and only such maintenance work was carried on as was found necessary for the operation of trains over those portions of the line open for traffic.

Company solely controls through ownership of capital stock, 854.34 miles of Affiliated Companies and 1,240.52 miles of the Southern Pacific R. R. Co. of Mexico, and jointly controls (through ownership of capital stock in equal proportions) with the Atchison, Topeka & Santa Fe Ry. Co. 534.42 miles of the Southern Pacific Railroad and 59.66 miles of the Sunset Railway and with Messrs. John D. and A. B. Spreckels, 156.13 miles of the San Diego & Arizona Railway, A GRAND TOTAL of 14,054.16 MILES.

GENERAL

Dividends on the capital stock of your Company were declared during the year, payable as follows:

1/2 per cent. paid April 1, 1920.....	\$4,531,054.93
1/2 per cent. paid July 1, 1920.....	4,531,303.17
1/2 per cent. paid October 1, 1920.....	4,531,311.08
1/2 per cent. payable January 3, 1921.....	4,615,611.64

Total.....\$18,209,280.82

On May 15, 1920, the Southern Pacific Equipment Company was organized under the laws of California, for the purpose of constructing and acquiring equipment for Southern Pacific Company and its affiliated companies. All the outstanding capital stock of the new company is owned by Southern Pacific Company. Of the new equipment mentioned on page 20 the Southern Pacific Equipment Company is building 30 locomotives, 2,000 box cars, 1,000 stock cars, 1,000 flat cars, and 65 caboose cars. It is also building 1,000 of the 4,000 new refrigerator cars included in the Pacific Fruit Express Equipment Trust mentioned in last year's report.

Under the pension system put into effect January 1, 1903, there were carried on the pension rolls at the end of the year 1,022 employees. The payments to pensioners for the year amounted to \$465,566.62.

By order of the Board of Directors,  
**JULIUS KRUTTSCHNITT,**  
 Chairman of the Executive Committee.

(Continued from page 42)

day at 97½ and accrued interest, to yield about 6.80 per cent, and was twice oversubscribed by midday.

The bonds are not redeemable before maturity and are secured by the deposit as collateral of \$8,225,000 face value Illinois Central refunding mortgage 4 per cent gold bonds, due 1955, and \$3,820,000 face value Illinois Central and Chicago, St. Louis & New Orleans Railroad joint refunding mortgage 5 per cent bonds, due 1963. The issuance of the bonds is subject to the approval of the Interstate Commerce Commission.

**MINNEAPOLIS & ST. LOUIS.—Loan for Equipment Approved.**—The Interstate Commerce Commission has approved a loan of \$386,150 to this company to be used in the purchase of 15 freight locomotives at \$64,365 each through the National Railway Service Corporation. The company had asked for a loan of \$4,398,500. Commissioner Daniels wrote a dissenting opinion similar to that in the case of the Chicago, Rock Island & Pacific above noted.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Authorized to Issue Equipment Notes.**—This company has been authorized by the Interstate Commerce Commission to issue and sell \$2,400,000 of equipment notes.

**NEW YORK, NEW HAVEN & HARTFORD.—Application for a Loan.**—This company has applied to the Interstate Commerce Commission for a loan of \$8,000,000 for 15 years from the revolving fund to reimburse the treasury for payments to retire maturities and to provide for additions and betterments amounting to \$1,401,000.

**ORANGEBURG.—Authorized to Abandon Line.**—This company has been authorized by the Interstate Commerce Commission to abandon its line between Orangeburg and North, S. C., a distance of 17.7 miles.

**READING COMPANY.—Annual Report.**—The annual report for the year ended December 31, 1920, of this company, which is the holding company for the Philadelphia & Reading Railway, the Philadelphia & Reading Coal & Iron Company, etc., shows the following income account as compared with the calendar year 1919:

	1920	1919
Receipts:		
Interest and dividend receipts.....	\$11,942,639	\$11,600,508
Rent of equipment.....	3,773,830	3,772,605
Rent of Delaware River wharves and other property.....	349,864	374,520
	\$16,066,333	\$15,747,633
Expenses:		
Contingent.....	125,988	98,905
	\$15,940,345	\$15,648,728
Deductions from income:		
Interest on funded debt.....	\$3,756,510	\$3,759,930
Interest on unfunded debt.....	192,475	278,834
Interest on Reading Company—Jersey Central Collateral Bonds.....	920,000	920,000
Interest on Wilmington & Northern R. R. stock.....	51,800	51,800
Interest on real estate bonds.....	76,184	76,113
Rental of leased equipment.....	442,125	482,625
Taxes.....	779,508	708,125
	\$6,218,602	\$6,277,427
Surplus.....	\$9,721,743	\$9,371,302

**SALT LAKE & UTAH.—Loan Approved.**—The Interstate Commerce Commission has approved a loan to this company of \$700,000 from the revolving fund to provide for additions and betterments and to meet maturing indebtedness.

**SAN DIEGO & ARIZONA.—Asks Authority to Guarantee Trust Certificates.**—This company has applied to the Interstate Commerce Commission for authority to guarantee an issue of \$750,000 of equipment trust certificates signed by the Anglo-California Trust Company.

**SAN DIEGO & ARIZONA.—Asks Authority to Transfer Rolling Stock.**—This company has applied to the Railroad Commission of California for permission to transfer its rolling stock under an equipment trust agreement, and to deliver to the Anglo-California Trust Company of San Francisco, a mortgage on certain real estate in San Diego county.

**SOUTHERN PACIFIC.—Annual Report.**—The combined income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating income (March 1 to Dec. 31, 1920, inclusive):		
Operating revenues.....	\$240,381,492	.....
Operating expenses.....	207,186,859	.....
Net from railway operations.....	33,194,633	.....

Taxes.....	13,006,696	.....
Net railway operating income.....	16,524,941	.....
Total operating income.....	17,718,104	.....
Non-operating income:		
Income from lease of road—standard return	8,043,288	\$48,244,660
U. S. Government guaranty.....	20,490,428	57,458,020
Dividend income.....	5,251,324	1,182,039
Total non-operating income, including other.....	39,892,612	55,105,210
Gross income.....	56,610,716	112,823,320
Total deductions from gross income.....	23,540,441	25,909,413
Net income.....	32,070,275	31,548,607
Disposition of net income:		
Income applied to sinking and other reserve funds.....	1,053,945	1,022,864
Dividend appropriations.....	.....	17,478,459
Total appropriations.....	1,053,945	18,501,323
Balance to profit and loss.....	\$31,016,329	\$13,047,284

An abstract of the report appears on adjacent pages. The report will be reviewed editorially in an early issue.

**WHEELING & LAKE ERIE.—Loan for Equipment Approved.**—The Interstate Commerce Commission has approved a loan to this company of \$3,304,000 to be used in the purchase of 2,000 gondolas at \$2,650 each and 1,000 box cars at \$2,960 each through the National Railway Service Corporation. The company had applied for a larger loan. Commissioner Daniels wrote a dissenting opinion similar to that in the case of the Chicago, Rock Island & Pacific above noted.

**Settlements With Railroad Administration**

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts: Galveston Wharf Company, \$85,000; the Duluth Union Depot & Transfer Company, \$21,000; St. Joseph Belt, \$95,000; Chicago River & Indiana, \$45,000; Chicago Junction, \$380,000; Hudson & Manhattan, \$750,000. The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

**Guaranty Certificates Issued**

The Interstate Commerce Commission has issued certificates for partial payments on account of the six months' guaranty for 1920 as follows:

Chicago, Peoria & St. Louis.....	\$110,000
Denver & Rio Grande.....	937,500
Grand Canyon.....	900
Panhandle & Santa Fe.....	550,000
Rio Grande, El Paso & Santa Fe.....	40,000
Total payments of the Treasury Department under the provisions of the Transportation Act up to June 25 were as follows:	
(a) Under Section 204, for reimbursement of deficits during Federal Control.....	\$1,354,339.74
(b) Under Section 209:	
(1) To carriers to which final payment of the guaranty has been made under paragraph (e), including previous advances under paragraphs (b) and (3).....	1,690,114.71
(2) For advances under paragraphs (b) and (i) to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission.....	262,950,874.00
(c) Under Section 212:	
(1) For partial payments in respect to the guaranty provided in Section 209.....	156,874,190.05
(2) For partial payments in respect to the reimbursement for deficits during the period of federal control provided in Section 204.....	562,853.02
(d) Under Section 210, for loans from the revolving fund of \$300,000,000 therein provided.....	197,289,487.00
Total.....	\$620,721,858.52

These figures are exclusive of various settlements and payments on account made by the Railroad Administration.

**Dividends Declared**

Atchison, Topeka & Santa Fe.—Common, 1½ per cent, quarterly, payable September 1, to holders of record July 29.  
 Central of New Jersey.—2 per cent, quarterly, payable August 1, to holders of record July 30; special, 2 per cent, semi-annually, payable June 30, to holders of record June 27.  
 Elmira & Williamsport.—Preferred, 3.16, payable July 1, to holders of record June 20.  
 New London Northern.—2 per cent, quarterly, payable July 1, to holders of record June 16.  
 Norfolk & Western.—Common, 1½ per cent, quarterly, payable September 19, to holders of record August 31; preferred, 1 per cent, quarterly, payable August 19, to holders of record July 30.  
 Norwich & Worcester.—Preferred, 2 per cent, quarterly, payable July 1, to holders of record June 16.  
 Pennsylvania Company.—3 per cent, semi-annually, payable June 30, to holders of record June 22.  
 Rome & Clinton.—3 per cent, payable July 1, to holders of record June 22.  
 Western Pacific R. R. Corp.—Preferred, 1½ per cent, quarterly, payable July 1, to holders of record June 21.

## Railway Officers

### Financial, Legal and Accounting

**John C. Hume**, assistant claim agent of the International & Great Northern, with headquarters at San Antonio, Tex., whose promotion to general claim agent, with headquarters at Palestine, Tex., was announced in the *Railway Age* of June 3 (page 1301), was born at Union City, Ind., on April 23, 1878. He was educated in the public schools of San Antonio, Tex., and entered railway service on July 1, 1895, as a messenger in the service of the International & Great Northern at San Antonio. He has served this company continuously for 26 years. After serving in the local freight offices at San Antonio, he was transferred to the ticket office, where he served until 1904, when he was promoted to assistant claim agent, with the same headquarters. He was serving in this position at the time of his recent promotion, effective in May, following the death of J. S. O'Flynn.



J. C. Hume

**Herbert W. Johnson**, whose election as controller of the Chicago, Burlington & Quincy was announced in the *Railway Age* of June 10 (page 1378), was born at Chicago on November 24, 1879, and entered railroad service on May 1, 1898, in the office of the auditor of ticket accounts of the Burlington. His entire railroad career has been spent in the service of that company. On January 24, 1905, he was appointed traveling auditor, and three years later was made clerk in charge of a department in the office, of the auditor of freight accounts at Chicago. He was promoted to chief clerk of claims under the auditor of freight accounts on December 7, 1909, and in November of the following year was appointed assistant auditor of freight accounts. On November 1, 1913, he was appointed assistant auditor of expenditures, and four years later was promoted to auditor of expenditures. At the time of his recent election, Mr. Johnson was serving as assistant controller, with headquarters at Chicago, a position to which he had been promoted on March 1, 1920.



H. W. Johnson

### Operating

**D. E. Beatty**, roadmaster, of the Louisville & Nashville, with headquarters at Nashville, Tenn., has been promoted to superintendent of the Mobile and Montgomery division, with

headquarters at Montgomery, Ala., effective July 1, succeeding J. I. McKinney, retired.

**W. L. Barnes**, superintendent transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, who has been on leave of absence, permitting him to serve as executive manager, Car Service Division, American Railway Association, with headquarters at Washington, D. C., has returned to his former duties and has been appointed general superintendent transportation. **J. H. Aydelott**, acting superintendent transportation, with headquarters at Chicago, has been promoted to superintendent transportation, with the same headquarters, and the position of assistant superintendent transportation has been abolished. The appointments were effective July 1.

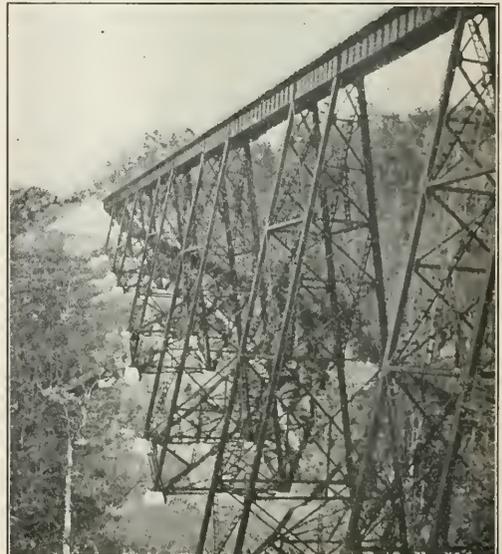
### Traffic

**Roy Pope** has been appointed general freight agent of the Americus & Atlantic with headquarters at Atlanta, Ga.

**Joseph N. Campbell**, whose appointment as general freight and passenger agent of the Louisiana Railway & Navigation, with headquarters at Shreveport, La., was announced in the *Railway Age* of June 3 (page 1301), was born at Pocahontas, Ark., on September 26, 1877, and was educated at Add-Ran University, Tex. For some time Mr. Campbell was engaged in Indian educational work, and as a newspaper man in Indian territory and Oklahoma territory. He entered railroad service on April 3, 1903, in the freight department of the Chicago, Rock Island & Pacific. A year later he took similar service with the Fort Worth & Denver City, and in 1905 took a position in the freight claim department of the Atchison, Topeka & Santa Fe, as chief clerk at Amarillo, Tex. Mr. Campbell entered the service of the Louisiana Railway & Navigation in February, 1906, as chief clerk in the freight claim department. At the time of his recent appointment, he was serving as freight claim agent to which he had been promoted in May, 1919.

THE FROG SHOP of the Lehigh Valley at Weatherby, Pa., is to resume operation on July 5 after a suspension of three months.

• • • •



An Example of Virginian Engineering—the Black Lick Viaduct, 207 Ft. High



## Contents

### Remedies for Wastes in Railway Operation . . . . . Page 59

An Unusual Article. Written by F. J. Lisman, of F. J. Lisman & Co., New York. Suggests That More Thorough and Intelligent Cost Keeping Methods Are Necessary. Presents Inquiry; Where Are the Greatest Leaks?

### New Freight Terminal Nearing Completion in Chicago . . . . . 65

Multiple Story Construction and Elevators Are Prominent Features of Chicago & Alton Project.

### Hearings Before Senate Committee Adjourned . . . . . 70

Committee Members Have Shown But Small Interest at Recent Meetings—Prospects for Little Railroad Legislation at This Session.

#### EDITORIALS

Foreign Cars on the D. & H. . . . .	51
Where Are the Greatest Leaks? . . . . .	51
A Conclusive Demonstration . . . . .	51
Is "Bigness" an Insurmountable Obstacle? . . . . .	51
Labor Unions Defy the Labor Board . . . . .	52
Running Weak Cars a Wasteful Practice . . . . .	52
Labor's Restriction of Production . . . . .	53
Illinois Central . . . . .	54
Southern Pacific . . . . .	55
Atlantic Coast Line . . . . .	57

#### GENERAL ARTICLES

Remedies for Wastes in Railway Operation; F. J. Lisman . . . . .	59
Grand Central Busiest New York Station . . . . .	63

#### GENERAL ARTICLES—Continued

Railroads in the Post War Readjustment; Atlee Pomeroy . . . . .	64
New Freight Terminal Nearing Completion in Chicago . . . . .	65
Labor Leaders Meet at Chicago to Determine Policy on Wage Reductions . . . . .	69
Hearings Before Senate Committee Adjourned . . . . .	70
Derailment of Passenger Train Ascribed to a Split Head Rail Failure . . . . .	72
The Delaware & Hudson's New Car Service Rules . . . . .	73
Illinois Central Makes Claim Prevention Appeal to Shippers . . . . .	75
Freight Car Loading . . . . .	76
Impact and Its Relation to Damage Claims; J. A. Pilcher . . . . .	77
Electrification of the Paulista Railway of Brazil; W. D. Bearce . . . . .	80
New Rules Replace National Agreement at Altona Works . . . . .	83

#### GENERAL NEWS DEPARTMENT . . . . . 84

Published every Saturday and daily eight times in June by the

Simmons-Bordman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building      CLEVELAND: 4300 Euclid Ave.      LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
PHILADELPHIA: 407 Bulletin Bldg.      Cable address: Ursignemc, London  
CINCINNATI: First National Bank Building      WASHINGTON: Home Life Bldg.      NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

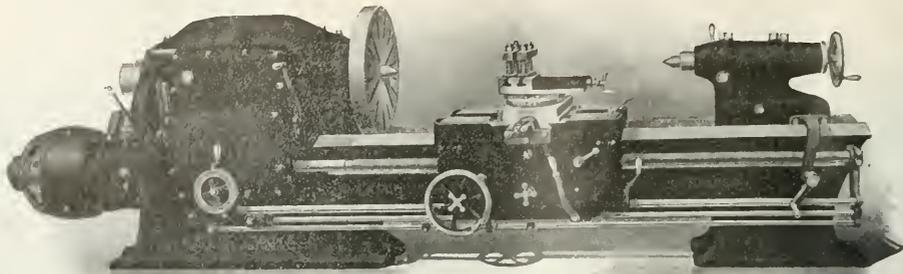
E. T. HILWSON	A. F. STUEBING	MILDURN MOORE
B. B. ADAMS	C. W. FISS	E. L. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. F. COLK
R. F. THAYER	ALFRED G. OEHLER	L. M. SANDWICK
C. B. PECK	F. W. KRAEGER	J. G. LYNE
W. S. LACHFR	HOLCOMBE PARKES	J. H. DUNN
J. G. LITTLE	C. N. WINTER	D. A. STEEL

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00. £2 0s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 9,000 copies were printed; that of these 9,000 copies, 8,088 were mailed to regular subscribers, 73 were provided for counter and news company sales, 279 were mailed to advertisers, 82 were mailed to employees and agents, 818 and 481 were provided for new subscriptions, 5 copies lost in the mail and office use; that the total copies for this year to date were 266,000, an average of 9,854 copies per issue.



Centralized controls speed production on the Ryerson-Conradson Railroad Lathe

## Speeding Up Locomotive Repairs

What is a locomotive hour worth? \$60 or \$100? Who knows?

Every hour saved in locomotive repair increases the time available for locomotive earning power.

In speeding up shop operation, the Ryerson-Conradson Railroad Lathe plays a vital part.

Convenient location of controls on the apron; impossibility of stripping gears in quick shifting and capacity for extra heavy work, all combine to give high production.

You need this modern lathe for high speed repairs.

*Bulletin 1301 gives more details.*

*Write for your copy.*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Delaware & Hudson rules for handling foreign freight cars, reprinted on another page, have justified themselves as

### Foreign Cars on the D. & H.

a means of economy, and they therefore deserve "preferred attention" at a time when everybody is paying particular attention to savings. Such a code—a code in which every word has an important meaning and yet which clerks are constantly tempted to read hurriedly—is, however, worthy of most careful study if only as one important element in making simple and easy the scores or hundreds of studies in routing which a large yard office may have to make every day. "Studies" is the proper word, though each study may take but a minute; for accuracy is of the first importance, and the country is now so big that the old time yardmaster who kept the whole freight route map of the United States in his head, is pretty nearly extinct. The Delaware & Hudson's combination home route card and empty-car waybill is a sensible device by which Mr. Roberts expects to save thousands of dollars yearly, as compared with the cost of providing separate forms for these two functions.

The peculiar situation of the New England carriers and the necessity for giving them adequate relief has caused F. J.

### Where Are the Greatest Leaks?

Lisman, the investment banker, to attempt to outline a method of getting at the exact cost of handling different commodities in order that there may be a fair division of earnings between the carriers. A situation of this kind naturally leads to a realization of the leaks and losses in railway operations. We are fortunate in being able to present elsewhere in this issue a frank discussion by Mr. Lisman of what, in his opinion, are the great wastes in railroad operation and how they may be remedied. It seems hardly necessary to remind our readers of Mr. Lisman's extensive experiences with railroad properties or to emphasize his fitness for making a study of this kind. He hits some things pretty hard—L. C. L. freight, for instance—and he also suggests a permanent remedy for labor trouble. That he questions the advisability of consolidating railroad properties beyond a reasonable point is clearly indicated in his comments on the elimination of competition. Incidentally, Mr. Lisman invites free and frank criticism of his suggestions and will be disappointed if our readers do not take advantage of this invitation.

Because of the many factors which enter into the consideration of some of the problems of railway operation, it is often difficult for the officer to develop any

### A Conclusive Demonstration

effective demonstration of the economies accruing from policies or improvements which he has initiated. So many independent variables are generally involved that it is hard to prove that they have not vitiated his calculations. Occasionally, however, the results obtained are so overwhelmingly conclusive that the influence of the other factors pale into insignificance and almost any reasonable allowance for any possible effect which they may

have still leaves a large saving to the credit of the improvement, policy or practice under consideration. As a case in point, a certain railroad in the west, in the face of a rapidly rising market, in 1917, bought a two-years' supply of boiler flues on the basis of the average consumption at that time. Since then only a very small number of flues have been bought to take care of certain special needs and yet today after four years, on the basis of the present consumption of flues, this road still has more than two-years' supply on hand. This remarkable reduction in flue consumption on this railroad must be ascribed almost entirely to one condition—the reorganization of the administration of locomotive water supply and treatment on this road at about the time that the flues were purchased in 1917. The case is particularly significant because the saving is not the result of any large capital expenditures. Instead it must be explained by the minute supervision which the water supplies have received under which each case has been solved as an independent engineering problem without any attempt to apply some favorite panacea. It is true that many water softening plants are in service on the road in question and that others will no doubt be installed from time to time, but the important fact is that the use and treatment of water is under the supervision of a staff that knows its business and has the confidence of the management.

The president of a large company performing a transportation service for the railways at an important terminal offered

### Is "Bigness" an Insuperable Obstacle?

as an explanation of the ability of his company to render this service to the roads at a cost less than that for which they could perform it themselves the fact that his officers had an intimate knowledge of every detail of these operations and exercised the closest supervision over them. As a result this company has been able to arrive at the actual cost of each step in these operations. With this information as a basis it has endeavored to reduce its costs in various ways. For example, from the figures which it has collected, it has been able to arrive at the normal amount of time required for various operations and to establish a wage bonus for special performance above this base, thereby stimulating the employee by giving opportunity to increase his earnings. That this has been beneficial is indicated by the fact that the bonus payments run into thousands of dollars weekly. By these same performance records the company can detect and eliminate the shirker, thereby raising the average efficiency. Of equal importance is the fact that the cost of each operation is known in detail on the following morning, thereby bringing unfavorable influences to the attention of the management immediately upon their appearance and affording an opportunity to correct or eliminate them. What this company has done for its own private interest in serving the railways, the railways should be able to do for themselves. One of the most serious handicaps under which the roads are laboring is that of ignorance of the cost of many of their operations. As a result too little attention is given by the average railway officer to unit costs and almost every road is performing many services which are costing more than they should if

data were presented promptly to the officers which they could use in detecting leaks and stopping them. It is said frequently that a railway is so large and its operations so complicated that it is not possible for data of this character to be compiled. If, in performing a transportation service for the railways, a private company finds that it is to its financial advantage to prepare information of this character, it would seem that the railways themselves should be able to so decentralize their accounting as to secure equally valuable results in the various branches of their operations.

## Labor Unions Defy the Labor Board

IT is evident the general public greatly misunderstands the situation with regard to the national agreements. Many newspapers continue to print statements to the effect that the abrogation of the agreements will save the railroads \$300,000,000 a year. The national agreements have not really been abrogated. They were to have gone out of existence on July 1, but they are still in full force and effect because the labor organizations have openly defied the Railroad Labor Board by completely disregarding the spirit and purpose of its decision in the national agreements case, in consequence of which the board has suspended its abrogation order.

These so-called national "agreements" as they exist today are not "agreements" in any sense whatever. They were made by the Railroad Administration with certain labor unions under government control. The railway companies had no part in making them. They never agreed to the rules incorporated in them and the Transportation Act plainly contemplated their abrogation on September 1, 1920. The Labor Board, however, ordered them continued until it could hold hearings and render a decision regarding it. The labor leaders put forth every effort to protract the hearings and get the objectionable rules and working conditions continued.

The Railroad Labor Board finally ordered the national agreements abrogated July 1 and, subject to certain principles it laid down, remanded negotiation of new rules and working conditions to the individual railways and their employees. Among the principles it recognized was that of the eight-hour day. This automatically rendered impossible probably one-half of the savings it had been estimated could be made by restoring the rules and working conditions of 1917. The decision of the board necessarily was a condemnation by it both of the rules and working conditions incorporated in the national agreements and of national rules and working conditions in themselves. The very essence of it was recognition of the principle that rules and working conditions should be made by the individual railways and their own employees in order that they might vary from road to road and thereby be adapted to local conditions.

The first thing the national labor leaders did after the board's decision was rendered was to order the chairmen of their committees on the individual railways to demand continuance practically unchanged of every rule in the national agreements. The local chairmen did this and stuck to it. Of course the railways could not individually accept the rules in the national agreements. This would have been to have left in effect all the rules which have caused the great inefficiency and enormous waste which have resulted from the national agreements. It would have prevented the adaptation of rules and working conditions to local situations and would have disregarded the decision of the Labor Board.

The open defiance of the Labor Board by the national labor leaders, aided and abetted by the local chairmen, has thrown the entire subject of rules and working conditions back into the hands of the board. In these circumstances there are several courses open to the board. It can attempt to write uniform rules and working conditions for all the railways of the United States. Doubtless it would eliminate

some of the more indefensible features of the national agreements. The result, however, would be the application of the same rules and working conditions to all the railroads of the country regardless of local conditions. The board might attempt to write separate rules for each railway. This would improve the existing situation very little indeed.

But neither the Labor Board nor any other body of men is competent to write rules for each individual railway. This would be practically an interminable process. No body of men can know enough about local conditions to do this.

Another course open to the board is to recognize the plain intent of the Transportation Act and proceed accordingly. The Transportation Act plainly intended that when the railways were returned to private operation they should be managed as individual units. It was to get away from policies adopted under government control in furtherance of nationalization of the railways that they were returned to private operation. Only by abandoning these policies could a return to private operation do any good. The most costly and indefensible policies adopted under government control were those for the standardization of wages and rules and working conditions. The Railroad Labor Board might carry out the plain purpose of the Transportation Act by restoring the rules and working conditions of 1917 with such specific exceptions as it may regard as fair and in the public interest.

So far as actual results are concerned, the labor leaders thus far have been completely victorious in the fight over national agreements. The Conference Committee of Managers of the railways presented to the board detailed evidence and concrete examples regarding the operation of the present rules sufficient to convince any fair and rational person of their iniquitousness and that they are imposing a heavy and indefensible burden upon the railroads and the public. This evidence convinced the board itself so completely that it ordered the national agreements abrogated. Nevertheless, the national agreements are still in effect and unless the board has the courage to act as the provisions of the Transportation Act and the logic of the situation dictate the labor leaders will so maneuver that they will be in effect for months to come.

Failure of the individual railways and their employees to reach agreements regarding the rules and working conditions is entirely due to the persistent pursuit by the labor leaders of a policy obviously intended to perpetuate the very rules and working conditions which the Labor Board by its decision has condemned. The situation demands prompt, intelligent and courageous action by the Labor Board. Only by such action can it vindicate the wisdom of Congress in creating it.

## Running Weak Cars a Wasteful Practice

FEW problems affecting railway operation and maintenance are completely encompassed within the bounds of a single department. It is unfortunate that in the solution of these problems the departments having primary jurisdiction often have little recourse except to settle them on the basis of only those factors which come within the scope of their own operations. An important aspect of the continued operation of cars of weak construction is the effect which these cars have in increasing loss and damage claims, in causing wrecks and accidents and in otherwise delaying traffic, all of which add materially to the operating expenses. But these considerations, being beyond the jurisdiction of car department officers, do not receive the weight which their importance deserves in the establishment of policies with respect to the retirement or rehabilitation of these cars.

The cost of renewals and maintenance are the only factors concerning which the car department officers can speak with

full authority. It is doubtful, however, if full consideration were given to these two factors alone whether these cars would long be continued in service. If adequate consideration were given to the reduction in the direct cost of maintenance which rehabilitation or replacement with new equipment would make possible, would not the cost of rehabilitation or retirement be found to be one of the most lucrative investments open to the railroads at the present time? An investigation made by one railroad a few years ago disclosed the fact that the retirement of a large number of cars of all-wood construction, and their replacement with new cars of steel or steel underframe construction, would effect a saving in maintenance alone which in five years it was estimated would amount to about 68 per cent of the entire cost of the new equipment. When adding the service value of the car days saved by the less frequent appearance of the equipment on the repair track and in the shop, the combined saving was estimated to be practically 80 per cent of the total cost of the new equipment. After taking into account the accrued depreciation on the retired cars, the total saving in maintenance cost and in car days for five years amounted to about 130 per cent of the additional capital required plus the interest, depreciation and renewal charges.

How many other investments offer a return which will not only pay the carrying charges but will more than retire the principal in a five-year period? A thorough study of the economics of freight car maintenance and operation today would lead to equally startling conclusions with respect to the 300,000 or 400,000 weak and unsuitable freight cars which are still in service.

## Labor's Restriction of Production

IT SEEMS NOT improbable the historian of the present age will treat as one of its most extraordinary phenomena the persistent efforts made by working men through labor unions to prevent improvement and cause deterioration of the living conditions of the working man and his family. To many persons this statement will sound paradoxical, but it refers to a policy of the labor unions, the inevitable tendency of which should be obvious to every person of intelligence.

The Railroad Labor Board ordered the national agreements abrogated effective on July 1, but has found it necessary to suspend its order. The labor leaders caused the rules and working conditions incorporated in the national agreements to be presented to each individual railway and insisted that they be accepted practically without modification. This made agreement between individual railways and their own employees impossible. Not only is this a defiance of the Labor Board, but it has afforded a striking illustration of the main policy being followed by many labor organizations—that of using every means available to restrict production.

The fundamental objection to practically all the bad rules in the national agreements is that they are intended to reduce, and have the effect of reducing, the efficiency of labor. Labor works with machinery and tools furnished by the employer. Rules, working conditions and practices which reduce the efficiency of labor reduce, or tend to reduce, the output of each worker and of the machinery and tools he uses. It follows that the railway labor unions are engaged in a struggle to reduce the amount of transportation service produced in proportion to the number of men employed and the amount of machinery and tools used.

The same thing is being done in almost every industry where labor is organized. The labor leaders seek to restrict the number of bricks laid by each man and thereby the number of houses built. They seek to restrict the amount of coal mined by each miner and thereby the amount of coal produced. They seek to restrict the number of shirts, suits of clothes and shoes made by each worker, and thereby the

total number of shirts, suits of clothes and pairs of shoes made.

It is easy to understand many things the labor unions do. It is easy to understand why they seek advances and oppose reductions in wages; the incomes of all classes of people are the subject of constant negotiation, and, other things being equal, the most aggressive and skillful negotiators get the largest incomes. It is easy to understand why labor unions for years have sought reductions in the hours of work. Sufficient leisure to rest, enjoy the society of one's family and friends, read and sleep is desired by every normal man. Probably without some kind of organization working men would not get reasonable hours of work and enough money wages to buy their share of the necessaries, comforts and luxuries of life, which constitute their true compensation for the work they do. But why does almost every labor union constantly try to restrict, even within the limits of a reasonable working day of eight hours, the amount of work men do, and in consequence the output of industry? Who lives in most of the houses built, eats most of the food produced, wears most of the clothing made, and directly or indirectly uses most of the transportation service rendered? Those who work with their hands. What are the effects of restriction of outputs? First, to restrict or reduce the amount of these things produced; second, to increase their cost and the prices that must be paid for them, thus necessarily and unavoidably restricting the amount of them which working people can get and pay for.

Obviously, it is just as easy for working people to get a fair division of a large product as of a small product. Obviously, if the total product of industry is restricted by inefficiency the amount of the total product labor will get will be smaller than the amount it would get if production were not restricted.

Nevertheless labor unions persist in their policy of restriction of output, and then complain loudly about the inevitable results of it. They restrict the construction of houses and apartment buildings in cities and complain because places to live are scarce and rents are high. They restrict the amount of work done by each railway employee, and then complain because railway operation is expensive and rates are high. They restrict the production of clothing and shoes, and then complain that they cannot buy more clothes and shoes because the prices are high.

In view of such rules and working conditions as the labor unions have got adopted on the railroads and in the building trades, and the still more unreasonable and restrictive rules they constantly seek, one wonders how long it would take labor organizations to destroy modern industrial civilization if there were not employers and leaders of public opinion with intelligence and courage enough to resist and combat them. Many of the labor leaders are men of intelligence and ability in certain respects. There are grafters and scoundrels among them, but a large majority are honorable men. Why, then, do a great majority of them advocate and persistently struggle for methods and principles which if logically carried out would reduce production in this and other progressive countries to an amount per capita no greater than it is in China and bring about the same condition of chronic starvation among working people here which prevails there?

There must be among the numerous labor leaders in this country at least a few who know that there never yet was a house lived in, or a pound of flour eaten, or a shirt worn which was not first produced, and that in the long run labor itself is the chief beneficiary of increased production and the chief sufferer from restriction of production. If there are such labor leaders we have not heard of them giving practical recognition to the fact mentioned by discouraging restriction and encouraging increase of production. The amount of time and energy devoted by labor leaders to attempts to reduce production is beyond intelligent comprehension.

## Illinois Central

THE *Railway Age* essays in the course of a year to analyze in its editorial columns the operations of some 50 odd railroad properties. In its reviews the attempt must be made to make them both informative and interesting. This particular part of the task, in so far as the last two or three years has been concerned, has not been as simple as might appear. It has been to a certain extent difficult to get away from a tendency towards monotony and equally as difficult to point out the differences which characterize one property as compared with another. Nearly every one of the country's railroads has been subjected to the same influences which have been so often referred to in these columns, namely, a great increase in gross earnings, a still greater increase in expenses and the resulting decline in net. The difference as between the roads in this respect has been one of degree rather than of kind and the problem has been to say the same thing in different ways and with different figures in a manner which will prove sufficiently distinctive and, as mentioned above, sufficiently informative and interesting.

In reviewing the operations of a railroad, it is extremely desirous, in fact necessary, to point out insofar as possible what lies ahead, in other words, to indicate if possible what the property may be expected to do in the future. This in itself is also difficult. So much depends upon the Interstate Commerce Commission, upon the Labor Board, upon Congress, upon the President and the administration, and upon the trend of business conditions in general that the future of the railroad seems in large measure to depend less upon what the property will do than upon what the agencies of the government and what industry may do. The railroad's problem is thus subordinated to the entire transportation problem in a degree much greater than has been the case in former periods of trial and stress.

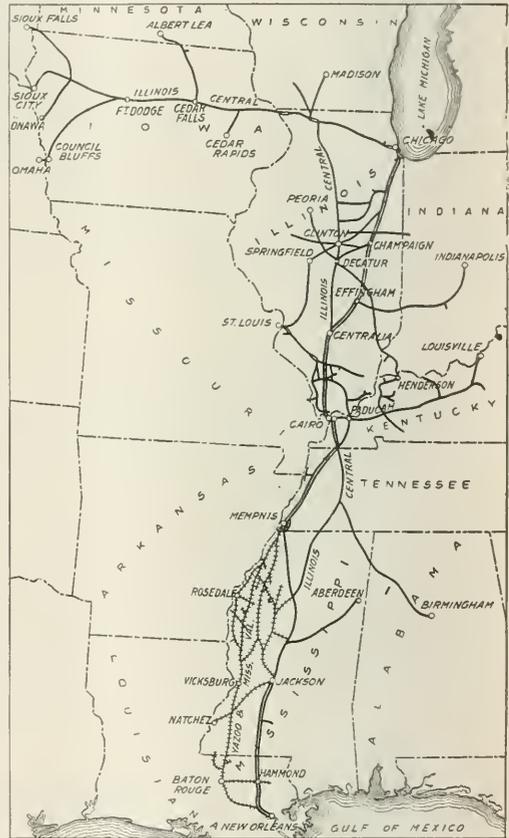
The question naturally arises as to what all this may have to do with the Illinois Central. In that road we have what appears to be somewhat of an exception, to an extent sufficient at least so that in its case one may safely attempt to look forward into the future with the realization that it is in rather a preferred position. Naturally, the fortunes of this property will rise or fall with those of the steam railway carriers in general, but such is the character of the property and of its management, that whatever progress may be made in the general situation will be reflected in special degree in its operations and earnings.

When one's mind turns to the subject of efficiently operated railroads, one of the first carriers that comes to mind is the Illinois Central. This is true not only of students of the railway problem, but of shippers, whose opinion, in these days of restored competitive service, is of equal or greater importance. The Illinois Central today is supplying a service the character of which is bettered by no other carriers and equalled by but few. On the one hand, it furnishes a highly satisfactory fast freight service which delivers traffic in Chicago 62 hours after it leaves New Orleans. On the other, because of efficient management combined with the fact that 45 per cent of its total tonnage is bituminous coal, it secures an average train load considerably in excess of the averages secured on the roads about it. Its suburban service out of Chicago ranks with the best in the country. There are few roads in the country so many of whose officers rank with the leaders in their various departments.

As in the case of certain of the other efficiently operated carriers, such as the Lackawanna, Burlington, etc., efficient operation on the part of the Illinois Central was not sufficient to enable it to overcome the handicaps of federal control and the high wage scales of government control and Decision No. 2 of the Railroad Labor Board. The road received a rental from the government of \$16,282,374 annually. In 1918 it earned for the government a net railway operating income

of \$12,907,466 and in 1919, \$4,191,796. In 1920, it was one of the few roads which increased its net over the 1919 figure, the net railway operating income according to the December monthly report to the Interstate Commerce Commission, being \$6,914,198. The claim against the government covering the guaranty period has been set at \$19,499,887. The Illinois Central, in short, was not a good money maker for the government for the federal control and guaranty periods.

At present the road is not carrying as much traffic as it carried in the first few months of last year. Because it is receiving higher rates on this traffic than it was in the same period of 1920 its gross earnings have been larger. Severe economies have cut down expenses so that in spite of the



The Illinois Central

falling off in traffic, the net railway operating income in the first four months of 1921 was \$6,766,895 as compared with \$4,867,033 for the period from January 1 to April 30, 1920.

The traffic carried by the Illinois Central in 1920 was the largest in its history. In 1920 it handled 49,233,079 tons of revenue freight, the total revenue ton-mileage being 13,724,232,886. The revenue tonnage carried in 1919 was 38,245,714; in 1918, the busiest year previous to 1920, it was 45,853,934 and the revenue ton-mileage, 12,441,047,707. The road secured an average haul on its traffic of 279 miles in 1920 as compared with 261 miles in 1919 and 271 miles in 1918.

There is little question but that one of the best indications of efficiency in operation is revenue train loading, not only as compared with the records secured by other roads handling a like traffic, but more particularly as compared with the road's own records for previous years. One of the features of the Illinois Central's operations has been the marked and steady increase in its train load over a period of years. In 1920 its average revenue train load was 660 tons and the increase since 1916 has been no less than 110 tons. The figures for the various years are as follows: 1916, 550 tons; 1917, 623 tons; 1918, 639 tons; 1919, 649 tons. A similar progressive increase in car loading is also evidenced. The average number of tons of all freight in each loaded car in 1920 was 30 tons. In 1916, it was 24 tons; in 1917, 27 tons; in 1918, 29 tons; in 1919, 27 tons. Another leading figure is that of net ton-miles per car day, which was in 1920, 805, an average exceeded by but few roads in the country. The car miles per day in 1920 were 40.9.

It is quite to be expected that the road will not be able to continue the increase in the various averages into 1921 with the sharp falling off in traffic which has taken place. However, 1921 will not be without its progress. During 1920 the road placed orders for 150 locomotives, some of which will be used presumably on the Yazoo & Mississippi Valley. These orders included 100 heavy 2-10-2 or Santa Fe type locomotives. With them the road should be able to make further marked progress in its efforts to secure increased train loading and increased operating efficiency. To take care of the new locomotives, roundhouse stalls were extended and 100 ft. turntables were put in at the engine terminals at Centralia, Ill., Clinton and Freeport and stalls were extended at Amboy and Paducah.

The Illinois Central was allocated 3,500 coal cars by the Railroad Administration. During 1920 it also placed orders for 1,000 refrigerator, 300 stock and 200 flat cars and for 55 passenger train cars. It should hardly be necessary to bring in any more facts to show in what excellent shape from the standpoint of equipment the Illinois Central should be in to handle efficiently the business which will be offered to it when the much hoped for revival in business takes place.

In conclusion, the Illinois Central during the period of federal control and during the guaranty period did not earn its standard return or its guaranty, respectively; in fact, came far from so doing. Its efficiency of operation was not enough to enable it to overcome the handicaps of high wage scales, the national agreements and other elements characteristic of the uncertain period which all railroad men hope is now nearing its close. However, the period has been characterized by no inconsiderable amount of progress, which remark is particularly true as applied to 1920. Like the Burlington, the Lackawanna and certain other roads which might be mentioned, the Illinois Central is prepared for the future. It is in a particularly good situation to take advantage of any revival of business that may develop and it will naturally be materially assisted by any improvements that take place in the railway situation as a whole.

The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	4,799	4,793
Freight revenue	\$101,360,641	\$71,477,112
Passenger revenue	26,630,148	23,936,298
Total operating revenue	145,547,858	107,886,835
Maintenance of way expenses	29,034,954	19,595,657
Maintenance of equipment	42,028,103	29,897,946
Traffic expenses	1,377,250	947,479
Transportation expenses	66,301,718	45,384,834
General expenses	3,469,692	3,044,555
Total operating expenses	143,208,180	99,262,712
Net revenue from operation	2,339,678	8,624,123
Taxes	7,613,102	6,057,868
Operating income	Def. 5,304,235	2,532,407
Net railway operating income	Def. 1,321,720	2,986,964

The corporate income account is as follows:

	1920	1919
United States Government—guaranty period claim	\$19,499,887	.....
Rental from United States Railroad Administration	3,399,635	\$17,896,467
Net from railway operations	18,522,085	16,691,635
Total non-operating income	7,219,882	7,634,005
Gross income	25,741,967	24,325,639
Total deductions from gross income	12,170,845	12,136,720
Net income	13,571,122	12,188,919
Income balance transferred to credit of profit and loss	13,434,841	11,880,619
Dividends (7 per cent)	7,650,720	7,650,720

## Southern Pacific

THE SOUTHERN PACIFIC system operates, exclusive of the lines in Mexico, 11,152 miles of railroad. The distinguishing feature of the Southern Pacific, however, is not so much its size—there are a number of railway systems in North America which rank with it—as it is what may aptly be termed its versatility. The company's lines extend from Portland, Ore., and from Ogden, Utah, to San Francisco, Calif., thence to Los Angeles, and from there eastward to El Paso, Tex., and New Orleans, La., combined with which the company operates steamship lines from Galveston, Tex., and New Orleans to New York.

The system traverses eight states and over half the width of the country. On the line from Ogden to San Francisco, at Summit, Calif., where it crosses the Sierra Nevada range, it reaches a height above sea level of 7,018 feet. At Salton, on the edge of the Salton Sea in southern California, the line is 264 feet below sea level. In eastern Texas and southern Louisiana the region is characterized by its heavy rainfall; in the Imperial Valley of southern California, there is no rainfall at all; in the one place the problem in bringing land under cultivation is most likely to be drainage, the other's extraordinary fertility can only be utilized by irrigation. Northeast of San Francisco the road maintains with greatest difficulty a line across the Suisun marshes; in other parts of California the difficulty confronting operation is moving sand hills.

There are extremely heavy grades on some parts of the system; no grades at all on others. In one place snow sheds are a necessity; in another the heat is so intense the year round that the station buildings and other structures require an additional roof for purposes of insulation. The system traverses at some places areas where there is practically no population; on the other hand, it operates out of San Francisco and Oakland, Calif., a ferry and multiple-unit electric suburban service which ranks with the busiest in the country. The system operates steamship lines, ordinary ferry boats and car ferries. Besides its through railway service, it operates out of Oakland, Calif., and Portland, Ore., extensive multiple-unit electric suburban services; it also has some street railway lines.

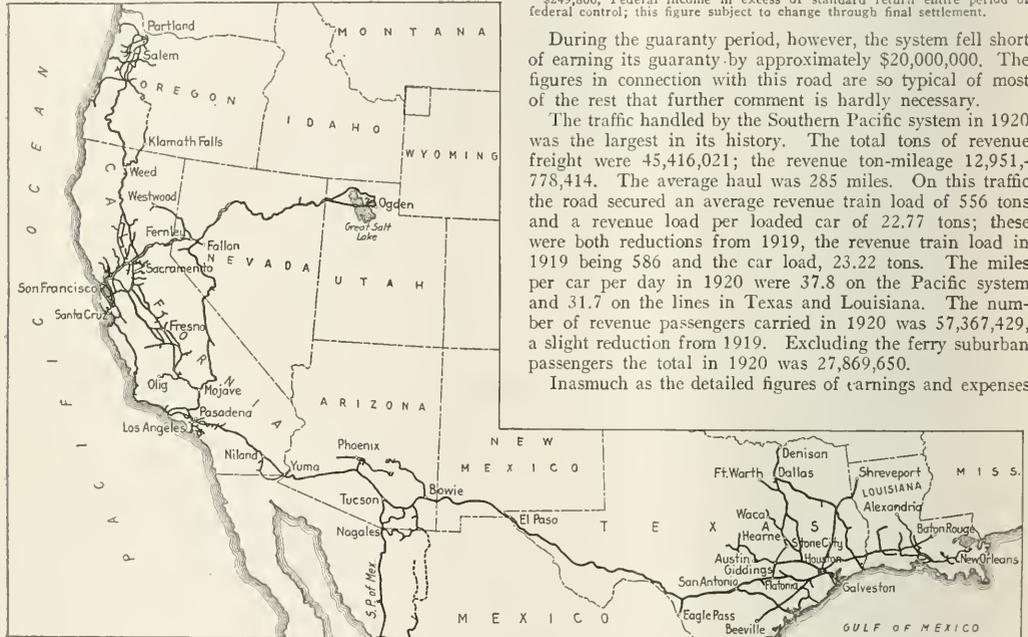
These various factors have more value than in that they are interesting. Not only do they indicate how extensive and varied are the operations of the Southern Pacific system, but they also give an idea as to the multitude of problems which have been offered for solution and an idea as to the manner in which the solution was brought about. Considering the conditions mentioned and bearing in mind the character of the territory served by its lines, it is natural that the Southern Pacific should have been characterized by continual growth and expansion. In the areas adjacent to Portland, Ore., San Francisco and Los Angeles, Calif., as likewise Houston and Galveston, Tex., and New Orleans, La., the company is serving regions of progress and prosperity. Because of its position and its extensive network of branch lines in these centers the traffic and traffic density of the company have increased in marked manner in recent years.

The Southern Pacific is still one of the carriers that is

deriving advantage from the law of increasing return. There is no indication that this expansion will not continue. Every portion of the country served by the lines of the Southern Pacific still has its future before it. This is evidenced in a number of ways, such as: (a) our increased ocean-going business across the Pacific; (b) the continued expansion of the deciduous fruit industry as assisted by the continuing progress in irrigation, of which the Imperial Valley project is an outstanding example; (c) the introduction and expansion of the growing of long staple cotton in the irrigated districts of Arizona and New Mexico, (d) the gradual expansion of manufacturing on the Pacific coast, of which the extensive plant of the Goodyear Company at Los Angeles is a leading project.

There is also the expectation that eventually trade relations may again be restored with Mexico. This will, natur-

ally, help the trade centers along the Mexican border, especially El Paso and likely Houston, and the carriers which serve them. As far as the eastern lines of the Southern Pacific are concerned, mention should also be made of the continued progress agriculturally of eastern Texas and Louisiana. Extensive fertile areas are gradually being added in this region by drainage and other methods.



The Southern Pacific

The Southern Pacific's traffic is as diversified as its operations are what we have termed versatile. In 1920, products of agriculture constituted 17.23 per cent of the total tonnage carried on the rail lines of the entire Southern Pacific system, exclusive of the lines in Mexico; products of animals furnished 2.49 per cent; products of mines, 31.35 per cent; products of forests, 20.31 per cent, and manufactures and miscellaneous 28.62 per cent. The tonnage of bituminous coal carried in 1920 was but 3.03 per cent, the reason for this small amount, being, of course, that the fuel used in Southern Pacific territory is oil.

The Southern Pacific, despite the great expansion in business which has taken place in the territory served by

Year	Federal income in excess of standard return	Standard return in excess of federal income
1918	\$7,757,935	
1919		\$4,334,355
January and February, 1920		3,173,714
\$249,866, Federal income in excess of standard return entire period of federal control; this figure subject to change through final settlement.		

in the past few years, did not prove much of a money maker for the government during the federal control and guaranty periods. Its greatly increased gross revenues were not sufficient to enable it to overcome the expanded costs of operation resulting from control by the government and further costs added by national agreements and higher wage scales. The standard return for the Southern Pacific properties, including both the Pacific system and the lines in Texas and Louisiana, was \$48,244,660. For the 26 months of federal control the system's net railway operating income exceeded the total standard return by the sum of \$249,866, the figures by years being as follows:

During the guaranty period, however, the system fell short of earning its guaranty by approximately \$20,000,000. The figures in connection with this road are so typical of most of the rest that further comment is hardly necessary.

The traffic handled by the Southern Pacific system in 1920 was the largest in its history. The total tons of revenue freight were 45,416,021; the revenue ton-mileage 12,951,778,414. The average haul was 285 miles. On this traffic the road secured an average revenue train load of 556 tons and a revenue load per loaded car of 22.77 tons; these were both reductions from 1919, the revenue train load in 1919 being 586 and the car load, 23.22 tons. The miles per car per day in 1920 were 37.8 on the Pacific system and 31.7 on the lines in Texas and Louisiana. The number of revenue passengers carried in 1920 was 57,367,429, a slight reduction from 1919. Excluding the ferry suburban passengers the total in 1920 was 27,869,650.

Inasmuch as the detailed figures of earnings and expenses

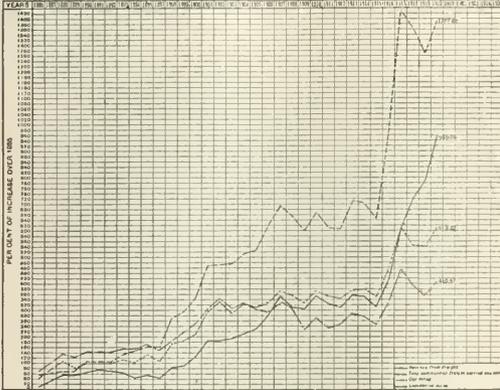
for 1920 and 1919 are given below and more particularly inasmuch as they follow what we have come to consider the usual trend, reference to them may be omitted. Attention should be drawn to the fact, however, that the Southern Pacific will this year be required to spend an unusual amount for maintenance of equipment. At the return of the railroads to private control on March 1, 1920, no less than 87.5 per cent of the company's box cars were away from home.

These cars have been returned to the Southern Pacific lines in bad condition, a typical factor which has already received considerable attention in these columns. On June 1, 1921, the company had 80 per cent of its cars on home lines, of which 16 per cent were in bad order. When the road went under federal control at the end of 1917, the percentage of bad order cars was 4.6 per cent.

It would take considerable space to detail the various projects looking to the improvement of the Southern Pacific's properties which were under way during 1920. They included additions to the shops at Sacramento, Calif.; im-

improvements at various engine terminals, notably the installation of 100-ft. turntables at various points; increased capacity at various water stations; new docks and wharves at Oakland, Calif., Wheeler, Ore., Algiers, La., etc.; replacing and strengthening of a considerable number of bridges, trestles and culverts; tunnel improvements at Tillamook Branch, Ore., Tunnel, Calif., Cisco to Lakeview, Calif.; Bakersfield, Calif., to Mojave, etc., and various other work of a miscellaneous character.

During the year there were put in track 524 track miles of 90-lb. rail. The total mileage of main line trackage (as distinguished from branches) of the Southern Pacific on December 31, 1920, was 6,472; of this total 4,343 was laid with 90-lb. rail. Of the total track mileage of 11,610,



Freight Service and Traffic on the Southern Pacific, Showing Per Cent of Increase Over 1885

(including branches) 4,786 had 90-lb. rail. Of the total of main line trackage of 6,472 a total of 3,885 or 62 per cent was automatic block signaled.

During the year the company placed large orders for new cars and locomotives both with its own shops and outside builders. These orders included 10 Mikado, 21 Pacific, 24 six-wheel switching, 15, 2-10-2 type and 2 electric locomotives.

A description of the Pacific and 2-10-2 type locomotives, with some details as to the service for which they are intended, was given in last week's issue of the *Railway Age*.

Freight car orders included 2,500 box, 500 automobile, 1,000 stock, 1,000 flat, 250 ballast and 65 caboose cars. Orders were also placed for a total of 100 passenger train cars. Reference should also be made to the 4,000 refrigerator cars received during 1920 by the Pacific Fruit Express, in which company the Southern Pacific has a half interest. It is rather evident that the Southern Pacific should be in a good position from the standpoint of equipment when deliveries on these several orders have taken place.

A noteworthy feature in connection with this equipment is that the system applied for a loan from the revolving fund to assist in financing its purchase. This application covering an amount of \$7,500,000 was denied by the Interstate Commerce Commission on the ground that the showing made in respect to the inability of the company to secure the funds from other sources was unconvincing. Whether that was the intention or not, the commission's decision may properly be regarded as a bit of a tribute to the system's financial standing.

The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	11,152	11,043
Freight revenue	\$183,416,323	\$163,011,669
Passenger revenue	71,701,637	59,371,140
Total operating revenue	282,269,504	239,657,272
Maintenance of way expenses	48,465,465	34,894,157
Maintenance of equipment	59,548,392	48,011,453
Traffic	3,490,707	2,256,661
Transportation	117,227,798	93,280,331
General	8,112,652	6,101,740
Total operating expenses	242,113,790	188,385,172
Net revenue from operation	40,155,714	51,272,100
Taxes	14,792,064	11,911,995
Railway operating income	25,363,650	39,360,104
Net railway operating income	21,312,344	39,677,168

The corporate income account is as follows:

	1920	1919
Total operating income	\$17,718,104	\$2,352,809
Income from lease of road—standard return (January and February, 1920)	8,043,288	48,244,660
U. S. Government guaranty (March 1 to August 31)	20,490,428	55,105,210
Total non-operating income	39,892,612	57,458,023
Gross income	57,610,716	57,458,023
Total deductions from gross income	25,340,441	25,909,413
Net income	32,270,275	31,548,610
*Dividend appropriations of income	32,070,275	17,478,459
Income balance to credit of profit and loss	31,016,329	13,047,284

\*The dividends paid during 1920, amounting to \$18,309,597, were appropriated from the profit and loss surplus, and therefore do not appear in the income account.

### Atlantic Coast Line

THE DISTINGUISHING FEATURE of the operations of the Atlantic Coast Line is probably indicated in no better way than by reference to the fact that of the 22,000 odd box cars owned by that road, no less than about 95 per cent are felt-lined ventilator cars. These cars are, of course, used for other purposes than for carrying commodities which require ventilator cars, but so important is the perishable-freight traffic that cars for it must be available on short



The Atlantic Coast Line

notice and in sufficient quantity. The Atlantic Coast Line is one of the largest, if not the largest, originators of perishable freight in the country. Its tonnage of fruits and vegetables in 1920 constituted but 5.66 per cent of the total tonnage; the revenue from perishable freight, however, made up 19 per cent of the total freight revenues, being exceeded only by products of forests which made up 20 per cent of the revenues. The Atlantic Coast Line originates no coal—bituminous coal in 1920 made up less than 7 per cent of the total revenue tonnage.

The Atlantic Coast Line is the most easterly of the important north to south lines in the southeast. It serves the

coastal plain which extends along the Atlantic seaboard and which includes Florida and the eastern portions of Georgia, the Carolinas and Virginia. This extended area is characterized by having some of the most fertile soil in the world. Its place in the agricultural development of the country bids fair to become of greater and greater importance as its potentialities are better realized and as the various existing low areas are gradually drained and brought into use. Because of the character of the region which the Atlantic Coast Line serves and more particularly because of the fact that it lies in a north and south direction, the road's traffic in perishables extends with fair regularity throughout the year. From November to May it handles the peak of the Florida traffic, notably in citrus fruits, celery, lettuce, tomatoes, etc. As the season advances, the road begins to receive traffic from the regions further north, the various vegetables being brought into the market in such a way as to fill out the year round.

This perishable traffic is difficult to handle; it requires fast schedules which must be adhered to so as to prevent undue damage claims. The problem of car supply is of special importance and the predominance of ventilator equipment shows how the road has succeeded in meeting it. Much of the traffic moves in refrigerator cars and there is a growing tendency in that direction. Some 60 per cent of the traffic in perishables moves to points in and east of the Buffalo-Pittsburgh zone; the remainder going to the west and southeast. It should not be understood that fruit and vegetables constitute all of the agricultural products carried. Cotton supplies a considerable tonnage. North Carolina in 1920 for the first time exceeded Kentucky from the standpoint of value of its tobacco sales; a large portion of this tobacco moves over the Coast Line.

The Atlantic Coast Line's standard return for the period of federal control was \$10,180,915. In 1918 it was one of the few carriers which earned more than its standard return, its net railway operating income for that year being \$11,626,128. In 1919 its net railway operating income was \$7,144,330; in 1920, \$3,908,649. So far this year, the road has not been doing as well as in the same period of last year. The net railway operating income for the first four months of 1921 was \$2,821,048; in the first four months of 1920 it was \$3,592,540.

In 1920 the road carried 17,324,916 tons of freight for a total of 3,290,282,723 ton-miles, increases of 8.62 and 4.86 per cent respectively, over the 1919 figures. The total freight revenues in 1920 were \$48,193,387 as compared with \$40,842,275 in 1919, an increase of 18 per cent. Total operating revenues were \$74,121,956, an increase of 16.62 per cent over 1919. As against this increase of 16.62 per cent in operating revenues, there was an increase of 28.87 per cent in operating expenses; or, in other words, the Atlantic Coast Line is another road typical of all the rest that have found too great the burden of high wage scales and the handicaps in general corollary to the aftermath of federal control. The Atlantic Coast Line's report gives in rather better detail than the reports of most roads the information which the student needs to analyze the year's results. The following figures, introduced to show the reason for the decreased net even with increased freight rates, will be of interest:

In 1916 the company had a total operating payroll of 19,170 employees, it moved 2,514,243,295 tons of freight one mile and had a total operating payroll cost of \$13,381,874.

In 1920 it moved 3,290,282,723 tons of freight one mile, it had a total operating payroll cost of \$40,199,926, and in August of that year had 25,252 employees.

From December, 1916, to December, 1920, freight rates were advanced approximately 60 per cent.

The above figures reduced to per cents show:

An increase in the number of employees of....	31.5 per cent
An increase in the number of tons one mile of....	30.9 per cent
An increase in the operating payroll cost of....	200.4 per cent
An increase in freight rates of.....	60.0 per cent

From December, 1920, to February, 1921, or in two months, the tons moved one mile show a decrease of 10 per cent (based on daily movement), or at the rate of 60 per cent per annum, bringing the amount of freight moved below the normal amount due to move, had pre-war conditions not been interrupted by the world war. It is hoped that by agreements to be negotiated direct with your company's employees and by reductions in wages in conformity with the decrease in the cost of living, reasonable reductions in payrolls will be effected without any measure of injustice or unfairness to your employees. Your officers are making every effort to secure proper economies in expenditures for fuel, crossties and other materials, and in this connection there will be noted a decrease in the number of employees from 25,215 in August, 1920, to 21,980 in March, 1921.

The Atlantic Coast Line is one of the more prosperous and strongly financed American railroads. Its growth to its present size and importance, particularly because of the manner in which it was brought about, forms one of the most interesting developments of American railroad history. This story has been put in book form, a book entitled "A History of the Atlantic Coast Line Railroad," written by Howard Douglas Dozier, Professor of Economics at Dartmouth College, having been published a few months ago.

The Atlantic Coast Line itself operates 4,890 miles of railroad. It is nucleus, however, of a system of no less than 13,334 miles. It owns a majority stock interest in the Louisville & Nashville, operating 5,044 miles, which in turn controls the Nashville, Chattanooga & St. Louis, 993 miles, and has, jointly with the Southern, a majority stock interest in the Chicago, Indianapolis & Louisville, 658 miles. The Atlantic Coast Line and the Louisville & Nashville together lease the Georgia Railroad, and other carriers in which the Coast Line has an appreciable interest include the Charleston & Western Carolina, the Atlanta & West Point, the Winston-Salem Southbound, etc. The general balance sheet of the company as of December 31, 1920, shows investments in affiliated companies amounting to \$68,085,882 and other investments of \$3,110,181. Of the gross corporate income of \$15,252,783, non-operating income, including dividends amounting to \$2,890,383, interest on investments, etc., was \$4,633,544. The net corporate income in 1920 was \$7,890,562 as compared with \$7,187,537 in 1919. Dividends on the common stock amounting to 7 per cent were paid in both years.

During 1920 the Atlantic Coast Line ordered and received five switching and 25 Pacific locomotives and also ten of the Russian Decapod locomotives. It received also 100 phosphate cars ordered in 1919 and had on order on December 31, 500 box and 400 coal cars. This new equipment has been financed without assistance from the revolving fund administered by the Interstate Commerce Commission.

The operating results for 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated .....	4,890	4,868
Freight revenue .....	\$48,193,387	\$40,842,112
Passenger revenue .....	19,138,399	18,448,229
Total operating revenue .....	74,121,956	63,559,015
Maintenance of way expenses .....	13,306,513	9,488,092
Maintenance of equipment .....	17,025,590	13,851,670
Traffic expenses .....	1,018,168	775,813
Transportation expenses .....	36,366,143	27,702,731
General expenses .....	1,763,373	1,334,789
Total operating expenses .....	68,943,732	53,499,911
Taxes .....	3,225,000	2,510,000
Operating income .....	1,953,224	7,549,104

The corporate income account is as follows:

Standard return (January and February, 1920):		
year 1919 .....	\$1,684,187	\$10,180,915
Additional compensation, January and February, 1920 .....	5,317	.....
Railway operating income, March 1 to Aug. 31 .....	5,478,458	.....
Operating income, Sept. 1 to Dec. 31 .....	2,886,334	.....
Dividend income .....	2,890,384	2,689,619
Gross income, inc. other .....	15,252,783	14,116,304
Deductions from gross income:		
Interest on funded debt .....	6,028,525	6,042,301
Net deductions including other .....	7,362,221	6,827,605
Total .....	7,890,562	7,288,699
Dividends:		
Preferred, 6 per cent .....	9,835	9,835
Common, 7 per cent .....	4,801,034	4,799,158

# Remedies for Wastes in Railway Operation

## More Thorough and Intelligent Cost Keeping Methods Necessary —Where Are the Greatest Leaks?

By F. J. Lisman  
F. J. Lisman & Co., New York

THE TRANSPORTATION ACT of 1920, Section 222, provides that the Interstate Commerce Commission shall establish rates so that carriers as a whole in each rate group will "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net operating income equal as nearly as may be to a fair return upon the aggregate value of the property of such carriers held for and used in the service of transportation." Section 223 provides "that during the two years, beginning March 21, 1920, the commission shall take as such fair return a sum equal to 5½ per cent of such aggregate value."

Sooner or later the commission must take up the question of exactly what constitutes "honest, efficient and economical management," etc., and this question is brought to the forefront in the New England rate case, because some of the lines concerned charge each other with inefficiency. Before exact justice, therefore, can be done in this New England division case, the question of economical management will have to be adjudicated. The Interstate Commerce Commission has had a number of knotty problems put before it but none more difficult than this particular one.

The commission can, of course, send its own experts or recognized railroad experts to investigate these properties, but no matter whom they may employ the findings will, as usual, be disputed not only by the particular management which may happen to be criticized, but also probably by other experts considered equally competent.

I have suggested as a temporary solution\* of the New England problem that the earnings on business interchanged between other roads in trunk line territory and the New England railroads, for the time being, be divided so that the New England railroads as a whole will earn on their fair value, a sum approximately equal to that earned by the trunk line group as a whole. This method of settling the New England rate case, however, is akin to communism, because if all the properties were operated in common such an arrangement would take away the incentive for each road to cut down its operating expenses to a minimum.

The only method of arriving at an adjudication of any subject is to have the parties in interest get together as closely as possible and then clearly define the points on which they cannot agree. I have, therefore, suggested that the Interstate Commerce Commission suggest or recommend to the carriers that they keep separate accounts not only of earnings accruing from the business interchanged with New England lines, but also as nearly as possible of the expenses incurred in connection with said traffic; that the carriers west of the Hudson river file with the New England carriers, and the New England carriers file with their western connections, not more than 90 days after the close of each month, a detailed report of the earnings and expenses incurred in connection with this interchange traffic. If any carrier should feel that these accounts are not properly kept they shall endeavor to arrive with each other upon an understanding as to the proper method of keeping such accounts, and if they fail to come to an agreement within 45 days after the question of improper accounting has been raised, they shall appeal to

the commission with a request for a decision on the subject.

For instance, if the Erie Railroad should assert that the New Haven system is charging an undue proportion of its terminal and yard expenses to through traffic, or that it is not operating its terminals economically, and is prepared to point out how money can be saved, then it would be up to the officials of the two lines to thrash out the matter and if they cannot agree as to what is fair, the subject should be referred to the commission for adjudication.

### Cost of Handling Any Given Commodity

The New England rate case which pushes this cost problem to the front, also presents in a more aggravated way the problem of what expenses can be reduced. Railroad officials have generally asserted that exact cost accounting in railroad operation is impossible; that they cannot state how much it will cost to haul a carload of silk as against a carload of coal, etc. This to an analytical mind seems like begging the question. The exact cost of hauling a carload of silk as against a carload of coal can be exactly defined, because the cost of hauling one ton per mile over any particular division is known. If a carload of silk contains 15 tons of paying freight and the car weighs 20 tons, then the cost of hauling these 35 tons of weight is in the same proportion as the cost of hauling a coal car weighing 20 tons and carrying 50 tons of coal. To be precise, the gross weight of the carload of silk would be 35 tons and the carload of coal 70 tons. If the locomotive is capable of hauling 3,500 gross tons over any given division, then the cost of hauling this carload of silk would be 1 per cent of the total operating cost of that train, while the cost of hauling the carload of coal would be 2 per cent. In order to further adjust the cost of handling these commodities, the empty car movement in the reverse direction must be taken into consideration and if this particular road should move 80 per cent of its coal cars light in the opposite direction and only 30 per cent of its box cars, then the cost of the empty return movement must be added to the cost of the loaded movement.

The actual cost of hauling freight over the road, or what might be called the "rolling charge" forms, however, only about 15 per cent to 18 per cent of the total operating expenses, or about half of the cost of conducting transportation. This particular and important part of conducting transportation is probably the easiest to define.

### Maintenance of Way

The Interstate Commerce Commission has finally decided on how the companies are to distribute the relative cost of passenger and freight business. It has always been said this could not be done and quite possibly the theory on which rules prescribing how this should be done may not be exactly correct; however, the rules are in force and should remain so until somebody can definitely prove that they are wrong in some particular respect, when undoubtedly they should, and can be changed.

When it comes to a question of how much it costs for maintenance of way to haul a carload of silk or a carload of coal, then undoubtedly experts will agree that the upkeep of roadway, while it may be partially influenced by weather,

\*See *Railway Age*, April 29, 1921, page 1028.

is really based on the amount of tonnage hauled over the track and on the speed with which it is hauled. If a company happens to have a traffic density of 1,000,000 net tons, which is probably not far from 2,000,000 gross tons per mile per annum, then the expense of maintenance appertaining to freight business can be divided on a gross tonnage basis, with a proper adjustment for fast freight as against drag or local freight trains.

Engineers have figured out, more or less, the hammer blow of a locomotive moving at 40 miles per hour as against one moving at 20 miles per hour. Fast freights should be debited with a somewhat heavier proportion of the cost of maintaining the track than the slower trains. Experienced engineers may not have been able to agree entirely on just what would be a fair arbitrary, but the opinion they would give would probably coincide fairly closely and an average of these opinions would not be far from correct. One 150-ton locomotive may, on account of more scientific construction, have a lighter hammer blow on the rail than another locomotive of the same weight, and a heavily loaded coal car may be harder on the track than a locomotive of the same weight.

Maintenance of buildings, such as freight stations, should not be charged for on a tonnage basis, but on a basis of usage to the different commodities. For example, mineral traffic does not pass through the freight houses and the only reason why it should be debited with a part of freight house expenses would be on account of the office force handling the clerical part of the work in these buildings.

#### Maintenance of Equipment

Maintenance of equipment might probably be accounted for entirely on a basis of gross tonnage because it costs as much for repairs per locomotive for 1,000 ton-miles whether the locomotive is hauling empty cars or paying freight. The proper method of charging up the maintenance of freight cars is open to considerable discussion. Naturally the cost of maintaining flat, gondola, box, tank or stock cars, etc., should be charged up to the respective classes of commodities carried in same. Furthermore, certain commodities are harder on the equipment than others: for instance, lime carried in bulk, chemicals, etc. Naturally, such special appliances as grain-doors must be charged to the grain traffic.

Maintenance of equipment officials might agree that the cost of maintaining any given type of cars should be loaded by certain percentage according to the commodity carried.

The cost of maintaining shops, machinery, etc., should be based on the same theory as that of maintaining locomotives and cars, while the cost of maintenance of engine terminals should probably be charged on a straight mileage basis.

#### General Expenses and Traffic Expenses

General expenses and traffic expenses should also be based on the amount of work done by the railroads; that is, on the gross tonnage handled. Railroad men and others talk of railroads handling net tons when they are all the while handling gross tons. Advertising, salaries of traffic men, cost of traffic associations, etc., are incurred for the purpose of handling net tons, but in order to get net tons, it is first necessary to produce gross tons, just the same as it is necessary for a mining company to extract large quantities or many tons of ore in order to get a comparatively small amount of metal. A mining company generally bases all its overhead and most other expenses on the tonnage of ore produced. Substantially the same remarks apply to all general expenses.

#### Conducting Transportation

Coming back to the cost of transportation, the cost of superintendence is largely based on the amount of paying business handled and should be based on the gross tonnage. The cost of dispatching trains is based on the cost of cars handled and should likewise be based on the amount of gross tonnage

handled. The same remarks apply to weighing, inspection and demurrage. The cost of coal and ore wharfs should naturally be charged up to the commodities passing over these wharfs.

The cost of loss and damage should in all cases be ascertained and be debited to each particular commodity as nearly as possible.

The cost of injuries to persons, damage to property, clearing wrecks, etc., is so difficult to allocate, that undoubtedly the fairest way is to base it all on gross tonnage.

#### Yard and Station Service

The allocation of the cost of yard and station service has been the item which has shown the greatest increase in the last eight years and is more difficult to define than any other. I have searched diligently for information on this subject, but have generally met with the response that these expenses cannot be allocated. Where there is a will there is a way, and by analytical thinking some way must be found to analyze these costs, not only for the purpose of knowing whether the business is handled economically but also whether certain traffic is worth having.

Yard switching is for the purpose of making and breaking up of trains, and should be clearly allocated on the same basis as that of the rolling charge; that is, on a gross ton basis. Yard service, if performed for the purpose of switching cars to and from freight houses, to and from team tracks or to and from industrial tracks, is in a different position. Nearly every engine in the course of each day performs all three of these latter services, and the time spent in each kind of service is probably not alike in any two given cases. It depends on the promptness of clearances which the engine with a cut of cars may get over busy tracks; on the number of switches which have to be thrown; distance traveled and also, to a considerable extent, on the diligence and intelligence of the crew in trying to do its work promptly. Nevertheless, it is up to the yard officials to keep track of the number of cars handled by each switching engine in each service, and to consider the cost of the various movements with a view to working out a standard of cost, etc.

#### Freight House Expenses

It probably costs a trifle more to handle outbound freight than inbound freight. While the expenses per ton handled through modern freight houses do not differ greatly, those familiar with this particular kind of work say it is utterly impossible to state whether it costs more to handle a piece of machinery weighing 1,000 lb. as against 20 boxes of groceries weighing 50 lb. each. Study can, and should be made of this subject, and expenses in station buildings in many cases can be greatly reduced by more efficient handling and by piece-work. It has been found that when gangs have been handling goods moving through freight houses on a piece-work basis, they do the work much quicker and at a substantially lower cost than employees who are paid by the hour. Close comparison of such costs as between companies would undoubtedly lead to considerable saving.

It is precisely the costs of freight houses and yard expenses which will finally have to be thrashed out in the New England rate division case. Possibly the trunk lines are right when they claim that the yard and freight house expenses of the New England roads are unduly heavy, but it is up to them to prove this assertion, and if they can do it, a great leap ahead in railroad cost accounting will be accomplished.

These statistics will also demonstrate, more or less, what kind of traffic is paying and what kind of traffic is handled at a loss.

#### Losses in Railway Operation and Their Remedies

This leads to the important question: Where are the greatest leaks or losses in the railroad business? I believe

that on the "less than carload business" the railroads are losing not less than \$50,000,000 a year.

It is impossible to get at the gross earnings from l.c.l. business, but they are probably about 8 per cent of the total freight earnings, or about \$350,000,000 per annum against which must be debited the bulk of the loss and damage expense, which has been steadily creeping up and now averages over 2 per cent of the freight earnings. If these costs of loss and damage were properly allocated to the l.c.l. traffic, it would probably consume from 15 per cent to 20 per cent of the gross earnings from this source.

The bulk of the freight house expenses and the large investments for terminals are made in connection with and for the purpose of handling l.c.l. traffic, and further investment for this particular purpose is called for from time to time. The loading of merchandise cars averages about 16,000 lb. and, therefore, the proportion of paying freight carried in these cars is only approximately 30 per cent of the gross weight hauled by the locomotive.

A close cost study of l.c.l. traffic will disclose that most railroad companies, many of which are now bitterly complaining about automobile truck competition, had better let the trucks have this business. This applies especially to the short haul less than carload business originating or terminating in the larger cities, where there are long delays in connection with switching to and from freight houses through large yards, and where the capital investment is very great.

Another way of saving on this business, besides the obvious attempts in reduction of loss and damage, consists of what was known during the war as "sailing days." Many companies should decline to handle the usual daily number of package cars and let competing railroads get the business or force concentration into much greater loads and do the loading more carefully.

#### Raise the Minimum of Loading

The second greatest source of waste, running into many millions, is light loading. While the capacity of freight cars in the last 20 years has increased by fully 50 per cent, the minimum carloads of the various commodities have probably not increased more than about 20 per cent. Many state commissions have prescribed a low minimum carload on many commodities in order to help the small producers or dealers. This is short-sighted local regulation at the expense of the nation at large. There have been long investigations of this subject and barrels of ink have been spilled over it, but very little has been accomplished in the interest of economy. A small committee should be appointed composed of representatives of the different groups of railroads throughout the country which should make definite proposals to raise the minimum weight of carload freight to a reasonable and economical level.

There is no reason why a small shipper should be allowed to load a car at less than its reasonable capacity just for the purpose of helping him, and let the public at large in effect pay him a bonus. The most economical and intelligent ruling for a minimum carload is the tonnage capacity, or cubic capacity of the car. If a shipper prefers a 40-ton car when only a 50-ton car might be available in his vicinity, then he should, in the interest of national efficiency, be compelled to take whatever car may be at hand.

Assuming that mineral traffic, which amounts to roughly 50 per cent of the tonnage, is now all handled in full carloads, then the raising of the minimum weight per carload by 10 per cent on other commodities would not only be equivalent to the construction of 125,000 additional freight cars which, at present prices of about \$1,800 per car, would represent an investment of \$225,000,000, but it will mean a reduction of substantially 5 per cent in operating expenses all-around, because it will cause a reduction of 5 per cent in freight train miles on the main lines; also in switching miles,

cost of repairs and, theoretically, a similar decrease in maintenance of way and in the bookkeeping; that is, general expenses connected with the handling of traffic, etc.

#### Wasteful Accounting Methods

The additional expense of accounting put upon the railroads by the Interstate Commerce Commission in asking for all kinds of statistics, is surely not less than \$25,000,000 and probably exceeds \$50,000,000. There is no reason why the Interstate Commerce Commission should not have all the information which is of service to it, but methods could be found to consolidate these various reports and abolish a great many. If, for instance, someone in a certain section of Texas complains to the commission that he is not getting as many livestock cars as another section of the same state, or of Oklahoma, the railroad companies will be required to regularly file a report as to the number of livestock cars dispatched in each particular section and these reports are required to be filed continuously and long after the necessity or use for them has ceased.

I recently congratulated a president of a railroad on the fact that he had just crossed the \$1,000,000 mark in gross earnings, and that, therefore, his road has become a Class 1 carrier. He replied that this was a subject for condolence rather than congratulations, because it would require much additional accounting on the part of his organization. He figured this additional cost would run anywhere from \$10,000 to \$25,000 and that the additional net which he might derive from the first \$100,000 gross earnings above \$1,000,000 would all go for additional cost of accounting as required by the commission. Surely this is absurd!

I would suggest that a conference be called between the railroad accountants and the statisticians of the Interstate Commerce Commission with a view to reducing the number of reports required to a minimum, and to consolidate them as much as possible.

There are, of course, many other savings possible in various ways by the various companies. Unquestionably, all railroad shops are not run efficiently, no more than all private machine or government shops. Right here, one difficulty arises. While railroad officials have not been compelled during the last three and a half years to spend as much time with the various state commissions as they formerly did, far too much time is being given by them to the various governmental requirements and to discussing matters of accounting, physical valuation, etc., with the numerous kinds of government officials. Railway officials cannot give the required time to thoroughly supervise their own affairs because they are too much involved in problems which too much regulation has thrust upon them.

#### Increased Percentage of Paying

##### Load Most Important

Some one has well said that the objects of a railroad are:

- (1) To transport as large an amount of freight and passengers as possible;
- (2) To handle this traffic with the smallest number of train-miles;
- (3) To operate each train-mile at the lowest possible cost.

The public at large certainly would be startled if it could be made to visualize the fact that the actual cost of transportation of trains over the road constitutes less than one-fifth of the total costs connected with the operation of railroads, and it is equally difficult for the public to visualize the fact that the expenditure of most of the remaining four-fifths is absolutely essential. All railroad statistics as shown to the public and stockholders, and for that matter most of those as shown to the operating officials themselves, are based on net tons. Managers of sugar mills base their reports on the number of tons of cane or beets which are ground and

they take much pride when they can show in any one year that the amount of sugar extracted by them is a fraction of one per cent greater than it was during the year before.

Similarly, the attention of everyone interested in railroads must be concentrated on extracting a greater amount of paying ton-miles in proportion to gross tons handled. If everybody will concentrate and the operating officials of the various lines will emulate each other towards producing less gross and more net tons the possible achievements in this direction would probably be quite surprising.

#### Labor Costs

All the above savings are trifling compared with possible savings connected with the cost of labor.

Out of every dollar earned by the railroad companies

In 1912, 43.1 per cent went for wages

In 1916, 40.8 per cent went for wages

In 1920, 59.9 per cent went for wages

Similarly, out of each dollar of railroad gross earnings, net earnings applicable to interest on capital were—

In 1912, 25.2 per cent

In 1916, 29.10 per cent

In 1920, 1.00 per cent

The amount of public service rendered for each dollar of interest and dividends paid to owners of railroad securities was—

In 1913, 459 ton-miles and 47 passenger miles

In 1917, 582 ton-miles and 53 passenger-miles

In 1920, 611 ton-miles and 64 passenger-miles

In other words, in spite of the decreased value of the dollar, capital during this eight-year period rendered an increased service of about 33 per cent for each dollar paid to capital. Inasmuch as the additional capital invested in railroads during this period has received no income, or has transplanted other capital which had to do without income, the result achieved by capital in the way of public service is shown in another way: that is to say, the increased service per dollar of capital invested in railroads during the same eight-year period was about 12 per cent. On the other hand, for each dollar of wages paid out, the railroads rendered—

In 1913, 245 miles of freight service

25 miles of passenger service

In 1920, 121 miles of freight service

13 miles of passenger service

or just a trifle less than half.

One might write volumes, but they could not more strongly prove the fact that the present high cost of transportation and lack of return on railroad capital has been due to abnormally high wages and inefficiency of labor. If railroad rates are to be reduced and the railroads are to be really managed in the most economical and efficient way, the only way is to repeal all special pro-labor legislation and let the railroads deal direct with their employees, practically in the manner in which the Pennsylvania Railroad is now proposing to handle its business.

We had very few railroad strikes before the war and the enactment of the Adamson bill, and we probably would have less strikes in the future because railroad officials would have to conform to public opinion on the subject of wages: public opinion is much more wide-awake on this subject than it used to be.

#### Permanent Remedy for Labor Trouble

Congress could in the interest of the public, in the interest of capital invested in the railroads, and in the interest of the bulk of labor, pass constructive legislation which will forever settle the wage question in a peaceful manner. The remedy for the present situation is as follows:

The provisions concerning the Labor Board in the Esch-Cummins bill should be repealed and in lieu thereof, there should be authorized a Labor Bureau under the supervision of the Interstate Commerce Commission. Labor employed by railroad and utility companies is just as much charged with the public interest as the management and, therefore, its joint activities should be under the same authority as the management. The function of the Interstate Commerce Commission Labor Bureau should be as follows:

1. To lay down rules for the election of the labor union officials, which shall be by secret ballot, and to supervise such elections.

2. If there appears to be any dissatisfaction or disagreement between a railroad corporation and its employees, the points of difference shall be submitted to the Labor Bureau, which shall clearly define them. In case 5 per cent of the employees or members of any union shall sign a petition favoring a strike, then the Labor Bureau shall order a secret strike vote which shall be supervised by it.

3. To prescribe a form of accounting, in accordance with which, all books of such labor unions are to be kept.

4. The accounts of the labor unions shall be audited by a certified accountant employed by the bureau; said reports to be printed and open to inspection by the public.

Everyone knows that strikes are generally declared by a small minority of more or less irresponsible and restless young men who want excitement, while the majority of the loyal, steady employees are passive in these matters and merely go on strike because they fear that they or their families will be molested. The union leaders will vociferously object to such legislation, but I am convinced that if this proposed legislation were to be voted on, not only most working people but also a majority of union labor would favor it by a large majority.

#### Competition

Just as it was the fashion a generation ago to encourage competition, and just as it was the fashion up to recently to regulate everything, the present slogan seems to be to avoid the alleged waste incidental to competition. Before Congress and the country go too far in this, a very close study should be made of the amount of operating expenses actually due to competition. While some railroad mileage might be abandoned here and there if competition were eliminated, this probably would not amount to very much—certainly not more than 5,000 miles, or 2 per cent of the entire mileage, and probably not half that.

While freight stations in many communities might be consolidated, the total savings in the expenses of maintenance of way would certainly be less than 2 per cent. There would be no savings in the maintenance of equipment at all, except, possibly, by the consolidation of shops here and there, but as all the good railroad shops are now generally worked to their full capacity, the savings of maintenance of equipment would not be very much.

The traffic department involves an expense of not over 3 per cent of the gross earnings of the railroad. This probably could be largely eliminated, although the shippers will greatly miss the accommodation and information now given out by this department.

Advertising could undoubtedly be reduced considerably, but whether this would be a real saving is another question because advertising of special excursions, reduced round-trip fares, etc., stimulates traffic, and the advertising of train schedules is a great service to the public.

In the conducting transportation department the only possible savings would be by increasing train loads on branch lines; which is equal to saying that people served by branch lines would get poorer service.

Quite true, other savings might be instituted, such as the

slowing down of competition, time freights, etc., all of which would mean reduction of service to the public.

Consolidation of service in the yard and terminals might here and there save considerable money, but these savings would probably be considerably less than 3 per cent of the total amount expended for conducting transportation.

General expenses could, theoretically, probably be reduced by consolidation, but as the size of the companies would be greatly enlarged, the work assigned to clerks would probably be increased so much that the theoretical savings would disappear. While the number of presidents might be decreased, the number of general, or supervising officers could not be decreased at all because as it is, there are not enough of them. Therefore, the amount disbursed for that purpose could not be reduced.

While anyone who has not studied this situation may glibly talk about the waste of competition, upon close examination it will be found that, with the exception of the operation of wasteful competitive passenger service, it does not exist on a great scale. If competitive expenses amount to 3 per cent of the total gross earnings of the railroads, they would run up to the very tidy sum of \$180,000,000 a year, or a little over one-half of what the government is now collecting in taxes from passenger and freight service.

Wasteful passenger service could easily be regulated by pooling of the business, and competition in freight service is probably worth to the public all it costs. Stratification of service and bureaucracy is certain to creep into every management which has no competition. The incentive to get ahead of the other fellow by giving better service is probably worth, not only what it actually costs, but several times that.

Before Congress legislates against competition, a close analysis of the cost and value of competition should be made.

Many old problems are dealt with in a new way in this article and many new points are raised on which there will unquestionably be much difference of opinion. As progress can only be achieved through discussion, I hope that your readers will freely and frankly criticize the suggestions which are made.

## Grand Central Busiest New York Station

THE GRAND CENTRAL TERMINAL carried off the honors in 1921 for handling the largest number of railroad passengers into and out of New York City with a total of 36,937,129 passengers, according to figures compiled by the New York Transit Commission and made public last week. The Pennsylvania Station was second with a total of 35,947,570 while the Long Island's station at Flatbush Avenue, Brooklyn, was third with 33,968,090. The Long Island, which brings passengers into three stations, including Flatbush Avenue, Pennsylvania Station and Long Island City, handled the largest number of passengers during the year, its total being 59,133,876, while the Pennsylvania was second with 42,260,425 passengers. The Long Island's traffic at Flatbush Avenue represents what may be called the most intensive movement shown in the record, as the whole of the traffic to and from Flatbush Avenue is carried on two tracks. The Flatbush Avenue total for 1920 was almost 6,000,000 (23 per cent) greater than in 1919.

These figures omit from consideration the Hudson & Manhattan, which operates tubes under the river and a line to Newark, N. J. That road handled to and from its Cortlandt street terminal 52,389,914 passengers and a total of 85,685,868 passengers, a large portion of whom used also trains of the Pennsylvania, Baltimore & Ohio or Lehigh Valley (to or from Manhattan Transfer) or of the Erie or Lackawanna.

The figures compiled by the transit commission show the

total number of passengers handled in and out of New York City in 1920, including those using the Hudson & Manhattan, as 252,763,523, an increase of seven per cent over 1919.

The details as compiled by the commission are tabulated as follows:

PASSENGER TRAVEL ON ALL STEAM ROADS IN AND OUT OF NEW YORK CITY, 1920			
Baltimore & Ohio (Pennsylvania Station).....			330,000
Central of New Jersey—			
Commuters.....	*10,882,157		
All others.....	7,254,771		
Delaware, Lackawanna & Western—			18,136,928
Commuters.....	13,233,165		
Passengers on 50-trip family tickets.....	2,073,300		
Other passengers on suburban trains.....	5,443,575		
Passengers on through trains.....	800,090		
Total (Hoboken).....	21,553,040		
One-half of this number (estimated) used the Hudson Tubes, leaving for ferries.....			10,776,520
Erie Railroad—			
Commuters.....	*21,901,892		
All others.....	5,475,473		
Total (Jersey City).....	27,377,365		
Two-thirds of this number, it is estimated, used the Hudson Tubes, the balance using the ferries being.....			9,125,788
Hudson & Manhattan—			
Sixth Avenue Line.....	33,295,954		
Terminal, Cortlandt St.....	52,389,914		
Lehigh Valley (Pennsylvania Station).....			85,685,868
Long Island—			460,000
Long Island City Terminal.....	1,725,706		
Pennsylvania Station.....	23,440,080		
Flatbush Avenue Terminal, Brooklyn.....	33,968,090		
New York Central—			59,133,876
Regular and school family	Commutation	50-Trip	
Grand Central, Main Line.....	4,505,367	5,264,533	669,500
Grand Central, Harlem Div.....	1,774,610	6,814,034	1,448,700
Sedgwick Ave., Putnam Div.....	254,678	669,268	188,250
42nd St. and Cortlandt St. Ferries (West Shore).....	1,306,371	5,368,956	452,500
Total.....	7,841,026	18,117,294	2,758,950
New York, New Haven & Hartford—			28,717,270
Regular and school family	Commutation	50-Trip	
Grand Central.....	8,295,191	7,279,094	885,597
Harlem River Terminal.....			492,211
New York, Ontario & Western (by West Shore Ferries).....			634,132
Regular Commutation			
N. Y., Westchester & Boston.....	3,698,156	743,856	4,442,012
Pennsylvania—			
Cortlandt Street Ferry.....			4,617,400
Desbrosses Street Ferry.....			2,033,004
Regular Commutation			
Pennsylvania Terminal.....	9,373,992	2,343,498	11,717,490
Total, Pennsylvania Railroad.....			18,369,494
Grand total.....			252,763,523

\*Estimated.

In addition to the traffic shown in the table, the Pennsylvania also received from and delivered to the Hudson & Manhattan at Manhattan Transfer 23,891,389 passengers (commuters 15,529,403; all others, 8,361,986), making the grand total of all Pennsylvania Railroad passengers arriving at and leaving New York City during the year 42,260,425. This company also carried to and from its Jersey City Terminal (Jersey City passengers) 3,900,000 (commuters 2,535,000, all others 1,365,000).

Lehigh Valley Railroad passengers arriving at and departing from Jersey City numbered 162,000, this figure being included in the total number of Pennsylvania Railroad passengers carried on its two ferries.

The Staten Island Rapid Transit Company carried on its lines in Staten Island (all within New York City) 13,011,958 passengers.

A compilation of the business handled by the leading stations would be as follows:

Grand Central—			
New York Central.....	20,477,247		
New York, New Haven & Hartford.....	16,459,882		
Total.....	36,937,129		
Pennsylvania Station—			
Baltimore & Ohio.....	330,000		
Lehigh Valley.....	460,000		
Long Island.....	11,441,080		
Pennsylvania.....	11,717,490		35,947,570
Flatbush Avenue, Long Island.....			33,968,090
Erie.....			27,377,365
Delaware, Lackawanna & Western.....			21,553,040
Central of New Jersey.....			18,136,928

## Railroads in the Post-War Readjustment\*

By Atlee Pomerene  
United States Senator from Ohio

I AM MINDFUL of the many criticisms of our transportation system, and many of them are well founded, but notwithstanding these facts we have the best transportation system in the world, at the cheapest rates per train mile in the world, and with the best paid labor in the world.

I have no defense to make for the executive management of our railroads as it existed 20 or 30 years ago, but the management has been greatly improved, and the class of men who are now the active executives of the great systems of the country are far in advance of the executives of 30 years or more ago. Most of them appreciate the fact that railroad property is not for their private manipulation, but that it is quasi-public property for the benefit of the entire public.

The war reduced the morale not only in private industry, but in the railroad world as well. Part of the shortcomings of every industrial activity is attributable to the war, and we must be very patient with one another when we attempt to criticize too severely. The object of criticism should not be for the purpose of maligning those who have made mistakes, but rather for the purpose of calling attention to them, with the view of curing them. It is in this spirit that I shall discuss briefly the transportation problem.

Theorists suggest government ownership. It is only charitable to say of them that while their intentions may be the best, they never have studied their way through the problems involved. Agitators speak of it, but as a rule they are bent only on destruction of things that are, and care nothing for the future of the country, except as they themselves may profit by the change. The government did many things which it was required to do during the period of the war just as manufacturers and business men, and in fact all other citizens, were compelled to do, which they would not think of doing during a time of peace.

And one of the things which it was necessary for the government to do during the period of the war was to take over and operate the railroads for the purpose of hurrying the manufacture and transportation of our war supplies for the boys who went to the front to fight the battles of democracy and world-freedom.

As a result of government management during these trying times, notwithstanding the great increase in all traffic rates, the government so far has sustained a known and conceded loss of somewhat over \$1,200,000,000. When the government took over the railroads, it agreed to return them at the end of government control in as good a condition as they were at the time the government received them. Under this provision of the statute some of the railroads have filed large claims. If the claims of the railroads which are not yet filed shall be proportionately as large as those which have been filed, the total of unliquidated claims will amount to between \$1,500,000,000 and \$2,000,000,000. Of course, it would be but a wild guess to state what part of this amount must ultimately be paid. Enough is known, however, to make us realize that it will be no inconsiderable amount.

The total railway investment, according to the best estimates that can be made by the Interstate Commerce Commission after they have been trying for six years and more to ascertain the value of these railroads, is about 19,200,000,000 of dollars. The finally ascertained value may be somewhat below or somewhat above these figures. There was a time when there was a great deal of water in these railroad stocks and bonds, but that is not so now, at least to no very great extent. The actual value of the railroads will not be very

far from the combined stock and bond issue. I am speaking of the railroads as a whole.

And now what is the situation? Labor has its rights which must be protected. The investors have their rights which must be guarded, and the public has rights which are paramount to all of them. The public has the right to have the best, the quickest, the cheapest transportation obtainable. And while present traffic rates per ton mile are lower in this country than they are in Europe, the public feels that present freight and passenger rates are higher than they ought to be, and I share this view. At the same time we must remember that the total revenues of the railroads cannot be reduced, generally speaking, unless there is a material reduction in the expenses of operation. I do not overlook the fact when I make this statement that high rates in some instances have resulted, as I believe, in the reduction of transportation to the extent that there has been an actual loss instead of an increase in revenues.

That it has been necessary to increase traffic rates I think all must concede. It is impossible to increase expenditures unless you increase the revenue to meet them, and instead of the railroads earning during the last year the 5½ per cent on their investment, the net earnings for the railroads of the whole country during the calendar year 1920 were only \$61,928,626 available for interest and dividends, or less than three-tenths of one per cent.

If we take the year March 1, 1920, to March 1, 1921, the net earnings are less than \$3,000,000 for the entire railroad systems of the United States.

A few weeks ago a manufacturer of engines came into my office. His company's plant had been operating only part capacity for some time. He had just returned from the south where he went to sell some engines. He met with only fair success. In talking about conditions in his own plant he told me that wages in his shop had increased from time to time during the war until the total wage average increase amounted to 115 per cent over and above the average wage prior to the war. Some weeks ago his company called its men together and advised them that the management in order to get work would be obliged to reduce the price of the product, and that this could not be done unless there could be a reasonable cut in the wage. The company proposed a cut of 15 per cent. All the men in the shop eagerly accepted this proposition except those in one department. They wanted to accept it, but advised the company that their international officers would not allow them to do so. What a fine spirit it showed to have employers and employees getting together in their common interest. How gladly, I imagine, the men accepted this reduction in order that they might have work, and the company might continue to do business. And when all their fellows were accepting, what must have been the feeling of the men in the one department who were not permitted to go to work by their international officers? My judgment is that officers of an organization should do what their men want, and the men should not be dictated to by the few arbitrary leaders.

In this particular instance let me add that before the war the standard engine of this company required 7,000 hours to build it. At the time of which I speak this same engine required 13,000 hours to build it, at an increase of wages of 115 per cent. In other words, as compared with pre-war times the cost of the engine was almost quadrupled.

I am not referring to these conditions in a fault-finding way. I know that during the period of the war the morale of the country was so interrupted that not one man nor one class of men was responsible for the conditions. All must accept their responsibility. It is one of the misfortunes that must be charged to war. I am referring to these conditions with the hope I may help all classes to see conditions as they are, and in order that we all may determine what should be done under present conditions.

\*From an address before the Chamber of Commerce, Hamilton, Ohio, on June 14, 1921.



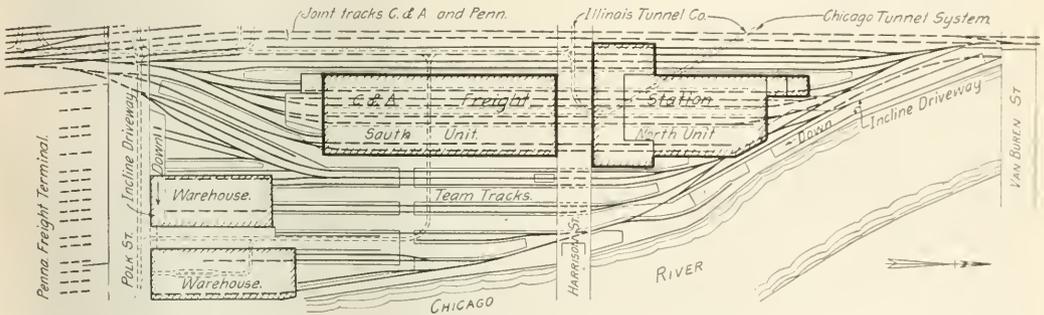
View from South. Team Tracks and East Side of South Unit in Foreground, Harrison Street and North Unit in Background

# New Freight Terminal Nearing Completion in Chicago

## Multiple Story Construction and Elevators are Prominent Features of Chicago & Alton Project

THE MULTIPLE STORY principle of freight house operation and the idea of elevator communication between floors find their most recent application in the terminal project which the Chicago & Alton is pushing to completion in the city of Chicago. This involves the replacing of an old freight house with a new one and the extensive revision of a restricted track layout. The new building is a combined freight house, warehouse and office structure, built over the tracks, in which outgoing and incoming freight will be handled separately and all freight, regardless of kind, will be

century old, while the general offices of the company have been confined to rented quarters for several years. With these basic needs present, an inducement for commencing the undertaking was supplied in the necessity which arose for the Alton to abandon its older facilities to make room for the construction of the new Union Passenger Station. Aside from the special engineering and operating features embodied, the project is of interest because of its having been undertaken at a time when the tendency on railroads has been to postpone improvements of this character. Also, associated as



The Track Layout of the Chicago & Alton Terminal

handled between different floor levels by elevators. The building is six stories high, and about three acres in extent. It provides approximately 140,000 sq. ft. of area in track platforms and freight house floors and 50,000 sq. ft. of warehouse space, has about 1,400 lin. ft. and 3,000 lin. ft. respectively of doorways and car platforms, and is located advantageously with respect to the Chicago river, along which the road has about 1,000 lin. ft. of dockage on a level with its tracks.

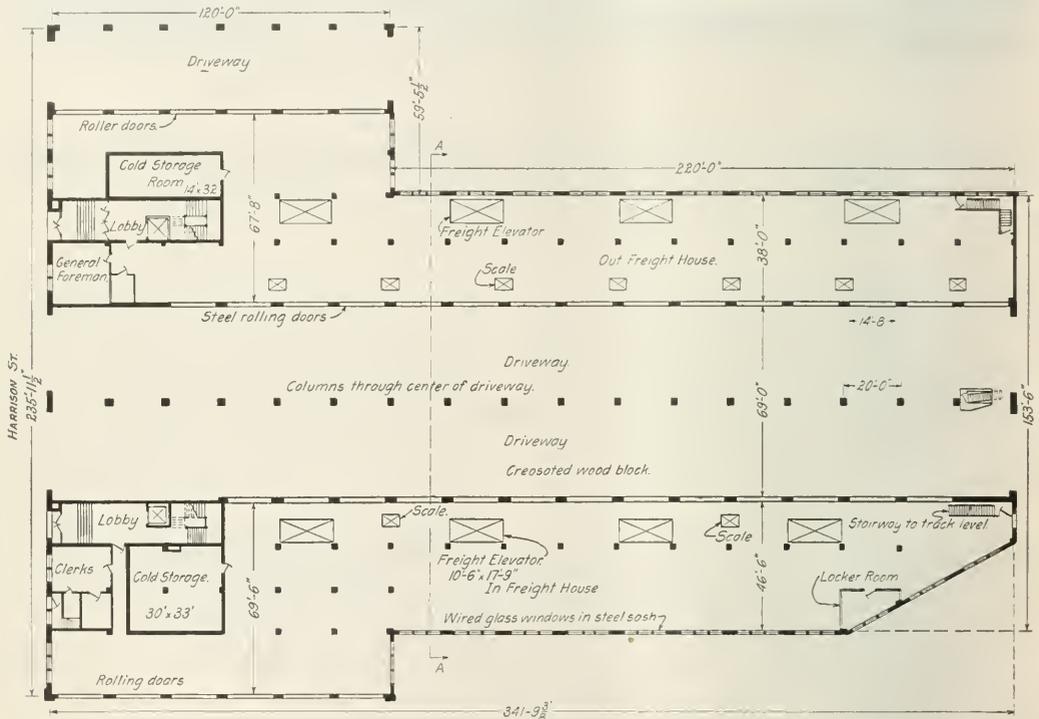
The project had its origin in the need for more adequate freight handling facilities and quarters for its enlarged office organization, the existing facilities being more than half a

it is with the union depot construction, it occupies a place of general interest as a part of a still larger terminal development program, the latter anticipating the remodeling of the entire terminal district in the vicinity of the present union depot through the construction of the new union station (now under way), the Alton layout, the Pennsylvania freight terminal building (already completed) and the proposed freight terminal of the Chicago, Burlington & Quincy.

In determining the design of the layout and the character of the construction several exacting conditions presented themselves for consideration as governing factors. The available ground space was a narrow strip extending from Van

Buren street on the north to Polk street on the south, a distance of about 1,300 ft., between the Chicago river on the east and the Union Station property on the west. This strip, comprising about ten acres, is situated some 20 ft. below the street level and is crossed by three elevated streets, Van Buren on the north, Harrison at the center and Polk street on the south. Furthermore, it is made irregular by the bank of the river and the existence at the Polk street end of two commercial warehouses. It will be bounded along the west side by an elevated street extending from Van Buren to Polk streets as called for by the plans of the Union depot. Added to these conditions and confinements with respect to location were considerations regarding the present and future business requirements, the limitations on funds for construction and the high value of the property, all of which created a problem

forms, one on the west for outgoing freight, a second on the east for incoming freight and a third midway between for effecting transfers directly from one car into another. These platforms accommodate elevators at intervals of about 50 ft., which provide the means of communication with the upper floors and also give access to 12 house tracks, seven of which extend through the house and are covered by it for a distance of about 800 ft. and four of which extend along the west side, the remaining track being a short spur at the south end of one of the platforms. These tracks are arranged in groups of four, three, two and two from west to east with respect to the platforms and provide capacity for about 270 cars. Excepting for the two tracks to the east which terminate at the north end of the structure, they may be entered both from the south and the north from the joint main line tracks of



Floor Plan of the South Unit Showing Elevator Shafts and Scales

necessitating close arrangement to detail. In the existence of such factors, the project was begun only after extended studies had been made to the end of minimizing cost and building most advantageously.

### The General Layout

The general layout comprises a building occupying a rectangular area along the west side of the Alton property on both sides of Harrison street. This building, about 900 ft. in its longest dimension and 236 ft. in its widest, is a continuous structure at track level, but at the street level is separated by Harrison street into north and south units, each of which faces on Harrison street. With respect to freight handling it is divided lengthwise into outgoing and incoming houses whereby all incoming freight is handled on one side of the building, while the outgoing is handled on the other. Below the street level the building accommodates three plat-

forms the Alton and Pennsylvania, there being one lead at the north and two at the south end of the yard.

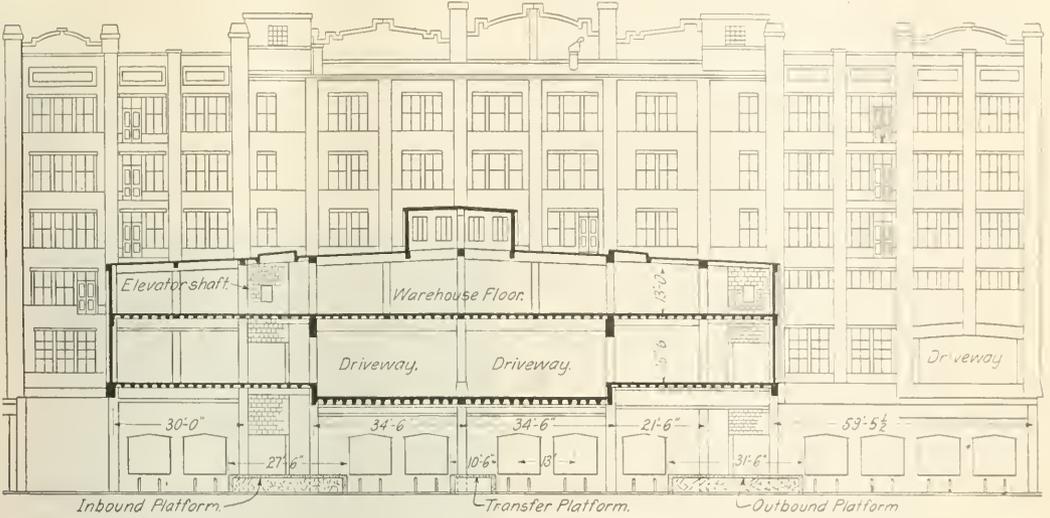
The remaining 20 tracks of the total of 32 in the yard are team tracks. These tracks are arranged in groups separated by concrete pavements and provide capacity for about 165 cars. Access to them will be had by two inclines, one already in existence extending from Polk street and the other to extend south from Van Buren street. The inclines will rise to the street levels on a grade of about 3.5 deg.

### The North Unit

Of the two units formed by the intersection of Harrison street, the north unit is the largest. This building, not including the 70 ft. by 30 ft. extension on the rear for power plant and heating purposes, is 340 ft. long, has a street frontage of 235 ft., extends five stories above the street level and, aside from the local freight handling facilities, provides warehouse

space and quarters for the company's local freight and general office organizations. The local freight business is confined to the first or street floor, all communication with street vehicles being effected at this level while access is had to the car platforms by means of the elevators. The area of the first floor is divided lengthwise into two sections, one intended

for the incoming and the other for outgoing freight, the sections being separated by a driveway 67 ft. wide. This driveway extends through the house from and on a level with Harrison street and terminates at the north end in a 24-ft. viaduct which, when completed, will provide a connection with Van Buren street. In addition to this central driveway, the plan

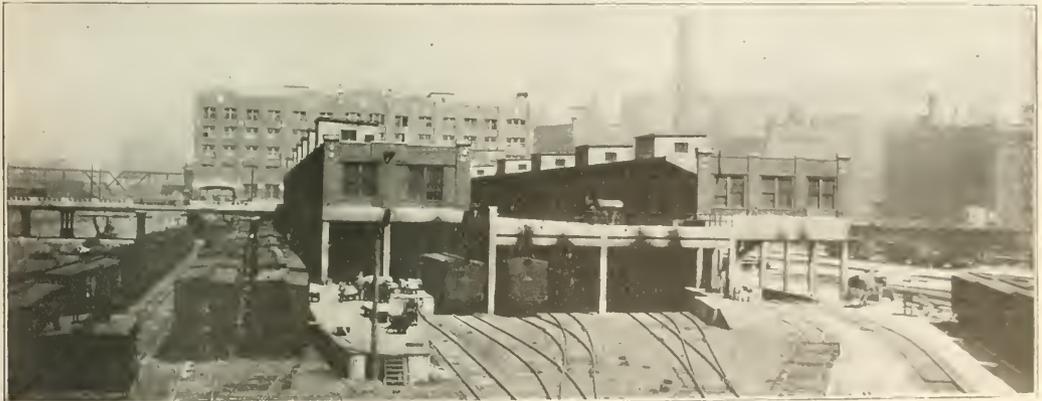


Section of the South Unit Through A-A, Showing Arrangement of House Tracks and Platforms

two for the incoming section. The floor is lighted by closely-spaced windows along each side of the building and by the large open entrances at each end of the driveway. The second floor of the building is designed for warehouse and storage use and allows for that purpose the entire area of the building except for the elevator shafts. The space

provides for two side entrances to the building from Harrison street, each to be 30 ft. wide and 120 ft. long. When constructed one will extend along the east side of the building for ingoing freight and the other under the west side of the building for outgoing freight.

This arrangement of the first floor provides about 19,000 sq. ft. of floor space each for the inbound and outbound por-



Looking North from Polk Street. South End of Freight House in Foreground

approximates 61,000 sq. ft., communication to it being effected by the several freight elevators which connect it with the car platforms and the first floor. This floor is well lighted by windows on the sides and ends of the building and by large and high monitors above the center.

The third, fourth and fifth floors of the building will be devoted to the needs of the local freight and general offices.

of the company. These floors extend only above the front end of the building and provide about 20,000 sq. ft. of office area. According to the plan the third floor will be occupied by the offices of the local freight agent, telegraph and telephone department, superintendent of car service and a lunch room; the fourth floor, by the controller's and auditor's forces and the fifth floor by the executive offices and the engineering, transportation, purchasing and freight and passenger departments. Two elevator and stairway units, one unit on each side of the building, will furnish access to the street and to the roof, the latter to be surrounded by a four foot parapet and prepared for recreation purposes.

### The South Unit

The south unit of the terminal structure is confined to one story above the street level and appears as two separate buildings, an inbound and an outbound house separated by a common driveway. This building is 460 ft. long and 154 ft. wide and is devoted entirely to freight handling. As such it differs from the north unit in three particulars. The car platform of the outbound house extends beyond the south end of the building sufficiently to accommodate a crane by means of which heavy objects may be transferred directly from street vehicles to the cars. Also the house like other terminals in the business center of the city provides accommodations for the transfer of freight with the Chicago Tunnel Company. By means of elevators tunnel cars can be transferred directly from the tunnel to tracks on the trucking floors. A further feature of this house lies in the relation of the incoming house to the team tracks by reason of which the two tracks extending under the east side of the building can be utilized as team tracks as well as house tracks. Sim-

ilarly to the north unit, the driveway to this unit is an extension from Harrison street and when desired may be prolonged south to intersect with Polk street.

of these caissons, one under each column except in two instances where the presence of a tunnel of the Chicago Tunnel Company required the supporting of the columns on a reinforced concrete beam spanning between adjacent piers. These beams are 5 ft. by 9 ft. in cross section. The caissons vary in diameter from 4½ ft. to 6½ ft., extend to an average depth of 60 ft. and rest on hardpan except in one instance, where bedrock was encountered.

The floor construction varies throughout the building. The car platforms are concrete on cinders and the floors above the street level are, in general, of the T-slab type construction patterned after the Branson system of joist molding, whereby the many joists supporting the slabs flare at each end. The car platforms and floors of the south unit are surfaced with asphalt mastic. All other platforms and floors are finished in "Carborundum," a mixture of carborundum dust with cement. The office floor hallways and the stairways are to



Interior View of Second Floor of North Unit. Floor in Process of Curing



Interior View of Outbound House of South Unit

ilarly to the north unit, the driveway to this unit is an extension from Harrison street and when desired may be prolonged south to intersect with Polk street.

All windows in the first and second floors and the skylights are of wire glass in hollow steel sash and the 84 doors between the driveways and the freight handling floors are of the steel rolling type, each door protecting an opening 16 ft. wide and 10 ft. high, separated only by the wall pilasters. The storage space on the second floor of the north unit is subdivided by a brick fire wall provided with four automatic tin-clad fire doors. In the third, fourth and fifth floors, expanded metal on the floors and floor joists provide the surfacing for plaster and on the fifth floor a false ceiling will be hung several feet below the roof. Partitions between the offices in general will be wood and glass while hollow tile will comprise the walls of all vaults and elevator shafts. The direct system of electric lighting is to be used throughout the building.

### Elevators

With the knowledge that in the final analysis the efficiency of the house will depend upon the elevators, this subject received particularly careful attention with the result that provision has been made for 17 automatic elevators, each of 5 tons' capacity. These elevators are electrically operated by means of push buttons. The buttons are located on the outside of the shaft as well as in the cage, by which arrangement the operator may or may not follow the elevator and the operation of the elevator is such that regardless of weight carried the platform automatically will come to a stop at the exact floor level. The elevator system also provides steel doors in the shafts, which are counterbalanced to effect easy operation and which both prevent their being opened from

### Structural Details

The building is of concrete-encased steel frame construction with brick walls and terra cotta coping and floors of reinforced concrete. It presents a number of interesting features in design, chief among which are the close attention given to lighting and the supporting of that portion of the four story section which extends over the four tracks on the west side by 60-ft. trusses. Two types of foundations support the structure, that under the south unit consisting of concrete pedestals carried on piles, while that under the north building consists of concrete piers carried down to hard pan or rock by the open caisson or Chicago method. There are 125

the outside and make impossible the rising of the elevator in the shaft until they are closed. By means of these elevators the system of operating the house is such that outgoing material received from street vehicles on the first floor is transferred to the scales, thence to the elevator and from there lowered to the track level platform and loaded into the cars. It is the intention of the Chicago & Alton in operating the house to require the men handling the material on the first floor to follow the freight entirely through the process of handling. Should occasion make it desirable, however, the system is one which will enable the work to be accomplished by separate gangs, each confined to a single floor.

This structure has been designed and erected under the direction of W. T. Bierd, president, H. T. Douglas, Jr., chief engineer, and W. F. Rech, bridge engineer of the Chicago & Alton, and is being built by the Dwight P. Robinson Company, New York. The south unit of the terminal is completed and has been in operation for several weeks while the construction of the north unit is expected to be far enough along to permit of its opening for operation by July.

## Labor Leaders Meet at Chicago to Determine Policy on Wage Reductions

**T**HE GENERAL CHAIRMEN and chief executives of the labor organizations affected by the recent wage cut order of the Railroad Labor Board met at Chicago on July 1 to consider and pass upon the wage reductions which went into effect on that date. Prior to July 1 strike talk was rife but as the meeting continued the conservative element in the ranks of the various organizations led by the "big four" brotherhoods obtained control of the situation and on July 5 several spokesmen of the labor organizations stated that anything in the nature of a strike in protest against wage reductions was "more than remote."

Soon after the various organizations convened a committee of five representatives of the 16 larger railway unions was appointed. This committee, which is headed by B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, and composed of F. H. Fitzgerald, president of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees; L. E. Shepard, president of the Order of Railway Conductors; E. J. Manion, president of the Order of Railway Telegraphers, and Timothy Shea, vice-president of the Brotherhood of Locomotive Firemen and Enginemen, will formulate the policy of the railway employees toward the wage decrease order of the Labor Board. The committee subsequently received daily reports from the various group meetings in progress and will prepare general recommendations for submission to the union's membership.

After the meetings had been in session it developed that the maintenance of way employees, clerks and shop men, together with the firemen and oilers, as a group are strongly opposed to accepting the decreases ordered for these employees by the Labor Board, whereas the train service organizations are seriously considering an "informal acceptance" of the Labor Board's decision. Later developments indicated that the conservatism of the "big four" brotherhoods was acting as a check upon the more radical representatives of the maintenance of way, clerks' and other organizations.

The great differences of opinion held by the representatives of the workers at the various group meetings led on July 2 to the appointment of a committee of ten in each of the organizations to draw up a program. When these various programs have been completed and approved by the representatives they will be submitted to the committee of five which, in turn, will consolidate them into one program which will then be submitted to the organizations for approval or rejection.

On July 3 it became apparent that the abrogation of rules and working conditions ordered by the Labor Board to be effective on July 1 and later indefinitely postponed, accounted to a large extent for the dissatisfaction of the employees as expressed in referendums on the wage reductions. When the more radical representatives became thoroughly informed as to the present status of the national agreements and of the various interpretations of Decision 119 which have been issued by the Labor Board, peace sentiment gained rapidly.

Factional differences within the organizations rendered a final decision as to labor's attitude at the present time impossible on July 4 and it became necessary to continue the meetings on July 5.

The train service organizations finally decided upon a plan of action late July 5 with the adoption of a resolution providing for a referendum vote of the membership of the train service brotherhoods as to whether the wage cuts recently ordered by the Labor Board will be accepted or rejected.

This referendum is to be taken not later than September 1 and in the meantime an effort will be made to arrange a conference between the Union chiefs and the railroad executives. The resolution adopted by the brotherhoods said in part:

*Whereas*, The general chairmen are required not only to consider wage reduction but in many instances railroad officers have served notice of their intention to abolish time and one-half for overtime in road freight and yard service and in addition thereto to revise schedules for the benefit of the railroad by abolishing many rules and conditions which in the aggregate mean loss of much money and creation of less favorable conditions for various classes of employees and

*Whereas*, Much unrest and uneasiness exist which cause deep concern, add to seriousness of the situation and establish a condition of affairs which makes it practically impossible for this body of general chairmen to take responsibility of deciding these important questions for the reason that we hold that no reduction in wages of various classes is justifiable and

*Whereas*, It is the earnest desire of the representatives assembled to do everything possible compatible with their duty to those whom they represent to avoid any inconvenience or loss to the public, and

*Whereas*, In keeping with this thought we hereby authorize and direct our executive officers to acquaint those in authority with these resolutions; further that they call attention to the fact that certain carriers, namely the Missouri & North Arkansas and the Atlanta, Birmingham & Atlantic have disregarded decisions and flouted authority of the Railroad Labor Board, and

*Whereas*, Despite all these provocative circumstances coupled with a common desire to refrain from taking any action that might precipitate a deplorable situation we

*Resolve*, That the general chairmen cannot assume the responsibility of accepting wage reductions and that not later than September 1, 1921, the entire subject matter be referred to the membership through the various general chairmen for acceptance or rejection.

*Be it further Resolved*, That we authorize our chief executive to make arrangements if possible to meet a committee of railway executives to be selected to meet the subcommittee representing the organizations named herein to consider and if possible adjust all matters in controversy and that our chief executives and committees handling these questions be directed clearly to place the representatives of the railway corporations on record as to whether or not they will request further decreases in rates or compensation, abolition of schedule rules or regulations or elimination of time and one-half time.

The ballot when submitted to the men shall contain an impartial and unbiased recital of all that is involved and the wishes of men as expressed by ballot shall determine the matter in accordance with the laws of the representative organizations.

It is believed that the other labor organizations will follow the lead of the brotherhoods and accept the wage reductions under protest, taking at the same time a decided stand on the abrogation of the National agreements.

### Pullman Shop Employees' Wages To Be Reduced

The shop employees of the Pullman Company will receive the same wage decreases as were ordered for the shop employees of the carriers in the Board's Decision No. 147, according to a ruling announced on July 5.

# Hearings Before Senate Committee Adjourned

## Committee Members Show but Small Interest—Prospects for Little Railroad Legislation at This Session

WASHINGTON, D. C.

THE HEARING before the Senate Committee on Interstate Commerce, which has been inquiring into the railroad situation for several weeks, was adjourned on July 1 to a date to be fixed later by Chairman Cummins in the latter part of August or about the first of September. Chairman Cummins' announcement merely stated that it was felt advisable to adjourn the hearings during the hot weather. It has also been proposed in the Senate to take a series of recesses during July and August. Very little interest has been displayed in the railroad hearing during the past two or three weeks by members of the committee. Seldom have more than three or four members been present and on several days Senator Cummins was the only member of the committee present. He has now been ordered by a physician to take a rest and the committee will hold no hearing of any kind during the next month. Testimony on behalf of the National Association of Owners of Railroad Securities was completed on July 1, although S. Davies Warfield, president of the association, may appear again when the hearings are resumed. The committee had had comparatively few requests from representatives of the shippers for opportunity to be heard and, while it had been arranged with representatives of the labor organizations to appear on July 5, they had asked for a later date. They had originally asked to be heard after the other testimony had been presented.

### Prospects for Little Railroad

#### Legislation at This Session

Now that the Frelinghuysen seasonal coal rate bill has been practically killed by vote to recommit it to the committee, there are prospects for very little, if any, railroad legislation at this session. A large number of bills introduced to amend the Transportation Act, practically all of which were originated by those who are unfriendly to that law and opposed it at the time of its passage, have been referred to committees, where no action has been taken on them.

While the hearing before the Senate committee has indicated no prospect of any definite results, it has afforded an opportunity to the railroads to give a public explanation of the situation. The investigation was started at a time when a good many people were making charges that the large increase in railroad expenses in 1920 after the railroads were returned was due to extravagance and that the decrease in railroad traffic was mainly due to the latest advance in freight rates. The railroads were able to show conclusively that the largest part of the increase in expenses was due to the wage award and other increases in payroll which resulted from the national agreements and wage orders issued by the Railroad Administration during the last few weeks of its existence, while there were also large increases in the cost of fuel and other expenses, over which the railroads had very little control. The hearings have also served to convince at least a majority of the committee, apparently, that the diminution of traffic was due to general business depression in no way related to freight rates and that even if freight rates were too high a repeal of the 6 per cent rate-making rule of the Transportation Act would not in any way affect the situation since the advance in rates has at no time been sufficient to pay a 6 per cent return even during the months of the heaviest traffic last fall.

### Director Colston Submits

#### Written Statement Outlining Views

At the request of Senator Cummins, W. A. Colston, director of finance of the Interstate Commerce Commission, submitted a written statement on June 30 outlining his views regarding the organization proposed by the National Association of Owners of Railroad Securities and the bills for the federal incorporation of the National Railway Service Corporation and to promote further economies and efficiency in railway transportation.

He said there was no doubt in his opinion that the corporation under a federal charter would continue to accomplish in part at least the benefits realized under its state charter, namely, the extension of credit to carriers which otherwise could not obtain credit and the reduction of interest rates, discounts and commissions on moneys required by railroads.

Without provision for adequate capital, however, he said, these benefits would be limited by amounts available under section 210 of the Transportation Act, or by similar provisions under future laws, and the work of the corporation would be handicapped, as the State corporation has been, by the unwieldy forms of equipment trust agreements, etc.

"I think that the proposed corporation could be made a much more virile and helpful institution if the bill were amended in the following respects," said Mr. Colston.

"First. In order that there may be no fear or suspicion of private profit or benefit growing out of the activities of the federal corporation, the act of incorporation should distinctly provide that the assets and profits of the corporation shall be the assets and profits of the United States, to be administered by the managers of the corporation, as trustees or fiduciaries, solely in the interest of commerce and of the people of the United States. Instead of providing, as is now done by section 10 of the bill, that the corporation shall issue no shares of stock, it might be well to provide that all of the capital stock of the corporation shall be issued to and held by the United States. The loans, leases, underwritings and other major operations of the corporation should be under the control or subject to the supervision of the Interstate Commerce Commission just as loans are now made under section 210 of the Transportation Act under the direction of the commission. But transactions incidental to carrying out the general enterprises authorized by the commission should be performed by the corporation's officers and trustees just as business of a private corporation is carried on by its officers and an executive committee under the general authority of the directors or stockholders.

"Secondly. The business of the corporation should be simplified by providing that the corporation itself shall make the loans, underwrite the securities, or exercise the other activities contemplated, upon direction or approval of the Interstate Commerce Commission, without the necessity for multiplying transactions between the commission and the Treasury, between the Treasury and the corporation, and between the Treasury and the carriers. And to the extent of its assets or capital stock the corporation should be permitted to underwrite, as well as buy, sell and loan upon, the securities of carriers, but should, of course, not be permitted to bind the United States by its underwritings or agreements, except to the extent of the assets turned over to the corporation and the profits therefrom, or to such

further extent as may be specifically authorized by law.

"Thirdly. There should be turned over to the corporation, as the basis of its operations and to be held, administered and dealt in as trustee, for the uses and purposes for which it is created, all railroad securities of any kind now held directly or indirectly by the United States government, all balances in the revolving fund created by section 210 of the Transportation Act, 1920, and all the accretions of the general railroad contingent fund provided for by section 15a of the Interstate Commerce Act. A rough estimate of the assets now or prospectively dormant and available for such purposes, in addition to the accretions which may be expected for the general railroad contingent fund, may be obtained from a consideration of the following:

In June of last year the War Finance Corporation held securities of railroads amounting to \$64,658,210. It is probable that the greater part of this sum is still unpaid.

On April 30, 1921, the Treasury held obligations of carriers acquired under section 7 of the Federal Control Act, approved March 21, 1918, as amended, amounting to \$66,047,250, and equipment trust 6 per cent gold notes acquired by the Director General of Railroads pursuant to the Federal Control Act of March 21, 1918, as amended, and the act approved November 19, 1919, to provide for the reimbursement of the United States for motive power, cars and other equipment ordered for carriers under federal control, amounting to \$310,098,300, and obligations of carriers acquired pursuant to section 207 of the Transportation Act, approved February 28, 1920, amounting to \$89,506,500.

The revolving fund of \$300,000,000 created by section 210 of the Transportation Act has been increased by accrued interest, and if other provision is made for payment of judgments against the Director General now required to be paid out of this fund we may set down the assets and balances in the fund as amounting to something over \$300,000,000.

The carriers are now seeking the funding of additions and betterments during federal control amounting to approximately \$750,000,000.

The obligations held for advances to carriers under the Federal Control Act are subject to some changes growing out of the final settlement of the carriers' accounts with the Director General, but we may say in round figures that if the request of the carriers to fund additions and betterments during federal control is granted we shall have in sight dormant or frozen assets amounting to about \$1,500,000,000, which, if turned over to the proposed corporation, could probably be made the foundation of a financial power of \$4,500,000,000, an amount sufficient, apparently, to finance the needs of all of the railroads of the United States for many years.

"Incidentally to the amendments suggested there should be provisions to permit the making indefinitely of loans by the corporation, on order or approval of the Interstate Commerce Commission, out of its funds or assets, including the balances and assets arising from the operations of the revolving fund under section 210 of the Transportation Act, 1920, and there should be either no limitation of the time for which loans may be made or the time should be considerably extended beyond the period of 15 years now permitted by section 210 of the Transportation Act. The average life of equipment is considerably more than 15 years, and under the restrictions of section 210 of the Transportation Act it was impossible to arrange for the purchase by the National Railway Service Corporation (or any other organization effected for the purpose) of equipment to be held by the corporation and leased to carriers generally. As will appear from the table submitted in my testimony of today, and showing the amortization at 6 per cent of equipment on basis of 4½ per cent return on original investment, and with depreciation rates of 4 per cent and 5 per cent, respectively, the National Railway Service Corporation could buy equipment in quantity and lease such equipment to carriers indefinitely on basis of 4½ per cent return on original cost of equipment plus depreciation, the carrier, of course, making the repairs. With such central ownership, benefits of a standardization of cars and of use of cars where needed to meet seasonal requirements, etc., could be largely realized."

Relative to the bill providing for the promotion of fur-

ther economies and efficiency in railroad operation, Mr. Colston said in his opinion the creation of formal organizations on the part of the railways and men of financial experience as proposed by the Warfield organization would be of great benefit in furthering economies and efficiency, particularly in the matters of standardization of equipment, common use of terminals and universal interline billing. He said it was his belief that the greatest difficulty in the way of accomplishing those results in the past has been through the lack of power or failure to exercise power to make mandatory the conclusions of those who have studied the several subjects. He said the proposed bill should confer on the commission the power to act upon recommendations made by the proposed service board or of any of the group boards, because if the recommendations could not be made mandatory the act would be of no effect.

Director Colston said he wished it understood he had prepared his statement hastily and that it represented his personal views and not in any way those of the commission.

### Views of American Manufacturers' Association

H. A. Holmes, representing the American Manufacturers' Association, told the committee that members of his association stand ready to provide \$100,000,000 a month for a year to enable the government to pay its debts to the railroads, which he estimated at about that amount, receiving in return 5½ per cent tax-free Treasury certificates. Senator Cummins said that the Railroad Administration owes the roads about \$700,000,000 and has on hand about \$235,000,000, whereas the roads owe the government for capital expenditures about \$750,000,000. If the President decides to fund the indebtedness of the railroads, he said, a situation might arise in which Mr. Holmes' proposition would be very interesting.

### Walter L. Fisher Urges Legislation in Favor of Co-ordinating Facilities

Walter L. Fisher, counsel of the Chicago Railway Terminal Commission, urged upon the committee the importance of legislation which will compel the better co-ordination of railroad facilities by grouping or consolidation and by unification of terminals along the lines suggested by Chairman Clark of the Interstate Commerce Commission in his testimony before the House Committee on Interstate and Foreign Commerce in 1919, in which he advocated that a beginning be made by consolidation of terminals under terminal associations or companies under a single management. Mr. Fisher said that the fundamental difficulty of the whole railroad situation is the failure of the public, the government agencies and the railroads to keep in mind the inherent character of the railroad business. He said he is not an advocate of immediate government ownership and would be reluctant to state the date for government ownership, but every time we fail to have definitely in mind the fact that a railroad is a government agency we get the wrong point of view. The railroads are performing a function of government, he said, yet the railroad executives are constantly disposed to ignore that fact except when they want help from the government on the ground that they are performing a public service. There is an unsound and uneconomic duplication of terminal facilities which are only superficially used, he said, yet many railroad executives claim that the advantages of competition overbalance the advantages to be derived from unification. Yet, he said, this spirit of competition amounts to very little from the public standpoint and is little more than a talking point for a railroad that has better facilities than another in selling freight.

In the matter of service, he said, the railroads find that if they compete too much they get into destructive competition and so they agree to limit it. The unification carried

out under the Railroad Administration, he said, was so successful that many railroad officers who were concerned with it boasted of it, although they had previously opposed unification, while it is difficult now to get them to admit the advantage of unification because of the attitude of their superiors, and unless there is some strong authority to compel unification, the movement will not get very far.

The Interstate Commerce Commission, he said, has no greater opportunity for usefulness than to make a real study of the possibilities of unification to determine the facts, and if it does not have the power should have the power to put its recommendations into effect. People who regard government ownership with apprehension should realize that the danger of government ownership is increased by their failure to recognize the necessity for co-operation and co-ordination and their insistence on the competitive theory. This, he said, is doing more to force premature government ownership than anything else. In some respects, he said, the railroad executives are doing remarkably well, but they are so reluctant to give up advantages which one road may possess over another that some compelling power is required. Senator Cummins pointed out that the Interstate Commerce Commission now has power to compel the common use of terminals and facilities. Mr. Fisher assented, but said that power is tied up by the necessity for fixing the value of the property to determine the proper compensation. He believed the Supreme Court would sustain the theory that back of all the titles to property lies the obligation to perform the public service and, while he would be the last to say that a railroad ought not to receive a fair return, it should only receive a fair return, but, he said, the railroads want to capitalize the disadvantage of a competitor. He said that the railroads are appealing to congress for help, but before Congress responds they should be compelled to adopt measures that will promote a more economical use of the facilities.

Mr. Fisher said it was gratifying to observe the efforts of the bondholders, as represented by Mr. Warfield's organization, to take a more active part in railroad affairs. The railroad executives, he said, resent it and are inclined to treat the bondholder as a mere creditor, but they fail to recognize the inevitable tendency of railroad financing in the future. Because the railroads have not been able to sell stock at par they have been driven to issue bonds and the real owners of the railroads have come to be the bondholders. The real problem is how to raise additional money for the railroads and to do so it is necessary to stabilize railroad securities. That means that the bondholders have got to come to the front and they ought to be invited to do so.

Mr. Fisher said he did not believe the existing Interstate Commerce Act reaches the difficulty in the way of a greater co-ordination of railroad facilities and that the permissive provisions as to consolidation certainly are insufficient, particularly as very little sympathy has been manifested on the part of railroad officers toward a grouping of the roads. Senator Cummins said that he agreed that the act does not go far enough and that the Senate had favored a compulsory consolidation law. Senator Cummins asked if this would not have to be done by some public agency because of the difficulty of raising capital enough for it to be accomplished by a private company. Mr. Fisher said that if the Interstate Commerce Commission would revise the rate divisions so that the rates would provide on terminal properties the same rate of return that is allowed on railroad investments generally there would be no difficulty in getting capital. He said it would not be necessary to condemn the terminal properties or pay for them, but the title can be left where it is, but the Interstate Commerce Commission could be empowered to compel the properties to be turned over to a company that would operate them in the common interest.

## Derailment of Passenger Train Ascribed to a Split-Head Rail Failure

THE CHIEF of the Bureau of Safety of the Interstate Commerce Commission calls attention to the dangerous character of split-head rail failures in a report on a derailment occurring on the Chicago Great Western near Wyeth, Mo., on January 3, 1920. This is based on an investigation by the engineer-physicist, James E. Howard, which has led to the conclusion that the derailment was caused by rail failure of this type. The report goes into considerable detail as to the nature of these rail failures, carefully differentiating them from piped rails. Considerable data are also presented, designed to indicate the influences leading to this type of rail failure. Excerpts from this report follow.

In rails with split heads a longitudinal, vertical plane of rupture is developed, located along the middle of the width of the head. The origin of the plane of rupture is an interior one, located about  $\frac{1}{4}$  in., more or less, below the running surface of the head. The shallow zone above the origin of the rupture remains unbroken until the last stages of failure are reached. In the development of the split head the plane of rupture extends downward until abreast the junction of the head and the web. Here it commonly bifurcates, the branches extending right and left toward the fillets under the head. Final rupture occurs by the complete separation of the halves of the head and their detachment from the web.

Split-head rails are often erroneously reported as piped rails. The primary causes which lead to the failure of these two types are distinctly different, and their origins are located in different parts of the cross section of the rail. A split-head fracture has its origin in the upper part of the head. A piped rail has a plane of separation in the web and lower part of the head. Split-head rails are of frequent occurrence, while piped rails are not. A split-head fracture may occur in conjunction with a piped rail as the present rail shows—a matter not affecting their separate origins.

It will be inferred from the present exhibit and the remarks which are submitted that relatively there is a greater tendency, under the influence of track conditions, for a rail to fail by the development of a split head than by reason of the presence of a pipe.

Mr. Howard also presented a report on micrographic studies showing evidence of flow of the metal in the upper portion of the rail head as a result of which he presents the following statement concerning probable cause of the failure:

In summation, the failure of the rail which caused the present derailment was due to the presence of a split-head fracture. Wheel loads cause distortion of the grain of the steel and induce lateral flow of the metal at the running surface of the rail, the tendency of such loads being to spread the railheads. The successful resistance of such lateral forces depends upon the structural soundness of the metal in the railhead. Longitudinal streaks are lines of weakness which influence the formation of split-head fractures and locate their incipient points of origin. Longitudinal streaks are due to casting and mill conditions. Their elimination, or reduction in numbers and gravity of development, are matters for the steel makers to consider. The ages at which split-head rails manifest themselves indicate such fractures are of slow and progressive development. It is a matter of conjecture, although having the appearance of probability, that split-head rails would be unknown if strictly seamless steel was available for rails. The rail problem is intensified by reason of the employment of high wheel pressures. Soft rails display mashed heads. Hard rails furnish a large number of transverse fissures.

There is a popular fallacy entertained that split-head rails do not constitute a dangerous type of fracture, since at certain stages in their progress of rupture they may be detected in the track. This evidence, however, is presented at a late stage, after the necessary margin in strength in the rail has been practically exhausted, and not prior thereto. An element of danger has arisen when split-head rails are detectable in the track. An economic question is involved in the elimination of the causes of split-head failures, since many rails are removed for this cause which are not otherwise unserviceable. Finally, split-head failures should not be reported as piped rails.

A ROUGH GAME. "What has become of the tin locomotive and the train of cars I gave you on your birthday?"

"All smashed up," replied the small boy. "We've been playing government ownership."—Exchange.

# The Delaware and Hudson's New Car Service Rules

## Revised Rules for Promoting Prompt Car Movement Simplified for the Benefit of Yardmasters

A VERY successful wording of the rules for the guidance of station agents and yardmasters in the prompt and economical movement of foreign freight cars is that of the Delaware & Hudson Company and a reprint of these rules is given herewith. This code has been in use for over a year, but it has now been revised to conform to the changes, going into effect July 1, which have just been adopted by the American Railway Association and it will be found of interest as an example of a concise arrangement of the matter in concrete form, most suitable for the agents and clerks, who will use it, free from some of the technical

it will be seen, is well adapted to be a powerful aid to the yard clerk in the attempt (which he must never relax) to keep in mind the railroad geography of the whole country and the bold-type subheads in the instructions enable him, in each instance, to avoid wasting time on paragraphs which do not apply to the question in hand. For example, if he is dealing with a private-line car, he reads only the short section devoted to those cars.

It will be noted that these only do not include the new portion of Rule 2 under which two roads, connecting, may agree on exceptions to one of the requirements of that rule.

BETWEEN	Buttontwood P. R. R.	Wilkes-Barre D. & H.	Scranton D. & H.	Jermyn Tfr. N. Y. C.	Honesdale D. & H.	Carbondale D. & H.	Owego L. V.	Binghamton D. & H.	Nineveh D. & H.	Sidney D. & H.	Onesota D. & H.	Cobleskill D. & H.	Delanoss D. & H.	Schenectady N. Y. C.	Albany N. Y. C.	Troy N. Y. C.	Engle Bridge N. Y. C.	Mechanicville N. Y. C.	Saratoga N. Y. C.	Ft. Edward N. Y. C.	Rutland V. T.	Whitehall V. T.	Ft. Ticonderoga N. Y. C.	Port Henry V. T.	Saranac Lake N. Y. C.	Plattsburgh V. T.	Rouses Point V. T.
Rouses Point	373	373	354	342	384	337	327	304	280	264	243	207	189	174	191	184	179	172	152	135	137	113	89	74	90	23	0
Plattsburgh	353	350	331	319	341	314	304	281	257	241	220	184	168	151	168	161	156	149	129	112	114	90	68	51	73	0	0
Saranac Lake	420	417	398	386	408	381	371	348	324	308	287	251	233	218	235	228	223	216	196	179	181	157	133	118	0	0	0
Port Henry	302	299	280	268	290	263	253	230	206	190	169	133	115	100	117	110	105	98	78	61	63	39	15	0	0	0	0
Ft. Ticonderoga	287	284	265	253	275	248	238	215	191	175	154	118	100	85	102	95	90	83	63	48	48	24	0	0	0	0	0
Whitehall	263	260	241	229	251	224	214	191	167	151	130	94	76	61	78	71	66	59	39	22	24	0	0	0	0	0	0
Rutland	287	284	265	253	275	248	238	215	191	175	154	118	100	85	102	95	90	83	63	48	0	0	0	0	0	0	0
Ft. Edward	241	238	219	207	229	202	192	169	145	129	108	72	54	39	56	49	47	37	17	0	0	0	0	0	0	0	0
Saratoga	224	221	202	190	212	185	175	152	128	112	91	55	37	22	39	32	32	40	20	0	0	0	0	0	0	0	0
Mechanicville	219	216	197	185	207	180	170	147	123	107	88	50	32	17	19	12	20	0	0	0	0	0	0	0	0	0	0
Engle Bridge	239	238	217	205	227	200	190	167	143	127	108	70	52	37	31	23	0	0	0	0	0	0	0	0	0	0	0
Troy	231	228	209	197	219	192	182	159	135	119	98	62	44	29	8	0	0	0	0	0	0	0	0	0	0	0	0
Albany	215	212	193	181	203	176	166	143	119	102	81	45	27	36	0	0	0	0	0	0	0	0	0	0	0	0	0
Schenectady	203	200	181	169	191	164	154	131	107	90	69	33	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delanoss	188	185	166	154	176	149	139	118	92	75	55	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cobleskill	170	167	148	136	158	131	121	98	74	57	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onesota	134	131	112	100	122	95	84	61	38	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sidney	113	110	91	79	101	73	63	40	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nineveh	98	93	74	62	84	57	47	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Binghamton	120	117	98	86	108	81	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Owego	143	140	121	109	131	104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbondale	39	36	17	5	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honesdale	68	63	44	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jermyn Tfr.	34	31	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scranton	22	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wilkes-Barre	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buttontwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

D. & H. connects at two or more points with the following --

- B. & M. Troy, Mechanicville, Engle Bridge
- C. R. R. N. J. Hudson, Wilkes-Barre, So. Wilkes-Barre
- D. L. & W. Binghamton, Scranton, Plymouth
- Erie (Binghamton, Jefferson Jct., Carbondale, Winton Jct., Scranton, Pleasant Valley Jct., Honesdale)
- O. T. Rouses Pt., Mooers Jct.
- O. & J. Greenwich Jct., Johnsonville
- L. V. Owego, Avoca, Wilkes-Barre, So. Wilkes-Barre
- N. Y. O. & W. Sidney, Carbondale, Jermyn Transfer (Albany, Troy, Schenectady, So. Schenectady Voorhoeville, Saranac Lake)
- N. Y. C. (Albany, Troy, Schenectady, So. Schenectady Voorhoeville, Saranac Lake)
- N. Y. S. & W. Minooka, Yatesville
- P. R. R. Buttontwood, So. Wilkes-Barre
- Rutland Rouses Pt., Mooers Jct. Ft. Ticonderoga, Rutland

Delaware & Hudson Mileage Table for Car Service Department

details which are necessarily included in the American Railway Association circular, but which are not required in everyday use.

These rules are printed in large type, on the two inside pages of a four-page leaflet 9 inches by 11 inches, and are embraced under eight heads as shown. When the leaflet is opened out the two inside pages form a convenient poster to put up on the wall of a yard office; and the two outside pages are used to show: (1) the map (reproduced in the illustration reduced one half in width and height) designed to aid the agent in selecting the most suitable cars for use in loading freight to points on other roads and (2) the mileage chart (reproduced full size) for use in short-routing foreign cars which are to be sent home empty.

The rules, with the map and the mileage chart, have proved their adaptability to their purpose by reducing to a minimum the volume of messages from yardmasters to headquarters asking for instructions about routing. The map,

This is covered by separate instructions to each junction agent and, of course, is of no interest to other stations.

### Combined Home Route Card and Empty-Car Waybill

The adoption by the American Railway Association (June 23) of the revised rules re-establishes the home route card, the use of which was suspended during the period of quasi-pooling which prevailed under war conditions; and the Delaware & Hudson is introducing a form (size 4 in. by 11 in., reduced in the illustration one-half in width and height) which contains both this and three empty-car waybills. The form is self-explanatory. Every foreign car received must be accompanied on its travels by a home route card as long as it is retained; and, as such a car may make a number of journeys, loaded or empty, before it is surrendered to the road whence it came (or to some other road) the three waybill forms printed on the single large card may often obviate the use of three separate cards. In the event of a



## Delaware and Hudson Circular No. 14

## D. &amp; H. CARS

RULE 1. D. & H. cars must not be used for the loading of traffic beyond the limits of The Delaware & Hudson Company when the use of other suitable cars under these rules is practicable.

D. & H. coal cars may be loaded off line only to destinations in New Jersey, New York, New England, and Canada via Rouses Point, and with iron ore and pig iron to destinations in State of Pennsylvania via Wilkes-Barre and Buttonwood. Unless otherwise instructed surplus empty D. & H. coal cars will be billed to Carbondale.

## FOREIGN CARS

Foreign cars received under load may be forwarded to destination; when original lading is removed or when received empty they must be handled as provided in Rules 2 and 3.

## FOREIGN CARS AT HOME ON DIRECT CONNECTIONS OF D. &amp; H.

- RULE 2. (a) May be loaded in local service in the direction of the home road, or  
 (b) Loaded (via any route) so that the home road will participate in the freight rate, or moved  
 (c) Loaded or empty in any direction to a local point, or delivered to a short line or switching railroad, if to be loaded for delivery on or via the home road, or  
 (d) Delivered empty to road from which originally received under load, if such road is also a direct connection of the home road, or  
 (e) Returned empty to the delivering road when handled in switching service and owner is not a direct connection in that switching territory, or  
 (f) Delivered empty to home road at any junction point.

## FOREIGN CARS AT HOME ON OTHER THAN DIRECT CONNECTIONS OF D. &amp; H.

- RULE 3. (a) May be loaded locally in the direction of the home road, or  
 (b) Loaded (via any route) to any road in the direction of the home road, or  
 (c) Loaded (via any route) so that the home road will participate in the freight rate, or moved  
 (d) Loaded or empty in any direction to a local point, or delivered to a short line or a switching railroad, if to be loaded for delivery on or movement via the home road, or to a point in the direction of home road beyond Delaware & Hudson Rails, or moved  
 (e) Empty to road from which originally received at junction where received, if impracticable to load in accordance with this rule.

## DISPOSAL OF SURPLUS EMPTY CARS

RULE 4. The use of the home route card is re-established and the information shown thereon will be used as the basis for disposing of empty cars under sections (d) and (e) of Rule 2, and section (e) of Rule 3.

Special care must be taken to dispose of cars owned by our direct connections via shortest route. In disposing of such cars, it is permissible to deliver to road from which received at the junction point where received, or at a junction nearer home road, when empty mileage can be saved for both roads.

Example: D. L. & W. car at Saratoga originally received from N. Y. C. at Saranac Lake may be delivered N. Y. C. at Schenectady.

Cars owned by our direct connections when received from other than owners may be returned to the road from which received only when such road is also a direct connection of car owner.

Yardmasters after filling daily billing orders will dispose of surplus empty foreign cars in accordance with these rules, reporting surplus empty D. & H. (except coal cars) for disposition.

Local Agents will report on daily telegraph report, all surplus empty cars for disposition (except D. & H. and foreign coal cars) which should be disposed of in accordance with these rules.

## PRIVATE LINE CARS

RULE 5. Unless otherwise instructed the return movement of empty private line cars will be over the same road and

through the same junction points as the outbound loaded movement as indicated by the information shown on the home route card.

## TANK CARS

RULE 6. When tank cars are unloaded the owners or party to whom consigned will issue instructions for empty movement to the Agent at point of unloading. The Agent will bill each car to final destination, without revenue, but using standard form of revenue way-bill showing name of consignee and full route.

## GENERAL INSTRUCTIONS

Agent will require shippers to furnish destination and routing of shipments when ordering cars for loading. If proper car is not available for loading offered, same will be ordered in usual manner. When ordering cars, Agents must give commodity to be loaded, destination and full routing. Agent must immediately notify shippers of change in Car Service Rules, furnishing them copies if desired, and notifying them that no cars may be loaded except as authorized herein. Cars loaded by shippers without authority and in violation of these rules must be transferred into proper cars by shippers at their expense, and demurrage charges assessed against cars improperly loaded, until release, as per published demurrage tariff. See chart for the principal connections of the D. & H. Co. and the roads with which each connects.

[The following appears on the front page in red ink.]

THE RATE FOR THE USE OF FOREIGN FREIGHT CARS IS NOW ONE DOLLAR PER DAY.

## Illinois Central Makes Claim Prevention Appeal to Shippers

ON JULY 1, the Illinois Central, through its president, C. H. Markham, issued an appeal to shippers and consignees through advertisements in the press, to aid the road in its "claim prevention" campaign. The advertisement read in part:

During May, 1921, 68 per cent of the amount paid out for loss and damage to freight on the Illinois Central System was on carload shipments. We request carload shippers to insist upon being provided with cars suitable for the particular kind of freight they desire to ship and to see that shipments are properly braced and stowed in cars to prevent damage by shifting.

We request shippers of less-than-carload freight to comply with the rules and specifications of the Consolidated Classification Committee appointed by the Interstate Commerce Commission by selecting substantial containers in which to pack their goods for shipment, so that packages may not be crushed and contents damaged when loaded into cars with other freight. We request them to mark their packages plainly as to name of consignee and destination, removing all old marks that may appear on packages, and to furnish legible billing orders, so that billing may indicate clearly the name of consignee and destination. We also request them to deliver their goods at freight depots early in the day to avoid hurried loading and billing.

We request receivers of freight to observe the character of containers used by shippers and the manner in which goods are packed, crated and marked, particularly when goods are not received in good order, and to make those facts known to the shippers, appealing to them to use good containers, on the ground that defective goods and delayed transportation service cause them loss of trade. We also request receivers of freight to notify our representatives promptly of any concealed loss or damage to their shipments, in order that immediate investigation may be made. Some receivers of freight neglect to do this for days, and even weeks, after shipments have been received, rendering it difficult for the proper inspection and investigation to be made. This militates against good service.

Our purpose in presenting this problem to our patrons is to enable us to render a better service by eliminating delay in the delivery of freight in good condition and to assist in reducing the cost of transportation. By no means do we claim that all of the trouble is due to lack of care on the part of shippers and consignees. We are doing everything within our power to correct abuses for which we are responsible. We are striving with our best efforts to render a service of satisfaction by working closely with shippers and receivers of freight wherever it is possible to bring the troublesome question of loss and damage under control, to the great advantage of shippers and receivers of freight as well as to this railroad.

## Freight Car Loading

WASHINGTON, D. C.

**A** REDUCTION of 5,680 cars, compared with the previous week, in the number of cars loaded with revenue freight during the week ended on June 25 is shown by the weekly report of the Car Service Division of the American Railway Association. The total for the week was 775,061 cars which was a decrease of 136,442 as compared with the corresponding week in 1920 and 70,623 below the total for the corresponding week in 1919. Comparisons with the previous week show reductions in the loading of all commodities with the exception of ore.

The largest increase compared with the week which ended on June 18, was in the loading of grain and grain products, the total for the week being 38,821 cars or 2,173 cars less than the preceding week. Loading of merchandise and miscellaneous freight, which includes manufactured products, amounted to 468,107 cars, which was 1,416 cars under that for the week before. A decrease of 1,045 cars was reported

for forest products, bringing the total for the week to 49,427 cars. Only a slight increase was reported in the number of cars loaded with coal, the total for the week being 156,999 or 244 more than the week before. This was, however, 38,500 cars less than were loaded during the corresponding week in 1920 and 30,159 under the total for the corresponding week in 1919. Loading of livestock totaled 28,229 or a decrease of 312 cars compared with the preceding week and coke 4,557 or a decrease of 545 cars compared with the same period. Reports showed 28,921 cars loaded with ore which was an increase of 55 cars over the previous week. With the exception of grain and grain products, reductions in the loading of all commodities compared with the corresponding week last year were shown.

Compared by districts, the Pocahontas, Southern and Central Western were the only districts to report increases in the number of cars loaded with revenue freight over the week. With the exception of grain and grain products, reductions were under the corresponding week last year.

The loading report for the week of July 18 is as follows:

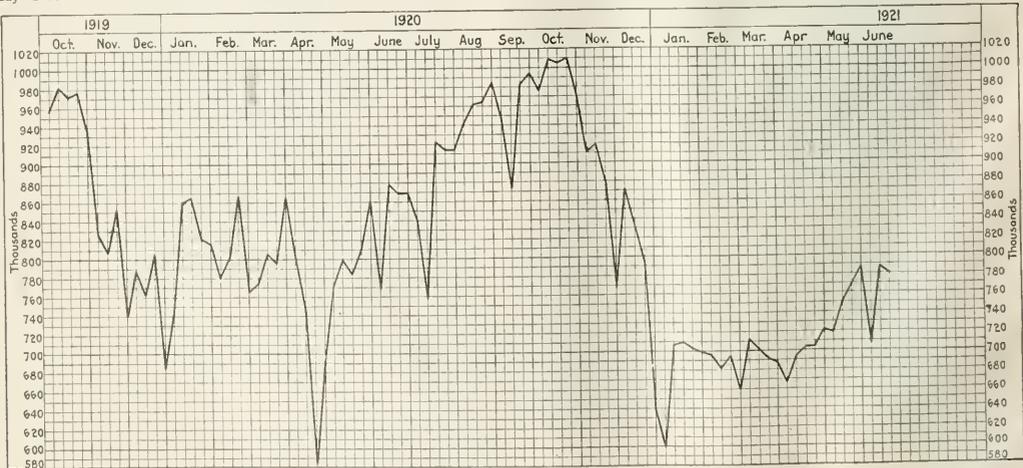
### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS.

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, June 18, 1921.

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mds. L.C.L.	Miscellaneous	Total revenue—Freight loaded			Received from connections		
										This year 1921	Corresponding year 1920	Corresponding year 1919	This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	6,450	3,212	42,592	949	5,406	1,807	56,920	72,095	189,441	217,429	206,202	194,128	247,215	220,097
	1920	6,176	2,955	52,122	2,697	8,362	7,897	25,334	111,886	144,328	164,328	159,735	114,336	151,261	114,495
Allegheny	1921	3,310	3,149	48,920	2,201	3,076	6,587	44,303	52,792	164,328	196,502	159,735	14,259	22,566	16,472
	1920	2,385	3,240	56,016	5,791	3,815	10,246	42,225	72,884	33,955	33,839	32,216	61,292	77,011	59,344
Pocahontas	1921	191	147	24,292	20	1,342	24	2,713	5,226	33,955	33,839	32,216	14,259	22,566	16,472
	1920	121	104	20,710	582	2,048	247	197	9,830	33,839	32,216	14,259	22,566	16,472	
Southern	1921	3,243	2,014	19,632	442	14,898	795	37,966	32,172	111,162	124,991	111,423	42,555	58,075	51,115
	1920	2,937	2,243	24,233	197	16,535	3,289	25,762	49,776	105,493	127,581	102,394	48,325	71,274	67,541
Northwestern	1921	11,263	8,078	4,885	625	15,076	18,383	27,257	32,743	118,310	155,773	146,132	88,325	112,075	111,115
	1920	9,867	7,632	8,151	1,332	17,463	44,173	23,131	44,024	105,493	127,581	102,394	48,325	71,274	67,541
Central Western	1921	11,411	9,775	12,799	138	5,119	543	30,713	34,995	105,493	127,581	102,394	48,325	71,274	67,541
	1920	9,011	11,009	21,913	406	6,373	4,798	31,714	42,355	105,493	127,581	102,394	48,325	71,274	67,541
Southwestern	1921	5,116	2,166	4,123	727	5,555	727	15,630	23,878	57,952	60,621	49,805	39,463	48,041	45,831
	1920	3,928	2,658	5,693	926	6,022	734	16,330	24,330	57,952	60,621	49,805	39,463	48,041	45,831
Total all roads	1921	40,994	28,541	157,243	5,102	50,472	28,866	215,622	253,901	780,741	916,736	807,907	514,358	675,443	574,895
	1920	34,425	29,840	188,838	11,841	60,638	71,874	164,693	355,087	780,741	916,736	807,907	514,358	675,443	574,895
1919	30,044	27,582	172,317	.....	61,974	63,608	.....	50,929	101,186	135,995	.....	.....	161,085	.....	.....
Increase compared	1920	6,569	.....	.....	.....	.....	.....	50,929	101,186	135,995	.....	.....	161,085	.....	.....
Decrease compared	1919	10,950	959	.....	.....	.....	.....	215,622	152,715	421,746	.....	.....	153,273	.....	.....
Decrease compared	1919	10,950	959	14,974	.....	11,499	34,742	.....	198,584	27,166	.....	.....	60,537	.....	.....

L.C.L. Merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

June 11	1921	41,119	29,135	163,088	4,788	51,393	30,179	215,740	253,555	788,997	930,976	807,205	509,129	681,514	563,838
June 4	1921	41,394	24,039	142,674	4,642	48,227	28,311	195,246	221,975	706,508	828,907	776,610	480,162	657,709	524,731
May 28	1921	46,337	27,518	164,870	5,605	50,277	28,673	215,095	248,862	790,849	898,169	763,761	519,191	670,536	550,858
May 21	1921	37,252	26,368	158,512	5,337	50,216	30,214	216,030	244,401	768,350	862,074	777,324	508,969	666,585	557,879



Curve of Revenue Car Loading

Week ending June 25 not plotted, 775,061.  
Week ending June 18, 1921, 780,747.

Week ending June 18, 1920, 916,736.  
Week ending June 18, 1919, 807,907.

The number of surplus freight cars continued to decline during the period from June 15 to June 23. The average was 377,850 cars in excess of current freight requirements or a reduction of 3,896 cars as compared with the total on June 15. Surplus box cars totaled 140,627 or a decrease of 3,308 in approximately a week while surplus coal cars numbered 163,982. The latter figure is an increase of approxi-

mately 4,500 over that reported for June 15 but this is due principally to a correction that had to be made in the earlier figures resulting from a mistake made by one of the large carriers in its report. Reports also showed an increased demand for other classes of freight cars. From June 15 to June 23, surplus automobile and furniture cars declined approximately 460, flat cars 388 and stock cars 1,140.

## Impact and Its Relation to Damage Claims\*

### Two Miles an Hour the Maximum Speed for Coupling if Evils of Rough Handling Are to Be Avoided

By J. A. Pilcher

Mechanical Engineer, Norfolk & Western

**T**HE REDUCTION of operating expenses, necessary to the very existence of railroads in this country, is the greatest problem confronting operating officers at the present time. Among the many items which make up the volume of operating expenses is damage to freight equipment and lading in transit.

Damage claims chargeable to rough handling and unlocated damage arising from movement of freight traffic present a serious financial drain. Campaigns to educate employees through picture lectures and periodic meetings have been instituted on many roads to illustrate more forcibly the de-

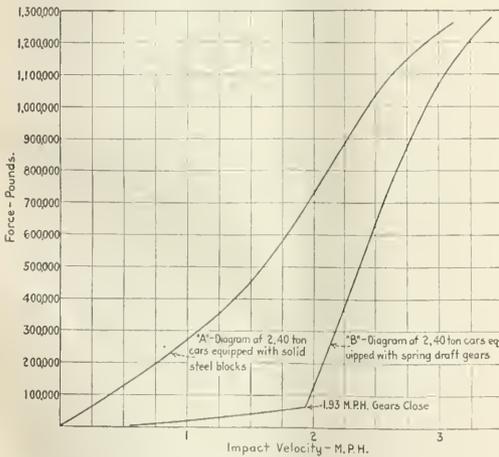
when the fast moving train strikes a standing train or some other obstruction.

A package dropped from a high building is not hurt in starting, though the package and every part of it increases its speed at the rate of 32.2 ft. per second and has a force constantly pressing against it equal to the weight of the package. This is nearly 22 miles an hour. Inversely, it is also true that if the package or a car or train moving at a speed of about 22 miles an hour, had a constant force applied to it to stop it equal to its own weight, it would come to a standstill in one second and in a distance of 16.1 ft. and with no more damage to it than to the package in starting the fall, provided it were possible to apply the force uniformly to every particle of the package, car or train, and its contents at the same time.

If the package weighs only one pound and is packed in any kind of shape, a force of one pound on any part of it is not likely to do harm. If the package weighs 1,000 lb. and we desire to set it in motion, we must be more particular where we apply the force and be sure it is not concentrated on some weak spot or some very limited area of the surface. Exactly the same law applies to stopping the movement of the package after it has been set in motion. If a package made of strawboard or other light material for holding light or fragile commodities, be stored between the end of a car and heavier goods in a strong box, or between two such boxes, it will suffer if the car receives even reasonable service. If it is stored under such heavy boxes it is, of course, crushed by their weight. Such packages, therefore, should be stored on top of the heavy freight when not stored in cars by themselves.

If we start or stop cars weighing 130,000 lb. to 300,000 lb. it is necessary to take hold of them at some point of the structure designed to resist a force of 130,000 lb. to 300,000 lb. if they are not to break or crush. Likewise, the package or the car must be strong enough to transfer the force from the point at which it is applied to every other particle of itself and its contents. It would not be wrong at all to stop one car weighing as much as 300,000 lb. traveling at a speed of 22 miles per hour in one second and in a distance of 16.1 ft., by applying a retarding force of 300,000 lb., on the end of the coupler in a proper contact, but it would be out of all question to apply to this one coupler a sufficient force to bring to a stop a train of such cars under the same conditions.

In the stopping of trains with the brakes, the necessity for any such attempt is done away with by the application of the retarding force to many points along the whole train, thus distributing the great total force. The brakes on the freight cars are proportioned in such a way that under no



Relation Between the Speed at Which Cars Are Coupled and the Force of Impact

struction of freight equipment and lading caused by careless shifting and handling of trains, improper warehouse trucking of freight and indifferent stowing of merchandise in cars.

The term rough handling does not always convey the same meaning to everyone and a definition may not be out of place. In the first place, it does not mean the rapid moving of either car or package, after it has once been set in motion. But it does mean a rapid rate of change in the speed of movement, as when a package, dropped from a high building, strikes the pavement and comes to a sudden stop, or

\*Prepared for the Freight Claim Prevention Committee of the Freight Claim Division, American Railway Association.

condition can the retarding force exceed about one-quarter of the weight of the light car. Under this condition, if traveling at a speed of 22 miles per hour it could not be stopped by the brake in less than four seconds or in a distance less than 64.4 ft. In the case of trains of loaded cars the retarding force from the brake, compared to the weight of the car and contents, is very much less, in many cases not as much as one-twentieth of the weight of the car. If the force is one-twentieth the weight of the car it will come to a standstill from a speed of 22 miles per hour in 20 seconds or in a distance of 322 ft. Such forces as have just been discussed, even up to the weight of the package, if uniformly and evenly applied, do no damage.

Rough handling, therefore, is either too rapidly starting or stopping the movement of the package, car, or train, or applying the necessary forces for stopping or starting on much too small a portion of the package, car or train. Ramming a truck into a box of goods to slightly alter its position does local damage to the package and contents, and, so far as the results to this particular package are concerned, it is just as much rough handling as running a switch engine into a train of box cars standing at a freight station.

The general rule for moving cars in all cases is "do not start or stop too quickly" and for moving packages in the freight house the same rule applies, with the additional caution to "be careful where and on what amount of surface the force is applied."

In moving packages there is little danger from local application of the force unless the package is rammed with the truck to produce a small movement, but the warning against stopping too quickly is very necessary, as packages of all kinds stop very quickly when dropped on the floor or on each other. Personal experience with package handling soon teaches the conscientious man, as he so often sees the results of ramming and dropping, and no further reference will be made to them. But car handling, probably the most prolific cause of unlocated damage, will be considered further for the reason that the damage is largely hidden and thus leaves the party causing the damage without the much needed experience, be he ever so conscientious.

### Impact Between Cars

No car should strike another at a speed greater than two miles an hour. This speed brings a force of about 125,000 lb. between the couplings of cars weighing about 130,000 lb. and brings the twin spring draft gear solid. Any striking speed above this rapidly increases the forces of reaction.

No locomotive weighing with tender as much as 130,000 lb. should have the tender end with the draft gear connection rammed into a car at a speed greater than two miles an hour. When the front end of the locomotive is used the speed should be brought down to about one and one-third miles an hour, as only the car draft gear comes into action. When a larger locomotive is used, the striking speed should be still further reduced in proportion to the weight of the locomotive.

In starting a train, if the locomotive is traveling at a speed greater than two miles an hour when the rear end is jerked into motion, the condition is the same as far as the results are concerned as if one of the cars had been rammed into the other at that speed. While the train is in motion all conditions that will bring about a difference in speed of two adjacent parts of over two miles an hour should be avoided. If there were no unrestricted slack in the train when the train is passing through dips and over humps the variations in speeds of adjacent cars could not become of any serious importance. If the brakes could be applied to each car simultaneously and in equal proportions no marked difference in speed could be developed. Unrestricted slack between cars cannot be entirely eliminated. Up to the present time no brake is in use that does not have a time element

between the application of the brakes on the adjacent cars. Owing to changes in loading and variations in piston travel the brakes are not always proportionately the same. Care must be exercised in bringing the train through dips and over humps. Maintaining a constant speed of the engine is a great help in this respect. In the application of the brakes a heavy application at slow speeds is the one most liable to give trouble. This may bring the front part of the train to a dead stop before the brakes have applied on the rear portion. This is the same as running into a standing car.

A series of impact tests were made at Rochester, N. Y., using cars fitted with various kinds of draft gears and with no draft gears. Recording instruments were used which showed the instantaneous speeds and recorded the time down to one-thousandth of a second. From this accurate record of the speed of movement of the struck and striking cars, the forces of reaction between the parts of the cars in contact were determined during each moment of contact. The diagram *A* is a record of the impact between two loaded cars, weighing 132,000 lb. each, without any draft gears, and shows the striking speed in miles per hour, plotted against the forces in pounds. It will be noted on this diagram that striking at a little more than one-half mile an hour brings the forces of reaction at the points of contact up to the weight of the car. Striking at one mile an hour brings the forces up to about 270,000 lb.; one and one-half miles an hour, up to about 455,000 lb., and if the striking is done at two miles an hour the forces will be 730,000 lb., provided the car is not already over-strained and giving way under the forces thus developed.

Diagram *B* shows the forces when two loaded 40-ton cars weighing 132,000 lb. each and fitted with tandem spring draft gears, are run together. This type of car with the tandem spring draft gear is selected because so many box cars of this capacity and so equipped are in use and in them is hauled the larger portion of the box freight of the country. If striking speeds are reduced to take care of these cars, more modern cars with better draft gears will be properly protected.

It will be noted on diagram *B* that the draft gear goes solid at 1.93 miles an hour and at this point the force of reaction between the cars is only about one-half the weight of the car, or 62,000 lb., a very small force for the car to stand. After the draft gear goes solid the forces between the cars rise very rapidly with the increase in the striking speed. Even at as low a striking speed as two miles an hour, an increase of only 0.7 miles an hour, the forces of reaction have increased to 125,000 lb. At a striking speed of 2.25 miles an hour the forces of reaction have increased to about 375,000 lb. Another 0.25 mile an hour speed increase brings the forces of reaction up to about 635,000 lb.

If these forces acted on the units in the car the same as the force of gravity acts in the case of a falling body, viz., if every particle received just the force necessary to retard it, results would not be so serious as the records show. The fact is that speeding up or slowing down of movement in a horizontal plane has to be brought about by some external force, applied against some particular portion of the car, viz., between the wheels and rails with brake application and at the coupler when the cars come together. Each package or unit of freight in the car has also to be acted on from without itself either to be accelerated or retarded in its motion. Some of the packages are in contact with the ends of the car. If they are heavy and the friction on the bottom of the car or of the parts on one another is not great enough, the ends of the car are knocked out, as when lumber comes through the end of a car. If one package has to take the force of the one next to it, it is simply a question of the relative values of the strength and force as to whether or not it will be crushed.

The character of the package also has much to do with the liability to damage under the forces of the impact. A crate of eggs with proper strips between the eggs does not need the care in handling that would be necessary with a box full of eggs with no strips between them; neither does a basket of eggs require as careful handling as a box of eggs. The basket, being less rigid and the parts of the basket itself being readily subject to changes in shape from small forces, allows the eggs some movement after the basket has reached the floor and so does not bring them to so sudden a stop as would the box. The crate with the resilient or spongy pasteboard partitions between the eggs allows a comparatively large amount of movement of the eggs and so does not need the care in handling of either the basket or the box.

This illustrates the necessity for holding striking speeds down to the point where no draft gear in common use goes solid if rough handling damage to freight is to be held down to a reasonable minimum. It also illustrates the fact that the reaction forces of impact increase very rapidly after the draft gears go solid and, further, that a very small increase in striking speed above that necessary to bring the draft gears solid brings into action a force that will damage any reasonable structure.

The question can very naturally be asked, "If such a statement is true, why do we not see more damage?" Reported rough handling damage added to the hidden and unaccounted damage to freight, called "unlocated damage" is now certainly more than enough. The cost of freight car repairs is another item that shows more than enough. Furthermore, the damage to equipment, by absorbing the force of the impact, often protects the lading.

#### Damage to Equipment

The damage to equipment is not always immediately apparent to the eye. A car, unlike a glass tumbler or an egg, does not fall to pieces as soon as it is struck too hard. It is a structure that has more or less resilience in itself and the parts will go through a very considerable amount of deformation before they break. This deformation of parts is not apparent to the brakeman who allows the cars to go together or to the engineman who allows the engine to go against the cars too hard. The damage has been done nevertheless and shows up at some future time when there is seemingly no reason. A stone mason breaking a rock with his hammer does not accomplish his purpose with a single blow. He strikes a large number of blows and finally the rock cracks open. Can you say which blow broke the rock? Did the last blow have any more to do with it than the first? The last blow was probably not as hard as the first, since the striking arm grows tired. Just in this way does every over speed coupling of cars do its damage, which finally shows up in the car repairs.

#### Prevention

The great question is how are we going to bring the damage from rough handling down to a reasonable minimum? The answer is to educate the men doing the handling as to the significance of impact at over-speeds and further educate them so they can judge the slow speeds at which the equipment should be brought together. Two miles an hour is a rail length in about 11 seconds, a very slow walking speed for a man. Three miles an hour is an ordinary walking speed for a man, and four miles an hour is a very fast walking speed for a man. Remember that no striking or contact speed should be above two miles an hour.

Would it pay to have trained observers constantly on the alert that they might keep the car handlers trained in the matter of speeds and the effect of over-speed impact? There are certainly great possibilities for saving by employing such a supervisory force.

Such training would also put an end to the constant call

for stronger cars from year to year. The energy of moving masses is as the square of the speed, so the strength has to be increased much faster than the speed or the damage will be much greater in proportion than the increase in speed.

The increased cost of car repairs is just as much or more a question of the method and care of handling as it is a question of design of equipment and efficiency of the repair department. Comparison can be made of the cost of repairs per car mile as between one road and another, but if a comparison is not also made of the method and care of handling, it has little real value. The man having responsibility for the repairs has nothing to do with the handling and no chance to reduce the over-speed impact. The man who is responsible for the handling is also responsible for the cost of handling and has constantly before him the incentive to handling cost reduction. He should remember that the men who repair the bad order cars do not put the cars in bad order and that the cost of repairs to bad order cars on the mileage basis depends much more on the number of cars damaged and the amount of the damage, than on any possible difference in the methods of handling the repair department.

Those responsible for the cost of handling the equipment very naturally say they cannot handle at a speed of not over two miles an hour and keep handling expense at a reasonably low point. They must not forget that the handling speed and the over-speed at the instant of impact are entirely separate matters. The question is, how much extra will the railway company have to pay for the reduction of over-speed impact and will this extra payment save as much or ten times more in freight claims and cost of repairs to equipment? It must not be forgotten here that only a small portion of the over-speed impact damage is apparent at the time of impact, only those cases that are very flagrant digressions from proper methods showing up immediately.

Over-speed impact can only be gotten rid of by the conscientious painstaking effort of those handling the equipment. They must learn how they can give quick handling with low impact speeds of not over two miles an hour. They must inform themselves of the consequences of over-speed impact and train themselves to estimate the slow speeds correctly. Those who supervise in this work must give particular study to the consequences of over-speed impact and give themselves particular training in judging slow speeds so they can intelligently instruct and correct those who actually handle the cars and locomotives.

The supervising forces will have to be at this instructing and correcting day in and day out, year after year, even more strenuously than they are after the speeding up of the movement and keeping down of the handling cost. They must remember that the direct handling cost is easily shown on paper, but the indirect handling costs can be much greater, and that while these indirect costs are accounted for by another department, their influence on the net earnings of the railroads is no less marked for that reason.

They must remember also that while it may save the car, the designing of stronger cars does not save the lading. Furthermore, stronger cars mean heavier cars. Heavier cars cost more in the first place, their earning capacity for a given axle loading is reduced, and hauling around the extra dead load causes a direct increase in operating expenses.

THE MERCHANTS' ASSOCIATION of New York City, through its traffic bureau, is agitating the plea, said to be in the minds of many thousands of traveling salesmen, for a resumption of the general sale of mileage books—3,000 miles or 5,000 miles—for travel on all railroads at a rate lower than the regular one-way fare. The statement of the Merchants' Association says that the National Council of Traveling Salesmen's Association has appointed a committee to present this matter to the railroads and to the Interstate Commerce Commission.

# Electrification of the Paulista Railway of Brazil

## Fuel Scarcity Forces the Adoption of Electric Motive Power on Brazilian Wide Gage Line

By W. D. Bearce

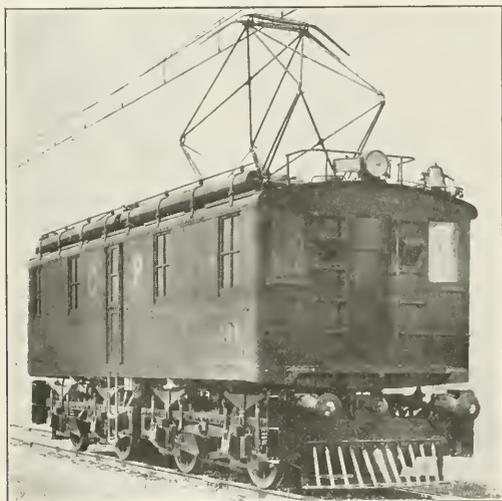
Railway and Traction Engineering Dept. General Electric Co.

THE concluding shipments are being made on the \$2,000,000 contract with the International General Electric Company for the electrification of a section of the Paulista Railway in Brazil. This project includes a double track section 28 miles in length between Jundiaby and Campinas.

The motive power equipment consists of eight freight locomotives weighing 100 tons each and four passenger locomotives weighing 120 tons each. Work has been

The road bed is rock ballasted and the construction throughout is equal to any of the main line roads in the United States. The track gage is 5 ft. 3 in. on the section to be electrified, but some of the connecting lines are narrow gage and facilities are provided for transferring the car bodies complete with merchandise to narrow gage trucks and vice versa. The passenger service includes high speed passenger trains with full Pullman accommodations. The present locomotive equipment consists of heavy type locomotives for freight service with high speed engines for passenger service. All are equipped for burning wood as fuel instead of coal. On account of the high price of coal and the great difficulty in securing it, wood is burned almost exclusively in this part of South America. The variety most used is known as quebracho, which gives satisfactory results except that, of course, the quantity required for a 100-mile run is very bulky. Recently there has been difficulty in procuring even wood that is suitable for this work. Electrification, therefore, was decided upon as the remedy.

The section selected for electrification presents a rather difficult profile including maximum grades of 1.5 to 1.8 per cent. While the immediate plans of the Paulista company contemplate electrification for only a distance of 73 miles, the design and capacity of all apparatus and equipment is suitable for operating on an extension to Sao Carlos a total distance of 129 miles. The approximate tonnage handled over this line during the year 1918 from Jundiaby to Cordeiro was about 275,000,000 ton-miles, including freight, passenger and non-revenue service. The electrical equip-

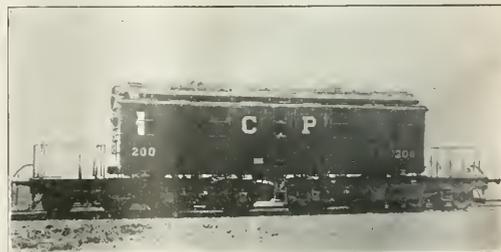


Freight Locomotive for the Paulista Railway

ment is designed for handling approximately double this amount and the sub-station and line equipment is also capable of handling approximately double the 1918 revenue tonnage. As a basis for estimates it was assumed that the number of trains per day over the initial electric zone will be 6 passenger and 21 freight in each direction, making a total of 54 trains per day.

progressing on these locomotives for about a year at the Erie works and the first locomotive was put on the test track about the middle of March. Complete running tests were made and two freight locomotives were shipped before the middle of May. One of the passenger locomotives was also put on the test track and shipment was made, according to schedule, during May.

In addition to the locomotives, the contract included the equipment of a complete 3,000-volt direct current sub-station of 4,500 kw. capacity consisting of three 1,500 kw. 3 unit motor generator sets, transformers, switches and high tension equipment. Overhead line material has also been furnished for 76 miles of track and material for 10 miles of 88,000 volt, 3 phase, 60 cycle high tension transmission in duplicate from the lines of the Sao Paulo Light & Power Company.



120-Ton 3,000-Volt Passenger Locomotive

The line from Campinas to Jundiaby is a main line section connecting at the southern terminus with the Sao Paulo Railway and the Central Railway of Brazil. The Central Railway is government owned and electrification of this line has also been authorized. At Campinas and other points north connection is made by the Paulista Railway with a number of feeder lines, which bring large quantities of coffee and other raw material from the interior.

### Locomotives

The initial order for locomotives included eight freight and four passenger all of the twin geared type. These are similar to those in successful use in United States on the Chicago, Milwaukee & St. Paul, the Butte, Anaconda & Pacific, the Detroit River Tunnel and other roads, and

include the well tried features of the best types of locomotives now in service.

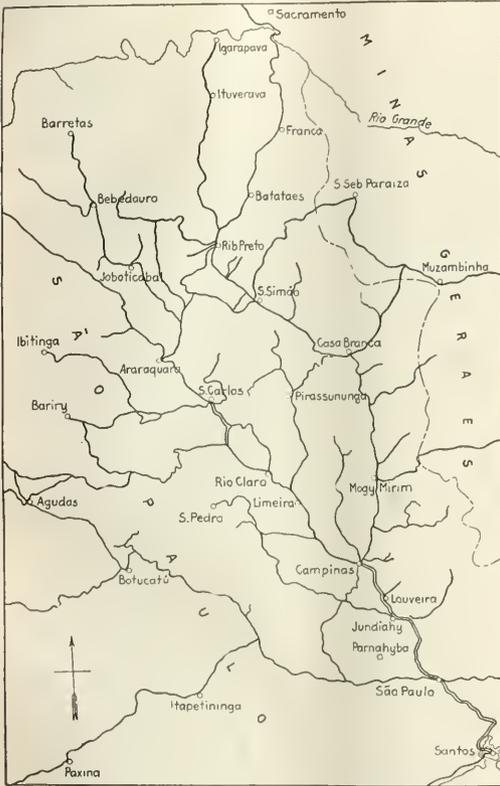
**Freight Locomotives.**—The freight locomotives weigh 100 tons, all weight on driving axles. They are designed for handling a trailing train of 770 tons on the maximum 1.8 per cent grade at speeds of from 12 to 16 miles per hour. The maximum allowable speed on tangent level track is 30 to 35 miles per hour. It is expected that because of the greater capacity and higher speed characteristics the electric locomotives will provide an appreciable improvement in the existing steam service, both as regards schedule speed and weight of trains handled.

As shown in the photograph the freight locomotive has a running gear consisting of two 2-axle trucks coupled to-

or bulk heads so placed as to form two end compartments about 5 ft. in length for the operator's cabs and the remainder for housing the control equipment, compressor-exhauster set and other auxiliary apparatus. Two pantograph trolleys are of the double pan sliding type similar to that used on other heavy electrification projects and are mounted on the cab roof. These are insulated for 3,000 volts and are designed to operate through a range of from 15 to 22 ft. above the rail.

To conform to the equipment on this road it is necessary to provide control for the vacuum type brakes used on the cars. Two entirely different systems of brakes are therefore provided for; a straight air brake system for the locomotive, and vacuum type brakes on the train. The two systems are manipulated in the same manner as the usual all compressed air type, the locomotive brakes being applied automatically at the same time as the train brakes under normal running. Brakes can be applied on the locomotive alone or on the train alone if desired. When regenerating, however, there is a magnet valve so arranged that straight air cannot be applied while returning power to the trolley. However, should an emergency application be made, regeneration is discontinued and the brakes are applied on the locomotive.

**Passenger Locomotives.**—The passenger locomotives are similar in design to the freight units except that a two



Paulista Railway System and Connections



Three Unit Four Bearing 1,500 Kw. 3,000-volt D. C. Motor Generator Set for the Paulista Railway

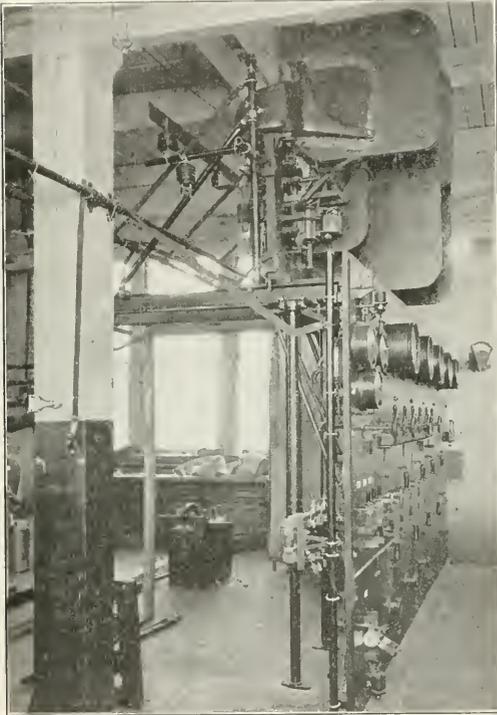
gether by an articulated joint, and a single cab of the box type. The draft gear is mounted on the trucks and, all hauling and buffing stresses are transmitted through the truck frames and articulated joint, thus eliminating any possibility of damage to the cab and platform structure. Each truck is equipped with two GE-267 motors of the box frame type geared to the driving axle by two sets of gearing, one at each end of the motor. One of the trucks is side equalized and the other cross equalized, thus providing the equivalent of a three point support for the superstructure. The diameter of the driving wheels is 42 inches and of the cast wheel center 36 in. allowing for a steel tire 3 in. in thickness. The overall length of the locomotive is 39 ft. 2 in. and the rigid wheel base 8 ft. 8 in. The interior of the cab is divided into three compartments by partitions

axle guiding truck is provided at each end to comply with the railway company's specifications for high speed service. The motors used are identical to those on the freight locomotive except for the change in gear ratio to provide for maximum speeds of from 56 to 62 miles per hour. The running gear consists of two 2-axle driving trucks the inner ends of which are connected by an articulated joint. The outer ends are extended and supported on the guiding trucks by roller centering devices over the front axle and an articulate joint over the rear axle which also connects the guiding and motor trucks. The general arrangement of motors and control is the same as that on the freight locomotives, and a similar system of regenerative braking is also provided. This locomotive is designed for hauling a train of 440 tons trailing up a one per cent grade at a speed of 38.8 miles per hour. The gear ratio on the passenger locomotive is 70 to 30 or 2.33.

Regenerative braking is accomplished by connecting one motor in such a way that it excites the field of three other motors and also its own field. This scheme is in general similar to that used on the Chicago, Milwaukee & St. Paul gearless passenger locomotives and eliminates the necessity for a separate motor generator set for excitation. A balancing resistance is connected in the circuit to protect the motors against sudden surges of the line voltage and to give effective protection against line voltage changes. In order to

begin regeneration, the main controller handle is turned to the first notch series position and the selective handle to the braking position. The main handle is then notched up until the desired braking effect is obtained.

A high speed circuit breaker is placed between the 3,000 volt trolley and the locomotive apparatus. The duty of this breaker is to protect the motors and equipment from any injury due to short circuits or overloads. In case of a short circuit this breaker cuts in a protective resistance and then opens the line contactor. The action is very rapid so that in case of heavy overload, or short circuit, the possibility of damage is reduced to minimum. Breakers of a similar type



3,000-volt D. C. Generator and Feeder Railway Switchboard

are in operation in many parts of the United States both on locomotives and in sub-stations.

The following table gives the dimension, capacity and weights of the two locomotives:

DATA ON ELECTRIC LOCOMOTIVES FOR PAULISTA RAILWAY

	Freight	Passenger
Length overall	39 ft. 2 in.	55 ft.
Width	10 ft. 1 1/4 in.	10 ft. 1 1/4 in.
Height over trolley down	14 ft. 3 in.	14 ft. 3 in.
Total wheel base	26 ft. 8 in.	46 ft. 0 in.
Rigid wheel base	8 ft. 8 in.	7 ft. 9 in.
Total weight	200,000 lb.	240,000 lb.
Weight on drivers	200,000 lb.	160,000 lb.
Weight per driving axle	50,000 lb.	40,000 lb.
Weight per guiding axle	None	20,000 lb.
Weight of mechanical equipment	115,400 lb.	155,400 lb.
Weight of electrical equipment	84,600 lb.	84,600 lb.
Diameter of drivers	42 in.	42 in.
Diameter of guiding wheel	.....	36 in.
Number motors	4	4
Gear ratio	82/18	70/30
Total continuous rating hp.	1,600	1,600
Total (1 hour rating) hp.	1,680	1,680
Tractive effort cont.	28,820 lb.	14,720 lb.
Tractive effort 1 hr.	30,600 lb.	15,680 lb.
Speed continuous rating m.p.h.	21 (34 km.)	41.25 (66.4 km.)
Speed 1 hour rating m.p.h.	20.8 (33.5 km.)	40.5 (65 km.)
Maximum safe speed	28 (45 km.)	53 (85 km.)
Tractive effort 30% coef. adh.	60,000 lb.	48,000 lb.

## Substations

For the initial electric zone between Jundiahy and Campinas, one substation is being installed located at Louveira, a distance of 9.5 miles from Jundiahy. This station contains three 1,500 kw. 3 unit synchronous motor generator sets each arranged to operate its two generators in series for 3,000 volts. Power is received from an 88,000 volt 60 cycle transmission line and stepped down through three 3 phase, 1,900 kva. transformers to 2,300 volts for the synchronous motor.

The switchboard is similar in design to other 3,000 volt d. c. equipment. The 3,000 volt panels are installed together with the auxiliary station lighting panel. The high voltage panels include one for each of the motor generator sets, and one for each outgoing feeder. The main circuit breakers are located above and to the rear of the switchboard panels so as to be well out of reach to prevent accidental contact. They are remotely controlled from operating levers located on the front of the panels. A 3,000 volt line switch is also included with each circuit breaker. These switches are remote controlled from the front of the panel, as a safety measure. The switch handles for the circuit breakers are inverted to distinguish them from the line switches. The alternating current switchboard is electrically controlled throughout. For lightning protection a 96,000 volt aluminum cell arrester is installed in the high tension room of the station.

As a protection from short circuits and excessive overloads a high speed circuit breaker is installed with each motor generator set. This is connected to the negative terminal of the machine and arranged to connect a limiting resistance into the circuit upon opening. At the same time the station circuit breakers are opened, completely cutting off the power supply. The speed of these circuit breakers is such that resistance is inserted in the circuit before the short circuit current reaches sufficient value to injure the apparatus.

Other auxiliary equipment supplied to the station includes a 15 ton hand operated crane, a portable oil filter press and oil testing equipment, and a stationary compressor set. For control current a 4 3/4 kw. battery charging motor generator set is used with a 170-volt storage battery.

## Power Lines

The railway company's high tension transmission line has been constructed with duplicate circuits mounted on separate wood poles between Jundiahy and Louveira, a total distance of 10 miles. At Jundiahy this line is permanently tied in with a new line constructed by the Sao Paulo Light & Power Co., extending a distance of about 17 miles to the hydro-electric station at Parnahyba. The power company's line is constructed with an H type pole line carrying the duplicate circuits. This transmission line from the water power plant to the substation will thus be operated over a distance of 43 km. as a single system at 88,000 volts 3 phase 60 cycle. The line is designed for ultimately supplying three substations and the conductors are of 1/0 B&S stranded copper which will insure a very low line loss under ordinary operating conditions. On the railway company's line two cross arms are used with large pin type insulators. A ground wire is also carried on each transmission line for lightning protection.

*Secondary Distribution.*—The overhead line construction is of the same general design as that used on the Chicago, Milwaukee & St. Paul. This is known as the twin catenary construction, having two 4/0 trolley wires supported from the same steel messenger by loop hangers. Wood poles suitably guyed are used for supporting the catenary. The hangers for the two contact wires are attached at alternate points, giving a most flexible type of construction and insuring the elimination of all "hard spots." Bracket supports are

used on single track construction and cross span for multiple track work. The normal height of the contact wire is 21 ft. above the rail. For all sidings and yard tracks a single wire is used over each track. The material furnished by the General Electric Company includes hangers, pull offs, copper and steel wire, miscellaneous hardware, etc., for 76 miles of track. The use of the twin catenary construction is particularly successful for lines operating heavy trains requiring the collection of large amounts of current through pantograph trolleys. In addition to the advantage of the two contact wires for handling the current required, this construction also insures practically sparkless commutation at the point of contact, both for heavy freight and high speed passenger operation.

### Bonding

The weight of rails on this line is 91 lb. and these are bonded with the pin terminal type bond 42 inches in length and 211,600 circular mills cross section. Cross bonds are also used for interconnecting the rails of the same track and for bonding between tracks on the multiple track sections.

### Locomotive Testing and Shipment

In the preparation of the electric locomotives for testing and for export shipment there are a number of unusual features which may be of interest. The gage of track on the Paulista Railway being 5 ft. 3 in. special arrangements were necessary to provide for removing the locomotives from the shop to the test track. To provide the necessary test track about one mile of extra rail was laid on the East Erie Commercial Railroad with 5 ft. 3 in. gage. In order to transport the locomotives from the shops to the test track, a distance of about three-quarters of a mile, special transfer trucks were used; one for each truck of the locomotive. By means of these trucks, which operate on their own wheels of standard gage, the locomotives were moved out over the usual transfer table and standard gage track to the special gage section provided for testing. Upon reaching this section they were moved off the transfer trucks over a ramp, the end of which was elevated to the same height as the special trucks.

A complete set of tests was run on all locomotives including regenerative braking and high speed running. After test the locomotives were transferred to the shipping department where they were disassembled and prepared for export shipment. The cab complete was removed from the truck and the pantograph, bells, etc., removed from the cab roof. Each truck was shipped separately without removing the motors from the truck frame. In the case of the passenger locomotive, each bogie truck was shipped with the adjacent motor truck without disassembling. On account of the large vessels available for making this shipment it was not necessary to reduce the locomotive to small packages.

Progress on the construction is shown by the fact that the first freight locomotive was ready for test March 15; during the month of May three freight and one passenger locomotives were shipped and progress on the balance of the order indicates that similar shipments will be made the following two months in accordance with the terms of the contract.

GEORGE W. LEE, chairman of the Temiskaming & Northern Ontario Railway Commission, announces that the Ontario Government has been recommended by this commission to place on sale through the municipalities of the North, the entire number of lots, between six and seven thousand, which the commission holds, outside of the railroad's right of way. As Government property these are not assessable, and the commission's decision is the result of a long series of protests from the municipalities where they are located.

## New Rules Replace National Agreement at Altoona Works

PIECE work has been re-established, punitive overtime abolished and new classifications and rates of pay inaugurated in the Altoona works of the Pennsylvania System under an agreement between the management and the employees, which became effective on July 1, 1921. Details of the rules were made public in an announcement by P. F. Smith, Jr., works manager.

The new rules, which take the place of the Shop Crafts' National Agreement covering working conditions, were formulated by a committee representing the employees at Altoona works. These representatives, a committee of 75 employees, elected by secret Australian ballot, supervised jointly by the management and the employees, to represent the employees at the four shops comprising the Altoona Works, have also formed themselves into a permanent organization known as the Altoona Works Employees Association. The preamble of the constitution and by-laws adopted by the organization at its first meeting reads:

We, the employees of the Altoona Works, Pennsylvania System, in order to form an organization to establish satisfactory working conditions in our shops, provide means for fair dealing between the management and the employees, and to promote the general welfare of our community, do establish this constitution for the Altoona Works Employees Association.

The organization of the plan of employees representation, established at Altoona, provides as follows:

A local committee of three members to represent the employees in each class in each of the shop units; a shop committee, consisting of a local committee chairman of each craft to represent the employees in each of the shop units; an Altoona Works general committee, consisting of a shop chairman to represent all the employees in the shop crafts at Altoona, and a Works Council composed of all the local committeemen. The committeemen will serve for three years, one-third of the entire representation being elected every year.

In general, the most important of the new rules agreed to by the men and the management provide:

1. Re-establishment of piece work under the principles previously announced by the railroad, namely, under rates set so that piece workers can earn a rate which is higher than the day-work rate which may from time to time be established for day-workers.

2. A 48-hour basic week, with not more than nine hours on any one day, or less than eight hours on any day except Saturday. This permits the men to decide for themselves whether they shall work eight hours per day or more than eight hours on some days during the week, in order to get a half holiday on Saturday.

3. Where reduction in expenses becomes necessary, it may be accomplished either by reduction in force or reduction in hours of work, as the employees themselves decide.

4. Overtime to be paid *pro rata* for the ninth and tenth hours and time and one-half after the tenth hour.

5. Seniority based on length of service with the company, rather than length of membership in a particular craft.

6. Classification of work under a wide spread of rates, which permits the establishment of rates of pay based on skill required, rather than a flat rate, and gives a man doing more important work a higher rate of pay.

FOUR TRACKMEN WERE KILLED and three seriously injured on the Cumberland Valley division of the Pennsylvania Railroad near Milnor, Pa., on July 2, while riding to their work on a motor car. They met a freight train and their car was wrecked. There was a dense fog at the time.

# General News Department

The American Association of Railroad Ticket Agents will hold its third annual convention at St. Paul, Minn., on August 19 and 20.

The Chicago, Burlington & Quincy on July 1, put on 1,500 workmen to repair grain and coal cars, according to E. P. Bracken, vice-president in charge of operation, to make ready for the expected heavy movement of these commodities.

An erroneous statement occurs in the sixth sentence of an article describing the Minich safety hand brake published on page 1464 of the June 24 *Railway Age*. The sentence should read "The usual brake chain is eliminated, being replaced by a connecting bar attached to the brake rod (or air brake lever on hopper cars)."

The Southern Pacific in connection with its fuel economy campaign will reward the engineer and fireman on each division having the best fuel efficiency and economy record for the year with a trip to Chicago as representatives of the company at the next International Railway Fuel Association's annual convention with all expenses paid including time lost.

A fire in the yards of the Chicago Junction at West Forty-third street, Chicago, on July 4, the origin of which has not been determined, destroyed a yard office and 20 empty freight cars and damaged 40 others, with an estimated loss of \$35,000. The fire started in some loose rubbish in the yard near an oil house and spread when a barrel of oil exploded and scattered the flames.

The running of freight trains on Sunday in the State of Georgia normally forbidden by law, but allowed since August 20, 1917, because of war conditions, is now the subject of an inquiry by the State Railroad Commission, which has called upon the carriers to report on the matter by July 25. The suspension of the law was made through an order of the Commission, and the Commission now proposes to revoke that order under authority provided in the statute. Forty-five railroads have been called upon to report.

The Pennsylvania Railroad has once more been contending with the Bigelow Boulevard slide at Pittsburgh, Pa., which, due to recent rains has become somewhat troublesome. About 10 days ago small quantities of earth started to work out over the tracks adjacent to the hillside and while steam shovels had been brought up to the site in anticipation of a movement the slide encroached upon the two inside tracks. These have since been cleared. The movement, on last report, had ceased and will, apparently, give no further trouble unless some heavy rains occur.

## Northern Pacific Signal Department

In the signal department of the Northern Pacific a general reorganization, which has just gone into effect, provides for an increase in supervising forces to provide closer supervision and more assistance to their workmen. Under the new arrangement there is one supervising officer to approximately every five men, while formerly the ratio was as one to eight. Prior to July 1 the men were on a monthly rate of pay, but will now work under hourly rates; this at the request of the Brotherhood of Railroad Signalmen of America.

## Express Messenger Shot

The express messenger on train No. 44, eastbound, on the Cleveland, Cincinnati, Chicago & St. Louis, was shot twice when he resisted two robbers who boarded the express car at Covington, Ind., early on the morning of July 1 and made away with loot estimated at \$9,000 in cash and securities which they took from the safe in the car. The robbery was

discovered at Veedersburg, Ind., 12 miles east of Covington, when the express messenger was found beneath a pile of express bags which had been stacked upon him. It is believed the robbers dropped from the train as it slowed down at Veedersburg.

## Railway Earnings for May

The net operating income of the railroads for May made a somewhat better showing than in the preceding months of this year. For 200 Class I roads it was \$37,160,000, as compared with a deficit of \$4,882,000 last May. The operating revenues were \$441,000,000, a decrease of 2.7 per cent, and the expenses were \$376,000,000, a reduction of 13.1 per cent.

## Operating Statistics

The average mileage per freight car per day for the month of April, according to the Interstate Commerce Commission's monthly operating statistics was 20.6 as compared with 19.5 in April, 1920. This average, however, is less than that established during April in 1917, 1918 or 1919. The average net tons per loaded car was 26.9 as compared with 28.6 and the net tons per train averaged 637 as compared with 647. The percentage of unserviceable cars was 12.3 as compared with 6.5.

## Tentative Valuations Served

The Interstate Commerce Commission during the past week has served a number of additional tentative valuations of the smaller roads. The commission's figures for the final valuation of the property used as of the valuation date are as follows:

Gainesville Midland.....	1915	\$1,174,665
St. Johns River Terminal Co.....	1915	1,880,705
Spokane International Railway Co.....	1917	5,330,039
Coeur d'Alene & Pend d'Oreille.....	1917	400,000
Tonopah & Goldfield.....	1915	1,856,150
Washington, Potomac & Chesapeake.....	1915	216,656
Delaware & Northern.....	1916	1,417,210
Caddo & Choctaw.....	1916	238,161
Great Southern.....	1916	764,401
Bridgeton & Saco River.....	1916	360,563
Wiscasset, Waterville & Farmington.....	1916	500,168
Colorado-Kansas.....	1916	365,778
Pacific & Idaho Northern.....	1916	2,100,176
Fourche River Valley & Indian Territory.....	1916	257,000
Intermountain.....	1916	991,127

## Chairman Clark Receives Replies

### to Coal Supply Letter

Chairman Clark of the Interstate Commerce Commission has received replies to his letters which, as noted in last week's issue, were sent to the associations representing the railroads and public utilities urging the importance of accumulating a reasonable reserve supply of coal in advance of the period of heaviest demand this fall and winter. Thomas De Witt Cuyler, chairman of the Association of Railway Executives, said the letter would be submitted to a meeting of the standing committee of the association and that he would urge that prompt action be taken. G. W. Elliott, of the National Committee on Gas and Electric Service, said he would endeavor to have the suggestions conveyed to the public utilities through channels that would be the most effective and that the commission's thoughtfulness regarding the coal requirements would be appreciated. M. H. Aylesworth, executive general manager of the Electric Light Association, said that some definite action on the subject would be taken at once.

### Honorary Degrees

At the recent commencement exercises in the universities and colleges honorary degrees were conferred upon a number of men in or closely associated with the railroad business. Harvard University conferred the degree of Master of Arts upon William J. Cunningham, its James J. Hill Professor of Transportation. Benjamin B. Greer, vice-president of the Chicago, Milwaukee & St. Paul, was given the degree of Master of Arts by Dartmouth College, of which he is an alumnus. E. G. Buckland, vice-president and general counsel of the New York, New Haven & Hartford, was given the degree of Doctor of Laws by Washburn College, of which he is an alumnus.

### Changes in Car Service Rules

The car service rules of the American Association have been amended by numerous changes in Rules 1, 2, 3, 4 and 5; and by letter ballot, closed on June 23, these changes, unanimously approved by the general committee and also by the committee on car service, were ordered to go into effect on July 1.

The important changes are: In Rule 2, the provision for the return to the owner of empty cars located at junction points with the home road; in Rule 3, for a more favorable operation with respect to empty car mileage, by the elimination of paragraphs d and e of the present rule and the substitution thereof of a provision under which a road, unable to dispose of empty cars belonging to indirect connections by loading them to or in the direction of home, may return them to the road from which received, on the basis of record rights.

The use of the home route card is re-established.

At the same time the per diem rules were amended by the addition of more detailed provisions in Rules 1, 7, 13, 14 and 15, increasing the strictness of the regulations for correcting errors in settlements. By Rule 15 a road failing to receive promptly from a connection empty cars, at home on its road, moving home under car service rules, shall be responsible to the connection for double the per diem on such cars.

### Valuation Field Work, Eastern District, Completed

The engineering field work of the eastern district, Bureau of Valuation, Interstate Commerce Commission, has been completed. The eastern district includes the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, West Virginia, Virginia, and North Carolina.

The field party work was begun on February 26, 1914, and completed on June 30, 1921. The district field organization included 12 roadway parties, but this force was not maintained during the war years of 1917 and 1918, due to the fact that the bureau released over 600 engineers for military and naval service, of which the eastern district contributed a due proportion. The record shows that the work was in progress about seven years, but after making due allowance for vacancies which existed during the war, and the lesser number of parties in use during the organization and demobilization periods, it appears that the field party work in the eastern district was completed in five years. This estimate is based upon an average of 12 full roadway field parties. The eastern district includes 43,000 miles of steam railroads whose all-track mileage is 82,500, and 50,000 miles of telegraph lines.

The field work having been completed, the eastern district is now concentrating all of its engineering force on the preparation of the reports showing the cost of reproduction new and the cost of reproduction less depreciation.

W. H. BARR, president of the National Founders' Association, has sent out a letter calling on members of the association to work for the complete abolition of national railroad labor agreements; restoration to the carriers of individual jurisdiction over wages, classifications and working conditions; repeal of the Adamson law and funding of the indebtedness of the railroads of the country. Mr. Barr points out that this is one of the few times where the association has recommended intensive action by its members, but that restoration of railroad prosperity on sound lines is now a recognized necessity. He says that business men generally must arouse themselves to the serious condition confronting the railroads.

## Traffic News

Six thousand tons of rails for the Alaskan Railroad are to be sent by water direct from Mobile, Ala., to Seward, Alaska, by way of the Panama Canal.

T. L. Wolfe, for the last five years vice-president and traffic manager for the A. E. Staley Manufacturing Company of Decatur, Ill., has resigned. He is succeeded as traffic manager by Thornton Burwell, formerly assistant traffic manager.

The Traffic Club of Wheeling, W. Va., has elected the following officers: President, H. H. Marsh; vice-president, H. J. Hofmann; treasurer, C. W. Henry, and secretary, P. M. Neigh. Members of the board of governors are C. W. Henry, W. H. Higgins, P. M. Neigh, H. H. Marsh, J. A. Fleming, R. J. Miegel, E. C. Jepson, H. J. Hofmann, A. T. Oxtoby, S. C. Williams, G. W. Koonce and Douglas Vass.

The establishment of a government line of ships between the United States and Alaska to connect with the government railroad is proposed in a bill introduced in the Senate by Senator Cummins and referred to the Committee on Territories. Under the bill the Shipping Board would be required to transfer to the Secretary of the Interior ships of sufficient number and tonnage to operate between the United States and Alaska ports and the President would be given authority to co-ordinate all government agencies having to do with Alaskan affairs.

The principal coal carrying roads serving West Virginia and Pennsylvania mines in carrying cargo coal to the lower lake ports have filed with the Interstate Commerce Commission application for special permission to make the 28 cent reduction on lake cargo coal apply only on coal going beyond the upper lake ports. A complaint against this reduction on the ground of discrimination has been filed with the commission by the Morton Salt Company, which alleges that as its plants are located at Port Huron and Ludington, Mich., it is damaged by reason of the preference given to west bank Lake Michigan ports.

### Coal Production

Production of soft coal increased slightly during the week ending June 25, but was still short of the 8,000,000-ton mark. The output is estimated at 7,769,000 net tons, which is about 350,000 tons below the rate maintained from May 14 to June 11. The Geological Survey says the present recession in output is now seen to be due to a marked decrease in shipments from the mines to the lake front and a slight decrease in the movement to tidewater.

### Interstate Commerce Commission

#### Opposes Reduced Mileage Fares

Both the Senate and the House committees on interstate commerce, to which have been referred various bills introduced in Congress to require the railroads to issue interchangeable mileage books at reduced rates, have called upon the Interstate Commerce Commission for an opinion as to the advisability of such legislation. Chairman Clark of the commission has written a letter to the House committee opposing a reduction of passenger fares at this time on the ground that it would reduce railroad revenues, which are already insufficient to pay their return on the investment. A hearing on the subject of reduced mileage rates was held before a sub-committee of the Senate committee on interstate commerce on June 27, at which reduced mileage rates were advocated by representatives of the commercial travellers' organization and opposed by representatives of the railroads. The letter said that approximately one-third of the passenger travel represents commercial travel and that a reduction would reduce the revenues which the railroads are now receiving from this traffic, while it would not stimulate additional travel sufficiently to make up for the loss.

Operating Statistics of Large Steam Roads—Selected Items for the Month of April, 1921,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles			Car-miles		Ton-miles (thousands)			Locomotives on line daily								
			Principal helper	Light	Loaded (thous. cars)	Empty (thous. cars)	Per cent. loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Service-able	Unserviceable	Percent unserviceable	Stored						
<b>New England Region:</b>																			
Boston & Albany	1921	394	220,385	237,696	26,416	4,081	2,410	62.9	5,216,321	81,690	129	28	17.8	...	...	...	...	...	
Boston & Maine	1920	2,469	290,656	345,926	47,003	10,242	5,661	69.4	29,106,301	1,167,930	130	52	19.8	...	...	...	...	...	
N. Y., N. H. & H.	1920	1,959	433,899	465,465	27,914	9,734	4,858	66.7	50,619,944	2,102,405	353	114	24.7	3	7	19.1	35	8	
1921	1,938	365,835	377,278	29,620	7,180	1,984	78.4	34,900,099	1,653,882	289	112	27.9	8	...	...	...	...	...	
<b>Great Lakes Region:</b>																			
Dela ware & Hudson	1921	808	342,539	447,123	30,334	8,241	3,588	60.5	558,674	273,965	277	38	12.1	118	...	...	...	...	...
Del., Lack. & Western	1921	997	495,662	605,651	113,703	14,810	7,212	67.3	837,989	389,453	305	54	15.0	41	...	...	...	...	...
Erie (inc. Chic. & Erie)	1921	2,259	788,251	892,428	36,926	25,109	12,573	66.6	1,492,423	687,487	579	137	21.1	127	...	...	...	...	...
Lehigh Valley	1921	1,471	523,374	579,579	25,810	14,542	8,676	62.6	897,340	418,206	421	118	21.9	140	...	...	...	...	...
Michigan Central	1921	1,829	426,569	473,129	57,376	17,994	12,398	64.4	661,567	329,333	336	190	36.1	100	...	...	...	...	...
New York Central	1921	5,646	1,498,778	1,638,337	116,823	51,420	29,536	63.5	2,913,391	1,230,250	1,089	564	34.1	381	...	...	...	...	...
N. Y., Chic. & St. L.	1921	5,646	1,787,274	2,010,044	153,962	54,011	32,460	62.5	3,259,987	1,479,892	(1)	(3)	(1)	(3)	...	...	...	...	...
Pere Marquette	1921	2,207	304,180	319,363	6,162	7,863	3,647	68.1	371,817	202,114	161	48	22.9	19	...	...	...	...	...
Pitts. & Lake Erie	1921	2,200	245,361	256,651	4,152	5,654	1,353	74.3	290,527	141,458	161	45	21.8	7	...	...	...	...	...
Wabash	1921	2,418	487,970	507,256	3,003	3,149	6.94	68.5	753,118	313,268	274	69	20.1	47	...	...	...	...	...
1920	2,418	378,696	386,163	7,503	8,572	2,807	75.3	438,424	202,086	249	81	24.5	6	...	...	...	...	...	
<b>Ohio-Indiana-Allegheny Region:</b>																			
Baltimore & Ohio	1921	5,185	1,515,880	1,692,092	114,088	36,815	23,590	60.9	3,235,703	1,109,339	1,008	427	29.8	196	...	...	...	...	...
Central of N. J.	1921	679	240,391	266,263	34,920	5,452	3,630	60.1	361,798	179,295	194	70	26.5	17	...	...	...	...	...
Chicago & Eastern Ill.	1921	679	200,013	218,913	23,728	3,495	2,092	62.6	229,582	116,250	209	55	20.8	...	...	...	...	...	...
C., C. & St. L.	1921	1,131	194,092	197,257	4,179	3,892	2,234	63.5	263,307	123,658	130	40	4.5	4	...	...	...	...	...
Elgin, Joliet & Eastern	1921	2,393	515,470	531,640	7,34	12,626	6,454	66.2	796,015	351,841	288	118	28.5	25	...	...	...	...	...
Long Island	1921	395	39,767	47,013	6,809	451	289	60.9	24,403	9,053	34	9	20.8	4	...	...	...	...	...
Pennsylvania System	1921	10,875	3,401,711	3,692,280	253,714	86,918	51,247	62.9	5,856,170	2,910,799	2,714	703	20.6	1,017	...	...	...	...	...
Phila. & Reading	1921	694	472,741	534,077	66,568	11,743	7,350	61.5	803,837	437,347	348	82	19.1	139	...	...	...	...	...
Pocahontas Region:																			
Chesapeake & Ohio	1921	2,543	664,409	715,860	18,469	18,289	14,228	56.2	1,416,087	750,407	440	110	20.0	75	...	...	...	...	...
Norfolk & Western	1921	2,210	599,817	733,800	24,515	16,472	10,655	60.7	1,220,806	656,550	581	106	15.4	235	...	...	...	...	...
1920	2,191	662,402	819,625	42,357	17,226	10,823	61.4	1,378,841	778,501	409	275	40.2	34	...	...	...	...	...	
<b>Southern Region:</b>																			
Atlantic Coast Line	1921	4,887	722,279	725,522	11,621	15,391	11,089	58.1	938,499	298,449	294	122	29.3	3	...	...	...	...	...
Central of Georgia	1921	1,908	227,127	228,931	2,457	4,507	2,142	67.8	243,078	109,425	115	23	16.7	...	...	...	...	...	...
I. C. (inc. Y. & M. V.)	1921	1,913	226,742	228,716	7,850	4,573	1,563	74.5	299,817	113,270	104	22	17.5	...	...	...	...	...	...
Louisville & Nashville	1921	5,026	1,383,561	1,460,702	51,929	23,148	15,494	59.9	1,482,763	690,317	556	99	15.1	53	...	...	...	...	...
Seaboard Air Line	1921	5,024	1,419,094	1,522,780	46,989	24,231	12,751	65.5	1,455,695	708,861	495	143	22.4	...	...	...	...	...	...
Southern Ry.	1921	6,942	1,125,014	1,143,329	27,073	23,933	11,607	67.3	1,246,683	511,631	906	216	19.3	131	...	...	...	...	...
1920	6,942	1,408,167	1,444,814	49,111	32,555	12,517	72.2	1,687,445	767,287	932	179	16.1	6	...	...	...	...	...	
<b>Northwestern Region:</b>																			
C. & N. W.	1921	8,319	1,286,001	1,316,712	19,289	24,742	14,202	63.5	1,357,704	584,526	625	331	34.6	22	...	...	...	...	...
C., M. & St. P.	1921	10,618	2,100,146	2,238,637	57,306	28,361	15,924	64.0	1,537,809	659,576	786	268	25.0	152	...	...	...	...	...
C., St. F., M. & O.	1921	10,626	1,553,004	1,611,300	68,537	37,395	17,723	67.3	2,058,708	970,353	656	308	32.0	2	...	...	...	...	...
Great Northern	1921	7,982	611,653	651,268	25,229	16,337	6,751	70.8	877,445	421,305	614	177	23.4	280	...	...	...	...	...
M., St. P. & S. Ste. M.	1921	7,985	887,971	1,034,670	49,804	27,374	8,111	75.7	1,459,771	739,747	508	223	30.5	18	...	...	...	...	...
Northern Pacific	1921	4,225	412,339	416,645	5,652	8,591	3,444	68.6	436,910	194,688	346	54	13.5	52	...	...	...	...	...
Ore. Wash. R. R. & Nav.	1921	2,198	177,551	195,997	31,895	4,973	1,214	80.4	264,915	139,412	108	48	30.8	...	...	...	...	...	...
<b>Central Western Region:</b>																			
Atch., Top. & Santa Fe	1921	9,771	1,464,640	1,553,854	67,208	36,809	21,951	63.6	2,111,520	761,575	809	160	16.5	158	...	...	...	...	...
Chicago & Alton	1921	9,517	1,538,039	1,613,497	73,419	36,523	16,618	68.7	1,981,802	839,358	608	251	27.6	8	...	...	...	...	...
Chi., Burl. & Quincy	1921	9,310	1,340,576	1,398,889	62,916	34,142	20,076	63.0	2,040,557	952,652	700	258	26.9	139	...	...	...	...	...
Chi., Rock Island & Pacific	1921	9,364	1,563,796	1,640,501	74,730	41,752	17,253	70.8	2,340,568	1,154,285	864	264	29.7	...	...	...	...	...	...
Denver & Rio Grande	1921	2,593	166,133	204,455	37,053	3,640	1,651	68.8	205,299	98,641	223	86	27.8	62	...	...	...	...	...
Oregon Short Line	1921	2,850	260,887	268,115	16,586	5,783	2,708	68.1	344,036	166,205	184	45	19.7	51	...	...	...	...	...
Union Pacific	1921	3,615	662,755	672,300	31,356	20,808	7,910	73.4	1,087,593	485,272	393	158	28.7	114	...	...	...	...	...
1920	3,614	879,372	897,372	44,134	21,889	6,479	77.3	1,126,898	534,696	424	153	30.9	32	...	...	...	...	...	
<b>Southwestern Region:</b>																			
Gal., Harrisburg & S. An.	1921	1,367	243,688	244,768	4,434	4,886	2,974	62.2	596,781	126,476	73	45	38.1	...	...	...	...	...	...
Gulf, Colo. & Santa Fe	1921	1,372	256,291	257,549	1,510	5,317	2,054	66.7	315,967	143,340	82	40	33.8	...	...	...	...	...	...
Missouri, Kans. & Tex.	1921	1,710	216,614	219,940	5,930	5,534	3,430	61.6	314,592	128,331	131	47	26.4	48	...	...	...	...	...
Mo., Kans. & Tex. of Tex.	1921	1,740	209,778	213,140	4,898	4,085	2,940	58.1	248,602	99,884	101	42	17.6	4	...	...	...	...	...
St. Louis-San Francisco	1921	2,263	1,003,875	1,016,447	22,470	10,426	6.83	1,269,213	575,851	381	178	31.8	28	...	...	...	...	...	...
Texas & Pacific	1921	1,942	272,498	272,498	3,808	8,789	8.85	63.8	324,853	126,785	118	76	39.0	18	...	...	...	...	...
1920	1,947	323,821	323,821	6,781	6,387														

Compared with April, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Average Number of Freight Cars on line daily			Per cent un-service-able		Gross tons per train, excluding locomotive and tender		Net tons per train		Net ton miles per car-day		Car-miles per car-day		Net ton miles per road per day		Pounds of coal per 1,000 feet of road including locomotive and train		PASSENGER SERVICE	
	Home	Foreign	Total	Service-able	Stored	per train, excluding locomotive and tender	Net tons per train	Net tons per car	Net ton miles per car-day	Car-miles per car-day	Net ton miles per road per day	Car-miles per car-day	Net ton miles per road per day	1,000 feet of road including locomotive and train	Train-miles	Passenger train car-miles			
<b>New England Region:</b>																			
Boston & Albany.....1921	3,442	4,409	7,851	6.7	1,078	984	371	20.6	347	27.6	6,912	205	306,682	1,533,064					
.....1920	563	10,655	11,218	3.5	.....	1,003	438	24.0	377	23.3	10,724	209	308,951	1,948,584					
Boston & Maine.....1921	17,750	13,719	31,469	18.7	4,717	1,097	458	21.9	377	15.6	30,722	157	893,921	4,424,126					
.....1920	7,152	4,145	11,297	9.9	.....	1,014	454	21.2	377	15.8	4,613	161	841,391	4,540,961					
N. Y., N. H. & H.....1921	24,469	15,887	40,356	17.0	3,028	1,167	489	21.8	175	12.3	30,716	173	1,041,318	6,443,932					
.....1920	8,049	43,882	51,931	5.9	.....	954	447	22.2	106	5.9	2,813	204	1,038,994	6,444,530					
<b>Great Lakes Region:</b>																			
Delaware & Hudson.....1921	11,309	5,735	17,044	8.7	2,381	1,631	800	33.2	536	26.6	10,373	195	165,975	951,293					
.....1920	3,166	14,244	17,410	5.8	.....	1,649	886	35.8	691	35.5	14,335	204	181,191	926,203					
Del., Lack. & Western.....1921	16,861	6,813	23,674	9.3	955	1,691	784	26.2	547	31.0	12,991	172	479,676	3,446,633					
.....1920	4,992	20,693	25,685	4.1	.....	1,546	775	29.3	302	15.1	7,782	150	410,152	2,839,449					
Eric (inc. Chic. & Erie).....1921	39,011	14,626	53,637	15.3	16,131	1,893	872	27.4	427	23.4	15,146	151	661,340	4,948,977					
.....1920	5,078	50,515	55,593	6.9	.....	1,692	851	30.0	375	15.3	8,443	183	527,993	3,608,071					
Lehigh Valley.....1921	33,772	9,788	43,560	14.7	3,620	1,715	795	28.8	477	28.7	18,774	161	357,677	2,652,544					
.....1920	10,718	28,908	39,626	6.2	.....	1,530	772	31.6	277	13.0	7,680	216	366,389	2,330,661					
Michigan Central.....1921	19,147	10,649	29,796	15.4	2,472	1,597	655	21.5	303	21.9	4,492	128	556,851	4,769,008					
.....1920	4,175	37,081	41,256	5.4	.....	1,461	690	25.0	182	10.0	4,105	.....	579,783	5,329,197					
New York Central.....1921	89,932	48,149	138,081	10.7	33,009	1,824	828	27.4	510	18.1	7,263	125	2,723,325	17,732,476					
.....1920	26,155	112,929	139,084	6.8	.....	1,824	828	27.4	510	18.1	7,263	125	2,723,325	17,732,476					
N. Y., Chic. & St. L.....1921	6,357	4,398	10,755	14.9	2,318	1,534	596	19.9	577	43.0	10,856	119	89,005	323,419					
.....1920	1,394	7,986	9,290	6.3	.....	1,424	655	23.5	449	25.1	7,280	.....	62,501	428,762					
Pere Marquette.....1921	10,803	9,861	20,664	14.2	1,000	1,184	577	25.9	375	18.4	3,052	162	280,123	1,368,844					
.....1920	3,824	15,840	19,664	8.9	.....	1,184	577	25.9	375	18.4	3,052	162	280,123	1,368,844					
Pitts. & Lake Erie.....1921	17,373	7,104	25,177	13.4	2,743	2,284	1,216	37.7	111	4.9	12,441	141	246,786	1,280,022					
.....1920	3,635	19,835	23,470	8.7	.....	2,446	1,449	42.8	103	3.6	10,750	100	91,901	446,090					
Wabash.....1921	13,039	9,160	22,199	11.2	.....	1,453	642	22.1	470	31.2	4,319	167	508,429	2,627,692					
.....1920	5,548	18,257	23,805	10.1	.....	1,158	534	23.6	283	15.9	2,786	231	534,928	2,667,553					
<b>Ohio-Indiana-Allerghy Region:</b>																			
Baltimore & Ohio.....1921	69,967	27,878	97,845	12.1	6,414	1,534	732	30.1	378	20.6	7,135	183	1,442,466	8,495,894					
.....1920	22,883	70,041	92,924	6.8	.....	1,600	846	35.1	455	19.6	8,208	.....	1,281,739	7,556,286					
Central of N. J.....1921	20,458	8,961	29,419	29.5	4,478	1,507	746	32.9	266	10.4	8,068	193	311,724	1,465,664					
.....1920	5,231	18,023	23,252	7.5	.....	1,148	581	33.3	167	8.0	5,782	.....	300,017	1,251,436					
Chicago & Eastern Ill.....1921	17,247	2,389	19,636	9.8	1,188	1,378	673	29.0	218	11.9	9,293	181	1,031,984	5,389,849					
.....1920	10,032	13,128	23,160	7.5	.....	1,257	637	21.8	178	8.8	3,645	.....	227,570	1,483,056					
C., C., C. & St. L.....1921	19,023	15,537	34,560	11.2	3,621	1,655	710	27.4	398	25.4	5,793	140	708,644	4,547,638					
.....1920	5,003	20,761	25,764	4.3	.....	1,630	654	31.9	344	18.6	4,900	.....	693,479	4,125,554					
Elgin, Joliet & Eastern.....1921	10,468	4,970	14,438	4.5	3,952	2,066	1,111	38.2	491	8.1	3,641	150	67,475	345,170					
.....1920	8,082	8,287	16,369	7.8	.....	2,063	1,113	41.0	302	11.9	5,941	.....	103,118	479,797					
Long Island.....1921	2,151	3,557	5,708	3.8	980	614	228	20.1	53	4.3	765	134	189,358	1,008,575					
.....1920	552	6,029	6,581	2.4	.....	465	185	70.2	25	2.1	456	.....	163,338	857,985					
Pennsylvania System.....1921	215,116	66,956	282,072	7.5	88,696	1,722	816	35.5	345	16.4	9,769	145	4,879,312	32,354,037					
.....1920	98,349	213,721	312,070	6.0	.....	1,471	771	34.1	323	14.4	6,268	.....	4,917,704	33,683,519					
Phila. & Reading.....1921	27,644	11,095	38,739	10.2	5,877	2,700	925	37.2	376	16.4	21,004	182	512,234	2,317,968					
.....1920	7,601	32,293	39,894	5.9	.....	1,603	915	38.8	405	15.5	23,431	.....	496,530	2,257,008					
<b>Pocahontas Region:</b>																			
Chesapeake & Ohio.....1921	38,252	11,838	50,090	8.2	9,550	2,135	1,131	41.0	499	21.6	9,835	134	427,885	2,427,132					
.....1920	10,968	33,607	44,575	10.2	.....	2,125	1,182	41.8	297	35.8	12,310	.....	411,885	2,465,170					
Norfolk & Western.....1921	37,664	5,919	43,583	8.0	9,197	2,035	1,095	39.2	502	20.7	9,903	168	378,324	2,229,900					
.....1920	10,955	20,160	31,115	5.9	.....	2,082	1,175	45.2	834	30.0	11,843	.....	386,114	2,943,556					
<b>Southern Region:</b>																			
Atlantic Coast Line.....1921	22,392	11,016	33,408	15.5	.....	1,164	413	19.4	298	26.4	2,036	145	841,045	5,920,071					
.....1920	6,035	30,250	36,285	11.8	.....	1,110	443	20.9	293	21.3	2,171	.....	794,700	5,417,094					
Central of Georgia.....1921	4,996	3,792	8,788	23.7	.....	1,070	482	24.3	415	25.2	1,912	160	311,408	1,562,112					
.....1920	1,461	7,653	9,114	4.8	.....	1,058	500	24.8	414	22.4	1,974	.....	296,110	1,576,627					
I. C. (inc. Y. & M. V.).....1921	47,767	9,883	57,650	7.5	11,351	1,544	603	28.1	345	10.4	5,776	163	1,457,936	9,085,445					
.....1920	12,546	44,881	57,427	5.5	.....	1,489	703	28.1	790	35.6	6,831	.....	1,487,936	9,085,445					
Louisville & Nashville.....1921	38,530	14,170	52,700	22.7	11,027	1,072	499	29.9	437	24.4	4,578	167	404,134	2,135,687					
.....1920	13,154	27,988	41,142	7.5	116	1,026	497	29.1	572	30.0	4,683	.....	880,345	5,599,640					
Seaboard Air Line.....1921	11,544	8,445	19,989	21.5	.....	1,224	421	20.2	296	23.2	1,674	181	576,745	3,358,856					
.....1920	3,386	23,481	26,867	9.9	.....	1,355	401	25.6	374	23.0	2,330	.....	549,741	3,251,556					
Southern Ry.....1921	39,614	20,326	59,940	10.3	7,341	1,108	455	21.4	285	19.8	2,457	203	1,313,232	8,005,064					
.....1920	15,041	51,698	66,739	4.5	.....	1,198	545	23.6	383	22.5	3,684	.....	1,453,929	8,837,315					
<b>Northwestern Region:</b>																			

# Equipment and Supplies

## Car Deliveries—First Five Months of 1921

Freight car production is again returning to the low level which characterized the first half of 1920. Reports of the leading car building companies to the Railway Car Manufacturers Association show that in May there were produced for domestic service 3,610 freight cars. This compared with 4,455 in April and represents a progressive decline from the figure of 7,298 reached in December, 1920. The production for the first six months of 1920 averaged about 3,900 cars monthly.

The following table shows the production of freight and passenger cars by months from January 1, 1920, to May 31, 1921, by the car building companies which report their production to the Railway Car Manufacturers' Association.

TABLE I—CAR DELIVERIES

1920	Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign
January	4,482	1,904	1	9
February	3,774	1,039	4	28
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	21
June	2,608	708	..	27
July	2,583	1,184	18	27
August	3,056	1,800	21	13
September	3,529	1,088	38	..
October	5,999	668	21	13
November	5,902	976	48	..
December	7,298	1,362	96	17
Total for 1920	46,784	14,602	273	135
1921	Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign
January	7,008	819	43	..
February	6,276	500	50	14
March	5,753	700	69	..
April	4,455	871	116	6
May	3,610	429	138	6
5 mos. 1921	27,102	3,319	416	20

Other figures supplied by the Association show that in the greater part of the period under consideration the builders have been working on back orders. In other words, as small as the production was, it has been considerably ahead of the orders taken for new business. Thus at the end of August, 1920, there were on order and undelivered 50,275 freight cars for domestic service; at the end of May, 1921, the total had been decreased to but 13,890. The detailed figures follow:

TABLE II—CARS ON ORDER AND UNDELIVERED

	(Figures for end of month)					
	Freight Cars			Passenger Cars		
	Domestic	Foreign	Total	Domestic	Foreign	Total
December, 1919	24,816	10,720	35,536	467	110	577
January, 1920	28,282	9,381	37,663	311	103	414
February	29,706	8,389	38,095	282	103	385
March	33,061	7,854	41,455	522	80	602
April	42,869	7,180	50,449	586	88	674
May	47,761	6,338	54,099	732	110	842
June	48,171	7,792	55,963	796	97	893
July	50,275	8,212	58,487	811	88	899
August	49,442	7,574	57,016	775	75	850
September	48,114	6,793	54,907	903	75	978
October	46,051	7,026	53,077	851	66	917
November	41,290	6,234	47,524	925	59	984
December	35,268	4,856	40,124	839	42	881
January, 1921	32,874	2,903	35,777	786	42	828
February	26,685	3,325	29,910	750	28	778
March	21,808	4,029	25,837	681	28	709
April	17,513	3,312	20,825	565	24	589
May	13,890	3,359	17,449	450	18	468

Car repair work has been an important feature of the work of the car building companies for the past several months. The figures follow:

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month		On order and undelivered at end of month
	Delivered	On order	
May, 1920	2,296	20,130	24,092
June	2,541	23,541	27,031
July	2,491	26,710	29,201
August	2,818	26,710	29,528
September	3,140	27,779	30,919
October	3,945	25,663	29,608
November	4,345	22,951	27,296
December	4,648	..	..
Total, Jan. 1, 1920, to Dec. 31, 1920	34,198	..	..

January, 1921	4,229	21,469
February	4,499	18,303
March	4,824	14,348
April	3,898	11,884
May	3,250	12,308
5 mos.	20,700	..

(Note. In using the above tables attention should be drawn to the fact that from March, 1921, on, one additional car building company is included. The figures now represent the production of all the important builders and, therefore, the larger part of the car building capacity of the country, with the exception of the railroad shops, the production of cars in which relatively to the total is not great.)

## Locomotives

THE UNITED STATES OF COLOMBIA has ordered 4 locomotives from the Baldwin Locomotive Works.

THE ILLINOIS CENTRAL is asking for prices on the repairs of from 100 to 130 Mikado type locomotives.

THE SOROCABANA RAILWAY (Brazil) has ordered 2 Mikado type locomotives from the Baldwin Locomotive Works.

THE PITTSBURGH & WEST VIRGINIA has ordered 2 Pacific type locomotives from the American Locomotive Company.

THE NATIONAL RAILWAYS OF MEXICO have ordered 10 Pacific type locomotives from the Baldwin Locomotive Works.

THE HUNTINGDON & BROAD TOP MOUNTAIN RAILROAD has ordered 4 locomotives from the Baldwin Locomotive Works.

THE LEHIGH & HUDSON RIVER is having repairs made to 2 locomotives at the shop of the Baldwin Locomotive Works.

THE MONTEREY IRON & STEEL COMPANY, Mexico, has ordered from the American Locomotive Company, 4 Consolidation type locomotives, with a total weight in working order of 294,000 lb.

THE PEKIN-KALGAN (China) has ordered from the American Locomotive Company, 3 Pacific type locomotives with a total weight in working order of 292,000 lb. and 2 Mikado type locomotives, with a total weight in working order of 296,000 lb.

THE NATIONAL RAILWAYS OF MEXICO have ordered from the American Locomotive Company, 20 Consolidation type locomotives with a total weight in working order of 314,000 lb. and 7 Mikado type locomotives, with a total weight in working order of 440,000 lb.

## Freight Cars

THE NORTHERN PACIFIC is inquiring for prices on 1,000 steel center constructions for freight car repairs.

THE WABASH has given an order to the Western Steel Car & Foundry Company for making repairs to 300 steel hopper cars of 40 tons' capacity.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY, St. Louis, Mo., has ordered 100 steel underframes from the General American Tank Car Corporation.

## Passenger Cars

THE HUNTINGDON & BROAD TOP MOUNTAIN RAILROAD has ordered 10 passenger cars from the Harlan plant of the Bethlehem Shipbuilding Corporation, Ltd

## Iron and Steel

THE KANAWHA & MICHIGAN is inquiring for bids on 700 to 800 tons of structural steel for bridge work.

THE WHEELING & LAKE ERIE is inquiring for 150 tons of steel for car repairs and 200 kegs of spikes.

THE CHESAPEAKE & OHIO has ordered 1,700 tons of bridge material from the Mount Vernon Bridge Company.

## Signaling

THE MISSOURI, KANSAS & TEXAS has ordered from the Union Switch & Signal Company 63 semaphore signals to be installed between La Bette, Kan., and Vinita, Okla.

# Supply Trade News

Charles Copeland, assistant treasurer of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has been elected secretary, to succeed Alexis I. du Pont, deceased.

The Jeffrey Manufacturing Company, Columbus, Ohio, on June 1, removed its New York City office, from 50 Dey street to 30 Church street, with Harold B. Wood as district manager.

N. C. Catabish, general sales manager of the National Carbon Company, Inc., Cleveland, Ohio, has been assigned to other duties and J. R. Crawford, general sales manager of the Union Carbide Sales Company, has been appointed to succeed Mr. Catabish.

## American Car & Foundry Company

The annual report of the American Car & Foundry Company for the fiscal year ended April 30, 1921, shows earnings from all sources, after provision for taxes, of \$13,212,816, as compared with \$14,382,565 in the year ended April 30, 1920. A total of \$4,661,961 was expended for renewals, replacements, etc., leaving net earnings of \$8,550,856, as compared with \$10,401,192 in 1920. Dividends were paid amounting to \$2,100,000, or 7 per cent on the preferred stock, and \$3,600,000, or 12 per cent on the common stock. The surplus for the year was \$2,850,856, as compared with \$1,101,192 for 1920. The profits for the year equal \$21.50 a share on the common stock, as compared with \$27.67 a share in the previous fiscal year.

President W. H. Woodin in his report to the stockholders says in part:

The present condition and future prospects of the railroads continue as causes of grave anxiety. It is unnecessary to dwell on the effects of governmental control and operation upon their financial and physical conditions. The question pressing for solution is their rehabilitation so that they may perform efficiently their proper functions in serving the industries of the country and that the vast amount of the people's money invested in their securities may be properly safeguarded. Because of lack of traffic, the increase in freight rates granted during the year just past has not as yet had any appreciable effect towards restoring a condition of prosperity. Undoubtedly a crying need is a reduction in the costs of operation, and some progress has been made in this direction by the recent ruling of the Railroad Labor Board. More than this, however, is required for their complete rehabilitation and relief. Particularly a backward step will be taken if the roads now shall be deprived of the benefit of the increase in freight rates recently granted them. This certainly should not be attempted until after a fair trial has been given the conditions brought about by the increase in rates and the reduction in operating costs.

During the year there has been but little buying of new equipment. This has been due in part to inability to finance purchases. Some relief has been given by the operation of the law of last year by which the government has been able to assist the roads in their buying—but compared to their requirements the measure of this relief has been almost negligible. The financing by the roads of the large amount of new equipment purchases that will be needed in the near future and without which the country's progress and prosperity will be greatly retarded, presents a problem. That from time to time a greater or less number of cars stand idle does not argue that the roads have all the equipment needed. It happens at the present time and due to general business depression, that there is a dearth of traffic to be moved. Notwithstanding this, the ratio of cars now idle to the total available for service is inconsiderable—and as soon as conditions once more approximate the normal the lack of equipment will be very much in evidence. While, therefore, this company in common with like industries confronts the likelihood of a lessening of its activities for some time to come, nevertheless this can be faced with equanimity in the certainty that the needs of the country will make imperative in the near future the resumption of equipment buying on a large scale.

During the year there have been brought to complete adjustment and in entire harmony all of the company's manufacturing accounts with the government, including those relating to the purchase by the director general of railroads of the 31,000 freight cars referred to in prior reports.

Due to the bad condition into which the equipment of many of the roads was allowed to fall while under government control, it was expected that there would be a very large amount of car repairing to be done. The result, however, has fallen far short of the expectation—such work accounting for approximately only one-fifth of the company's business and profits for the year. The manufacture and sale of its miscellaneous products has yielded a greater volume of business than has the work of car repairing.

The company enters upon its new year with a thoroughly liquidated inventory and a comfortable volume of business booked—approximately \$30,000,000. In all respects its affairs are in satisfactory shape.

The balance sheet follows:

ASSETS		
Property and plant account.....		\$71,875,643
April 30, 1920, as per last annual statement.....	\$68,517,847	
Add: Additions during year.....	3,357,796	
Current assets.....		64,787,515
Materials on hand.....	\$14,010,061	
Accounts and notes receivable.....	28,301,833	
U. S. certificates of indebtedness, Liberty Bonds and Victory Notes.....	5,008,850	
Stocks and bonds of other companies.....	5,992,332	
Cash in banks and on hand.....	11,474,439	
		\$136,663,158
LIABILITIES		
Preferred stock.....		30,000,000
Common capital stock.....		30,000,000
Current liabilities.....		27,243,005
Accounts payable, not due, and payrolls (paid May 10, 1921).....	\$21,694,593	
Provision for federal taxes.....	4,123,412	
Dividend on preferred stock (payable July 1, 1921).....	525,000	
Dividend on common capital stock (payable July 1, 1921).....	900,000	
Reserve accounts.....		\$14,143,585
For insurance.....	\$1,500,000	
For general overhauling, improvements and maintenance.....	1,586,721	
Dividends on common capital stock, to be paid when and as declared by board of directors.....	10,860,000	
For improving working conditions of employees.....	256,864	
Surplus account.....		\$35,276,568
		\$136,663,158

## Obituary

Edward J. Ronan, representative of the Gold Car Heating & Lighting Company, Brooklyn, N. Y., died at his home in Brooklyn on July 3. Mr. Ronan had been connected with the company for 21 years.

Alexander H. Handlan, president of the Handlan-Buck Manufacturing Company, St. Louis, who died at Oconomowoc, Wis., on May 28 after more than a year of ill-health,



A. H. Handlan

had spent his entire business career of 52 years in the service of that firm. In January, 1869, he was employed as a bookkeeper by M. M. Buck, a dealer in railroad lanterns at St. Louis, and shortly after bought an interest in the firm. In 1901 Mr. Handlan acquired the entire ownership of the company by purchase and changed the name of the concern to its present form. The business of the company was also expanded to permit the manufacturing of a line of railroad supplies. Mr. Handlan, at the time of his

death, was not actively engaged in the management of his company, having retired from business about 20 years ago.

## Railway Construction

**ALABAMA, FLORIDA & GULF.**—The Interstate Commerce Commission has issued a certificate authorizing the construction of lines between Dothan and Wilson, Ala., four miles, and between Greenwood and Marianna, Fla., nine miles.

**CHICAGO UNION STATION.**—This company has let a contract to the Brennan Construction Company, Chicago, for the construction of a 12-duct conduit line between Harrison and Van Buren streets, noted in the *Railway Age* of July 2 (page 42); also a contract to the W. J. Newman Company for a temporary office building to be used in connection with the wrecking of the old Chicago & Alton freight house at Van Buren street.

**ILLINOIS CENTRAL.**—This company is accepting bids for the construction of the substructure of a bridge south of Johnston, Miss., to cost about \$30,000.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of June 17 (page 1422) as contemplating the construction of a pumping station at Ramsey, Ill., has closed bids for this work. This company is also receiving bids for the construction of a new water-treating plant at Amboy, Ill., to cost about \$30,000.

**MISSISSIPPI WARRIOR BARGE LINE.**—This company has commenced construction of the new floating freight terminal at Cairo, Ill., to provide for the direct transfer of freight in the Illinois Central and the Mississippi Warrior Line.

**PENNSYLVANIA SYSTEM.**—This company has awarded a contract for the dismantling of its train shed at Jersey City, N. J., to Henry A. Hittler's Sons Company, Philadelphia, Pa. It is intended to replace this old structure with three low shelter sheds to take care of the passenger business which has been of a local character since the construction of the Pennsylvania terminal in New York City.

**SOUTHERN PACIFIC.**—This company has awarded a contract for the construction of a tunnel, 1,420 ft. long, eliminating the trestle on the west bank of the Willamette river, about 7 miles from Portland, Ore., to the Hauser Construction Company, Portland.

**TEXAS & PACIFIC.**—This company is accepting bids for the construction of a new brick and tile passenger station at Ranger, Tex., with dimensions of 42 ft. by 263 ft., to cost about \$75,000.

**THE PITTSBURGH & WEST VIRGINIA.**—This company has let a contract to the John F. Casey Company, Pittsburgh, Pa., for the grading of 3½ miles of track into the coal fields owned by John A. Bell, of Pittsburgh. The work includes one 70-ft. steel bridge.

**TOLEDO, PEORIA & WESTERN.**—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 100-ton frame coaling station at Cuba, Ill.

**VIRGINIAN.**—This company is receiving bids for the construction of additions to its shops at Elmore, W. Va.

**WOOD CONSTRUCTION INFORMATION SERVICE.**—The National Lumber Manufacturers Association, Chicago, has recently issued some additional data dealing with mill construction. The subjects treated in these sheets deal with basement floors, roof and roof coverings and include a set of floor beam charts to facilitate the determination of the most economical system of floor construction to carry a given load. Another subject presented is a progress report of tests made by the Forest Products Laboratory, Madison, Wis., in co-operation with the association on built-up beams under various loads in comparison with solid timbers.

**ABOUT 2,000 SHOPMEN** of the Delaware & Hudson resumed work on July 5, after a general suspension of work lasting six weeks. Certain shops on the Baltimore & Ohio on the same day took back about 3,600 shopmen who had been furloughed for three weeks or more. It is said that at the Mount Claire shops of the Baltimore & Ohio, in Baltimore, the forces now aggregate about two-thirds the normal number.

## Railway Financial News

**ANN ARBOR.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of \$2,000,000 of 6 per cent bonds under the company's improvement and extension mortgage, \$1,925,000 of the bonds to be pledged as collateral security for certain promissory notes and \$75,000 to be issued in exchange for 5 per cent bonds now held in the treasury.

**ATLANTIC COAST LINE.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**CHICAGO & ALTON.**—*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1-December 31)....	\$25,785,052	.....
Operating expenses (March 1-December 31)....	24,403,890	.....
Revenues over expenses (March 1-December 31) ..	\$1,381,162	.....
Rental from United States Railroad Administration	529,719	\$3,178,315
United States Government guaranty period claim	3,105,524	.....
Railway operating income .....	\$5,016,405	\$3,178,315
Operating expenses, corporate, not assumed by the United States Railroad Administration.....	\$9,573	\$64,192
Taxes .....	657,144	4,787
Railway operating income over corporate expenses and taxes .....	\$4,349,688	\$3,109,336
Total income from railroad properties.....	\$4,412,748	\$3,101,409
Deductions:		
Hire of equipment, etc. ....	\$1,056,888	\$271,053
Net income from railroad properties.....	3,355,860	2,830,356
Total other income .....	\$119,256	\$105,825
Total income from all sources .....	\$3,475,116	\$2,936,181
Deductions:		
Interest on funded debt, etc.....	\$4,109,763	\$3,933,650
Net deficit .....	634,647	997,469

The annual report of the Chicago & Alton will be reviewed editorially in an early issue.

**GREAT NORTHERN.**—*Asks Loan for New Equipment.*—Application has been filed with the Interstate Commerce Commission for a loan of \$606,000 from the revolving fund to aid in the purchase of 500 refrigerator cars, and authority was also asked for the issuance of \$606,000 of equipment gold notes at 6½ per cent which it is proposed to sell at 97½ to the First National Bank of New York.

**ILLINOIS CENTRAL.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**INTERSTATE RAILROAD.**—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$3,000,000 of additional stock, the proceeds to be used for the purchase of property for and the construction of an extension of its railway from the present terminus at Norton, Va., to a connection with the Carolina, Clinchfield & Ohio, a distance of about 25 miles. The right of way of the Norton & Northern to be purchased will constitute a portion of the completed extension.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—*Authorized to Purchase Road.*—This company has been authorized by the Interstate Commerce Commission to acquire the railroad property of the Wisconsin & Northern and to issue \$2,671,000 of its first consolidated 5 per cent mortgage bonds to be used in part payment.

**MINNEAPOLIS & ST. LOUIS.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of \$714,000 of refunding and extension mortgage 5 per cent bonds to be placed in the company's treasury in respect of expenditures for additions and betterments amounting to \$398,000 and for retirement of equipment obligations amounting to \$316,000.

**MINNEAPOLIS & ST. LOUIS.**—*Annual Report.*—The corporate

income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues	\$14,352,998	.....
Operating expenses	14,923,309	.....
Taxes (other than U. S. Government)	568,623	.....
Total	\$15,491,932	.....
Operating revenues over expenses and taxes. Def.	\$1,138,934	.....
Standard return	\$451,438	\$2,773,857
Amount by which M. & St. L. R. R. failed to earn Govt. Guaranty (March to August) estimated	3,362,819	.....
Total income, including other	\$4,055,806	\$3,058,508
Surplus	\$2,916,872	\$3,058,508
Interest on outstanding funded debt	\$2,079,218	\$2,040,479
Taxes—U. S. Government	53,257	17,416
Total fixed and other charges	\$2,136,696	\$2,627,815
Balance—Surplus	\$600,176	\$430,693

The annual report of the Minneapolis & St. Louis will be reviewed editorially in an early issue.

**MISSOURI, KANSAS & TEXAS.—Application for Loan Approved.**—The Interstate Commerce Commission has approved a loan of \$450,000 to the receiver to assist in the acquisition of 300 50-ton steel tank cars of 10,000 gal. capacity, to cost \$3,007 each.

**SEABOARD AIR LINE.—Defers Interest on Bonds.**—The directors on July 1 voted to defer the semi-annual interest payment due August 1 on the \$25,000,000 5 per cent adjustment mortgage bonds, the principal of which is due October 1, 1949. The bonds were issued on October 1, 1909.

Robert L. Nutt, treasurer of the Seaboard Air Line, made the following statement after the meeting:

The directors under ordinary conditions might have considered an advancement of the necessary amount although not earned, but since the interest is cumulative and because of general depressed business conditions throughout the country, in the opinion of the board, the company would not be justified in advancing interest on the income bonds, which would take from the property money considered essential to its proper maintenance. A further consideration was the fact that the reduction of wages does not take effect until after July 1.

The policy of the company during the succeeding six months will be to put the motive power in first class condition to meet the winter business of the corporation. This policy will, it is believed by the board, prove to the material benefit of the adjustment bondholders in that their property will be better conserved.

The amount earned during the period under consideration, viz., November 1 last to April 30, 1921, available for interest on the adjustment bonds was approximately \$30,000. This will be carried over into the next interest period, the amount being insufficient to justify its distribution.

**SOUTHERN PACIFIC.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**SUGAR PINE.—Asks Permission to Abandon Line.**—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of its line of 14.15 miles in Tuolumne County, Cal.

**TENNESSEE CENTRAL.—Sale Postponed.**—The sale of this road, scheduled for June 30, has been postponed to October 1, at the request of the Mississippi Valley Trust Company, trustee for the first mortgage bondholders.

**TEXAS CITY TERMINAL.—Certificate Held Not Necessary.**—The Interstate Commerce Commission has issued a decision that the proposed acquisition and operation by this company of the railroad formerly owned by the Texas City Transportation Company and operated by the Terminal Company as lessee, is not within the scope of Paragraph 18, Section 1, of the interstate commerce act, and the proceeding was dismissed.

**TOLEDO, ST. LOUIS & WESTERN.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues:		
Freight	\$9,307,528	.....
Passenger	400,925	.....
Total	\$10,118,447	.....
Operating expenses:		
Maintenance of way and structures	\$2,124,597	.....
Maintenance of equipment	2,019,174	.....
Traffic	164,459	.....
Transportation	3,657,763	.....
General	179,450	.....
Total	\$8,144,957	.....

Net revenue from operations	\$1,973,490	.....
Tax accruals	288,150	.....
Railway operating income	\$1,685,172	.....
Total other income	279,795	\$1,273,216
Gross income	2,464,967	1,273,316
*Deductions from total gross income including interest on funded debt	1,146,228	1,087,653
Total	\$2,103,491	\$1,368,749
Net income	361,476	Def. 95,433

\*Includes interest on A and B Gold Bonds of 1917, amounting to \$461,080 defaulted.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare as follows:

OPERATING REVENUES		1920	1919
Freight		\$10,766,900	\$7,419,636
Passenger		461,017	452,877
Total operating revenues		\$11,758,721	\$8,267,878
OPERATING EXPENSES			
Maintenance of way and structures	\$2,317,092	\$1,475,281	
Maintenance of equipment	2,371,601	1,821,103	
Traffic expense	178,056	72,625	
Transportation expenses	4,425,344	3,440,980	
General expenses	201,312	137,569	
Total operating expenses	\$9,492,917	\$6,944,945	
Net revenue from railway operations	2,265,804	1,322,932	
Railway tax accruals	350,150	315,000	
Railway operating income	\$1,915,192	\$1,007,801	

FREIGHT TRAFFIC		1920	1919
Number of tons carried	5,082,141	4,123,391	
Number of tons carried one mile	1,261,496,000	896,804,000	
Average distance hauled per ton (miles)	248.23	217.43	
Average revenue per ton mile	\$0.0854	\$0.0527	

PASSENGER TRAFFIC		1920	1919
Number of passengers carried	319,619	295,166	
Number of passengers carried one mile	15,347,648	18,447,764	
Average distance hauled per passenger (mile)	48.02	62.50	
Average revenue per passenger mile	\$0.3004	\$0.2455	

W. L. Ross, receiver, in his remarks, says that the results of the operation of the property for the year show the largest operating revenues in the history of the road, there being an increase of \$3,400,843, or 42.22 per cent over the preceding year, regardless of the disturbed business and financial condition of the country.

**WHEELING & LAKE ERIE.—Authorized to Issue Equipment Obligations.**—This company has been authorized by the Interstate Commerce Commission to issue short term notes to the amount of \$13,629,000 for the acquisition of equipment through the National Railway Service Corporation's equipment trust agreement; to assume obligation as endorser and guarantor in respect of obligations of the service corporation to the United States, to the amount of \$3,304,000, and to pledge with the Secretary of the Treasury \$79,000 of refunding mortgage 5 per cent bonds to secure the repayment of a loan of \$3,304,000.

### Guaranty Certificates Issued

The Interstate Commerce Commission has issued certificates for partial guaranty payments, as follows:

Eric	\$1,000,000
Ferrowood, Columbia & Gulf	18,000
Middletown & Unionville	35,000
New Orleans Great Northern	150,000
St. Johnsbury & Lake Champlain	70,000
Winston-Salem Southbound	10,000
Trinity Valley	1,500
Susquehanna & New York	50,000
Manistique & Lake Superior	33,000
Flint River & Northwestern	4,000
Chicago Great Western	150,000

### Dividends Declared

Ashtand Coal & Iron Ry.—1 per cent, quarterly, payable June 25 to holders of record June 25.  
 Atlanta & West Point—3 per cent, payable June 30, to holders of record June 21.  
 Belt Railroad & Stock Yards (Indianapolis) Common—3 per cent quarterly; preferred, 7 1/2 per cent; both payable July 1.  
 Delaware, Lackawanna & Western—5 per cent, quarterly, payable July 20 to holders of record July 11.  
 Georgia Railroad & Banking—3 per cent, quarterly, payable July 15 to holders of record July 1.  
 Manhattan Railway—1 1/4 per cent quarterly, payable July 1 to holders of record June 30.  
 Pittsburgh & West Virginia—Preferred, 1 1/2 per cent, quarterly, payable August 31 to holders of record August 1.  
 Richmond, Fredericksburg & Potomac—Common and dividend obligations, 4 1/2 per cent, payable June 30 to holders of record June 24.  
 Western Ry. of Alabama—3 per cent, payable June 30 to holders of record June 30.

# Annual Report

## Illinois Central Railroad Company — Seventy-First Annual Report

To THE STOCKHOLDERS OF THE ILLINOIS CENTRAL RAILROAD COMPANY:

There is submitted herewith the report of the Board of Directors covering the affairs of your company for the year ended December 31, 1920.

The number of miles operated on December 31, 1920, was 4,799.40

Additions for year:  
 January 1, 1920—Tracks of New Orleans Great Northern . . . . .36  
 R. K. at Monticello, Miss., not reported in previous years . . . . .02  
 December 1, 1920—Reclaiming at Tara, Ia. . . . . .02  
 4,800.15

Less:  
 February 1, 1920—Reduction due to construction of cut-off at Scottsburg, Ky. . . . . .62  
 February 1, 1920—Shortening line at Carbondale, Ill. . . . . .10  
 March 1, 1920—Shortening line due to construction of cut-off at Camp Knox, Ky. . . . . .03  
 .75  
 The number of miles operated on December 31, 1920, was . . . . . 4,799.40  
 The average number of miles of road operated during the year was . . . . . 4,799.44

### INCOME

A summary of the Corporate Income for the year ended December 31, 1920, compared with the Corporate Income for the year 1919, is stated below.

	1920	1919	INCREASE + DECREASE -
Average Miles Operated	4,799.44	4,793.22	+ 6.22
During Year . . . . .			
Operating Revenues . . . . .	\$121,804,579.25	\$121,804,579.25	—
Operating Expenses . . . . .	121,874,327.47	121,874,327.47	—
Expenses over Revenues . . . . .	69,748.22	69,748.22	—
United States Government Guaranty Period Claim	19,499,886.56	19,499,886.56	—
Rental from United States Railroad Administration . . . . .	3,399,634.99	17,896,467.48	+ 14,496,832.49
Railway Operating Income	22,829,773.33	17,896,467.48	+ 4,933,305.85
Operating Expenses, Corporate, not assumed by United States Railroad Administration . . . . .	117,657.90	351,632.62	— 233,974.72
Federal War Income and Other Taxes . . . . .	7,172,261.96	853,200.00	+ 6,319,061.96
Uncollectible Railway Revenues . . . . .	23,319.80	—	+ 23,319.80
Railway Operating Income over Corporate Expenses, Taxes and Uncollectible Railway Revenues . . . . .	15,516,533.67	16,691,634.86	— 1,175,101.19
Equipment Rents—Net Credit . . . . .	3,196,849.02	—	+ 3,196,849.02
Joint Facility Rents—Net Debit . . . . .	191,297.36	—	+ 191,297.36
Net Railway Operating Income . . . . .	18,522,085.33	16,691,634.86	+ 1,830,450.47
Income from Investments and Other Corporate Income . . . . .	7,219,881.91	7,634,404.57	— 414,122.66
Gross Income . . . . .	25,741,967.24	24,325,639.43	+ 1,416,327.81
Interest on Funded Debt and Other Miscellaneous Corporate Charges . . . . .	12,170,844.96	12,156,719.96	+ 14,125.00
Net Income . . . . .	13,571,122.28	12,168,919.47	+ 1,402,202.81
Disposition of Net Income:			
Income Applied to Sinking Funds and Other Reserve . . . . .	118,200.00	118,200.00	—
Income Appropriated for Investment in Physical Property . . . . .	18,080.85	170,100.07	— 152,019.22
Total Appropriations of Income . . . . .	136,280.85	288,300.07	— 152,019.22
Income Balance Transferred to Credit of Profit and Loss . . . . .	13,434,841.43	11,880,619.40	+ 1,554,222.03

The income account for the current year 1920 consists of the Federal contract compensation for January and February, less Corporate expenses and war taxes; and the income resulting from operation for the ten months beginning March 1, 1920. To these sums is added an amount which represents the difference between the amount earned and the amount guaranteed under Section 209 of the Transportation Act, 1920, during the six months' guaranty period, from March 1 to August 31, 1920, inclusive, which amount stands as a claim against the Government. For the year 1919 the income reported was made up of compensation accrued to your Company under the contract with the Government entered into pursuant to the Federal Control Act, from which were deducted Corporate expenses and Federal war taxes. To the income for the respective years was added income from securities, rents and other Corporate income and there was deducted interest on funded debt and other Corporate charges.

In the current year's income the items "Operating Revenues," amounting to \$121,804,579.25, and "Operating Expenses," amounting to \$121,874,327.47, represent operating results for the months from March to December, 1920, inclusive. There were no corresponding figures for the previous year because in that year all operating revenues accrued to and all operating expenses were borne by the Government and in lieu thereof there accrued to your Company rental payable by the Government under the terms of the Federal Control Act and the standard form of contract entered into by your Company with the Director General of Railroads.

The item "United States Government Guaranty Period Claim" of \$19,499,886.56 is the sum by which the Railway Operating income, as defined in Section 209 of the Transportation Act, 1920, for the six months from March 1 to August 31, 1920, was insufficient to meet the guaranty under this section of the Act.

The decrease of \$14,496,832.49 in "Rental from United States Railroad Administration" for the year 1920, compared with the year 1919, is due to the fact that rental payable under the Federal Control Act and the Standard Contract accrued for January and February of the current year only, while in the year 1919, the rent for the entire year accrued to your Company.

There was a decrease of \$233,974.72 in "Operating Expenses, Corporate, not assumed by United States Railroad Administration" for the reason that Federal contract for March 1, 1920, and other miscellaneous expenses for the remaining ten months were included in "Operating Expenses." In the previous year the expenses for the entire twelve months were included in this account. These expenses were for salaries and expenses of officers and clerks necessary to maintain the Corporate organization.

The increase of \$6,319,061.96 in "Federal War Income and Other Taxes" is principally due to the inclusion in the current year of ten months of State and other taxes accruing from March to December, 1920, in addition to Federal war income taxes for the year. The State and other taxes for the first two months of the year 1920 were chargeable to the Director General of Railroads. In the previous year the Company assumed the Federal war income taxes and the State and other taxes for the entire year were borne by the Director General of Railroads.

The increase of \$23,319.80 for the calendar year 1920 in the item "Uncollectible Railway Revenues" was for transportation charges earned by your Company determined to be uncollectible and therefore charged off. Uncollectible railway revenues in the previous year were included in the accounts of the Director General of Railroads and any portion thereof antedating the Federal control period was charged back to your Company by the Director General and in the report of the previous year included in "Expenses Prior to January 1, 1918."

The increase of \$3,196,849.02 for "Equipment Rents-Net Credit" is the excess of income over cost for hire of railway equipment for the last ten months of the current year. In the previous year, as also in the months of January and February, 1920, this income accrued to the Director General of Railroads under the terms of the Federal Control Act and the Standard Contract.

The increase of \$191,297.36 in "Joint Facility Rents-Net Debit" is for the excess of rentals paid over rentals received for tracks and terminal facilities used in common with other carriers for the last ten months of the year. The corresponding rentals for the first two months of the current year and for the previous year accrued to or were assumed by the Director General of Railroads.

"Income from Investments and Other Corporate Income" decreased \$414,122.66. There was a decrease of \$1,008,553.13 in amount of interest receivable on Louisville, New Orleans & Texas Railway Company Second Mortgage Income Bonds and a decrease of \$126,382.06 compared with the previous year, caused by a reduction in the amount of revenues accrued prior to January 1, 1918, being reported by the Director General of Railroads. These decreases were offset in part by an increase of \$150,006.38 in dividends from securities owned, representing an increase of \$400,000.00 in dividends on Madison Coal Corporation stock, less decrease of \$249,993.62 on account of dividends received on Dubuque & Sioux City Railroad Company capital stock last year and on which no dividends were paid during the current year. There was also an increase of \$564,219.03 in "Income from Unfunded Securities and Accounts," the major portion of which was for interest receivable from The Yazoo and Mississippi Valley Railroad Company on its undated indebtedness to your Company. The balance of \$3,892.52 consisted of minor items of nonoperating income received this year as compared with the previous year.

The increase of \$14,125.00 in "Interest on Funded Debt and Other Miscellaneous Corporate Charges" is largely due to an increase in interest on funded debt, less a substantial decrease in rents for leased roais. The increase in interest on funded debt was on account of additional securities issued during the year for new equipment. The decrease in rents for leased roais represents the deficit from operations of the Dubuque & Sioux City Railroad by your Company during the last four months of the current year and is payable by the Dubuque & Sioux City Railroad Company.

### ASSETS AND LIABILITIES

The following is an explanation of the important changes in "Investments" and "Funded Debt" during the year:

Investments:

Expenditures for additions and betterments amounted to \$17,295,942.82, as shown in detail on page 8. Of this sum \$15,191,281.07 was for improvements to lines of railroad owned by your company and to its equipment and is included in General Balance Sheet Account "Road and Equipment since June 30, 1907." The balance of \$2,104,661.75 covered improvements to the railroads of subsidiary companies and is included in General Balance Sheet Account "Investments in Affiliated Companies—Advances."

The increase of \$196,500.00 in "Investments in Affiliated Companies—Bonds" was as follows:

Purchase of Ocean Steamship Company of Savannah Seven Per Cent Gold Bonds of 1925, at par . . . . .	\$209,000.00
Less: Peoria & Pekin Union Railway Company Five Per Cent Delicenture Bonds matured August 1, 1920, redeemed, par value . . . . .	12,500.00
Increase . . . . .	\$196,500.00

There was an increase of \$2,044,172.66 in "Investments in Affiliated Companies—Advances," as shown in the 6, representing the increase in advances to subsidiary companies. Advances for additions and betterments to the lines of railroad and equipment of subsidiary companies . . . . . \$2,104,661.75  
 Less: Reduction in advances to non-transportation subsidiary companies . . . . . 60,489.05  
 Increase . . . . . \$2,044,172.66

There was an increase of \$2,088,900.00 in "Other Investments—Bonds" explained as follows:

The Yazoo and Mississippi Valley Railroad Company Registered Five Per Cent Gold Improvement Bonds . . . . .	\$2,614,000.00
These bonds were transferred from the Insurance and Fension Fund close to maturity to the following:	
Less: Sale of United States Fourth Liberty Loan Four and One-Quarter Per Cent Bonds sold to Central of Georgia Railway Company . . . . .	\$525,000.00
Illinois County Club First Mortgage . . . . .	100.00
Cent Bonds, redeemed . . . . .	100.00
Increase . . . . .	\$2,088,900.00

**Funded Debt:**

There was an increase in "Funded Debt" of \$1,811,085.00, as follows:

Illinois Central Railroad Company Six Per Cent Equipment Trust Gold Notes issued under Government Equipment Trust No. 33	\$9,117,000.00
Illinois Central Equipment Trust, Series "E," Seven Per Cent Certificates issued	8,107,000.00
Illinois Central Railroad Company One to Fifteen Year Secured Six Per Cent Gold Notes issued	4,440,000.00
Illinois Central Railroad Company and Chicago, St. Louis & New Orleans Railroad Company Joint First Refunding Mortgage Five Per Cent Bonds, Series "A," issued for conversion of Sterling Bonds in Dollar Bonds	5,085.00
<b>Total</b>	<b>\$21,669,085.00</b>

**Less:**

Equipment trust obligations retired and cancelled:

Illinois Central Railroad Company Equipment Trusts:	
Series "A"	\$800,000.00
Series "B"	350,000.00
Series "C"	198,000.00
Series "D"	190,000.00
Series "E"	550,000.00
Chicago, St. Louis & New Orleans Railroad Company Equipment Trust, Series "A"	570,000.00
<b>Total</b>	<b>\$2,658,000.00</b>
Real Estate Mortgage matured and paid	100,000.00
<b>Total</b>	<b>\$2,758,000.00</b>
<b>Net Increase</b>	<b>\$18,911,085.00</b>

"Funded Debt Held in Treasury" decreased \$70,000.00 due to the retirement of a like amount of matured Chicago, St. Louis & New Orleans Railroad Company Equipment Trust, Series "A" Bonds.

There was expended during the year for Additions and Betterments (including improvements on subsidiary properties), \$17,295,942.82.

ROAD	ADDITIONS AND BETTERMENTS ON OWNED LINES	ADVANCES FOR ADDITIONS AND BETTERMENTS TO LINES OF SUBSIDIARY COMPANIES		TOTAL EXPENDED
		ADDITIONS AND BETTERMENTS	TOTAL	
<b>Total</b>	<b>\$3,671,844.12</b>	<b>\$1,999,235.79</b>	<b>\$5,671,079.91</b>	
<b>EQUIPMENT:</b>				
Steam locomotives	\$1,801,316.47		\$1,801,316.47	
Freight train cars	9,656,447.03		9,656,447.03	
Passenger train cars	9,721.18	Cr.	9,721.18	
Floating equipment	2,000.00	Cr.	2,000.00	
Work equipment	49,353.74		49,353.74	
Miscellaneous equipment	1,894.63		1,894.63	
<b>Total</b>	<b>\$11,497,290.69</b>		<b>\$11,497,290.69</b>	
<b>GENERAL:</b>				
Organization expenses		\$15.66	\$15.66	
General officers and clerks		2,361.52	2,361.52	
Law		4,263.49	4,263.49	
Taxes	\$333.63	41.73	375.36	
Interest during construction	21,809.63	98,743.56	120,553.19	
<b>Total</b>	<b>\$22,146.26</b>	<b>\$105,425.96</b>	<b>\$127,572.22</b>	
<b>Grand Total</b>	<b>\$15,191,281.07</b>	<b>\$2,104,661.75</b>	<b>\$17,295,942.82</b>	

The following shows the amount advanced during the year to each of the subsidiary companies, these amounts being included in total advances shown in Table No. 6 of this report:

Benton Southern R. R. Co.	\$82.36
Bloomington Southern R. R. Co.	Cr. 612.00
Blue Island R. R. Co.	1,708.57
Canton, Aberdeen & Nashville R. R. Co.	23,321.09
Chicago, St. Louis & New Orleans R. R. Co.	1,340,047.05
Dubuque & Sioux City R. R. Co.	467,600.66
Fredonia & Reeds R. R. Co.	6,228.61
Goldsboro Northern R. R. Co.	213,718.71
Kensington & Eastern R. R. Co.	55,574.16
Memphis R. R. Terminal Co.	Cr. 6,000.00
South Chicago R. R. Co.	3,192.54
<b>Total</b>	<b>\$2,104,661.75</b>

**ROAD AND EQUIPMENT**

The following is a summary of the more important improvements during the year, the cost of which was charged wholly or in part to Road and Equipment.

**Additions and Betterments—Road:**  
 136 new industrial sidings were built or extended.  
 137 new company sidings were built or extended, a net addition of 18.33 miles. Included therein were additions to yard facilities of 5.03 miles at Freeport, Ill., 2 miles at Centralia, Ill., and 1.70 miles at Nonconah, Tenn.  
 The grading for the Markham Yard, located between Harvey, Ill., and Homewood, Ill., referred to in the report of the previous year, was continued.

Second main track was constructed from Amboy, Ill., to Sublette, Ill., 5.70 miles, and from Leyworth, Ill., to Clinton, Ill., 8.66 miles. There were constructed during the year 12.53 miles of third main track between Peotone, Ill., and Tucker, Ill.

That portion of the line change and grade reduction work between Dawson Springs, Ky., and Scottsburg, Ky., known as the Scottsburg Grade Reduction, was completed.

The 56th St. subway, Chicago, Ill., was finished. This completed the renewal of bridges over streets between 51st St. and 67th St., Chicago, Ill. The construction of the new St. Charles Air Line bridge over the south branch of the Chicago river was completed and the old structure retired. The bridge over the Rock river at Dixon, Ill., was replaced with a new structure during the year in order to permit the operation of new Central type locomotives on the Amboy District.

The construction of subway at Washington Street, Bloomington, Ill., and two subways at Lemm and 14th Streets, Ft. Dodge, Iowa, was commenced.  
 The interlocking plant at Bemis, Tenn., referred to in the previous report, was completed.

The suburlin platforms with waiting rooms at track level, at Chicago, Ill., between 51st and 53rd Streets, 56th and 57th Streets, and 59th and 60th Streets; at St. Louis, Mo., at 51st, 52nd, 56th, 57th, 59th and 60th Streets; also, interchange facilities for the Chicago, Lake Shore and South Bend Railway at Kensington, Chicago, Ill., referred to in the previous report, were completed. A suburban station was constructed at 175th Street, south of Chicago, Ill., to serve the Edgewater Country Club. A passenger station and a new freight station with power, hoist and track facilities were constructed at Centralia, Ill. A new freight and passenger station was constructed at Newbern, Tenn.

New icing facilities were constructed at Jackson, Miss., and improvements made at the Chicago, Iowa.  
 Improvements were made in water facilities at Kankakee, Ill., Hart, Ill., Centralia, Ill., Peotone, Ill., and New Orleans, La. A new 100,000 gallon capacity creosoted frame water tank was erected at Peotone, Ill.

Roundhouse stalls at Centralia, Ill., Clinton, Ill., Amboy, Ill., Freeport, Ill., and Paducah, Ky., were extended to accommodate the new Central type freight locomotives. New 100-ft. turntables, replacing 85-ft. turntables, were installed at Centralia, Ill., Clinton, Ill., and Freeport, Ill.

Work of constructing block signals between Tisley, Ky., and Princeton, Ky., a distance of 20.5 miles, was commenced. There were 2,408 miles of block signals in operation at the close of the year.

2,335 lineal feet of permanent bridges and trestles were constructed replacing pile and timber bridges and trestles; 1,032 feet of permanent bridges and trestles were filled and 11,893 lineal feet of pile and timber bridges and trestles were replaced. There were 1,242 miles of track were ballasted or rebalasted and brought up to the present standard. **Additions and Betterments—Equipment:**

Twenty-five Pacific type locomotives were added and eighteen locomotives of various types were disposed of, resulting in an increase of ten locomotives. Three Consolidation type freight locomotives were converted into Mikado type freight locomotives and three Pacific type passenger locomotives and nine freight locomotives of various classes were superheated. The increase in tractive power of locomotives for the year was 744,910 pounds.

Seventy passenger train cars, four motor trucks and one motor car were added. One thousand six hundred and twenty-seven freight train cars were added and four hundred and eighty were destroyed, sold or transferred to other classes, resulting in a net increase for the year of one thousand one hundred and forty-seven cars.

**GENERAL REMARKS**

Federal control having terminated on March 1, 1920, your Company accepted the provisions of Section 209 of the Transportation Act, 1920, and was thereby guaranteed by the Government an income for the six months beginning March 1, 1920, of not less than one per cent compensation as fixed in the Federal Control contract, subject to increases due to adjustments as provided for in Section 4 of the Federal Control Act.

Approximately twenty per cent was added to your Company's payrolls by the decision of the Railroad Labor Board, which, though rendered on July 2, 1920, was effective from April 1, 1920.

To meet increases in labor costs due in part to this decision, increases in costs of fuel and supplies, as well as to provide the six per cent return upon property values as provided in the Transportation Act, the Interstate Commerce Commission, by its decision in the case known as Ex Parte 74, rendered July 29, 1920, but effective August 26, 1920, permitted increases of forty per cent in interstate freight rates in the territory North of the Ohio River and East of the Mississippi; of thirty-five per cent in territory West of the Mississippi; and twenty-five per cent in Southern territory. Interstate rates applying to the West were increased thirty-three and one-third per cent. Interstate passenger fares other than suburban, and rates on milk and cream carried on passenger trains were increased everywhere twenty per cent, and the railroads were granted a surcharge for transporting passengers in sleeping cars equal to one-half of the regular sleeping car fare. Intrastate rates and fares were not increased the same time or to the same extent as the interstate. State commissions, to whom applications were promptly made for increases in state rates, were in several states without authority to allow increases in passenger fares, and in some states the increase granted in interstate freight rates was not applied in many instances by Federal injunctions, most of these rates were finally advanced to the interstate basis. In only two states, however, were the full advances effective before the end of the year, and in one of the two the increase took effect in October, 1920. In the remaining states, interstate passenger fare increases in the important states of Illinois, Iowa, Indiana and Louisiana were not effective until the end of the year, and advances in freight rates in these and other states were only partially effective.

The marked decline in traffic during the final months of the year prevented your road from earning the sums hoped for from the rate increases. To meet this situation expenses were promptly reduced to correspond with the decline in traffic so far as this could be done consistently with safe and efficient operation.

Prior to September 1, 1920, through freight traffic was moved over the Yazoo and Mississippi Valley Railroad between Asylum, Miss., and West Junction, Tenn., under a trackage agreement covering that part of the line between Asylum, Miss., and Aspin, Miss., and an agreement of arrangement was made extending this arrangement to the line between Aspin, Miss., and West Junction, Tenn., in lieu of the traffic arrangement previously existing between the two Companies.

An equipment trust agreement known as "Government Equipment Trust No. 23" was executed during the year to cover the minimum purchase price of three thousand five hundred coal cars allocated to your Company by the Director General of Railroads, and \$9,117,000.00 of notes of your Company bearing interest at six per cent per annum were delivered to the Government under this agreement. Additionally, the Government later loaned your Company one hundred and fifty coal cars received subsequent to the execution of the trust agreement and to provide for the balance of the purchase price on the original three thousand five hundred cars.

Your Company contracted for the purchase of seventy-five locomotives, fifty passenger train cars and one thousand five hundred freight cars for a total cost approximately \$13,515,000.00. To provide funds for the purchase of this equipment there was issued during the year "Illinois Central Equipment Trust, Series F," amounting to \$8,107,000.00 and there was advanced by the United States Government under the provisions of Section 210 of the Transportation Act, \$4,440,000.00, your Company's own notes maturing in equal amounts annually between 1921 and 1935, bearing interest at the rate of six per cent per annum, to secure the loan. The balance of the purchase price of the equipment was paid in cash to your Company.

The number of stockholders as shown by the books of your Company at the close of the year was 13,645, as compared with 11,966 last year. The Board desires to express its appreciation to the officers and employees for their loyal and efficient services during the last year.

By order of the Board of Directors,

C. H. MARKHAM,  
 PRESIDENT.

## Railway Officers

### Financial, Legal and Accounting

**E. R. Belt** has been appointed auditor of disbursements of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., effective June 6.

### Operating

**A. A. Sims** has been appointed assistant to the superintendent of transportation of the Southern Pacific with headquarters at Houston, Tex., effective July 1, succeeding C. L. McManus, deceased.

**G. H. Minchin**, assistant superintendent of the Illinois division of the Atchison, Topeka & Santa Fe, with headquarters at Chillicothe, Ill., has been appointed trainmaster on the Missouri division, with headquarters at Marceline, Mo.

**B. S. Tobias**, trainmaster on the Panhandle division of the Atchison, Topeka & Santa Fe, with headquarters at Wellington, Kan., has been appointed chief dispatcher, with the same headquarters, succeeding C. J. Wells, who has been assigned to other duties. The position of trainmaster has been abolished.

### Traffic

**T. D. Geoghegan**, traffic manager of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., has resigned, effective July 1.

**W. M. Organ** has been appointed general live stock agent of the Chicago Great Western with headquarters at Chicago, Ill., effective June 15.

**Golder Shumate**, freight traffic manager of the Baltimore & Ohio, with headquarters at Baltimore, has been appointed general freight traffic manager for the system with the same headquarters. **O. S. Lewis**, general freight agent at Pittsburgh, succeeds Mr. Shumate. **W. W. Blakely**, assistant general freight agent at Pittsburgh, has been promoted to general freight agent with the same headquarters, and **A. L. Doggett**, division freight agent at Youngstown, Ohio, takes Mr. Blakely's place. **C. H. Pumphrey**, district freight agent at Philadelphia, succeeds Mr. Doggett at Youngstown. **Samuel House**, assistant general freight agent at Baltimore, has been appointed general freight agent with office at the same place. **George Harlan** has been appointed assistant general freight agent, and **J. L. Hayes** division freight agent at Baltimore. **P. S. Phenix**, industrial survey agent at Baltimore, has been appointed division freight agent at Cumberland, Md. **E. Jordan** and **J. R. Brown** have been made division freight agents at Charleston, W. Va. **Samuel Strachan** has been appointed assistant to the general freight traffic manager at Baltimore, Md.

### Mechanical

**J. McDonough**, master mechanic of the Atchison, Topeka & Santa Fe, with headquarters at Fort Madison, Iowa, has been transferred to the Illinois division, with headquarters at Chicago, succeeding A. L. Beardsley, who has resigned on account of ill-health.

### Engineering, Maintenance of Way and Signaling

**J. N. Olson**, assistant engineer of the Gulf lines of the Atchison, Topeka & Santa Fe, with headquarters at Galveston, Tex., has been transferred to the office of the chief engineer, with headquarters at Chicago.

## Obituary

**Frank E. Teetshorn**, chief train dispatcher of the Green Bay & Western, died at Green Bay, Wis., on June 27.

**W. A. Ballard**, president of the New Jersey, Indiana & Illinois, died at his home in South Bend, Ind., on June 30, after a long illness.

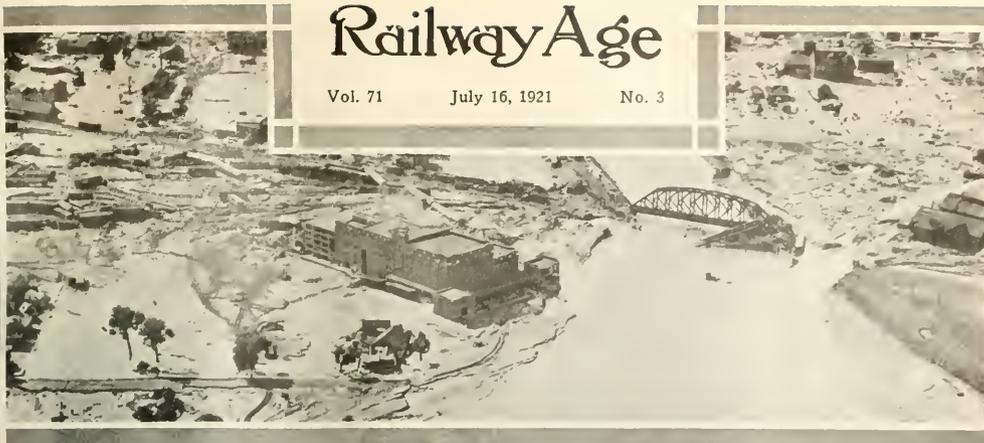
### JOHN F. WALLACE

**John Findley Wallace**, of New York City, consulting engineer, and chairman of the Chicago Railway Terminal Commission, died suddenly at a hotel in Washington, D. C., on July 3. He had been in Washington to testify before the Senate Committee on Interstate Commerce in connection with its railroad investigation. Mr. Wallace was one of the most prominent engineers in the United States, having had an extensive experience not only on railroads in various parts of the country and abroad, but in other lines of engineering activity. He was born at Fall River, Mass., on September 10, 1852. He entered railway service in 1869 as a rodman on the Carthage & Quincy. He was engaged in engineering work on the Rockford, Rock Island & St. Louis, the Peoria & Farmington, the Iowa Central, the Atchison, Topeka & Santa Fe, the Chicago, Madison & Northern and the Illinois Central. This service covered most of the period to June 1, 1904, although he was for a time engaged in private practice. On the Illinois Central he was successively engineer of construction, chief engineer (for five years), assistant second vice-president, assistant general manager and general manager.

On June 1, 1904, he was appointed chief engineer of the Isthmian Canal Commission and he also became vice-president and general manager of the Panama Railroad & Steamship Line and a member of the Isthmian Canal Commission. From October, 1905, to May, 1906, he was confidential adviser of the president of the Chicago & North Western. In June, 1906, he became president of the Electric Properties Company and also president and chairman of the board of directors of Westinghouse, Church, Kerr & Co. He left the Westinghouse companies in 1914 and has since been engaged in consulting work on numerous large enterprises. He was vice-president of the Kansas City, Mexico & Orient and of the Northern Colorado Power Company. Since 1914, he has been chairman of the Chicago Railway Terminal Commission and has acted for the City of Chicago in negotiations in contract ordinances involving relations with the railway companies serving the city.

Among the notable works with which Mr. Wallace's name is connected are the terminals of the Illinois Central built for the Chicago World's Fair of 1893, and the present Chicago & North Western passenger terminal in that city. At the age of 24 he made for himself a reputation by his work in rock excavation in the upper Mississippi river, where he was assistant United States engineer. He prepared the construction organization for the building of the Panama Canal. He was the first president of the American Railway Engineering Association. He was for years prominent in the American Society of Engineers and was president of that body in 1900.

FORTY CENTS A PLATE is the cost of a good noon-day meal at a lunch room which seventeen shop foremen of the New York, New Haven & Hartford have established for themselves at Van Nest, New York City; and at that price they have accumulated in two and a half years a reserve fund of about \$500. Van Nest is not well provided with restaurants and so these men got the company to give them an old passenger car and they fixed it up as a dining car (without trucks). The company furnishes hot water and gas. They have a woman cook, and, with a present membership of 40 (foremen and clerks) and an average daily company of eaters of 26, they are maintaining the establishment without difficulty. The woman reporter of the New York *Evening Post*, who gives these facts, says that this unpretentious "dining car" is beautiful with rosebushes, and that the odor from the kitchen is "savory."



A Scene at the Pueblo Flood

## Contents

### Great Alaskan Bridge Built During Coldest Weather ..... Page 103

The New Government Railway Structure Over the Susitna River Provided With 504 Ft. Span to Facilitate Clearing of Ice Jams.

### Government and Private Operation in Canada ..... 107

An Analysis of Results Obtained on the Two Large Railway Systems of That Country Under State and Company Control, by J. L. Payne.

### Pennsylvania Defends Employee Representation Plan ..... 115

Labor Board Now Confronted With Perplexing Problem of Ascertaining Its Authority Over National Agreements.

#### EDITORIALS

July 1 Is Here .....	95
A Large Bridge on the Alaskan Railway .....	95
Make Reduced Living Costs Real .....	95
Turn-ables and Track Lay-outs .....	95
Loss and Damage from Defective Cars .....	96
Danger of Coal Shortage Increases .....	96
Will the Labor Board Enforce the Closed Shop? .....	97
Government Versus Private Management .....	98
Labor Cannot Eat Its Cake and Have It .....	98
Northern Pacific .....	99
New York Central .....	100

#### GENERAL ARTICLES

Great Alaskan Bridge Built During Coldest Weather.....	103
Freight Car Loading .....	105
Government and Private Operation in Canada, by J. L. Payne.	107

#### GENERAL ARTICLES—Continued

Tentative Valuations Issued .....	109
Charles Azro Prouty .....	110
Will Investigate Relations of Western Pacific.....	111
Derrails—Are They Good or Bad? by A. H. Rudd .....	112
A Proposed Bridge Across the Hudson River at New York.....	113
I. C. C. Commodity Statistics .....	114
Over 600,000 Employees Laid Off Between August and March.....	114
Pennsylvania Defends Employee Representation Plan.....	115
How the New York Central Inspects Perishables, by F. S. Welch .....	117
Locomotives for Federated Malay States Railways.....	119
Negotiations for Settlement of Government Accounts.....	120
How Sincerely Do Railroads Want College Men? by F. E. Hanson .....	121
Making Screws Hold in Any Material .....	122

#### GENERAL NEWS DEPARTMENT ..... 123

Published every Saturday and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building. PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg. CLEVELAND: 4300 Euclid Ave.  
WASHINGTON: Home Life Bldg. LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
NEW ORLEANS: Maison Blanche Annex  
Cable address: Urasimgec, London

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. F. LANE  
R. E. THAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STUEBING  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEHLER  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

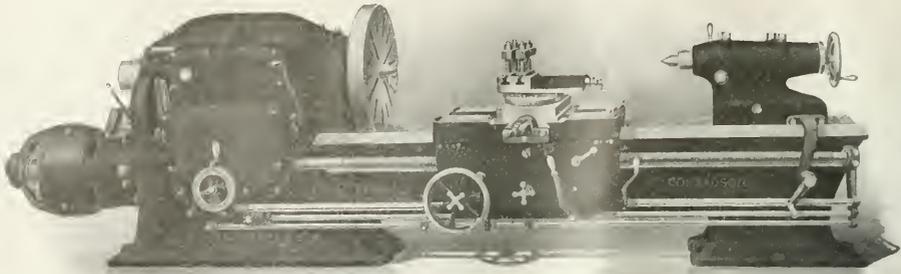
MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
L. M. SANDWICK  
J. G. LYNNE  
J. H. DUNN  
D. A. STEEL

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free in United States, Mexico and Canada, \$8.00. Foreign countries (excepting daily editions), \$10.00 £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 9,000 copies were printed, that of these 9,000 copies 8,115 were mailed to regular mail subscribers, 69 were provided for counter and news company sales, 250 were mailed to advertisers, 82 were mailed to employees and representatives, and 350 were provided for new subscriptions, samples, copies for the mail and office use; that the total copies printed this year were 275,200, an average of 9,829 copies a week.



The Ryerson-Conradson Motor Drive eliminates all belts, tension idlers and chain drives with their consequent trouble and inefficiency.

## Lathes for Progressive Railroads

*"A large amount of machinery used in railroad shops is obsolete to the extent that it has gone out of date and can no longer be efficiently operated."*

RAILWAY MECHANICAL ENGINEER

In twenty-five years locomotive weight has increased 265.9%—modernize your shops to keep pace.

Ryerson-Conradson Railroad Lathes embody many improvements that speed up shop output and reduce costs.

Direct motor drive; headstock cast integral with the bed; gears constantly in mesh; and centralized apron control are features of these modern machines.

They are built for increased production in the repair of heavy modern motive power.

Send for Bulletin 1,301.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

For some weeks railway and railway supply men have looked to July 1 as marking a change from the period of inactivity

July 1  
Is  
Here

to that of increased action in the rehabilitation and improvement of the railway properties. That date has now arrived and passed. The wage reductions estimated to exceed one million dollars a day are now in effect and this saving is accruing to the roads. Traffic continues to increase and is far above that of last spring, although still slightly below that of two years ago and much below that of a year ago. That these conditions are having their effect is indicated by the announcement during the last week by a number of roads that they have put on considerable numbers of maintenance of way men, and on other roads that the car repair forces have been increased. The need for increased activity in both the mechanical and maintenance of way departments is pressing. The situation is especially acute with reference to cars, for the roads, particularly in the western grain producing areas, are facing the movement of an unusually heavy crop, harvesting of which is already under way. Likewise, maintenance of way work is seasonal in character and there is much of it which if not started now should not be undertaken at all this year.

Elsewhere in this issue will be found an article describing the construction of a large bridge on the Government Railway in Alaska. As one of several formidable structures which are important features of this project it exemplifies the magnitude of the venture better than it can be expressed by a statement

A Large Bridge  
on the  
Alaskan Railway

that the railroad is estimated to cost 50 million dollars. In view of the meager traffic which it must expect through a long period of development, the question naturally arises as to the possibility of using a pile trestle or other short span structure to cross the Susitna river, a stream with relatively shallow water, but the annual recurrence of terrific ice floes positively precluded the consideration of anything other than a clear span over the entire main river channel. Hence the expenditure of over one million dollars for this one crossing. To the engineer this project is of interest because of the problem introduced by the extreme low temperature at which it was necessary to prosecute the work. The slow setting and curing of concrete under these conditions introduced one element of anxiety, and with a view to the elimination of all other sources of uncertainty in the quality of the concrete, more than the usual pains were taken to obtain the quality of workmanship and material which under normal conditions would insure a very high quality of concrete. As an illustration it was necessary to haul the sand and gravel a distance of 200 miles to obtain the quality desired. While this work was carried on under what are obviously abnormal conditions, the precautions taken may well be carefully considered inasmuch as they serve as an object lesson in the practical

application of the results of recent scientific studies of the quality of concrete.

As the retailer in the merchandising field has been the last to reduce his prices, so has the restaurant proprietor generally been even slower in lowering the prices

Make Reduced  
Living Costs  
Real

of the food he serves to conform with the decreased cost to him of groceries, meat and vegetables. Such a condition is particularly noticeable in eating houses and lunch rooms at outlying railroad yards where there is no competition. It is difficult to persuade a man who is forced to eat most of his meals at such places that there has been any appreciable reduction in the cost of living. The only restaurants accessible to railroad employees at many yards and terminals have often provided food of indifferent quality and now some of them are overcharging. Many of these restaurants occupy railroad premises and are otherwise obligated to the railways for special concessions. Where such conditions exist direct pressure might well be brought to bear to prevent further violation of the railways' hospitality by the restaurant proprietors in dealing unfairly with its employees. Some of these houses, of course, are not in any way obligated to the railways but even in such cases a hint that the company might open its own restaurant or assist a competitor in doing so by leasing space or an old building to him at a nominal rental might prove effective. Other remedies may suggest themselves in various localities, but in any event some effort should be put forth to end this unfair dealing which is undeniably a source of considerable discontent.

It has been well said that "the heart of the roundhouse is the turn-table" and there is room for improvement in the heart action of many present day terminals. Strength is the first essential in turn-tables and advantage should be taken of the present opportunity to reinforce them, making sure that they are

Turn-tables  
and Track  
Lay-outs

amply strong to support modern, heavy locomotives. Second only in importance to strength is the need for adequate, reliable power for turning the tables. In many cases replacing a small, inefficient turn-table tractor by a new unit, large enough to carry the load, will save subsequent expense in calling out inspectors, repairmen and hostlers to push the turn-table around by hand. Careful attention to proper balancing, lubrication, sanding and means for the removal of snow in localities subject to severe winter weather, will also prove time well spent and reduce future delays. There is a possibility of improvement in many roundhouses, so arranged that the opposite tracks do not line up. This condition reduces the flexibility of locomotive movement and necessitates uncoupling tenders with resultant expense and loss of time. The design of a new terminal development

offers a fine opportunity for the study and proper location of coaling stations, ash-pits and water cranes in order that locomotives may be handled through the terminal in a direct line and with the least possible delay and back movement. Many present terminals, however, can be improved by minor alterations in track lay-outs. For example, the busiest terminal of an important railroad was greatly benefited by moving 75 ft. of track, thus making the turn-table accessible from both ends of the ash-pit. This obviated making all movements on and off the same end of the ash-pit and resulted in saving a large number of locomotive hours. In this particular case the replacing of an obsolete turn-table tractor and the later installation of a 100-ft. turntable was responsible for an important increase in terminal efficiency. Another condition to be guarded against occurs in track layouts where movements to and from the yard are made over a single switch point. The derailment of equipment at or near this point may cause serious delay and an emergency outlet should be provided. This can be accomplished at a comparatively small expense and may prevent tying up the entire terminal for several hours when its services are most needed.

The need for a generally higher standard of freight car maintenance has frequently been commented on in these columns. Not only would the ultimate cost of maintenance be reduced, but better and more economical service would be rendered if cars were maintained at the highest instead of at the

#### Loss and Damage from Defective Cars

lowest practicable standard. The effects of bad car condition on the character of the service rendered is clearly evident in the classified summary of freight loss and damage expenditures issued by the Freight Claim Division of the American Railway Association. For the month of March, 1921, the latest report available, 223 carriers report a total expenditure for loss and damage of \$9,580,536 of which \$946,290, or 9.9 per cent, is directly attributable to defective or unfit equipment. Next to rough handling and delays, this is the cause of the largest expenditure of any of the other directly assignable causes. But the most striking evidence of the effect of poor car condition will be seen in the carload shipments of grain, flour and other mill products, and of coal and coke. Of a total expenditure for loss and damage to grain shipments of \$549,488, \$287,940 is directly attributable to defective or unfit equipment. Of a total expenditure of \$326,767 for loss and damage to flour and other mill products, \$147,800 is attributable to the same cause. Combined, the loss and damage payments for these two groups of commodities, both of which require box cars, amount to over \$874,000 for the month of March, of which practically \$436,000, or slightly less than 50 per cent, is chargeable to the condition of the equipment. Expenditures amounting to \$403,488 were made in payment of loss and damage claims to carload shipments of coal and coke. Of this amount \$187,508, or over 46 per cent, was attributable to the condition of the equipment, largely open top cars. A total expenditure for loss and damage to all commodities caused by defective or unfit equipment running at an annual rate of nearly \$5 a car for all freight cars of railroad ownership is indicative of an average equipment condition which ought to be improved without delay. When it is taken into consideration that a large part of this loss and damage may be attributed to a comparatively small number of cars the saving in reduced loss and damage alone would go far toward completely justifying the retirement or rehabilitation of these cars, without considering any of the other important factors entering into the problem.

## Danger of Coal Shortage Increases

WISE PEOPLE who know they must buy coal between now and next winter will buy it as soon as practicable. Foolish people who know they will have to buy coal will postpone buying it and probably pay dearly for doing so. There may be no substantial revival of business activity within the next six months. If there is not, possibly there will be no serious coal shortage. If there is any considerable increase of manufacturing and other forms of industrial activity, there will be a coal shortage, and a serious one, unless buying for business and domestic purposes soon increases very largely.

The normal increase in consumption of coal in the United States for a long time has been from 10,000,000 to 20,000,000 tons a year. The year 1914, like the year 1921, was a year of depression. Both being years of depression, the amount of coal required by the country in 1921 should be from 70,000,000 to 140,000,000 tons more than in 1914. Nevertheless, in the first six months of 1921 the amount of coal produced and shipped actually was 9,000,000 tons less than in the same months of 1914, and, in fact, less than in the first six months of any of the last eight years except 1915. It was 30,000,000 tons less in the first six months of 1921 than in 1913, 50,000,000 tons less than in 1916, 77,000,000 tons less than in 1917, 86,000,000 tons less than in 1918 and 62,000,000 tons less than in 1920. At the present rate of output the total production of 1921 would be less than 400,000,000 tons. The last year in which less than this amount of coal was consumed was 1909—twelve years ago.

There is nothing in present conditions to justify the belief that unless the production and transportation of coal speedily increase the country can avoid a coal shortage this fall and winter. As already indicated, if there should be a revival of business activity the shortage would be serious. The Interstate Commerce Commission has become so alarmed regarding the situation that Chairman Clark has made a special appeal to the railways and public utilities to increase their purchase and storage of coal. Many of the railways and public utilities are doing so, but there is a limit to the beneficial effect this will produce. Unless other business concerns and domestic consumers speedily and largely increase their purchases the country will have serious coal troubles this winter.

There is every reason why consumers that can buy and store coal to provide for future needs should do so now. The railways today have a surplus of 163,000 coal cars. In addition, they have over 130,000 coal cars in bad order, many of which could soon be put into service if there was a demand for them. This makes a total of almost 300,000 coal cars for which there is no demand now; but past experience shows that a large increase of coal traffic in the fall and winter would soon wipe out this car surplusage and create a shortage.

It is as certain as any future thing can be that there will be no substantial reductions in freight rates on coal this year. The railroads themselves are paying for coal prices per ton which, according to the latest statistics available, average \$4.40 per ton, or about 180 per cent higher than in 1916. The advances in rates on coal have averaged nowhere near this much, and the railways cannot afford to reduce the rates on coal when they are having to pay such high prices for it. Furthermore, there seems no prospect of any considerable reductions in prices of coal, because the mine operators are still paying the mine workers the highest wages in history and, under their contracts will have to continue to do so until April 1, 1922.

With the prospect of a serious coal shortage looming up, and with no apparent prospect of reductions in prices, it is plain that in their own self-interest business concerns and domestic consumers should begin buying at once the supplies that they will need later. If they do not do so, and later

find that they cannot get the coal they need, they will have nobody to blame but themselves.

All past warnings regarding the increasing danger of coal troubles next fall and winter have been disregarded by the public. It is to be hoped that the warnings now being given will receive more attention.

## Will the Labor Board Enforce the Closed Shop?

THE HEARINGS before the Railroad Labor Board last week regarding the differences which have arisen between the management of the Pennsylvania and the shop crafts' unions involve principles of the utmost importance. One great question involved was whether the individual railway management may negotiate regarding rules and working conditions with its employees, both union and non-union, or must deal with the labor unions exclusively. Another great question involved was whether rules and working conditions are to be so formulated as to reward individual employees regardless of the work they do, and thereby promote inefficiency, or so as to reward individual employees in proportion to the work that they do and thereby stimulate efficiency, in the interest of the employees, the railroad and the public. Another great question involved was whether the Labor Board is to usurp the functions of the management of each individual railroad and its employees in determining rules and working conditions, or to allow this function to be exercised by the individual railroad and its employees.

The provisions of the Transportation Act regarding the settlement of labor controversies are so plain in their letter as to make it very difficult to understand how any serious doubt can be raised as to their spirit and intention. They specifically require all disputes between carriers and their employees "to be considered and, if possible, decided in conference between representatives designated and authorized so to confer by the carriers or the employees, or subordinate officials thereof, directly interested in the dispute." There is not a word to indicate that the carriers must deal exclusively with representatives of the unions.

The labor leaders are trying to get the Board to so interpret the law as to compel each railway management to deal solely with officers of the unions if the unions include a majority of the members of any particular class of employees on the individual railway. Suppose, however, that a union includes 60 per cent of the employees of any particular class, and that the remaining 40 per cent of the employees and one-third of the union employees, making 60 per cent of all, elect representatives to deal with the management. In such a case these representatives will not represent the unions, but they will represent a majority of the employees. Obviously, to try in such a case to force the management to deal solely with representatives of the unions would be to deny it the right to deal with representatives chosen by a majority of its employees, which would be directly contrary to the spirit of the law. The practical effect of forcing each railway to deal only with representatives of the union, if the union happens to include in its membership a majority of the employees of any particular class, would be to force upon the railroads the closed shop for that particular class of employees—a thing plainly not contemplated by the Transportation Act.

Negotiation by a railway solely with the representatives of the unions means, as long as the unions persist in their present policies, either the exclusive application of union principles in fixing rules and working conditions, or the making of all rules and working conditions by the Labor Board.

The application exclusively of union principles means the continuance of the abolition of piece work, of the

payment of large amounts of so-called "wages" for work not done, and, in many cases, excessive payments for work that is done. The shop crafts' unions especially have stood throughout for continuance on every railroad, practically unchanged, of the rules and working conditions provided in the national agreements. That means continuance of the gross waste and inefficiency which have prevailed ever since the national agreement with the shops crafts was made.

Since it is obvious that the railroads never will voluntarily agree to the principles and methods for which the shop crafts' unions stand, recognition by the Labor Board of the principle that the railroads must deal solely with the unions, would mean that rules and working conditions on practically every railway must be made by the Labor Board itself. This, however, would mean that the Labor Board would become the manager of all the railways of the United States, in so far as management relates to labor matters; and they are the most important matters to which it does relate. The railroads were returned to private operation under the provisions of the Transportation Act for the express purpose of abolishing nationalized and centralized management in all its forms. Therefore, for the Labor Board to constitute itself the manager of all the railroads with respect to labor matters would be to defeat the very intent and purpose of the law which created it.

The untenable position in which the Labor Board now finds itself with respect to the subject of rules and working conditions is due to an almost unbroken series of mistakes it has made in dealing with that subject. The law plainly contemplated that it should not take jurisdiction of any matter whatever until there had been conferences between the carriers and their employees regarding it which had resulted in a controversy that threatened to interrupt transportation. The national agreements made by the Railroad Administration with the employees expressly provided for their own termination when government control should terminate. The railways continued them in effect until September 1, 1920, because the law required that until that date no changes should be made in wages or working conditions which would reduce the compensation of any employee. Both prior and subsequent to that date rules and working conditions were a proper subject for conference and negotiation between the railways and their employees. They were not, properly or legally, a subject for consideration by the Labor Board until after such conferences had been held and controversies had arisen which might result in a substantial interruption of transportation. The Labor Board, however, disregarding the plain language and intent of the law, assumed jurisdiction of rules and working conditions in its decision in the wage case of last summer, and ordered the national agreements continued in effect until it could hold hearings regarding them and reach a decision. Having issued an order in April that they should be abrogated, effective July 1, it issued another order late in June ordering them continued indefinitely.

Meantime, the Pennsylvania and its employees had reached an agreement regarding rules and working conditions for its large Altoona shops, this agreement, however, being reached with the elected representatives of its employees there, and not with representatives of the labor unions. If this agreement had been reached before the Labor Board took jurisdiction of the subject of rules and working conditions it would have been difficult to raise any serious question as to its conformity to the letter and spirit of the law. The Labor Board having, however, taken jurisdiction of the subject of rules and working conditions and made certain rulings, and interpretations of rulings, regarding it, the labor unions now come in and demand that the Labor Board should require the agreement between the Pennsylvania and its employees to be set aside on the ground that it is contrary to the rulings of the Board. But if the Board's rulings in

not in conformity with the law there is no good reason why the railroad should regard them.

Up to the present time the Labor Board has pursued a policy which has seemed to be dictated mainly not by the provisions of the law which created it, but by fear of what the labor unions would do if it rendered any decision which displeased them. The result is that almost a year and a half after the return of the railways to private operation they and the public are still bearing the burden of the iniquitous standardized wages and rules and working conditions which were imposed under government control. The railroads were returned to private operation for the purpose, among others, of relieving them and the public of these things, not of perpetuating them. The Labor Board was created to carry out the purposes of the law, and not to defeat them, but its policy, or want of policy, in dealing with the subject of national agreements has thus far defeated those purposes.

## Government Versus Private Management

WE PUBLISH ELSEWHERE in this issue an article by J. L. Payne analyzing in some detail the operating results of the Canadian government lines and the privately owned and operated Canadian Pacific in the year 1919. We leave the reader to draw his own conclusion from the statistics presented by Mr. Payne, and his comments on them. We call attention to the fact, however, that if from the data presented by Mr. Payne the reader draws the conclusion that the government lines are less efficiently operated than the Canadian Pacific, this does not necessarily reflect upon the energy or ability of the official personnel of the government lines.

The railways of the United States were operated under government control mainly by the same men who operated them under private management in 1917, and who are operating them under private management now. The results obtained by these men under private and government control have been, however, widely different. This difference in results has been due almost entirely to differences in the principles that had to be applied, and the methods that had to be used, under government management, on the one hand, and private management, on the other.

There are many things the officers of a railway system which is privately owned and managed can and will do, that the officers of a railway system that is government owned and managed cannot and will not do, because government and private management necessarily are subjected to different influences.

For example, the officers of a government railway system cannot, as a practical matter, meet a reduction of traffic with the same large reductions in the number of men employed, and in other expenditures, as the officers of a private railway system can. The business of the railways of the United States declined under government operation following the armistice almost as much as it did under private operation in the latter part of 1920 and early part of 1921. Under government operation, however, the reduction made in the number of employees was comparatively small, while under private operation, between August, 1920, and March, 1921, the number of employees of the railways of the United States was reduced 605,000, or almost 30 per cent.

The successful operation of a railway system demands the application of the same principles and methods that are used in the successful management of any other kind of business, and neither in Canada, the United States, nor any other country—especially in one having a democratic government—can accepted business methods be used to the fullest extent in the operation of a government railway. They may be used

to a greater or less degree, depending on circumstances, and the present management of the government railways of Canada undoubtedly has used them to as great an extent as the conditions would permit. But government operation by its very nature necessarily is subjected to influences and motives which do not originate with the management, and which necessarily have an important effect on the operating results.

## Labor Cannot Eat Its Cake and Have It

THE DRASTIC MEASURES the railroads have been forced to adopt to avoid financial disaster are illustrated by the fact that 604,756 railway employees were contributed to the army of unemployed between August, 1920, and March, 1921. The establishment of new records in August, 1920, for the amount of transportation service rendered entailed the employment of 2,197,824 persons, according to the statistics of the Interstate Commerce Commission. Decreased traffic and excessive operating expenses, with a consequent low net return, despite higher freight and passenger rates, compelled the railroads to reduce the total number of their employees during the succeeding seven months to 1,593,068, a decrease of 27.5 per cent. Despite these drastic reductions, receivership was still "just around the corner" for many carriers.

Comparisons of the number of employees of various classes in August, 1920, and in March, 1921, bring to light interesting facts and indicate to some extent the causes and effects of this curtailment. The heaviest cuts were made in the maintenance of way and maintenance of equipment departments. Almost half—49.1 per cent—of the 456,179 foremen, masons, bricklayers, structural iron workers, section men and employees in construction gangs and on work trains were laid off in this seven-month period. Approximately 191,900 section men, or 52.5 per cent of the number in service in August, 1920, were not included in the March, 1921, pay roll. Almost 71 per cent of the men in construction gangs and on work trains were cut from the pay roll. Of the 1,274 masons and bricklayers employed in August, 1920, only 45.3 per cent, or 577, were employed in March, 1921. Similarly, the number of structural iron workers decreased from 900 in August, 1920, to 556 in March, 1921, a reduction of 38.3 per cent.

In the maintenance of equipment department the August, 1920, pay roll included 347,628 machinists, boilermakers, blacksmiths, carpenters, painters, upholsterers, electricians, air brake men, car inspectors, car repairers and other skilled laborers. The March, 1921, pay roll included but 239,446 employees of these various classes, a decrease of approximately 31.1 per cent.

Comparable reductions, of course, could not be made in freight, passenger, yard, terminal and station service because of the necessity for continuous operation regardless of financial difficulties. In freight train service, the number of engineers, firemen, conductors, brakemen and flagmen was reduced from 169,983 in August, 1920, to 135,534 in March, 1921, or 20.3 per cent. Employees in similar capacities in passenger service were reduced from a total of 59,965 in August to 57,159 in March, or 4.7 per cent. Employees in station, yard and terminal services, such as those classed as yardmasters, yardmasters' assistants, engineers, firemen, conductors, brakemen, switch tenders, other yard employees, hostlers, enginehouse men and station service employees, numbered 364,093 in August. In March they numbered 281,884, a decrease of 82,173, or 22.6 per cent.

The reduction in clerks during this period was comparatively small because of the great amount of necessary accounting and statistical work. Of the 261,211 clerks

employed in August, 33,830, or 13 per cent, had been laid off by March.

While this large reduction of employees undoubtedly was partly due to seasonal causes and much more largely to the slump in traffic, it is unquestionably true that many of the railway employees who are not now in service owe their unemployment to the policy followed by their union leaders. These leaders must have known that the carriers' excessive operating expenses would have to be reduced. They knew, too, that the cost of living was declining and that labor in outside industries was contributing towards necessary business readjustment by accepting lower wages. They knew that readjustment of the railway pay roll was inevitable. Nevertheless, they resisted every effort to bring operating expenses, of which the pay roll constitutes about 65 per cent, into a proper relation with operating revenues through reductions in basic wages and reform of rules and working conditions. The result was that the carriers were compelled to make reductions in forces so large that they were not good for either the railroads, the employees, or the public.

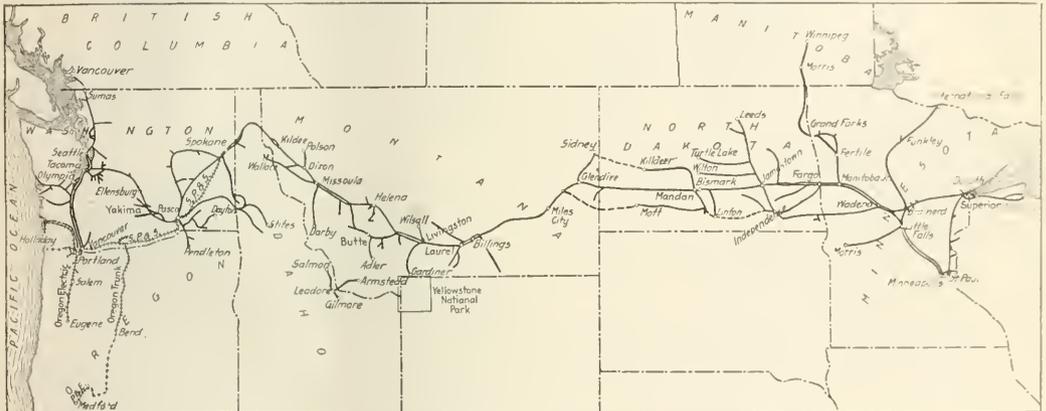
For example, in August, 1920, the percentage of un-serviceable freight cars was 7.1 per cent; in March it was 11.1 per cent; the increase being mainly due to the fact that railroad shop forces had to be reduced 31.1 per cent to save many railroads from ruin. Railroad labor's representatives blocked every other avenue of relief. Again, there is still a large amount of deferred maintenance of way work which was left over from federal control. The exceptionally mild winter and spring would have enabled the railroads to

## Northern Pacific

THE FACT that the directors of the Northern Pacific voted two weeks ago to declare the regular quarterly dividend of 1 3/4 per cent, despite the business depression and the low earnings of the railways, is a clear indication of the essential financial strength of the company. Its financial standing was also emphasized by the success of the Hill lines in floating the recent issue of bonds to refund the Burlington joint 4's.

The Northern Pacific was very hard hit by the increase of operating expenses which characterized the period of the war. Up to the present it has not been able to reduce this level of expenses materially, combined with which it is suffering severely from the depression which has been especially acute in the Pacific Northwest. The road's standard return was set at \$30,057,760. In 1918, despite the fact that it handled the largest business in its history, it did not earn its standard return, the net railway operating income for the year being \$28,209,373. In 1919, the net railway operating income was \$18,379,363; in 1920 but \$8,636,686. In the first four months of 1921, which is as far as the figures are at present available, the operations of the road resulted in a deficit of \$818,315 as compared with a net railway operating income in the first four months of 1920 of \$5,159,326.

Referring now to the corporate income, including the standard return while the railroad was under federal control and the guaranty for the six months from March 1 to August 31, 1920, it will be noted that the income available for



The Northern Pacific

accomplish much towards putting the physical properties in shape, but the refusal of the labor leaders to act in the best interests of all their clientele made it necessary to reduce the maintenance of way forces by almost one-half.

There should be a lesson in these unfortunate developments for both labor leader and employee. Some of the men who were laid off during this seven months' period are again in service; many more will be, as operating revenues and expenses approach a proper relationship. Then it will be interesting to find how many have learned by experience that they "cannot eat their cake and have it"—that they cannot force the railways to pay excessive amounts to individual employees without at the same time forcing them unduly to reduce the number of men employed. The surest and shortest road to extensive unemployment in the railroad and in every other industry is successful insistence by the labor unions upon wages and working conditions which impose upon the industry a burden greater than it is able to carry.

dividends in 1920 was \$19,094,183. In 1919 it was \$22,836,737. The dividend appropriations in both years totaled \$17,360,000.

The story of the Northern Pacific's operating results over the past few years is the same story that has been referred to so many times in these columns; namely, that there was a considerable increase in total operating revenues, a still greater increase in total operating expenses and the resulting decline in net. The annual report of the road brings out these facts clearly and they are also shown in the form of tables in this review. Table I is a resumé of the earnings, expenses, traffic handled, etc. It will be noted that in 1916 the total freight revenue was \$59,543,090, the total operating revenue \$80,281,343, and the net operating revenue \$37,049,065. In 1920 the freight revenue had increased to \$81,090,390 and the total operating revenues to \$113,084,408. The operating expenses, however, had increased to \$100,983,874 and the net had decreased to one-third of what it was in 1916 and was \$12,100,534. The progressive

increase in the operating ratio from 53.85 in 1916 to 89.30 in 1920 is especially noticeable.

The Northern Pacific's busiest year was in 1918, when it carried 24,150,782 revenue tons of freight. The total ton-miles were 9,589,272,892. Further than that, in 1918 the railroad secured an average haul of 397 miles. The amount of freight presented for transportation enabled it to haul an average train load of 737 tons and to secure an average car load of 25.4. In 1920 its average haul was but 334.9 miles; its average train load was 659.66 and the average car load but 24.2. The increase in operating expenses was due mainly to increased wages and the figures are given in such striking fashion that it would not be proper to omit them. They are as follows:

Total payroll for year ending June 30, 1915.....	\$24,486,852
Total payroll for year ending December 31, 1916.....	28,204,669
Total payroll for year ending December 31, 1917.....	35,872,879
Total payroll for year ending December 31, 1918.....	49,632,127
Total payroll for year ending December 31, 1919.....	52,605,396
Total payroll for year ending December 31, 1920.....	66,503,794

From 1916 to 1920 there was an increase of nearly 50 per cent in the cost of locomotive fuel. The average cost per ton in 1916 was \$2.57. In 1920 it was \$4.67. The fact is further developed that during 1920 the road was unable to secure sufficient quantities of eastern coal. Eastern coal brought the highest prices ever paid, ranging from \$8 to \$9 per ton delivered on the docks at the head of the lakes. During the year locomotives were supplied with a considerable quantity of Illinois coal. The figures relating to fuel are given as follows:

Year ended December 31	Coal used by locomotives tons	Average cost per ton	Total cost
1916	2,520,215	\$2.566	\$6,466,872
1917	2,745,034	3.030	8,317,453
1918	2,718,558	3.884	10,570,841
1919	2,604,428	4.1008	10,089,223
1920	2,625,493	4.6740	12,271,554

Another noteworthy handicap with which the Northern Pacific has to contend is that of increasing taxes. The taxes paid in 1920 totaled \$10,108,868 as compared with \$6,910,728 in 1917, an increase of 46 per cent. The increase was made up entirely of state taxes.

The foregoing does not have quite that optimistic sound which might be wished. It merely shows, however, that the Northern Pacific, while a fine property, has been subjected more severely than most roads to the unfavorable influences from which all have suffered within recent years. The Northern Pacific is fortunate in being able, because of its efficient management, to have put itself in a financial position so that it can continue its dividends in a time of stress such as the present.

Furthermore, the year 1920 for the Northern Pacific did show marked progress. During that year the road placed

the total tractive effort 49,094,650, and the average tractive effort 34,918. Of the locomotives in service at the end of 1919, 509, or 36 per cent, had superheaters; at the end of 1920, 600, or 41.49 per cent, had superheaters.

The Northern Pacific is at present confronted with the lack of traffic resulting from the depression, which, as above noted, has been particularly severe in the Northwest. The Northern Pacific is a large carrier of lumber. A story is told of a prominent Pacific coast lumber man who recently came east for the purpose, he said, "of getting out of the gloom." His remark is a bit facetious, it is true, but it emphasizes the nature of the conditions on the Pacific Coast. This and other factors which are corollary to a depression in a territory so widely extended as that served by the Northern Pacific, are further indicated by the fact that in the first four months of 1920 the road's freight revenues were but \$17,867,644 as compared with \$24,540,702 in the first four months of 1920. Like most railways, its great needs are an increase of its traffic, and a reduction of its labor, material and fuel costs.

The figures for operation in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated.....	\$6,653	\$6,592
Freight revenue.....	81,090,390	72,934,723
Passenger revenue.....	21,143,708	20,331,317
Total operating revenue.....	113,084,408	100,739,354
Maintenance of way expenses.....	21,012,798	16,223,655
Maintenance of equipment.....	25,993,923	19,809,119
Traffic expenses.....	1,142,318	765,310
Transportation expenses.....	48,439,001	38,274,463
General.....	3,148,012	2,537,657
Total operating expenses.....	100,983,874	78,672,509
Net from railway operations.....	12,100,534	22,066,845
Taxes.....	10,108,686	9,000,737
Operating income.....	1,973,378	13,042,167

The corporate income account is as follows:

Gross income.....	32,390,893	35,644,402
Interest on funded debt.....	12,134,438	12,117,483
Net deductions from gross income.....	13,296,709	12,807,665
Net income.....	19,094,183	22,836,737
Dividends.....	17,360,000	17,360,000
Income balance.....	1,734,183	5,476,737

## New York Central

AMONG THE MULTITUDE of questions that received more than ordinary attention during the war, one that resulted in no inconsiderable discussion among transportation men was the importance of the port of New York. That port, being the country's largest port, and with one exception the port nearest the scene of the conflict in Europe, was the key to the export and supply situation. As a result it was congested and even with its enormous facilities proved at times unable to handle to best advantage the great stores of war supplies which were loaded on ships at its many miles of docks. For a time there was an agitation, if such it might

TABLE 1—NORTHERN PACIFIC OPERATING RESULTS

Year	Freight revenue	Total operating revenues	Operating expenses	Net operating revenue	Operating ratio	Revenue tons	Revenue ton miles	Average haul	Revenue train load	Rev. car load
1920	\$81,090,390	\$113,084,408	\$100,983,874	\$12,100,534	89.30	23,446,182	7,832,847,753	334.90	659.66	24.2
1919	72,934,723	100,739,354	78,672,509	22,066,845	78.10	21,389,131	7,589,036,420	354.81	660.85	24
1918	78,534,344	102,908,259	71,516,302	31,391,957	69.62	24,150,782	9,589,272,892	397.06	737.14	25.40
1917	65,258,995	88,225,726	53,297,861	34,927,865	60.41	22,842,151	8,812,673,163	385.81	602.42	23.17
1916	59,543,090	80,281,343	43,232,278	37,049,065	53.85	21,892,988	7,721,585,793	352.68	636.72	21.21
1912-13	52,270,686	72,676,139	44,673,298	28,002,841	...	21,285,527	6,232,168,637	292.8	541.62	19.74

orders for 20 Pacific, 25 Mikado, 20 Eight-wheel switching and six heavy Mallet locomotives, the purchase of which, together with that of certain freight cars and various expenditures for additions and betterments to way and structures was financed with the assistance of a loan of \$6,000,000 from the government's revolving fund. The six Mallet and four switching locomotives had not been delivered up to the end of the year. On December 31, the road owned 1,446 locomotives, the total tractive effort being 52,136,870 and the average tractive effort per locomotive, 36,056 lb. At the end of 1919 the number of locomotives was 1,406,

which aimed to convince shippers that New York was not the only port on the Atlantic seaboard. The port of New York, nevertheless, finally managed to solve its several problems; it continues to be America's leading seaport and is expanding its facilities at present in greater degree than is the case at most of its competitor ports. The agitation to induce shippers to use other ports has in a large measure ceased. The other export centers have their functions and will continue to derive compensating advantages therefrom. New York will continue to be the real Atlantic seaboard shipping center and will continue to retain the advantages

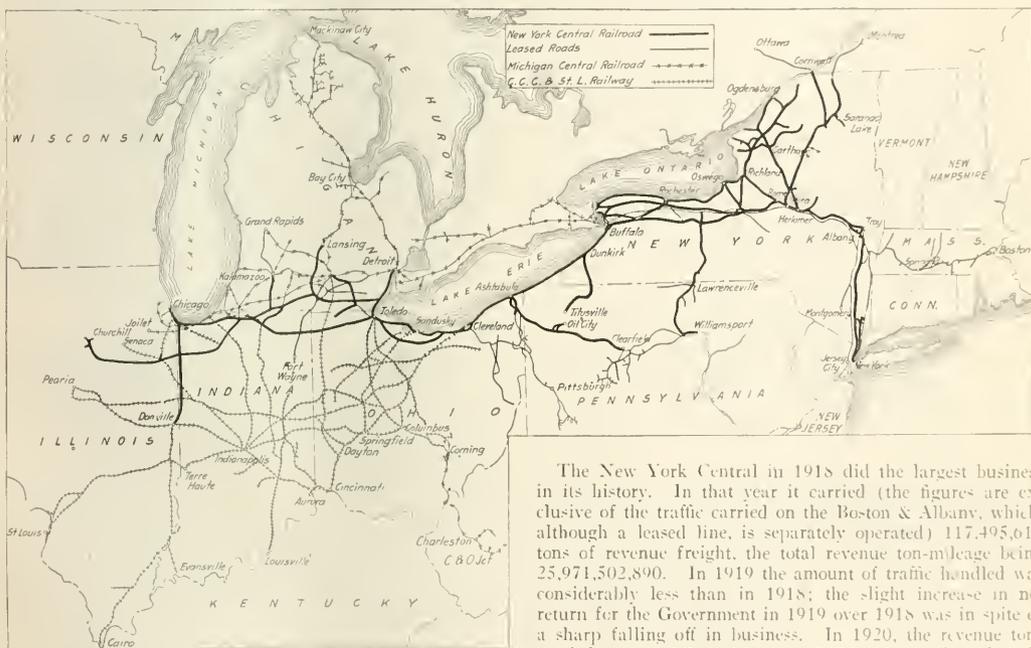
due to its great facilities and to the fact that as predominantly the largest port, it has the greatest number of ships and therefore the greatest amount of available cargo space.

Because of its being one of the more important of the lines serving New York and because of its strategic position and operating capacity in general, the New York Central was called upon during the war and the federal control period to serve in a measure as the backbone of the transportation lines in the eastern district. This statement is made with all due respect to the other lines serving the Atlantic seaboard, some of which, notably the Lackawanna, rendered a service, differing from that rendered by the New York Central in amount rather than in character. The New York Central was, because of the situation, called upon to do almost the impossible. The development of its plant and more especially the progressive policy evidenced in its large purchases of equipment just prior to the federal control period, enabled it to come through the difficult period in quite creditable shape.

The impression should not be secured, however, that the New York Central has not suffered from the handicaps resulting from the high wage scales, the national agreements

a net railway operating income, as reported in the December monthly statement to the Interstate Commerce Commission, of but \$3,557,579. The road, in short, was able to meet in fair measure the high costs of operation characteristic of the federal control period; it was not able to meet similarly the high wage scales embodied in Decision No. 2 of the Railroad Labor Board, nor the other conditions of the railway situation evidenced in general in 1920.

As far as the present is concerned, the New York Central is not now doing as much business as it did in the early part of 1920. Even with this smaller traffic it is, however, because of the increased rates, succeeding in keeping its gross ahead of last year's. In the first four months of 1920 its gross earnings have been \$63,321,465 as compared with \$60,978,831 in the first four months of 1920. Its net railway operating income for the first four months of 1921 was \$7,087,063 as compared with \$5,928,833 in the same period of 1920. The New York Central should succeed in coming through 1921 in much better shape from the standpoint of net earnings than it did in 1920, but it is not yet apparent that it will succeed in reaching for the year the net which it earned for the Government during the federal control period.



The New York Central System

and in general the high costs of operation characteristic of the federal control period and of the year 1920. The New York Central had a standard return for the period of federal control of \$55,802,631, although in 1918 this was increased to \$56,324,508 and in 1919 to \$57,690,588 through additional compensation on account of completed additions and betterments. In 1918 the net railway operating income was \$48,410,217; in 1919, it was \$49,704,631, which figures, although they did not equal the standard return, were not so unfavorable as compared with those of the majority of the roads.

In 1920, however, including the two months of federal control, the six months of the guaranty period and four months of operation on its own, the New York Central had

The New York Central in 1918 did the largest business in its history. In that year it carried (the figures are exclusive of the traffic carried on the Boston & Albany, which, although a leased line, is separately operated) 117,495,612 tons of revenue freight, the total revenue ton-mileage being 25,971,502,890. In 1919 the amount of traffic handled was considerably less than in 1918; the slight increase in net return for the Government in 1919 over 1918 was in spite of a sharp falling off in business. In 1920, the revenue tons carried were 110,753,433, some 7,000,000 tons less than in 1918. The revenue ton-mileage was 24,548,839,472. The average haul in 1920 was 200 miles.

The New York Central has creditable statistics of operating efficiency. In 1920 it had an average revenue trainload of no less than 895. Its average carload was 28.45 tons. Its daily car movement was 23 and its net ton-miles duty per car were 432. The New York Central carries a considerable tonnage of coal, bituminous coal in 1920 making up 36,616,030 tons and anthracite 8,583,211 tons of a total revenue tonnage of 110,753,433. This should assist it in securing a heavy trainload, but in view of the great amount of fast freight and merchandise traffic, the average of 895 mentioned above seems especially noteworthy.

It is hardly necessary to show the reasons for the sharp decline in net earnings in 1920 which took place in spite of the heavy traffic carried in that year. However, the fall-

ing facts quoted from the annual report for 1920 may be of interest:

The abolition of piece work in the shops of the company has cost millions of dollars. Under the piece work system and other shop conditions existing in 1915, 2,799 men turned out 73,072,000 effective miles of equipment. In 1920, piece work having been abolished and classification and working conditions of employees having been changed and employees being restricted to one kind of work for each class of employment, practically the same effective miles of equipment were turned out, namely 74,655,000, but 4,521 men were required. The cost of the work in 1915 was \$2,903,700 and \$8,352,000 in 1920, an increase of \$5,448,300. This is to say, there was an increase in men of 61.5 per cent, an increase in money of 187 per cent and an increase in effective mileage output of but 2 per cent.

The increase in payrolls since 1917 for the New York Central, excluding those of the Boston & Albany Railroad, is indicated by the following:

Date	Number	Monthly payroll	Average monthly pay per employee
December 31, 1917.....	94,386	\$8,409,722	\$89.10
February 29, 1920.....	103,572	13,511,978	130.45
December 31, 1920.....	96,418	15,892,121	164.83

The total amount of payroll charged to operating expense in 1917 was \$83,053,280, while for 1920 it was \$177,289,640. The entire operating expenses in 1917 were \$153,597,903, or \$23,691,734 less than the 1920 payroll included in operating expense.

Mention was made above of the progressive policy which the New York Central has followed in recent years in the matter of purchase of equipment. The large purchases made prior to federal control were one of the most important features in enabling the New York Central to meet the great demands upon it late in 1917, in 1918 and again in 1920. The company apparently intends to be similarly prepared for future eventualities. In 1920 it placed orders for no less than 196 locomotives, 265 passenger cars and 9,244 freight cars, of which about one-third was received before the close of the year. The total cost of this equipment was about \$48,318,300, one-quarter of which was financed through a loan from the government's revolving fund. The New York Central itself took 95 locomotives, 160 passenger cars and 4,194 freight cars, the remainder being sublet to the following affiliated companies: Michigan Central, Big Four, Pittsburgh & Lake Erie and Toledo & Ohio Central. Notes were given by these companies to cover the equipment assigned to them.

The New York Central's total borrowings from the revolving fund were \$26,775,000 in two loans, one of which, totaling \$14,850,000, covered equipment and the other, \$11,925,000, covered additions and betterments to way and structures. Of the former loan, the New York Central itself received \$6,976,000 and of the latter \$5,500,000; the remainder going to various of the other companies in the New York Central system, each of which gave notes to the parent company covering the amounts which they received.

The New York Central is also carrying out various other improvements to its properties other than those represented in the acquirement of new equipment. These projects include engine terminal improvements; extension of the car repair shops at East Buffalo, N. Y.; work in connection with the New York State Barge Canal, notably in 1920 at Tonawanda, N. Y.; a new line and traffic connection with the Toronto, Hamilton & Buffalo and Canadian Pacific at the Niagara frontier; the new proposed passenger terminal at Cleveland, etc. Another project that should prove of special importance to the road is now being carried out by the Cunard Line on land leased from the New York Central at Weehawken, N. J. The project calls for eight large steamship piers and accompanying facilities and represents one of the largest port developments now under way in the country. The net increase in property investments in 1920, which is another indication of the amount of work done, was \$11,422,-

340, of which \$3,349,574 represented equipment received less that retired during the year.

The New York Central's corporate income account for 1920 showed a surplus after the payment of the 5 per cent dividends amounting to \$1,250,256 as compared with \$7,433,063 in 1919. This reduction was due primarily to a decrease of \$8,246,181 in return from railroad operations and to an increase of \$1,509,689 in interest on funded debt. Rent for leased roads showed an increase of \$1,077,449 and interest on unfunded debt, \$788,603. This matter of increase in interest on funded debt is of rather serious importance to the New York Central, particularly inasmuch as it represents interest on expenditures which must be made if the property is to continue to be able to meet the heavy demands upon it for the efficient movement of traffic.

The funded debt as of December 31, 1919, was \$671,654,782; on December 31, 1920, this had been increased to \$748,354,477. The increases during the year included the \$25,000,000 ten-year collateral trust bonds sold about a year ago; equipment trust notes totaling \$13,674,000, covering the standard equipment allocated by the Railroad Administration; \$17,297,510 equipment trust notes covering that part of the 1920 equipment purchases not delivered to affiliated lines; and two items of notes, \$11,925,000 and \$14,850,000, given the secretary of the treasury and covering the two loans from the revolving fund (something over half the value of these notes is balanced by notes given the New York Central by the affiliated companies, covering the advances made to them). The interest charges on this increased indebtedness will no doubt prove something of a burden in the future. How much of a burden will depend upon the amount of progress that is made in working out the solution of the railroad problem.

The New York Central is an efficiently operated property; it would appear to be fully able to realize on any improvement in the general situation, and that such improvement is to occur now seems quite certain.

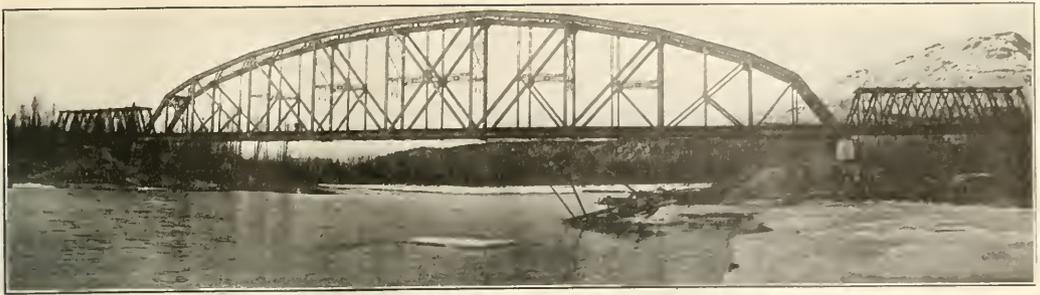
The operating results in 1920 as compared with 1919 follow:

	1920	1919
Mileage operated:		
Freight revenue.....	\$209,792,208	\$173,926,744
Passenger revenue.....	84,601,640	75,652,262
Total operating revenue.....	338,624,456	283,659,331
Maintenance of way expenses.....	47,865,568	34,591,703
Maintenance of equipment.....	93,287,339	62,196,767
Traffic expenses.....	3,464,274	2,510,703
Transportation expenses.....	159,203,006	114,767,234
General expenses.....	8,928,625	7,516,781
Total operating expenses.....	317,553,242	225,675,360
Net revenue from operation.....	21,071,214	57,983,971

The corporate income account is as follows:

	1920	1919
Compensation—January and February.....	\$9,300,435	.....
Additional compensation account completed additions and betterments.....	237,569	.....
U. S. Government guaranty—March 1 to August 31	28,699,177	.....
Net railway operating income—September 1 to December 31.....	11,537,943	.....
Total (compared with compensation accrued in 1919).....	49,444,407	\$57,690,588
Total other income.....	13,459,803	13,619,366
Gross income.....	65,109,739	71,308,505
Interest on funded debt.....	30,736,911	29,227,222
Total deductions from gross income.....	50,263,819	48,154,885
Net corporate income.....	13,734,688	19,917,251
Dividends (5 per cent each year).....	12,479,613	12,479,611
Surplus for the year.....	1,250,256	7,433,063

LIVE-STOCK DEALERS of western Canada, contending that the live-stock industry is almost completely ruined through high freight rates, have asked the Board of Railway Commissioners for a 50 per cent reduction in rates on cattle. Scarcely any cattle are now moving in Canada, and the dealers fear that cattle will remain in the country instead of being placed on the railways unless rates are made cheaper.



The Susitna Bridge on May 14, One Day Before an Ice Run.

## Great Alaskan Bridge Built During Coldest Weather

Government Railway Structure Over Susitna River Provided  
With 504-ft. Span to Clear Ice Jams

THE largest railroad bridge in Alaska, in point of size of main span, was built last winter by the Alaskan Engineering Commission, where the government railroad crosses the Susitna river near Gold Creek. This bridge, which was completed in February, 1921, is on the main line 264 miles north of Seward, the southern terminus of the new railroad, and 150 miles north of Anchorage, the ocean port at the head of Cook Inlet. It consists of a south approach of twenty-eight 14-ft. trestle spans, one 70-ft. pony span and one 121-ft. through Howe truss spans; a 504-ft. steel through

breaks the dams. The accumulated water and ice then rush out at a high velocity and the force of this run would no doubt take out any timber piers in its way, while a concrete pier would not only be exposed to the tremendous pressure of the ice jam but also to under-mining created by the under-water scour that would result from the creation of an ice dam against the pier. A comparative estimate for the structure over the main channel to consist of two 250 ft. steel spans on three concrete piers, including a pier near the center of the channel, against a 504 ft. steel span on two concrete shore

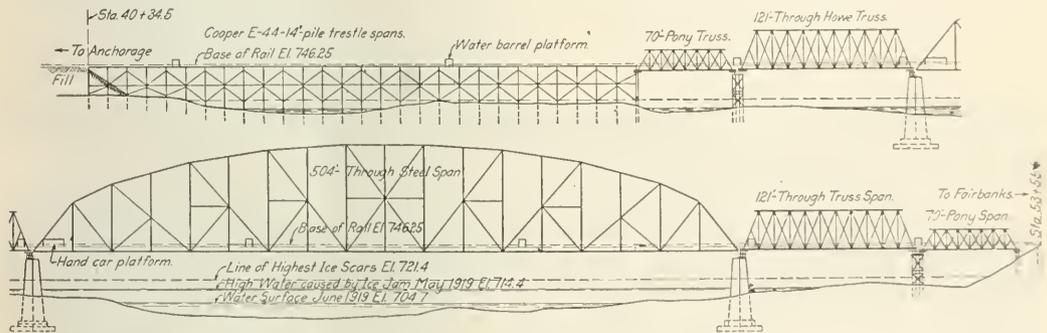


Diagram of Susitna Bridge and Stream Profile

truss span of the Pennsylvania type over the main channel; and a north approach of one 121-ft. through Howe truss span, one 70-ft. pony truss span and two 14-ft. trestle spans, giving a total length end to end of timber stringers of 1,322 ft.

### Ice Jams Call for Clear Span Over Main Channel

The design of this structure first involved a study of the action of the river under summer and winter conditions. Observations of high water marks and ice scars on trees along the shore supplied the required information as to the highest elevation reached by the ice while in movement. The spring break-up usually occurs before the ice has become soft and in passing down stream massive pieces jam against islands and bars and against the shore at points where the river takes a sharp turn, back of which the water rises until the pressure

piers slightly favored the long span. The latter alternative was therefore adopted.

The combination of timber and steel trusses in the same bridge may appear peculiar, but it is believed that this design was justified by the following conditions: Due to the high price of bridge steel and concrete work at the time of construction, it was much cheaper to build all approach spans out of timber, making provision for possible renewal with steel and concrete at some later date after the life of the timber had been exhausted. The main piers were designed to support adjacent 200 ft. spans at some future time, each to replace one 70 ft. pony truss and one 121 ft. Howe truss as now built.

The trestle was designed for Cooper's E-44 loading, the timber spans for E-50 loading and the 504 ft. steel span for

E-60 loading. American Railway Engineering Association specifications of 1910 were followed in the design of the 504-ft. steel span except in the matter of wind loads. Trusses and bottom laterals were designed for 40 lb. per sq. ft., considered as being applied on the surfaces presented by the train and floor as seen in elevation and by  $1\frac{1}{2}$  times the area of the members of the windward truss together with 500 lb. per lin. ft. of span for the floor and top laterals.

#### Pier Construction Begun 22 Miles Ahead of Track

Pier construction was begun in May, 1920, when the end of track was 22 miles south of the bridge site, supplies being freighted by sleds until the river broke and thereafter by boats and wagons. The transportation difficulties were overcome to a large extent in the middle of September, 1920, when track was laid up to the site. At this time excavation for the south pier was complete and that for the north pier begun. A temporary trestle had been driven across the river 100 ft. downstream and parallel to the axis of the bridge to permit track-laying to proceed and to facilitate the erection of the bridge without interference with traffic and other construction work along the line extending to the north. The piling for the south approach, consisting of trestle bents, pile-piers and an abutment for the timber spans had been driven and the falsework for the steel span had been started from the north end, before the arrival of the track. To determine the character of the foundation for the concrete piers, test holes had been bored the previous winter to a depth of 60 to 75 ft. below the surface of the ground. The material encountered was compact sand, gravel and large boulders in layers of varying thicknesses, suitable for carrying pier loading without foundation piles.

For the south shore pier excavation Wakefield sheet piling was used and for the north shore pier an open caisson. Excavation was started in the wet with orange-peel buckets operated by two stiff leg derricks until hard compact material was struck, when the holes were pumped out and the work continued with pick and shovel, the laborers filling dump boxes operated by derricks. Excavation extended to an average depth of 25 ft. below the ground surface in each pier foundation. Drain ditches were maintained about one

pits in the vicinity of the bridge was not satisfactory, as samples were found to contain humus. The field test for humus, recommended by the Portland Cement Association, was applied to several deposits available along the railway line and all showed the presence of this element in various amounts except samples from a pit in a glacial moraine in front of Spencer glacier, located 56 miles north of Seward,



The Main Span on November 29, 1920, with the Bottom Chord and Web Members Partially Erected

which tested clear. As the natural aggregate from this pit was deficient in sand, 7 per cent of sand was added. This provided a satisfactory mixture and was used in the substructure.

#### Extraordinary Measures Required in Placing Concrete

When the coffer dam, forming the pier enclosure, was unwatered, the bottom of the enclosure was under a 22-ft. head



To Avoid Ice Jams Was an Important Factor in the Design.

This Ice Run Came on May 15 and Was Gone the Next Day

foot deep around the edges and sloped to carry seepage water to a sump at the downstream end of the excavation where one 5-in. and two 8-in. pulsometer pumps operated continuously in the lower levels of the work.

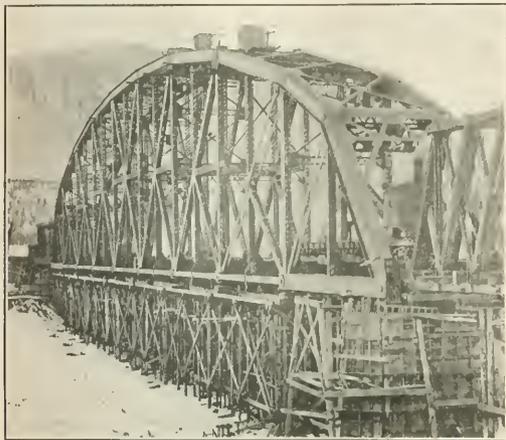
Considerable difficulty was encountered in finding sand and gravel suitable for the concrete piers. The importance of doing so, however, was forcibly brought out by a partial failure in one of the piers during September. It was concluded that this had resulted from inferior aggregate as well as poor cement and inadequate provision to meet the effects of the low air and water temperatures. Aggregate taken from

of water from the Susitna river which, due to the porous nature of the boulder and gravel formation, forced considerable water through the floor of the pit. The enclosure was 33 ft. by 69 ft. and it was found impracticable to partition off, place and hold concrete "in-the-dry" on this floor, the flow of water being too strong to permit of this being done. The temperature of the water, 35 deg. in November, and the large area, 2,277 sq. ft., made it impracticable to place concrete under water by bucket or pipe methods.

The following plan was devised to place the concrete under the circumstances of cold running water and low air tem-

perature: A large sheet of canvas was prepared in one piece, sufficient to cover the bottom area entirely and to extend about six feet up the sides of the enclosure. This canvas was "formed-in" by wooden forms along the sides and ends, to provide a run-way for water around the edges. Steam coils were placed around the sides of the pier enclosure and the entire space was housed in and made warm. Sand and gravel delivered on cars for the concrete work were heated by being dumped on a platform holding perforated steam pipe coils. The aggregate went into the mixture hot and hot water was used in the mixing operations.

The south pier, containing 1,456 cu. yd. of concrete, was poured between October 24 and November 11, 1920, during which time temperature readings at the bridge site ranged from 2 deg. below zero to 48 deg. above. The north pier, containing 1,520 cu. yd., was poured between December 1 and December 18, 1920, when temperatures ranged from 12 deg. below zero to 34 deg. F. above zero. The pier pit was kept unwatered during concreting operations and the concrete



The Main Span on February 6, 1921. Erection Nearly Completed and the Span Still Supported on Falsework

placed from chutes and pipes leading from the mixer to the pier. Concrete was given sufficient time to set before allowing cold water to come in contact with it.

#### Erection of Steel Begun Before Completion of Piers

To hasten the erection of the 504 ft. span it was necessary to proceed without waiting for the completion of the piers. Falsework for this span, as mentioned, had been driven from the north and southward. The north approach trestle, piers and falsework for the timber spans were driven and a temporary deck laid. One of the 70 ft. pony spans was used temporarily to span the excavation for the north pier, thus permitting the construction of this foundation. Erection of steel started on November 8, 1920, from the north end at the second panel point, a yard having been constructed on the north side of the river which was reached by means of the temporary trestle. Erection of steel was continued to the south end and all steel except for two north panels was assembled by December 15, 1920. All steel in these two panels which could be erected without interfering with the temporary 70 ft. pony span over the north pier, was placed after December 25, 1920, and as soon as this temporary span was removed the balance of the steel was placed, completing the erection on January 8, 1921. The American Bridge Company, which did the erecting, used a 100 ton locomotive

crane with a boom extended to a total length of 85 ft. This was supplemented in the yard by a 35 ton locomotive crane with a 50 ft. boom. The total weight of steel in the span is 1,803 tons.

But little riveting was done until after December 20, 1920, when over 90 per cent of the span was in place. Riveting was pushed from then until completion on February 9, 1921, during which time temperatures ranged from minus 42 deg. to plus 34 deg. F. On some cold and windy days the riveters usually did not work but on one occasion rivets were driven when it was minus 42 deg. in the morning and minus 12 deg. at quitting time. Rivets driven during very cold temperatures were retested several times in warmer weather and found to be in first class condition. The total number of field rivets was about 42,200.

The span was swung on February 2, 1921, and the first train passed over on February 6. The work of erecting the timber spans and finishing the trestle progressed simultaneously with the steel work, so that the bridge was entirely completed and ready to be put into service on February 16, 1921.

General supervision of the work was under Col. Frederick Mears, chairman and chief engineer of the Alaskan Engineering Commission, to whom we are indebted for the description presented above. The preliminary design of the 504 ft. steel span as well as design and details of the timber and foundation work were made by W. J. H. Fogelstrom, former bridge engineer, for the Commission, assisted by F. H. Chapin, assistant bridge engineer. The final design and details of the 504 ft. steel span were made by the American Bridge Company, which also fabricated and erected the steel. Modjeski and Angier, consulting engineers, Chicago, were retained to check and approve all designs and detail plans of steel work. Hildreth & Co., Chicago, performed the inspection of steel at the mill and shop.

## Freight Car Loading

WASHINGTON, D. C.

THE NUMBER of cars loading with revenue freight showed another slight decrease during the week ending July 2, according to the weekly report of the Car Service Division of the American Railway Association. The total was 774,808, as compared with 891,621 in the corresponding week of 1920 and 745,226 in 1919.

Comparisons with the report for the preceding week show increases in the number of cars loaded during the week of July 2 with grain and grain products, coal, ore and merchandise and miscellaneous freight, which includes manufactured products, but decreases in livestock, coke and forest products.

Loadings of merchandise and miscellaneous freight totaled 469,842 cars, an increase of 1,735 cars over the preceding week. Grain and grain products increased 1,726 cars over the previous week to a total of 40,547 while 30,335 cars were loaded with ore or 1,414 more than during the week before. There were 157,265 cars loaded with coal during the week. This was an increase of 266 cars over the previous week but, on the other hand, was 35,769 less than were loaded during the corresponding week in 1920. It was, however, 2,331 cars more than were loaded during the corresponding week in 1919.

The greatest decrease was in the number of cars loaded with livestock, the total for the week being 24,923 or 1,000 less than during the week before. Forest products dropped off 1,885 cars to 47,542 while coke totaled 4,384 cars, which was a decrease of 203 cars compared with the loadings of the week before.

Except for grain and grain products, decreases were re-

ported in the loading of all commodities as compared with the corresponding week last year.

Compared by districts, increases over the week before were reported in the number of cars loaded with revenue freight in the Southern, Northwestern, Central Western and Southwestern, but decreases in the Eastern, Allegheny and Poca-

the total on June 30 being 162,537 compared with 163,982 on June 23. Surplus stock cars numbered 18,170 compared with 20,029 one week before or a reduction of 1,859. These reductions, however, were in part counteracted by an increase of more than 6,200 in the number of surplus cars of miscellaneous classes, due principally to a big increase in the num-

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, June 23, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded			Received from connections		
										This Year 1921	Corresponding Year 1920	Corresponding Year 1919	This Year 1921	Corresponding Year 1920	Corresponding Year 1919
Eastern	1921	5,989	2,963	41,250	901	5,151	1,783	57,497	70,947	186,481	.....	.....	197,026	.....	.....
Allegheny	1921	6,400	3,022	56,754	2,997	8,530	7,919	24,803	113,357	.....	223,782	211,554	.....	254,316	229,154
Poconchos	1921	2,516	3,064	47,390	2,309	2,905	6,873	43,804	51,485	160,346	.....	182,399	176,137	110,064	129,783
Southern	1921	2,196	3,100	56,082	6,295	3,377	9,791	36,422	65,136	.....	34,862	.....	33,863	37,207	22,238
Northwestern	1921	141	148	25,357	24	1,288	23	2,654	5,227	.....	.....	.....	.....	14,164	.....
Central Western	1921	129	162	21,284	586	1,905	193	123	9,481	.....	.....	.....	.....	.....	.....
Southwestern	1921	2,959	2,207	20,126	443	14,294	553	37,720	34,058	112,360	.....	124,101	116,272	61,908	75,084
Total all roads	1921	28,900	2,312	24,653	195	16,172	3,341	257,438	487,380	1,179,917	.....	.....	.....	43,384	59,780
Increase compared	1920	11,159	7,841	5,373	583	14,352	18,317	28,075	32,217	.....	.....	.....	.....	.....	.....
Increase compared	1919	9,935	7,477	9,272	1,259	17,673	46,626	22,092	43,822	.....	.....	.....	.....	.....	.....
Decrease compared	1920	11,260	9,710	13,529	160	5,218	566	30,473	35,827	106,743	.....	.....	.....	.....	.....
Decrease compared	1919	9,167	10,023	21,552	436	5,920	5,069	33,125	42,593	127,885	.....	.....	.....	.....	.....
Increase compared	1920	4,797	2,296	3,974	137	6,219	806	15,453	22,668	56,352	.....	.....	.....	.....	.....
Increase compared	1919	3,941	2,678	5,902	114	7,092	736	16,631	24,223	.....	.....	.....	.....	.....	.....
Decrease compared	1920	38,821	28,229	156,999	4,557	49,427	28,921	215,678	252,439	775,061	.....	.....	.....	.....	.....
Decrease compared	1919	34,668	28,774	195,499	11,882	60,660	73,675	158,944	347,392	.....	.....	.....	.....	.....	.....
Increase compared	1920	29,476	28,389	187,158	.....	63,888	68,885	.....	467,888	.....	.....	.....	.....	.....	.....
Increase compared	1919	4,153	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1920	.....	545	38,500	7,325	11,242	44,754	56,734	94,963	136,442	.....	.....	.....	.....	.....
Decrease compared	1919	9,345	.....	.....	4,557	.....	.....	215,678	.....	.....	.....	.....	.....	.....	.....
Increase compared	1920	.....	160	30,159	.....	14,461	39,964	.....	215,459	70,623	.....	.....	.....	.....	.....
Increase compared	1919	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

L.C.L. Merchandise loading figures for 1921 and 1920 are not comparable, as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

June 18	1921	40,994	28,541	157,243	5,102	50,472	28,866	215,622	253,941	780,741	916,736	807,607	514,358	675,443	574,895
June 11	1921	41,119	29,135	163,088	4,788	51,393	30,179	215,740	253,555	788,997	930,976	807,205	509,129	681,514	563,838
June 4	1921	41,394	24,039	142,674	4,642	48,227	38,311	195,246	221,975	706,508	828,907	776,610	480,162	657,709	524,731
May 28	1921	46,337	27,518	165,870	5,605	50,277	28,673	217,707	248,862	790,849	898,169	763,761	519,191	670,536	550,858

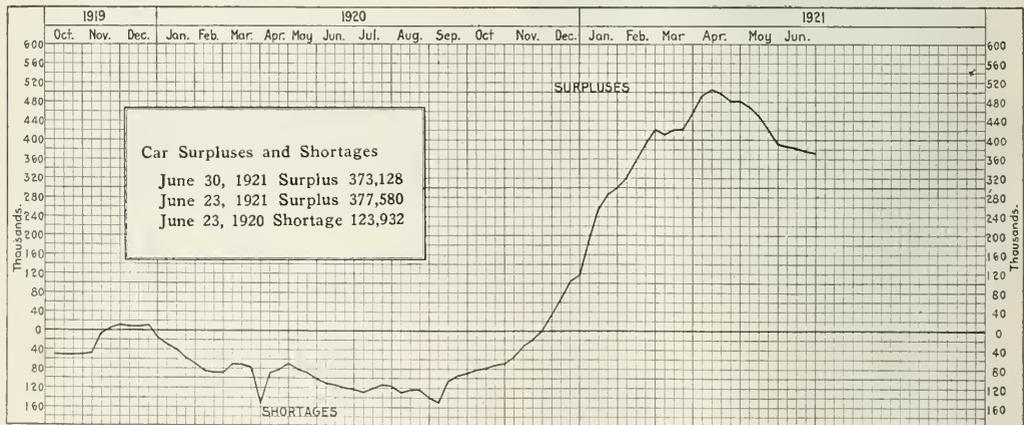
hontas regions. All, however, were below the corresponding week in 1920.

The summary for the week of June 25 is given in the table above.

The demand for freight cars continues to increase according to reports received by the Car Service Division of the American Railway Association. For the week ending June

ber of ore cars now being stored on sidings in the northwest. There was also an increase of approximately 200 in the number of surplus coke cars.

THE AVERAGE COST OF FREIGHT TRAIN OPERATION (selected accounts) for April was \$1.876 per freight train mile, according to the monthly bulletin published by the Interstate Commerce Com-



Curve of Net Car Surpluses and Shortages

30 there was an average of 373,791 surplus freight cars or a decrease of 4,059 as compared with the previous week.

The total number of box cars, including ventilated, automobile and furniture cars, in excess of current freight requirements was 146,298, which was a decrease within a week of 6,335. A decrease of 1,445 coal cars was also reported,

mission. This is slightly greater than the average for these selected accounts for April, 1920, \$1.874, but it represents a considerable saving as compared with the average for March, which was \$1.974. The average cost per passenger mile, selected accounts, was \$1.043 as compared with \$991 in April, 1920, but was also less than the average for March, 1921, which was \$1.077.

# Government and Private Operation in Canada

## An Analysis of Results Obtained on the Two Large Railway Systems in That Country Under State and Company Control

By J. L. Payne

Formerly Comptroller of Statistics, Department of Railways and Canals of Canada

SINCE THE SPECIAL announcement of a deficit of \$70,000,000 on the Canadian National Railways for the fiscal year 1920 there has naturally been a great deal of speculation and inquiry as to the underlying causes. That deficit was, of course, much larger than the figures given out. It omitted a very large volume of fixed charges. The only excuse for this omission was that some of these charges, on the basis of standard accounting, are not definitely known. They are readily ascertainable; but they have not been made up. That was the loose way in which state railway accounting was begun more than half a century ago, and it has never been thought worth while to make a change. There was no demand for the information anyway. Absolute indifference prevailed with respect to the whole matter.

A reversal of public sentiment has taken place within the past three months. The craving for authentic data is general and insistent. Thinking men all over the country are expressing deep concern in the volume of actual loss and the causes which have brought it about. Since the facts with regard to the deficit were presented in recent issues of *Railway Age* there is no intention of repeating them now. It will be sufficient to bear in mind that the fixed charges attaching to \$2,300,000,000 of capital liability, added to the operating shortage, will probably produce a deficit of not less than \$140,000,000 for the current year. It need not be said that, inasmuch as this loss falls wholly on the Dominion treasury, it is a serious matter to a country like Canada, with a population of 9,000,000 and a gross revenue of less than \$500,000,000.

### Judgment by Comparison

If a glance is taken at the map of Canada, it will be seen that three lines of railway run closely parallel to each other from Winnipeg to the Pacific coast. One of these is the Canadian Pacific, the other two form parts of the Canadian National group. As units, the latter are the Canadian Northern and the Grand Trunk Pacific. The eye is scarcely able to follow the parallel through Ontario, Quebec, and the Eastern Provinces; but it nevertheless exists. That will be obvious when a statement of operating mileage by provinces is brought under the eye. The facts from West to East are as follows:

	Canadian National	Canadian Pacific
British Columbia	1,201	1,816
Alberta	1,816	1,901
Saskatchewan	3,371	2,777
Manitoba	2,294	1,728
Ontario	3,120	3,286
Quebec	1,935	1,076
New Brunswick	765	524
Novo Scotia	375	576
	14,877	13,694

One or two explanations are necessary in relation to the foregoing table. It does not include the mileage of the Grand Trunk nor of a number of branch and subsidiary roads. The Prince Edward Island Railway is also omitted. If these were all brought in the mileage of the Canadian National would rise to 22,500. But the Grand Trunk had not been officially taken over by June 30, 1919, which happens, for reasons not creditable to the new Dominion Bureau of Statistics, to be the last year for which information is available on a basis permitting of direct comparisons. The units which will be com-

pared with the Canadian Pacific are the Canadian Northern, the Grand Trunk Pacific, the National Trans-continental and the Intercolonial. They contribute the mileage in the statement. If the omitted mileage and the operating results therefrom were brought in they would merely serve to make matters worse.

It will be observed that these roads have closely corresponding mileages in the various provinces. They tap in about the same measure the great wheat growing areas of the west, and meet on an equal footing in the industrial centres of Ontario and Quebec. They run through the maritime provinces practically side by side. Therefore it would be difficult to find any good ground for objection to the comparisons which will be made. Yet these two systems had operating results far apart in 1919. The Canadian Pacific had a net corporate income of \$36,977,263 and the Canadian National units had a deficit of \$40,650,222. This deficit, in accordance with the reprehensible practice of many years, left out of the reckoning an immense amount of fixed charges.

The object immediately in view is to look carefully at the various aspects of operating results and to see if any reasons for this adverse showing by the Canadian National group can be identified. If, for example, it were proposed to subject the system to searching examination, what tests would be applied by a skilled railway accountant, or a train railway operator, to locate the weak spots? Either of these investigators would certainly probe beneath the surface in a perfectly proper effort to ascertain why in the case of two great railways, operating side by side, one should be strong and prosperous and the other weak and insolvent. Having located the trouble centres, he would next seek to know whether or not the adverse results arising therefrom might have been modified if not wholly prevented.

### Where the Losses Came In

The four units of the Canadian National Railways here under review, and the Canadian Pacific, had the following operating results in 1919:

	Canadian National	Canadian Pacific
Gross earnings	\$93,173,827	\$162,846,470
Operating expenses	104,032,753	130,416,995
Tons hauled	5,754,622	25,894,741
Passengers carried	10,551,151	14,542,882
Earnings per mile	6,263	11,900
Expenses per mile	6,893	9,514
Earnings per train mile	3,010	4,104
Expenses per train mile	3,361	3,307
Operating ratio	111.6	89.1

Certain points of similarity will here be observed in contrast with other points of great dissimilarity. The tonnage of freight was almost identical; yet gross earnings and earnings per mile of line, as well as per train mile, were far apart. In this relation three facts should be candidly stated because they are advantageous to the Canadian Pacific: First, the Canadian Pacific had average ton mile receipts of .963 as compared with .892 by the Canadian National. This was due to the higher proportion of first class freight. Second, the Canadian Pacific had a larger average haul; and third, the Canadian Pacific had a higher traffic density.

With these more or less basic facts in mind, it is now important to apply analytical methods to some of the details which spring therefrom. In the operating ratio we have at

once a strong clue to the field in which weakness or faulty administration is likely to be found, and let it be said at once we shall be rewarded by several rather startling discoveries as we proceed. For this inquiry the years 1917 and 1919 are selected, for good and definite reasons. In the former year the Canadian Northern and Grand Trunk Pacific, representing the great western section of the Canadian National, were in corporate hands. In the latter they had been for a full year and more under government control. That fact at once suggests the pertinent question as to what were the general results of the change. Were betterments brought about? Was administration strengthened or weakened? Let the facts give the answers.

### Excessive Transportation Expenses

Since all the operations of a railway find their focus in the running of trains, the cost of transportation becomes fundamental. In this instance we shall be just to the Canadian National units in comparing them with the Canadian Pacific. We must first, however, find a satisfactory gage. For that purpose ton miles and passenger miles are combined and taken as a standard which will not be questioned. Ton and passenger miles represent not only the full service of railways, but the lowest unit of measurement obtainable. They place the roads in comparison on an absolutely common footing. The cost of transportation per ton mile and passenger mile will get us at once to the very core of operating conditions and, by comparison with a strong road, tell us whether or not there is weakness in that vital center. Here are the facts as to transportation expenses per ton and passenger mile:

	1917	1919
Canadian Northern.....	.321 cent	.634 cent
G. T. Pacific.....	.391 cent	.673 cent
Transcontinental.....	.294 cent	.439 cent
Intercolonial.....	.442 cent	.708 cent

The average for the four units in 1917 was .355, as against .288 for the Canadian Pacific. In 1919 the average was .626 for the Canadian National and .503 for the Canadian Pacific.

The difference between transportation cost per ton and passenger mile on the Intercolonial and Canadian Pacific is very striking. In the case of the Canadian Northern, which is responsible for 52 per cent of the freight tonnage and 60 per cent of gross earnings, there was a distinct worsening of operating conditions. From being 11.5 per cent higher than the Canadian Pacific in 1917 the cost rose to 26.0 per cent higher in 1919.

We get a little nearer to our final answer when our inquiry discloses the fact that while these four units of the Canadian National increased gross earnings in 1919 over 1917 by 24.6 per cent, the Canadian Pacific scored a betterment of but 10.9 per cent during the same period. Thus the Government system had a distinct advantage in respect of income. The trouble was not in that field. While, however, the Canadian Pacific was adding to operating expenses by 34.9 per cent, the Canadian National was swelling outgo by 69.7 per cent. The result in dollars and cents was that a net operating surplus of \$13,510,116 in 1917 was turned into an operating deficit of \$10,858,926 in 1919. The Canadian Pacific, on the other hand, came out with net operating earnings of \$32,429,475.

Extending the analysis, by measuring both earnings and operating expenses by combined ton and passenger miles, it is found that while the Canadian National increased gross earnings from .831 in 1917 to 1.122 cents in 1919 the Canadian Pacific advanced from .897 to 1.282. This was equal to a gain of 35.0 per cent in one case and 42.9 in the other. With respect to operating expenses, however, the Government group rose from .681 to 1.252 while the Canadian Pacific went up from .591 to 1.027. The difference in one instance was 83.9 per cent and in the other 73.8. Putting it in another and suggestive way, while the difference between the

two systems was 15.2 per cent in 1917 adverse to the Canadian National, in 1919 it was 21.9. That difference tells us rather plainly how much better the Canadian Pacific was able to meet the rising tide of operating cost than was the management of the Government system.

### Trainload and Carload Tests

A very strong sidelight is thrown on the operating results as expressed in terms of dollars and cents, and we begin to catch a clear glimpse of weakness in fundamentals, when we look into the trainload and carload situation on the Canadian National as contrasted with that on the Canadian Pacific. The facts will spare me from any comment whatever.

In carload the Canadian National is not open to serious criticism. It was only one ton below the average of the Canadian Pacific in 1917 and it picked that up in 1919. That is the single sign of betterment in operating conditions. By all other tests, without exception, the system gave a poorer performance in 1919 than in 1917.

The trainload of the various units was as follows:

	1917	1919
Canadian Northern.....	378.4	337.9
G. T. Pacific.....	308.8	302.1
Transcontinental.....	446.6	502.0
Intercolonial.....	362.9	412.1
Average.....	382.5	370.1

This result was 38.5 per cent below the average trainload of the Canadian Pacific in 1917 and 41.1 per cent in 1919. It might be assumed that this striking difference was due to unfavorable grades on the Government roads, but that would be a mistake. The Canadian Pacific is at a marked disadvantage in that regard. It has always been the boast of the Canadian Northern that its .4 per cent controlling grade was the best of any road of similar length in North America; yet the Canadian Northern had an average trainload of 378.4 tons in 1917 and fell to 337.9 in 1919. That must be compared with 529.8 and 522.1 on the Canadian Pacific.

The lighter trainload of the Canadian National is due to fewer cars hauled. In 1917 the number was 17.2; but in 1919 this had decreased to 15.6. On the other hand, the Canadian Pacific had an average of 22.6 cars in 1917 and 22.2 in 1919.

### Wages and Employees Compared

It was during the year ended June 30, 1919, that the McAdoo award began to make its pernicious influence felt among the railways of North America, and it would seem to be perfectly fair to compare the way in which this difficulty was met by the Canadian National and the Canadian Pacific. Two tests have been applied, and the results are rather significant. The first deals with the volume of wages per ton and passenger mile combined. The showing is as follows:

	1917, cent	1919, cent	Increase, per cent
Canadian Northern.....	.889	81.9	110.5
G. T. Pacific.....	.543	1.100	102.6
Transcontinental.....	.418	.622	48.8
Intercolonial.....	.445	.782	75.7
Average.....	.415	.798	94.7

These figures must be contrasted with averages of .344 and .625 by the Canadian Pacific. Incidentally, this test reveals the extent to which the swollen payroll affected operating cost of all railways in Canada up to 1919. But while the Canadian Pacific was able to keep the increase down to 78.8 per cent the Canadian National, dealing with precisely the same conditions as to scale and classification, had an addition of 94.7 per cent.

The second test related to the combined ton and passenger miles per employe. As to number of employes, the Canadian Pacific between 1917 and 1919 met a decline of 21.8 per cent in ton and passenger miles by cutting down the operating staff by 2.1 per cent. The Canadian National, on the other hand, had a drop of 9.1 per cent in the same mileage, yet added to the number of employes by 21.8 per cent.

The result, measuring ton and passenger miles by employees, was the following performances:

	1917	1919
Canadian Northern.....	235,908	154,399
G. T. Pacific.....	185,786	133,563
Transcontinental.....	217,938	181,940
Intercolonial.....	178,649	167,831
Average.....	212,547	159,962

The Canadian Pacific had, per employee, an average of 261,713 ton and passenger miles in 1917 and 208,331 in 1919. The decrease in the case of the Government roads was equal to 24.8 per cent, and in the case of the Canadian Pacific 20.3. The contrast in administrative skill in respect of both wages and performance by employees is obvious. The broad question of operating policy, as well as the further consideration of morale, are involved in the tests.

It should not be necessary to repeat that the standard of appraisal here employed is absolutely just. Ton and passenger miles express quite directly the service which each railway is called upon to give, and it is therefore fair to measure both financial and operating results by that comprehensive gage. We have seen how the two systems here contrasted stand up under the analysis made, and while many other deductions are plainly and pertinently suggested I have no disposition to deal with them. My purpose has been to present the facts and allow them to tell their own story as to how the various units composing the Canadian National performed in 1917 and 1919.

**The Results in 1920**

The facts for the fiscal year 1920 cannot be presented in comparative form for two reasons in chief: First, the essential factor of loaded car mileage is lacking; second, the year to which the figures recently presented to Parliament relate ended December 31 instead of June 30. Some general comparisons, however, can be made, subject to the qualifications as to the difference in years.

The operating ratio rose in 1920 to 124.01, and the operating deficit to \$36,842,970. This should be compared with a ratio of 81.39 by the Canadian Pacific and a net operating revenue of \$33,153,045.

Operating expenses per ton and passenger mile combined were equal to 1.567 cents on the Canadian National and 1.179 on the Canadian Pacific. Without making allowance for the difference in the years, it may be said that these results showed a worsening by 25.2 per cent over 1919 on the Government system, as compared with an increase of 14.8 per cent on the corporate road. An important, but quite unavoidable, qualification in these and succeeding results is that they do not include figures from the Grand Trunk Pacific. Data as to mileage for that road are lacking, which prevents their being brought in. The effect would, however, quite definitely be to aggravate the situation as disclosed by the other units, for the Grand Trunk Pacific in 1920 made much the worst showing in its history.

Measuring transportation expenses by ton and passenger miles in 1920 the result gives .774 cent for the Canadian National and .556 for the Canadian Pacific. In this particular test the showing of the Government roads was worse by 23.6 per cent in 1920 over 1919, as compared with an increase of 10.5 per cent by the Canadian Pacific.

In short, if a full and accurate comparison could be made as between operating results on the Canadian National lines in 1917 and in 1920 it would unquestionably show not only a serious aggravation of all the conditions, but a much greater increase in the adverse showings than was experienced by the Canadian Pacific. The point which should be given proper emphasis is that, while the Canadian National system is fundamentally weak, operating results have been made worse year after year by unskillful, wasteful and incompetent administration. There cannot possibly be any doubt of that, and it has a vital bearing on the exceedingly perplexing Canadian railway problem at this moment.

**Tentative Valuations Issued**

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 1, has issued a tentative valuation of the property of the Western Pacific as of June 30, 1914, stating the final value of the property used for common carrier purposes as \$66,730,011, which is less than the amount of bonds outstanding at that time, which amounted to \$75,000,000, to say nothing of \$75,000,000 of capital stock and other obligations which increased the total capitalization as of the valuation date to \$172,720,912. The final value stated is also less than the original cost, which the report says cannot be ascertained exactly but which it states "as closely as it is possible to determine from the carriers' records with certain limitations" described, as \$72,616,081. The report covers 925 miles of main line and 1,118 miles of track, much of which was very expensive to construct. The report says the cost of building the section from Chilcoot to Oroville, Cal., is probably not exceeded by the cost of the same length of any other railroad in the United States. The final value of the property owned is given as \$66,075,947.

The company constructed all of its mileage except about 31 miles of completed road, together with about 6 miles of other tracks bought from one of the predecessor companies, but most of the capital stock was exchanged, together with \$1,518,063 in cash for the unappraised property of seven predecessor companies and certain traffic agreements. The investment in road and equipment, including line, is stated in the books of the company to be \$156,318,136. This the commission has readjusted to \$147,552,091 and, the report says, if the \$74,837,000 of capital stock exchanged be subtracted the investment account would stand at \$72,715,091. It could not be determined from the carrier's accounts whether the cash given for the property of the predecessor companies was equal to or greater or less than the value of these properties; hence, the report says, it cannot be determined how much stock was issued without consideration. But the \$72,715,091 is said to represent the nearest approximation to the actual investment of the carrier in existing road and equipment that can be made from obtainable records. Under the recent reorganization the capitalization of the Western Pacific has been reduced to a figure more consistent with what the commission has stated as the value of the property.

The cost of reproduction new of the common carrier property used other than land is stated as \$61,577,074 and the cost of reproduction less depreciation as \$55,751,732. The report describes some of the factors taken into consideration in reaching this figure, as well as the details of the various accounts. The present value of the carrier lands owned and used is stated as \$6,048,133 and the present cost of condemnation and damages or of purchase of the lands used for carrier purposes in excess of the present value is stated as \$4,355,287. In addition, the present value of non-carrier lands held by the carriers is given as \$3,752,680. From the beginning the results of the operations of the carrier have been unprofitable and insufficient to meet the interest on the funded debt, hire of equipment charges, rents and other miscellaneous items. The results of the corporate operations for the period from July 1, 1910, to June 30, 1914, were a net deficit of \$15,537,356.

**Figures for Other Carriers**

The commission has issued tentative valuations giving the final value as of the valuation dates as follows:

Wood River Branch.....	1912	\$17,500
Riverside, Rialto & Pacific.....	1913	191,000
San Joaquin & Eastern.....	1910	100,000
Central of Oregon.....	1910	1,144,000
Grand Canyon.....	1910	85,000
Sumner Valley.....	1910	85,000
Woodstock.....	1910	2,000
Minneapolis & Rainy River.....	1915	1,150,000
Delta Southern.....	1905	75,000

## Charles Azro Prouty

CHARLES AZRO PROUTY, director of valuation of the Interstate Commerce Commission, and for over 17 years a member of the commission, died at his home at Newport, Vt., on July 8 after having been ill for nearly a year. He had not been at his office since about the first of the year, but for several months had continued to keep in touch with his work and to handle his correspondence from his apartment. About two months ago he was taken from Washington to Newport in a special car provided by Thomas W. Hulme, vice-chairman of the Presidents' Conference Committee on Valuation.

Mr. Prouty was appointed a member of the Interstate Commerce Commission in December, 1896, and upon the expiration of his term he was successively reappointed until he resigned as a commissioner in February, 1914, to organize the valuation work provided for by the law passed in 1913.

He has thus been a prominent figure in the field of federal railroad regulation for a quarter of a century and because of his ability and strong personality he exerted an important influence upon the course of the development of public regulation of the carriers. He had a habit of speaking his mind freely, the courage of his convictions and as he possessed an unusual ability to write and speak good clear English in a forceful way, his many public addresses and written articles on the subject represent a most important contribution to the literature of the railroads in their public relations. Becoming a member of the commission at a time when conditions in the railroad world were such that the need of the curb of governmental authority was more strongly manifested than it has been of recent years, as well as at a time when the commission had comparatively little power and felt called upon to emphasize the necessity for

strengthening its authority, Mr. Prouty for a number of years quite naturally came to be looked upon as representing what railroad men would term the punitive side of regulation. In later years, however, as the process of subjugating the railroads became more complete, his attention was devoted more toward what a railroad officer might regard as constructive regulation and his influence was exerted on several occasions to assist the swing of the pendulum in the other direction.

In the early days of commission regulation Mr. Prouty was a caustic critic of many railroad practices and by newspaper interviews as well as by the language used in his official opinions did much to call the attention of the public to the need for various reforms. At this period he was very prominently quoted in the newspapers as saying that the railroads only refrained from buying the commission because it was not worth buying. He was the author of several opinions of the commission which ordered drastic reductions in freight rates as well as of the opinion in the Eastern rate advance case of

1911, which denied one of the first of the applications of the roads for a general rate advance, but he was also one of the first public men to point out that a failure of regulation of railroads as private companies might come as the result of the discouragement of investors. While chairman of the commission in 1912 he made the statement in a public address that "while we can provide by legislation the sort of cars which a railroad shall use and the rates which it shall impose, we cannot by legislation force one single dollar of private capital into railway investment against its will." He also took occasion to emphasize on several occasions the conviction that while the government must regulate the railroads, it ought to leave the private capital invested as free as it can be left consistent with the public interest.

After he resigned as a member of the commission and felt more free to express his individual ideas he did much to assist in the removal of some of the prejudices against the railroads that had existed in the public mind as the result of

former conditions and while the legislation for a return of the railroads to private management was under consideration in 1919 his influence was exerted in support of the efforts to provide some assurance to railroad investors by a statutory rule prescribing 6 per cent as a fair return. He was an outspoken man of strong opinions which were usually stated with considerable vigor and in expressive language. He was also able to back up his opinion with strong arguments, in which he frequently preferred to rely on what he called common sense than upon legal technicalities.

Mr. Prouty did not live to see accomplished the results he had anticipated would follow from the valuation work and he was always careful to refrain from predicting how soon the effects would be felt, but he lived to see carried out the bulk of the preliminary work of gathering the facts which was organized under his direction and leaves to others the task of putting

them into practical effect. The commission has issued an announcement that his death will not interfere with the completion of the valuation work, which during his illness has been and will henceforth continue to be carried on under the direction of the associate director of valuation and Division I.

Mr. Prouty was born October 9, 1853, at Newport, Vt. He was graduated from Dartmouth College in 1875. He was assistant to Prof. S. P. Langley at Allegheny Observatory in 1875 and 1876 and then taught school for several years. He was admitted to the bar in 1882 and practiced law at Newport, Vt., from that year to 1896. He was a member of the lower branch of the Vermont Legislature in 1888 and was reporter of decisions of the Supreme Court of Vermont from 1888 to 1896, when he was appointed a member of the Interstate Commerce Commission. Mr. Prouty served as chairman of the Interstate Commerce Commission during the year 1912.



Charles A. Prouty

# Will Investigate Relations of Western Pacific

## I. C. C. Institutes Inquiry of Dealings with D. & R. G.—Denver & Rio Grande Western Stock Issue Approved

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on July 12 announced the institution of a proceeding of inquiry and investigation into the history, financial operations, accounts, and the practices of the Western Pacific Railway, the Denver & Rio Grande Railroad, the Western Pacific Railroad and the Denver & Rio Grande Western Railroad, their respective relations with one another, and "any and all other matters pertaining thereto, to determine the manner and method in which the business of said companies and each of them is or has been conducted, with a view to the making of a report and to the making of such order or orders as may be proper in connection with the issue of securities by and the accounts and practices of said companies or any of them." The order was dated July 11.

### Denver & Rio Grande Stock Issue Approved

At the same time the commission granted authority to the Denver & Rio Grande Western to issue 300,000 shares of common stock without nominal or par value, but held that the proposed acquisition of all the outstanding stock of the applicant by the Western Pacific Railroad Corporation is not within the scope of paragraph (2) or paragraph (6) of section 5 of the act, relating to the acquisition of control of a carrier, and that the proposed acquisition and operation by applicant of the Denver & Rio Grande Railroad is not within the scope of paragraph (18) of section 1 of the act. The commission report on this matter said:

A joint hearing was held on April 25 upon this application and upon the application of the Western Pacific Railroad for authority to issue certain bonds. No objection to the granting of the application was offered by any authority of any state in which the applicant proposes to operate.

The protective committee of the stockholders of the Denver & Rio Grande appeared at the hearing for the purpose of noting on the record the facts with respect to litigation pending in the district court for the district of Colorado between certain of the stockholders, as parties plaintiff, and the applicant and others, as parties defendant; and also for the purpose of objecting to the commission entertaining jurisdiction of the application unless and until applicant complies with the provisions of paragraph (18) of section 1, and paragraph (6) of section 5 of the interstate commerce act.

The old Denver company is a consolidated corporation which succeeded a former company of the same name and the Rio Grande Western, which companies, by contract dated June 23, 1905, in practical effect guaranteed payment of principal and interest of the first mortgage, 5 per cent, 30-year gold bonds of the Western Pacific Railway. The last mentioned company defaulted in the payment of interest due March 1, 1915, whereupon the first mortgage was foreclosed and the property was sold for \$18,000,000 to representatives of the holders of a large amount of the bonds. The Western Pacific Railroad Company was then organized by such bondholders to take over and operate the property purchased. The Western Pacific Railroad Corporation was also organized by the same bondholders, and all of the capital stock of the operating company, except a few qualifying shares held by its directors, was acquired by the holding company.

After the application of the \$18,000,000 received from the sale of the property of the old Western Pacific company there still remained unpaid upon the bonds \$38,270,343. The Equitable Trust Company of New York, the trustee under the first mortgage, obtained a judgment for this amount on

June 14, 1917, against the old Denver company based upon the guaranty contained in the contract of June 23, 1905, and thereafter a receiver was appointed for such company. As a result of various proceedings considerable amounts were realized from the sale of certain free assets of the old Denver company which were applied upon the judgment debt and interest. The balance remaining unpaid amounted on September 25, 1920, to \$36,192,655.78. The district court on that date directed the sale of the remaining property of the old Denver company for the purpose of satisfying the last-mentioned amount. Such sale took place at Denver on November 20, 1920, and the property was purchased for approximately \$5,000,000 by John F. Bowie, John B. Marsh and Ralph M. Arkush, on behalf of the holding company, which in turn represented the interest of approximately 95 per cent of the bondholders of the old Western Pacific company. The sale was confirmed on March 28, 1921, and is to be consummated as soon as possible after the commission has authorized the proposed issue of securities.

The Denver & Rio Grande Western has been organized by the holding company to take over practically all of the property of the old Denver company. The purchasers of the property have agreed with applicant by contract dated April 4, 1921, to cause title to be vested in the applicant, and as the principal consideration therefor, applicant will issue the 300,000 shares of its stock without nominal or par value, authority for the issuance of which was asked. Such stock will be acquired by the holding company, which has been represented in the transaction by the purchasers, and will be retained by it for the purpose of maintaining control of the applicant.

The property has been sold subject to the lien of all existing mortgages thereon, but as a result of the sale the property will be relieved of liability for the balance remaining unpaid on the judgment of the Equitable Trust Company of New York, amounting to \$35,224,493. The outstanding capital stock of the old Denver company is \$49,775,670, par value, preferred, and \$38,000,000, par value, common. The applicant for the present will have outstanding only the proposed issue of 300,000 shares of its common stock without nominal or par value. The total authorized capital stock of the applicant, however, is 500,000 shares of the par value of \$100 of preferred stock and 1,000,000 shares of common stock without nominal or par value. The property will be acquired by the applicant subject to outstanding funded debt amounting to \$121,175,500.

The \$32,063,500 of first and refunding mortgage bonds and the \$10,000,000 of adjustment mortgage bonds are now in default by reason of the fact that part of the collateral pledged to secure them consisted of \$25,000,000 of second mortgage bonds of the old Western Pacific company, the value of which was destroyed by the foreclosure of the first mortgage above mentioned.

Negotiations are now in progress between the holding company and the holders of the refunding bonds and the adjustment bonds, which contemplate their retirement through foreclosure and the substitution, if all of the bondholders consent, of \$25,750,000 of 7 per cent preferred stock of the applicant and \$15,750,000 of 5 per cent bonds secured by a junior lien on the applicant's property. If the proposed substitution is effected, the fixed charges upon the property will be reduced approximately \$1,500,000 per annum. The testimony shows that it is desirable to terminate the present mortgage

although the future of the applicant will remain uncertain until some agreement has been reached with the holders of the bonds.

It appears that the applicant is in need of new equipment and of betterments to its way and structures. The holding company proposes to finance these requirements to the extent of \$12,000,000, for which it is proposed ultimately to issue to the holding company an additional 120,000 shares of applicant's common stock without nominal or par value. Pending an agreement with the holders of the refunding bonds and adjustment bonds, however, the holding company will make advances only where they can be adequately secured.

Applicant stated in the application that it is unable to assign a cash value at this time to the property to be acquired by it.

### Holding Company Not a Carrier Subject to the Act

After outlining the foregoing the commission said:

The holding company is neither a carrier subject to the act nor organized to engage in transportation subject to the act.

Referring to the objections made by the stockholders' committee of the old Denver company we are of the opinion that the proposed acquisition and operation by the applicant of the properties of the old Denver company are not within the scope of paragraph 18 of section 1 of the act because such property was in existence and was operated in interstate commerce prior to the effective date of that paragraph. We are further of the opinion that the proposed acquisition of applicant's stock by the holding company does not constitute a consolidation of the property of two or more carriers by railroad subject to the act into one corporation for the ownership, management, and operation of properties theretofore in separate ownership, management, and operation within the meaning of paragraph 6 of section 5 of the act. The testimony shows that although the holding company will by stock ownership control both the applicant and the Western Pacific Railroad Company, the properties of the operating companies will be separately owned, managed and operated.

Inasmuch as the holding company is not a carrier engaged in the transportation of passengers or property subject to the act, the acquisition of the control of the applicant by the holding company is not within the scope of paragraph 2 of section 5.

We find that the proposed issue and sale of common capital stock without nominal or par value (a) are for lawful objects within the corporate purposes of the applicant, and compatible with the public interest, which are necessary and appropriate for and consistent with the proper performance by it of service to the public as a common carrier, and which will not impair its ability to perform that service, and (h) are reasonably necessary and appropriate for such purposes.

Commissioner McChord, in a concurring opinion, said he concurred in the majority report, except that he was of opinion that the holding company is subject to the provisions of paragraph 2 of section 5 of the Interstate Commerce Act.

Commissioner Eastman, dissenting, said he was not disposed to question the desirability of an investigation, but that if one is justified, it is better that the Denver property should remain in the hands of a receiver appointed by the court, pending the results of the investigation, rather than pass into the possession of a company organized in behalf of the bondholders who have been so intimately associated with the matters under inquiry.

He also took the position that the acquisition by the holding company of the stock of applicant is subject to the provisions of paragraph (2) of section 5 of the Interstate Commerce Act. That paragraph authorizes the commission to approve the acquisition by one carrier of the control of any other carrier "either under a lease or by the purchase of stock or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation."

Commissioner Campbell concurred in the views expressed by Commissioner Eastman.

THE GOVERNOR OF WISCONSIN signed a bill on July 6, making railroad tickets in Wisconsin good for 30 days from date of sale.

## Derails; Are They Good or Bad?

By A. H. Rudd

Chief Signal Engineer, Pennsylvania Railroad System

THE PROPOSITION to eliminate derails in main tracks, especially at grade crossings, may at first glance appear radical, revolutionary and retrogressive; and yet many signal engineers and other operating officers who have studied results now feel that safer and, therefore, better and more economical operation and maintenance would be attained by such elimination, and that the introduction of a device which may cause an accident to prevent an accident appears, to put it mildly, somewhat illogical.

The subject is at least a fruitful one for discussion, although, as the installation of these devices is largely a matter of state regulation, results in the near future in the direction indicated are more or less problematical.

The frequent derailments at derails might be cited as arguments for their retention, and as proofs of the danger resulting from their removal; and yet some roads which do not have derails in their main tracks not only escape these accidents but do not have the collisions which derails are supposed to prevent.

It would appear that the sentiment is quite general that "our men are so careful we do not need derails, but we are afraid of what the *other fellow* may do"; and the other fellow feels the same way. Those who admit that they need derails to enforce their own discipline are few and far between—it is the "other fellow." Put yourself in the other fellow's place and what becomes of the derail? It stays in, because the third party in the case, the arbiters, as represented by the public service commissions, feel "We might not be able to rely on either or any of you."

On the one hand we have the actual derailments, on the other, occasional collisions. Unquestionably there are many more derailments than collisions, but the answers to the questions "Did the derail prevent a collision?" or "Would a derail have prevented the collision?" must be, in a very large number of cases, more or less conjectural. For this reason, comprehensive comparative statistics have never, as far as the writer knows, been compiled; and obviously they are inherently difficult of compilation.

Does the derail tend to better observance of signals? Is it a "moral agent" as some claim, or an immoral one? Its theoretical utility is to protect the careful from the negligent, and, in some cases, the innocent from the guilty. Does it always work out that way?

At a crossing or junction on a double-track or a four-track road, where a derailed train may foul other tracks, is it a safeguard or a menace?

It is not used or required to be used to protect crossovers in double track and four-track roads; why? Largely because of this danger of wrecking trains other than the one intended. Does experience show that its omission has resulted disastrously? Is it better to put a train down the bank if it overruns a stop signal fifty or sixty feet, or to give it 500 ft. more in which to have a chance to stop before it reaches an open draw, or a crossing?

Which signals are more frequently overrun, stop signals or stop-and-proceed signals—due allowance being made for the number of each in service? Which signals are most frequently disregarded—interlocking or block (manual, controlled manual or automatic)? Why? Are they in most cases actually disregarded and ignored, or are they, when overrun, passed only a few feet?

How many derailments at derails have occurred in the past 10 years? Count not only those which have resulted in fatalities or injuries but also those classed as minor accidents but which, nevertheless, blocked traffic and required the services of the wrecking crew. How many serious collisions

have resulted in the same period at interlocked crossovers, crossings and junctions not "protected" by derails? What is the percentage of each?

The facts noted early in this contribution—frequent derailments and the absence of accident on some roads—have led some of us to think that the derail is perhaps an *unnecessary* rather than a "necessary evil"; that at least its value is open to question, and that an unprejudiced examination may disclose some interesting facts. What are these facts?

Are reliable statistics available? If not, perhaps the *Railway Age* will attempt to collate them; not only for the information of railroad officers but also for the public authorities, so that all doubt may be removed, and we may know definitely whether the derails should be retained or removed.

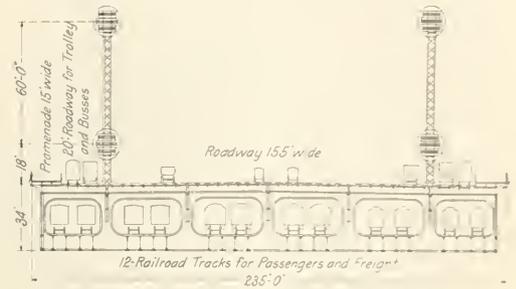
## A Proposed Bridge Across the Hudson River at New York City

A PROJECT FOR THE construction of a bridge to span the Hudson river and to connect the city of New York with the mainland on the west has been receiving considerable attention recently partly because of the need of some practical means to relieve congestion around New York and partly because of the size of the contemplated structure. As the plans now stand, the bridge, if built, will be one of the largest single structures yet constructed. Originally the undertaking embraced a structure in the neighborhood of Twenty-third street and a permit was issued by the War department for a bridge at that point. Of recent years civic growth and other factors have resulted in a change in location. The plans now advanced cover a structure crossing the Hudson river from a line south of Fifty-ninth street in Manhattan to Weehawken, N. J., with terminal and classification yards in New Jersey and a union passenger station and other facilities on the New York side.

The design of the proposed bridge, which is being changed

of high tensile strength steel, each 60 ft. to 70 ft. long and pin-connected. In order to prevent corrosion the chords will be enclosed in a continuous gallery formed by a casing of sheet copper which will protect the chains from the weather, and at the same time permit of their inspection.

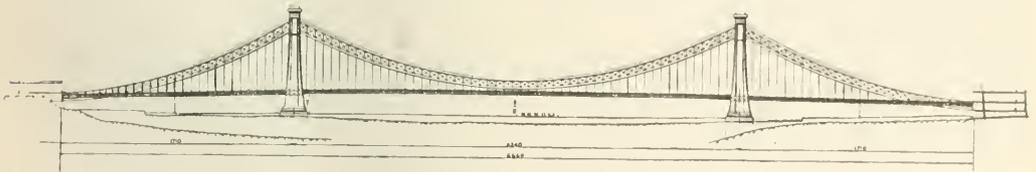
The towers supporting the suspension members will be of extraordinary size, extending about 800 to 840 ft. above water level, and 165 ft. below with foundation dimensions of approximately 400 ft. by 200 ft. The construction will be of



Cross Section Through the Main Span

steel and each tower will be enclosed in masonry in order to protect it from corrosion. This factor of corrosion has been carefully considered in the design of all parts of the structure and precautions have been taken in the design to render it practically negligible.

The traffic, in so far as it concerns the railroads in their problem at the Port of New York, will be handled somewhat as follows: In New Jersey a large classification yard or perhaps a series of contiguous yards will be constructed in the Hackensack meadows as well as connecting tracks to all the railroads affected, both to the yards and to the bridge direct.



The Design Is Pleasing to the Eye

from time to time as regards some of its details, follows the general lines of typical suspension bridges. It has a river span of 3,240 ft. with approach spans of 1,710 ft. The roadway is double decked, 235 ft. wide and so arranged that the upper deck carries all highway, trolley, bus and pedestrian traffic while the lower is solely for the accommodation of railway freight and passenger traffic. On the upper deck there will be space available for 16 lines of vehicles, two bus and two trolley lines and two promenades 15 ft. wide. The lower will have 12 railway tracks in sets of two each. The clearance above mean high water will be 155 ft. at the center and 140 ft. at the towers.

This roadway will be carried by two suspension arches spaced 160 ft. apart. In place of the usual cables, the suspension members will each consist of two parallel chords of chains, one spaced 60 ft. above the other with structural steel bracing between them. The arches will be divided longitudinally into 60-ft. panels by the suspenders from chords to deck. Each chord will be built up of three chains formed of eyebars, making a total of 12 chains for the bridge. The individual chains will be composed of from 20 to 30 eyebars

In New York the railroad tracks will be looped to the south, probably in the vicinity of Ninth avenue to a union station in the vicinity of Forty-second street. Freight tracks will continue along near the waterfront into the lower part of Manhattan Island and will be served by a comprehensive warehouse system.

Both the freight and passenger traffic will be on the basis of one-way operation. The maximum rail grade on the New Jersey approach is 1.0 per cent and on the New York approach it is 2½ per cent. The maximum grade for vehicles on approaches is 3¾ per cent while the maximum grade on the bridge itself, both rail and highway, is 2½ per cent. The estimated cost of the bridge is \$100,000,000. The present estimated cost of the terminal facilities on both sides of the river is \$115,000,000, making a total of \$215,000,000.

The project is being developed by the Hudson River Bridge and Terminal Association, Inc., New York, of which George A. Post is president. The designs for the structure were made by Gustav Lindenthal, consulting engineer, New York, and chief engineer of the association.

## I. C. C. Commodity Statistics

WASHINGTON, D. C.

THE tonnage of freight originating on the railroads of the United States during the first three months of 1921 was 217,967,619, as compared with 275,931,603 in the first quarter of 1920, according to the quarterly summary of freight commodity statistics of Class I roads issued by the Interstate Commerce Commission. This is a decrease of 21 per cent. The total revenue freight carried was 401,818,363 tons, as compared with 511,699,501 in 1920, a decrease of 27 per cent. Decreases are shown in all of the main groups of commodities but large increases are shown in the tonnage originating of some of the commodities, including several as to which there has been the most complaint that high freight rates were retarding traffic.

For the calendar year 1920 the tonnage of products of agriculture was 110,881,685, as compared with 115,033,319 in 1919. The tonnage of products of animals was 26,545,844, as compared with 35,493,662. The tonnage of mine products amounted to 712,512,968, as compared with 589,950,958, and of forest products to 101,613,209, as compared with 94,075,639. Manufactures and miscellaneous showed large increase, 251,166,994, as against 201,256,077. Carload traffic for the year was 1,202,720,700, as against 1,044,809,655. The l. c. l. merchandise was 52,984,273, as against 51,301,616, and the total tons originating were 1,255,704,973, as against 1,096,111,271.

For the first quarter of 1921 the total tonnage of products of agriculture was 26,023,087, as compared with 28,109,847 in the first quarter of 1920, but the tonnage of wheat was 4,968,196, as compared with 4,459,922. The tonnage of corn was 5,544,760, as compared with 4,325,425. The tonnage of citrus fruits was 474,947, as compared with 451,790; other fresh fruits 608,463, as against 467,580; and potatoes 1,001,832, as against 923,020.

The tonnage of products of animals was 5,900,684, as compared with 6,960,967 in 1920. Decreases are shown in all items except eggs, which amounted to 120,665 tons, as compared with 74,413, and wool, which amounted to 66,736 tons, as compared with 66,280 in 1920.

The tonnage of products of mines was 115,836,502, as compared with 143,323,954. There were decreases in all items except anthracite coal, of which the tonnage was 19,337,873, as compared with 17,304,993. The tonnage of bituminous coal was only 73,023,364, as against 90,622,687.

Products of forests amounted to 20,634,584, as compared with 25,575,364. Ties amounted to 1,950,149, as against 894,290, and pulpwood amounted to 3,182,513, as compared with 1,345,813. Manufactures and miscellaneous show a total of 39,726,611, as compared with 58,399,996.

The grand total of carload traffic for the quarter was 208,121,448, as against 262,370,128. The l. c. l. merchandise was 9,846,171, as against 13,561,475, and the grand total was 217,967,619, as against 275,931,603. The total number of carloads for the quarter was 6,224,990, as compared with 8,007,435.

## Over 600,000 Employees Laid Off Between August and March

WHAT IS PROBABLY the greatest "layoff" which ever occurred in the transportation industry took place between August, 1920, and March, 1921, when, according to the statistics of the Interstate Commerce Commission, the total number of employees on the Class I railroads decreased from 2,197,824 in August, 1920, to 1,593,068 in March, 1921, representing a decrease of 604,756, or 27.5 per cent.

The accompanying table shows by classes the reductions which were made in this seven month period and the per-

centages of decrease. It will be noted that reductions were made in all classes of employees except general officers receiving \$3,000 per annum and upward, division officers receiving \$3,000 per annum and upward, traveling agents and solicitors and employees in outside agencies. The largest cuts were made in the maintenance of way departments, the figures indicating that among the employees in construction gangs and work trains, almost 71 per cent were laid off. The average cut in the number of employees directly engaged in maintenance of way work was 49.1 per cent. The significance of these figures is pointed out in an editorial elsewhere in this issue.

NUMBER OF EMPLOYEES BY CLASSES—CLASS I ROADS  
August, 1920, Compared with March, 1921

Class of employee	August, 1920*	March, 1921†	Decrease	Per cent of decrease
1 General officers, \$3,000 per annum and upward	7,254	7,774	502†	6.9†
2 General officers below \$3,000 per annum	1,800	1,299	501	27.8
3 Division officers, \$3,000 per annum and upward	8,115	9,099	1,794†	22.1†
4 Division officers below \$3,000 per annum	5,274	3,276	1,948	34.
5 Clerks, \$900 per annum and upward	247,119	215,755	31,364	12.7
6 Clerks below \$900 per annum	2,304	1,447	857	37.2
7 Messengers and attendants	11,788	10,174	1,609	13.7
8 Assistant engineers and draftsmen	11,020	8,979	2,041	18.5
9 M. W. & S. foremen	8,838	6,312	2,526	28.6
10 Section foremen	42,834	39,837	2,997	6.9
11 General foremen, M. E. department	1,904	1,817	87	.5
12 Gang and other foremen, M. E. department	26,009	22,245	3,764	14.4
13 Machinists	63,478	50,609	14,869	23.7
14 Boiler makers	21,020	16,184	4,836	23.0
15 Blacksmiths	11,274	7,941	3,333	29.5
16 Masons and bricklayers	1,274	577	697	54.7
17 Structural iron workers	900	856	344	38.3
18 Carpenters	56,240	33,847	22,393	39.8
19 Painters and upholsterers	16,045	6,999	9,054	56.4
20 Electricians	15,678	12,702	2,976	19.0
21 Air-brakemen	8,173	5,162	2,011	24.6
22 Car inspectors	27,070	22,585	4,485	16.6
23 Car repairers	94,185	54,537	39,648	42.0
24 Other skilled laborers	62,272	45,819	16,453	26.4
25 Mechanics' helpers and apprentices	138,709	99,702	39,007	28.1
26 Section men	365,818	173,917	191,901	52.5
27 Other unskilled laborers	132,651	85,317	47,334	35.7
28 Foremen of const. gangs and work trains	1,966	942	1,001	50.9
29 Other men in const. gangs and work trains	34,549	10,058	24,491	70.9
30 Traveling agents and solicitors	3,865	4,475	614†	16.0†
31 Employees in outside agencies	1,260	1,340	60†	4.7†
32 Other traffic employees	426	395	31	7.3
33 Train dispatchers and directors	6,289	5,361	728	11.6
34 Telegraphers, telephoners and block operators	22,374	19,704	2,670	11.9
35 Telegraphers and telephoners operating interlockers	8,230	8,105	135	1.6
36 Verleymen (non-telegraphers)	4,014	3,678	336	8.4
37 Telegrapher-clerks	12,690	11,506	1,184	9.3
38 Agent-telegraphers	19,811	19,393	218	1.1
39 Station agents (non-telegraphers)	13,885	13,511	374	2.7
40 Station masters and assistants	642	553	89	1.4
41 Station service employees	127,942	94,079	33,863	26.5
42 Yardmasters	4,506	3,332	574	12.7
43 Yardmasters' assistants	3,883	2,981	904	23.3
44 Yard engineers and motormen	23,317	17,808	5,509	23.6
45 Yard firemen and helpers	23,888	18,068	5,820	24.4
46 Yard conductors (or foremen)	22,901	17,383	5,518	24.1
47 Yard brakemen (switchmen or helpers)	57,143	43,376	13,767	23.7
48 Yard switch tenders	6,540	5,998	506	7.7
49 Other yard employees	5,609	4,217	792	15.8
50 Hesters	12,375	10,626	1,749	14.1
51 Enginhouse-men	76,387	63,216	13,171	17.5
52 Road freight engineers and motormen	34,499	27,682	6,817	19.8
53 Road freight firemen and helpers	36,951	29,564	7,387	20.0
54 Road freight conductors	28,437	21,125	6,312	22.2
55 Road freight brakemen and flagmen	70,096	56,163	13,933	19.9
56 Road passenger engineers and motormen	13,458	12,843	615	4.6
57 Road passenger firemen and helpers	12,942	12,738	214	1.6
58 Road passenger conductors	11,162	10,522	640	5.7
59 Road passenger baggage-men	5,896	5,735	161	2.7
60 Road passenger brakemen and flagmen	16,507	15,331	1,176	7.1
61 Other road train employees	3,636	3,446	190	5.2
62 Crossing flagmen and gatemen	26,399	23,191	508	1.9
63 Drawbridge operators	1,738	1,517	221	3.3
64 Floating equipment employees	11,256	10,179	1,077	9.6
65 Policemen and watchmen	13,197	11,406	1,723	13.1
66 Other transportation employees	5,700	4,284	1,426	25.0
67 All other employees	23,108	19,078	4,030	17.4
Totals	2,197,824	1,593,068	604,756	27.5

†Indicates increase.

\*Interstate Commerce Commission.

# Pennsylvania Defends Employee Representation Plan

## Labor Board Confronted with Problem of Ascertaining Authority Over National Agreements

REPRESENTATIVES of the Pennsylvania, appearing before the Railroad Labor Board on July 14 and 15 in defense of its procedure in conducting negotiations with its shop employees and clerks threw new light on the authority of the Board as outlined in the Transportation Act and upon the legality of the Board's various rulings regarding national agreements. The shop men on the Pennsylvania, through System Federation No. 90 of the American Federation of Labor, and the clerks through the Brotherhood of Railroad and Steamship Clerks, had protested against the plan of the Pennsylvania to negotiate new agreements as to rules and working conditions with a committee selected by a majority of the individual workers in the various classes involved.

Representatives of the employees, in opening the hearing, requested the Board to render an interpretation on:

"(a) The right under principle 15 (of Decision No. 119, abrogating national agreements) of the majority of the employees of any craft to determine what organization shall represent them.

"(b) The right of such organization to negotiate agreements for all members of such crafts through designated representatives of their own choosing without regard to whether they are in the employ of the carrier with which negotiations are to be conducted.

"(c) The right of the organization under principle 5 (of Decision 119) to select such representatives in accordance with its own laws, and without interference by the officers of the carriers."

The basis for the employees' case was that the Pennsylvania, in attempting to carry out its plan of employee representation which has been described in previous issues of the *Railway Age* and which contemplates the negotiations of agreements between the management and the employees through the agency of a committee composed of employees who have been elected by vote of the majority of the individual members from each craft, violates various of the Board's rulings and interpretations and is intended to limit and eventually destroy the existing organizations.

N. P. Good, president of Pennsylvania System Federation No. 90, and B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, specifically charged that the Pennsylvania plan violated several of the principles which the Labor Board ruled should govern in the negotiation of new agreements as to rules and working conditions. For instance, principle No. 15, provides that "the majority of any craft or class of employees shall have the right to determine what organization shall represent such craft or class" and "such organization shall have the right to make an agreement which shall apply to all employees in such craft or class." Both contended that the Pennsylvania plan was directly contrary to this principle. The ballot which the Pennsylvania took for the election of representatives to confer on rules and working conditions was objected to on the grounds that it provides, first, for the election of individual representatives, and not organizations; second, that it ignores the organizations of employees now in existence, and, third, it provides for the division of the Pennsylvania into several regions, and the negotiations of different agreements in the several regions.

After representatives of System Federation No. 90 and of the Pennsylvania had failed to reach an agreement as to the method which should be pursued in electing representatives to confer on the question of rules and working condi-

tions, two ballots were taken, one by the organization requesting the men to name the organization which they desired to represent them in the negotiations, and the other by the carrier requesting the men to elect representatives with whom it could confer in forming new agreements. Mr. Good stated that of a total of 37,845 votes cast in the organization ballot, 37,238 voted in favor of representation by System Federation No. 90. The employees' representatives also charged that the Pennsylvania was violating the ruling of the Board continuing national agreements indefinitely by seeking to place new rules and working conditions into effect.

### E. T. Whiter Defends Pennsylvania Plan

E. T. Whiter, assistant to the vice-president in charge of personnel of the Pennsylvania, opening the carriers' case, outlined the Pennsylvania's position substantially as follows:

First, the Board has exceeded the authority given to it by the Transportation Act when it continued National Agreements in effect by Decision No. 2. The Board in Decision No. 119 admitted this contention by saying, "these agreements, by their terms, expired with Federal control." Again, in the same decision, the Board said, "Although Section 301 has not been complied with by the parties, the Board has jurisdiction of this dispute as it is and has been one likely substantially to interrupt commerce." The Board, however, cannot take jurisdiction until the provisions of Section 301 have been exhausted. Decision No. 119 was thought to recognize the unfairness and undue restrictiveness of many of the rules and working conditions and the right of the individual roads to deal directly with its own employees. However, later decisions have continued National Agreements indefinitely and taken away the right of individual negotiations.

Second. If carried out as apparently now intended, these decisions will have the effect of perpetuating the National Agreements in spite of the evident opinion of the public that these pacts be abolished and in spite of the Board's own ruling to that effect. This will mean nothing more or less than the closed shop.

Third. The Pennsylvania has endeavored to carry out its understanding of the Board's purpose, expressed in Decision No. 119, to encourage the railroads to re-establish relationships with their own employees on the basis of direct dealing, fair play and mutual understanding. The results accomplished with other classes of employees demonstrate the practicability and success of the plan offered by the Pennsylvania. However, the recent rulings of the Board tend to defeat the efforts of the carrier to reach a mutually satisfactory understanding with its employees, under which the railroad may be operated in the interest of the public as well as in the interest of the employees.

Mr. Whiter then said in part: "It must be evident to this board that while the Pennsylvania is anxious and willing to assist the Board in carrying out the Transportation Act, it cannot consistently comply with Section 301 of that Act, which requires that disputes shall be considered and, if possible, be decided in conference between the representatives designated and authorized to confer by the carriers and the employees or subordinate officials directly interested in the dispute, and at the same time carry out rulings of this Board which are so diametrically opposed to this section and to the best interests of the railroads, the public and the employees."

We share the Board's desire to avoid any interruption of traffic and to live up in letter and spirit to the mandates of the Transportation Act; that every means be taken to settle controversies that may endanger the continuous operation of the carriers. As far as the Pennsylvania is concerned, however, there is no danger of any substantial interruption of transportation. Railroad employees who prior to federal control lived harmoniously with their employers over a long period of years on the basis of just such relationship as we are re-establishing with our men, do not strike without just cause. The Pennsylvania has always treated its men fairly. There will be no interruption of traffic under such circumstances and harmonious relations will be re-established if this Board in its desire to avoid misunderstanding does not interfere with honest efforts of the railroads to get together and continue to live together with their own men."

#### E. H. Seneff Testifies on Authority of Labor Board Over National Agreements

E. H. Seneff, general solicitor of the Pennsylvania, followed with an argument in regard to the jurisdiction of the Labor Board over the question of National Agreements. Mr. Seneff's arguments were in general similar to those outlined in Mr. Whiter's remarks with a more extended analysis of the authority given to the Labor Board by the Transportation Act and the manner in which that authority has been used in the controversy over National Agreements. Mr. Seneff pointed out that the Labor Board, in the first place, had no power to continue National Agreements in its Decision No. 2, and that inasmuch as a bona-fide dispute over National Agreements has never been created, none of the subsequent orders of the Labor Board in regard to the abrogation or continuation of these agreements is legally rendered. Furthermore, Mr. Seneff pointed out, even had the Labor Board acquired jurisdiction over the question of National Agreements, its action in retaining jurisdiction indefinitely, deciding, first, on April 14 that National Agreements would terminate on July 1, and then deciding without a hearing on June 27 that they would not terminate, would still be beyond the power given to the Board under the terms of the Transportation Act. Assuming again that the Board had complete jurisdiction over the question of National Agreements, Mr. Seneff challenged its right or power to lay down principles to be observed by employer and employee in the making of contracts, as the Board did in Decision No. 119. Regarding these principles, Mr. Seneff said, "I am unable to find a word or syllable in the Transportation Act conferring any such power upon the Board. The Board in prescribing these 16 principles has undertaken to legislate respecting property rights and obligations of the carrier and employee, and no such power has been delegated to the Board by Congress. Even though such power had been delegated by Congress, it would not be constitutional, as the exercise of any power compelling the carrier and the employee to observe substantive principles in the adjustment of differences between them in the making of contracts amounts to an appropriation of property rights which cannot be taken away from either in this manner without infringement upon their constitutional rights. Congress never intended that the Labor Board should usurp the rights and obligations of the contracting parties in this way, but on the other hand, it was the obvious intention of Congress that the parties directly interested in the matter be free and untrammelled to deal with each other in any way they see fit, regardless of locality or territory and likewise regardless of majority or minority representation, until a dispute which cannot be settled in conference arises, and then the Board has a right to function."

In closing, Mr. Seneff said, "There is one thing more to which I desire to direct the Board's attention, and that is the apparent growing tendency on the part of the Board, as

I view it, to group the carriers as a whole and subject them to the same treatment regardless of different or varying conditions. It is apparent to me that Congress had in mind in the enactment of the Transportation Act controversies between individual carriers and their employees, and if that is so it is the legal duty of the Board to carry out that direction to the fullest extent."

#### Officers and Employees Testify In Behalf of the Pennsylvania

J. T. Wallis, chief of motive power of the Pennsylvania, then outlined the development of the closed shop during and after federal control, and pointed out the probable effect of the Board's position, as expressed in its orders, on the extension of this principle, saying: "We believe that it is but a step from the closed shop and union domination in Interpretation No. 5 (of Decision No. 119—the recent ruling in the Pullman case), to union domination for the railroads as a whole and to uniform national agreements, national boards of adjustment and those things denied labor organizations when the Anderson amendment was rejected. We believe it because we have all seen what happened during government control, and we think that your action and recent decisions are so nearly in conformity with what happened during federal control that they cannot but produce a like result."

Mr. Wallis was followed by H. A. Enochs, superintendent of the wage bureau, eastern region of the Pennsylvania, who outlined in detail the steps which that carrier has taken to carry out the provisions of Decision No. 119. Mr. Enochs, in turn, was followed by E. Peterman, a blacksmith in the Altoona shop. Mr. Peterman outlined the conditions existing at Altoona, the detrimental effect of the attempt of labor leaders to establish a closed shop and the manner in which the company had conducted its balloting for representatives with whom it could negotiate new agreements.

In reply to inquiries by members of the Board, Mr. Whiter later stated that of the 185,000 employees on the Pennsylvania, 167,100 were involved in this controversy. Of the 167,100, Mr. Whiter said, 108,254 have either agreed to working conditions or are negotiating through their duly elected representatives at the present time. In discussing the agreement which has been reached at the Altoona shops, Mr. Whiter later informed the Board that the total number of employees eligible to vote at that point was 2,198, and that 1,320 employees participated in the election of committeemen with whom the carrier had negotiated a new agreement.

Mr. Whiter closed the Pennsylvania's case with the following remarks:

"You have heard our case. You have been told freely of our aims and our methods of procedure and what we hope to accomplish. You have been told of our success in negotiating with those of our employees who were willing and did meet us half way. You have been told of our success at Altoona works where a majority of the shop crafts voted for their representatives who in turn completed their schedule in conferences with the Company's representatives and put it into full force and effect July 1, 1921.

"We propose to continue negotiations with those representatives who were duly elected by those who exercised the right to vote and will put into effect the schedules as soon as they are completed, and agreed to, and of which you will be currently advised."

Representatives of the Brotherhood of Railway and Steamship Clerks, Freight Handlers and Station Employees, presented similar arguments on behalf of the clerks on the Pennsylvania, B. R. Briceland declaring that the carrier had refused to negotiate with the brotherhood and to recognize the brotherhood as representing the majority of the workers of this class.

As a sequel to the meeting of the various labor leaders and general chairman at Chicago last week, the developments at

which were described in last week's *Railway Age*, the Railway Employees Department of the American Federation of Labor issued a warning in the form of a circular to the members of the shop craft union to "so conduct yourselves that you will not become involved in a stoppage of work." The letter stated that no action should be taken without authority of the Railway Employees Department "pending the time when the standard recognized railroad labor organizations can arrive at a point of handling this question, where concerted action by all may be taken." A "constitutional majority" for the rejection of the recent wage cut was also announced in the circular.

Several orders have been announced during the past week by the Labor Board, among them three interpretations to Decision No. 2. One of them increases the daily guarantee for engineers and firemen from \$6.00 and \$4.25 respectively to

\$6.80 for engineers and \$5.05 for firemen. Another interpretation applies the increase of 13 cents per hour specified in Article 12 of Decision No. 2, to labor foremen in shops and engine houses whose duties consist of supervising engine wipers, laborers, tool checkers, headlight men, fire tenders, turntable operators and similar positions. These men will receive a monthly increase of not less than \$26.52 per month.

The wages of the employees of the American Railway Express Company, except those employed in shop work, will be reduced six cents an hour on August 1, according to an order of the Labor Board, announced on July 12. It is estimated that the saving to the company will approximate \$8,000,000 annually. Last July the wages of employees of the American Railway Express Company were increased 16 cents per hour, and their present rates will therefore be 10 cents per hour larger than they were prior to that time.

## How the New York Central Inspects Perishables

### Loss and Damage Guarded Against by Inspection Service at Points of Origin and Terminals

By F. S. Welsh

Manager Stock Yards and Agriculture, New York Central Lines

**T**HE INSPECTION service which the New York Central Lines conducts in handling perishable commodities has a two-fold purpose. Its immediate object is to determine the exact condition of the perishables transported, while its ultimate end is the collection and dissemination of information concerning causes and means of correcting damage to these perishable shipments.

To accomplish the purpose of the work, as it has been outlined it is necessary to know the condition of the various commodities when they are offered for shipment. Our first procedure, consequently, is to maintain a detailed inspection service at the various shipping points. This inspection includes a thorough examination of the mechanical condition and equipment of the car. The arrangement of the load in the car must be carefully looked over with an eye for such physical defects as salty floors, collapsed bunkers, improperly fitted doors and any other conditions which might damage the commodity to be transported. The descriptions which our inspectors turn in as to the condition of the load include notations concerning the stripping and stowing, as well as descriptions of the containers being used. Other facts noted, pertain to the presence or absence of false floors, the size and construction of the car, together with mention of whatever additional protection is afforded, as for instance, when paper is used on the floor, sides and ends to guard against freezing. The type of the load is also sized up and mentioned in the report; that is to say, the inspector determines whether it is a vertical or an offset load and whether it is spaced or not. Mention is also made of the number and approximate dimensions of the channels left in the car for the circulation of air, together with their comparative regularity.

In describing the contents of the car, our men note the variety of the commodity, its quality, color, size, pack and general condition. To illustrate, we base the condition of the pack on the height of the cover of the container above the contents, and this is described as high, medium, flat or slack. When the commodity in question is fruit, its degree of ripeness is classified either as hard green, green, hard ripe, ripe, soft ripe, over-ripe, or decay. When the degree of ripeness is noted as past ripe, bruising occurs rapidly and the tendency toward this condition is also reported.

#### Qualifications for an Inspector

From the nature of the information required by this sort of inspection, a conclusion can be drawn as to the qualifications necessary for a competent inspector. We prefer men who have had actual experience in growing and shipping perishable produce, supplemented by a four year course in an agricultural college where opportunity has been given for studying plant pathology.

In conducting inspections at points of origin, we take into consideration the amount of territory which can be covered profitably by the individual inspector. We also determine the percentage of the total number of shipments which must be inspected in order to give us a comprehensive knowledge of the condition in which commodities are offered for shipment at any particular station or in any particular region. It is desirable, of course, that the cost of inspection per car be kept as low as possible. To accomplish this end and to increase the scope of each inspector's activities, we have divided our territory with reference to convenient highways and other transportation facilities, and in addition we have provided our inspectors with automobiles to enable them to cover the maximum number of shipping points. Our inspectors keep in close touch with the agent at each station, and are instructed to pay particular attention to those points at which commodities are frequently offered for transportation in bad condition. They also co-operate with shippers who are experiencing difficulty in loading their products. It is found that the moral effect of the presence of the inspector or the possibility of his appearance at any point without advance information as to his arrival, is very good.

#### Number of Shipments Inspected Varies

The percentage of the total number of shipments which can be thus inspected at points of origin varies greatly with the territory and the variety of the commodity. Inspections made at the time of the peach movement in western New York last fall amounted to about 3,500 cars, or approximately 85 per cent of the total shipments. Given this detailed knowledge of the condition of the various commodities offered for shipment, the carrier's liability and the factors affecting the commodity while en route can be determined with a fair

definite limit, provided the exact condition of the commodity is also reported upon its arrival at destination. The inspectors stationed at the principal receiving terminals have the same general qualifications as our inspectors at points of origin. Their duty is to make a complete record of each carload of perishables received. These reports generally are of two kinds: (1) The line-a-car report, which secures data as to the general condition of the car, and which is made after a more or less cursory examination, usually from the car doorway, (2) The detailed report which is made after a thorough inspection of the car. In addition to this close examination, the inspector notes all factors mentioned in the report from the point of origin, and the amount of damage to the load, if there is any, together with its location and probable causes. To illustrate, take the case of injury to potatoes caused by freezing. If potatoes thus injured are distributed throughout the load and are interspersed with unfrozen specimens, it is a clear indication that the injury occurred before the shipment was loaded. On the other hand, if most of the damaged potatoes are along the floor, the side walls or at one end of the bunkers, we know that the injury has been received in transit. Terminal inspectors make these detailed reports only upon request of the consignee or in the event that the line-a-car examination reveals extensive damage to the contents. The consignees of damaged shipments request these inspections at all of our terminals since notations concerning the damage existing are not made on paid freight bills unless the detailed examination has been called for. Without a damage notation on his paid freight bill, the consignee has no acknowledgment from the carrier of the existence of damage in the event that he presents a claim. We frequently make joint inspections with consignees, and the information thus obtained is not only reported and recorded in a track book, but is supplemented by photographs.

#### Full Use Made of Information

Once having collected this information as to the condition of commodities offered for shipment and received at destination, it becomes necessary for us to centralize the data and classify it in order to determine the causes for damage and the means of remedying them. To accomplish this end each inspector reviews his reports weekly and sends a written summary to the central office. This summary, stating the number of inspections and the variety of the commodities, makes clear the principal causes and the extent of all damage, and any unusual features which may have been noticed. From these weekly statements, supplemented by copies of the inspection reports themselves which are called for from time to time, we find it possible to classify causes for damage to perishables into three general groups as follows: (a) Bad

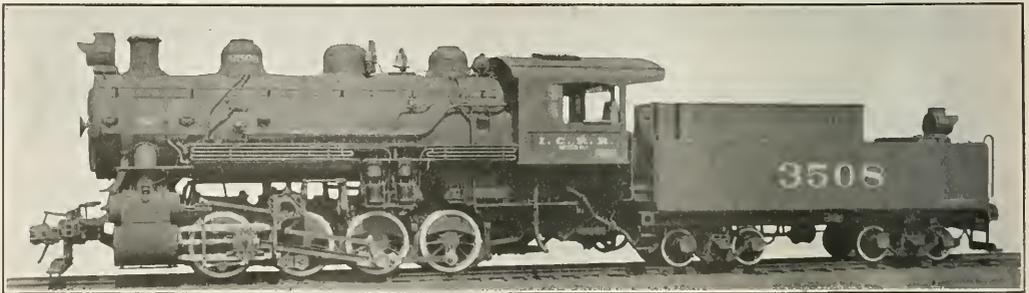
practices in the preparation of commodities for shipment. (b) Improper loading practices. (c) Faulty refrigeration.

In attempting to correct cases of faulty individual practices, we find it advisable to take the matter up with the shipper or consignee responsible, either by mail or through a personal call from one of our inspectors. If the trouble is occasioned by improper methods of loading, we try to persuade the shipper to adopt methods that have been proved efficient by experience. This we accomplish by means of blueprints and actual demonstrations by our inspectors of the best means for preparing shipments for loading. On the other hand, if the damage is due to faulty containers, we take it up not only with the shippers but also with the package manufacturers. In some instances it has been found possible to devise an entirely new container where the old one has been found unsatisfactory. This is true in the case of the New York celery crate which we found too large to afford proper refrigeration of the celery in storage, and too weak to hold together during transportation with the large amount of celery which it contained. A smaller size package has been designed and is proving so popular with a large majority of New York shippers that it is rapidly replacing the old crate. In this instance, too, we found the package manufacturers anxious to co-operate in every way.

When damage is caused by general field conditions, such as the prevalence of brown rot in peaches, we issue circulars and instruct all our inspectors to make organized efforts, urging that particular attention be paid to removing this trouble in the packing houses. In other instances if a change in the entire method of loading is necessary, we prepare blueprints and illustrations in circular form for distribution throughout a given region. Where damage is caused by improper refrigeration, the matter is reported to the supervisor of refrigeration who in turn issues orders to the particular icing station or officer responsible.

#### Satisfactory Results Obtained

The results of this inspection service on the New York Central Lines have been very satisfactory from our standpoint, and there is every indication that the service is meeting with approval from shippers and consignees. In the first place, there has been an actual increase in the receipts of perishable freight at our terminals under this system. Secondly, the reliable consignees and shippers are co-operating heartily with our inspectors in making inspections at destination. As an evidence of their attitude, one of the principal receivers at a large terminal, in filing claims for damage, has simply presented these to our claim agent with the request that he be allowed whatever damage was shown by the inspector's report.



New Eight-Wheel Switcher for the Illinois Central

Twenty-five of these engines have recently been delivered by the Baldwin Locomotive Works. They resemble closely the N. I. R. A. design but have increased grate area and firebox heating surface. The total weight in working order is 221,700 lb., tractive effort 51,000 lb., evaporative heating surface 2,782 sq. ft., and superheating surface 658 sq. ft.

# Locomotives for Federated Malay States Railways

Prompt Delivery and Success of Previous Shipment Secures  
Additional Order for American Builders

THE FEDERATED Malay States Railways during the four years of the war, deferred placing even the most essential orders for locomotives and rolling stock because of the enormous demand for such equipment by the allied governments for military transportation purposes. However, at the termination of the war, these railways had so expanded and passenger and freight traffic had so increased that it was



Mogul Freight Locomotive

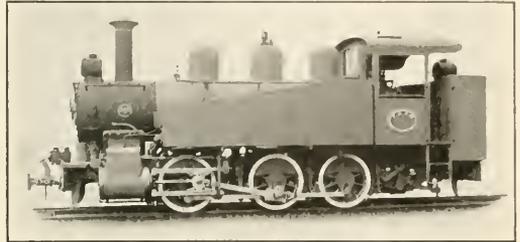
necessary to secure as much additional motive power as possible with a minimum delay.

The Federated Malay States Railways own and operate over 1,000 miles of meter gage track. The main line runs practically the length of the Malay peninsula, connecting Bangkok and Singapore. From this main line are various branch lines for local passenger and freight service. The motive power consists of 202 steam locomotives of various types. For the accommodation of passengers, 560 coaches are used and for the handling of freight, 4,154 cars. In addition

weighed 177,600 lb., including the tender fully loaded, and were equipped with American superheaters.

These, first American locomotives placed in service in the Malay States, gave such satisfaction that in September, 1920, the railways supplemented their previous order by 20 more engines of two distinct types. This order consisted of 10 Mogul (2-6-0) type locomotives for freight service and 10 six-coupled side tank locomotives (0-6-0) for switching and general freight service.

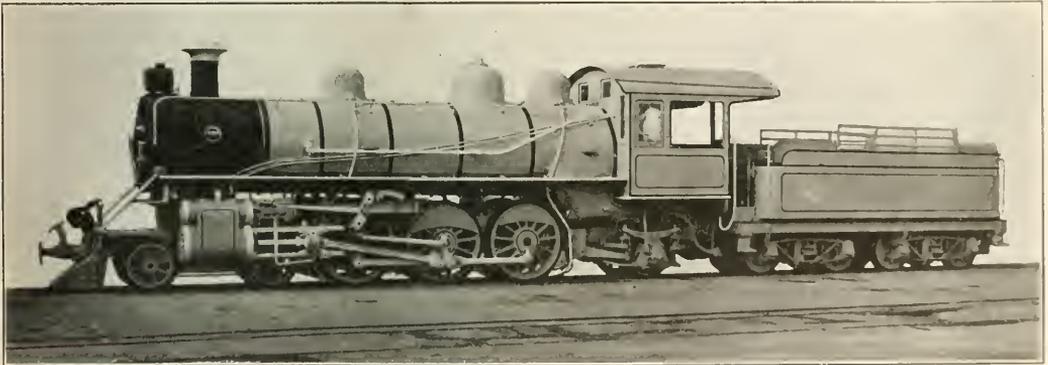
After being inspected by a representative of Messrs. Rendel,



Tank Locomotive for Switching

Palmer and Tritton, London, the locomotives, which were built in 58 working days, were shipped on April 23, 1921.

The contract for the 20 engines mentioned was placed in this country on account of the rapid delivery which could be obtained and also because of the excellent service rendered



Pacific Type Locomotive for Federated Malay State Railways

a marine service is operated consisting of steamboats, tugs and ferries, supplemented by the railways' own harbors, docks and wharves.

As the traffic on these railways was so materially augmented during and after the war, an order was placed with the Baldwin Locomotive Works for 12 Pacific (4-6-2) type locomotives for combined passenger and freight service. These locomotives, which were built and delivered in 1919, had 17 in. cylinders with 24 in. stroke, operated by 8 in. piston valves actuated by Walschaert valve gear. They

by the previous order of 12 Pacific (4-6-2) type engines. Due to existing conditions in England and based on statistics obtained from recent deliveries made by British locomotive manufacturers, it would appear that the delay between the receipt of an order and the actual date of delivery is of considerable length.

The locomotives are of the most up-to-date type and have open bar steel frames. American outside equalized steam brakes are applied to all the driving wheels and automatic vacuum brakes to all the tender wheels, with train connections

at the front of the engine and at the back of the tender. These vacuum brakes are designed to interchange and operate with the railways' standard Gresham and Craven system. Hand brakes are applied on the driving wheels of the tank locomotives and the tender wheels of the Pacifics and Moguls.

These locomotives were designed to operate on rails of 3 ft. 3 3/8 in. gage, 2 1/2 per cent grade, and over curves of a radius of 16 deg. The weights and principal dimensions are shown in the accompanying tabulation.

	Pacific Type 4-6-2	Mogul Type 2-6-0	Tank Type 0-6-0
Tractive effort.....	18,860 lb.	12,970 lb.	16,880 lb.
Gage .....	3 ft. 3 3/8 in.	3 ft. 3 3/8 in.	3 ft. 3 3/8 in.
Cylinders .....	17 in. by 24 in.	14 in. by 18 in.	16 in. by 20 in.
Valves .....	Piston type	Balance Slide	Balance Slide
Boiler .....			
Type .....	Straight Top	Straight Top	Straight Top
Diameter .....	56 in.	52 in.	44 in.
Working pressure..	170 lb.	160 lb.	160 lb.
Firebox: .....			
Material .....	Steel	Steel	Steel
Staying .....	Radial	Radial	Radial
Length .....	66 7/8 in.	69 7/8 in.	64 7/8 in.
Width .....	34 1/4 in.	27 1/4 in.	27 in.
Grate area.....	24.9 sq. ft.	13.1 sq. ft.	12 sq. ft.
Tubes .....	2 in. steel	2 in. steel	2 in. steel
Heating surface:			
Firebox .....	99 sq. ft.	88 sq. ft.	59 sq. ft.
Tubes .....	1,295 sq. ft.	674 sq. ft.	499 sq. ft.
Total .....	1,403 sq. ft.	762 sq. ft.	558 sq. ft.
Wheels: .....			
Driving diameter over tires.....	54 in.	37 in.	42 in.
Driving diameter of center .....	48 1/2 in.	31 1/2 in.	36 1/2 in.
Journals, main .....	7 1/2 in. by 8 in.	6 in. by 7 in.	7 in. by 7 in.
Journals, other .....	7 in. by 8 in.	6 in. by 7 in.	7 in. by 7 in.
Wheel Base: .....			
Base, driving.....	9 ft. 6 in.	9 ft. 8 in.	10 ft. 0 in.
Base, total engine..	27 ft. 0 in.	15 ft. 11 in.	10 ft. 0 in.
Base, total engine and tender.....	50 ft. 0 3/4 in.	39 ft. 3 in.	.....
Weight: .....			
On driving wheels..	67,400 lb.	52,000 lb.	78,000 lb.
On truck, front.....	27,000 lb.	10,000 lb.	.....
On truck, back.....	19,000 lb.	.....	.....
Total engine .....	114,800 lb.	62,000 lb.	78,000 lb.
Total engine and tender .....	177,600 lb.	109,000 lb.	.....
Tender: .....			
Water capacity ...	2,400 U. S. gal. 5 tons	2,200 U. S. gal. 2 cords	1,200 U. S. gal. 2 tons
Fuel capacity .....	.....	.....	.....

## Negotiations for Settlement of Government Accounts

WASHINGTON, D. C.

NEGOTIATIONS are still in progress between the railroad executives and government officials in an effort to work out a plan for funding for 10 years at 6 per cent the balance of the \$750,000,000 expended by the Railroad Administration for additions and betterments and for expediting the payment to the railroads of the government's indebtedness to them for the federal control period. The figure of approximately \$500,000,000 to be paid to the roads in settlement is frequently used by the government officers and apparently it is their desire to induce the railroads to abate their claims, particularly those for undermaintenance, to some such amount, which probably represents something like the Railroad Administration's own estimate of what it owes the

railroads, using its own theory of its maintenance obligation. Apparently the government is exerting considerable pressure upon the roads to induce them to accept a much lower figure than they claim in return for an agreement to fund their debt by accepting 6 per cent securities for it.

Secretaries Hoover and Mellon are taking an active part in conferences with the committee representing the Association of Railway Executives in an effort to reach a compromise on the claims and numerous other conferences have been held between the two cabinet officers, J. E. Davis, director general of the Railroad Administration; E. E. Clark, chairman of the Interstate Commerce Commission, and Eugene Meyer, Jr., managing director of the War Finance Corporation, to discuss the entire subject and particularly ways and means for raising the necessary cash if a plan of prompt settlement is agreed upon. Messrs. Mellon, Hoover, Davis and Clark made a brief report of the progress of the negotiations to the President on Saturday, July 9, following a meeting of the steering committee of the Association of Railway Executives in Washington the day before, but it was stated that no definite conclusion had yet been reached and that another conference would be held with the executives. There was such a conference on Monday and on Tuesday the steering committee held another meeting on the subject in New York.

A press association dispatch last week which represented the Secretary of the Treasury as having announced that a plan for a settlement for approximately \$500,000,000 had been practically completed seems to have had no more foundation than a statement that negotiations were in progress. The administration is willing to accept railroad securities for the indebtedness of the roads on account of capital expenditures, but as that would increase the amounts which must be paid to effect a cash settlement of the accounts on the other side, it is desirous of an assurance that the claims of the roads will be reduced to a figure which the government considers reasonable and which it feels it can pay under present conditions. Approximately \$200,000,000 is available to the credit of the Railroad Administration and the balance to be paid would require an appropriation by Congress unless it is found possible to carry out a plan that has been discussed for having the War Finance Corporation furnish it by taking over railroad securities now held by the Railroad Administration or the new ones to be given in connection with the funding operation. The administration is particularly interested in bringing about a settlement because of the belief that it would have an important effect on general business conditions to enable the railroads, which normally represent so large a proportion of the purchasing and employing power of the country, to pay their bills and undertake maintenance and other work that would put money into circulation. The railroads are anxious to effect a settlement, but they are confronted with a demand that they sacrifice a large proportion of their undermaintenance claims in order to obtain their money without litigation.



One of Five New Pacifics Built by the Philadelphia & Reading in the Company Shops

# How Sincerely Do Railroads Want College Men?

## Roads Should "Establish a 'Look to the Future' Policy of Recruiting and Training"

By F. E. Hanson

IN MARION B. RICHARDSON'S LETTER appearing in the *Railway Age* of June 17, it is stated:

(1) That letters received from railway officials on the subject of whether or not the railroads want college men state "that the college man does not come up to expectations in most cases and that railroad work requires men of certain temperament and qualifications."

(2) That one letter in particular stated, "that the railroads wanted students who had received good grades in their studies and had also taken an active part in athletics and campus activities."

From these letters Mr. Richardson states, "It appears that the railroads must have the highest grade of material available," and he suggests a means of establishing relations between the railroads and college students whereby the students will know what the railroads want and the railroads will be able to get the material which they desire or need.

### Poor Recruiting Methods

In regard to the statement that "the college man does not come up to expectations in most cases." Just consider the method followed by most railroads in recruiting for their technical or engineering departments. It is done very much as the recruiting for the other and non-technical departments is done; namely, consideration is given, except in isolated cases, only to the qualifications necessary for the particular vacancy to be filled. For the lower grades of railway engineering departments a technical education is not essential to the satisfactory performance of the duties required; consequently these grades are for the most part recruited from such bright appearing young men as happen to apply when there are vacancies for rodmen or chainmen. If a college man happens along at the time and is willing to accept the pay offered, he is likely to be given preference over the non-college man but there is no definite effort on the part of the railroads, as a whole, to get the technically trained man who will be able intelligently, as well as satisfactorily, to perform the work, nor are there any special inducements held out to him if he accepts a position under the system.

To this recruiting system, and to the fact that until very recently the railroads have paid less for the lower grades of technical workers than have other employers, can, I believe, be accredited the fact, if it is a fact, "that the college man does not come up to expectations in most cases and that railroad work requires men of certain temperament and qualifications." Under the system only those men with the temperament and qualification enabling them to forget that they have spent considerable time, at some cost, in obtaining a technical education, to "stick around" in the same grades with the non-college men who are obtaining their education at the expense of the railroad and through the helpfulness of their college brothers with no special opportunity offered them for using the education, will stay in railroad work. Those not having this temperament and qualification seek employment elsewhere where the fact that their technical knowledge is an asset is recognized from the beginning.

Of those college recruits who are left, after their number is depleted by the above process, there is required, in the face of an apparent lack of any regular system of promotion in grade or advancement in pay, a "certain (super) temperament and qualification" to keep from "going

stale" and taking the attitude of "Let George do it." Those men having this super temperament and qualification are probably the ones that would be recognized in the letters referred to as outside the classification of "Most cases."

### A "Looking to the Future" Policy

In regard to that part of the letter stating that "the railroad wanted students who had received good grades in their studies and had also taken an active part in athletics and campus activities." The letter must have been written by an official of some one of the few railroads which employs a recruiting system looking to the future rather than one which functions only to fill present vacancies. There are some railroads employing such a system as a corporation policy and there are others where the system is temporarily in force through the foresight of the head of the department or sub-department using it. At the present scale of pay there is no reason, from the standpoint of available supply, why all railroads should not adopt this "looking to the future policy" of recruiting to the lower grades of their technical departments. If this policy should be adopted, I think it safe to say that any foundation of fact for the statement that "the college man does not come up to expectations in most cases" would be removed and that the morale of the engineering departments of these railroads would be greatly improved, would be far more efficient and would consequently be operated at less expense to the railroads.

I do not wish to imply that there is no place in railway engineering departments for the non-college man. Deserving men or boys who desire to obtain a technical education and follow a chosen vocation by practical training, together with personal application and study, should be given every opportunity, but they should not be employed at the start at the same scale of pay as the college man nor should they be advanced in pay or grade until they have completely passed both mental and practical tests indicating that they are qualified in the fundamental principles on which engineering work is based and are, therefore, equally capable from a fundamental standpoint with the college man. Moreover, any non-college man employed in this way who does not qualify within fixed time limits in different grades of fundamentals should be dismissed from service as not showing the proper initiative and desire to master the technical principles of the profession or calling which he seeks to follow. By this means only could the morale and quality of an organization employing a "look to the future" policy of recruiting be kept to the standard which such a policy implies.

### Training the College Man

As to Mr. Richardson's suggested solutions whereby the conditions complained of could be remedied and the railroads could get properly qualified men: There can be no criticism of the first two suggestions, but in regard to his third and last one there is some doubt. Any man who can successfully complete the courses in a technical institution of high standing cannot help but assimilate all of the theoretical knowledge which is essential to railway engineering work. There may be isolated positions for which the railroads require men of exceptionally high theoretical ability, but they are so few in number and require such specialized

practical training that they cannot be properly considered in a general discussion of Mr. Richardson's question.

Some years ago one of our large middle western systems adopted a policy of annually employing a limited number of college men for its engineering departments. These men were first assigned to section crews where they were called upon to do regular section-hand work for a period of two to three months. The section foreman was under instructions to teach them the practical principles of track work and the roadmaster to watch them and observe their progress. Could any better method be devised whereby the railroads might be assured of getting men of the required calibre; could any better method be adopted to teach the recruit what constitutes track maintenance, or could there be any doubt concerning a man who successfully completed this part of the training, at section-hand pay, as to whether he knew what constitutes a day's work for a day's pay?

When this period was completed the men were assigned to various minor positions with a view to giving them an opportunity to learn something of the work in the different departments and sub-departments of railway engineering; they served an apprenticeship in practical work, not becoming experts in all branches to be sure, but becoming sufficiently well acquainted with the work of different sub-departments to make them more valuable to the department or sub-department to which they were finally assigned than they could otherwise have been. If such a system is consistently pursued, there can be no doubt that there would result an organization in which there could seldom occur a vacancy concerning the filling of which the head of a department or sub-department need lose any sleep at night. This, it seems to me, is a system or policy which might profitably be adopted by many railroads and whereby they would be assured of the selection of men best fitted for railroad work.

### How to Get College Men

As for the matter of obtaining college men for carrying out such a policy: A frank, open and honest statement of the policy would do it. Let the railroads designate an officer or employee to go before the student bodies of the colleges located in the territory traversed by their road and state their policy and method; tell the students that while they may be potential railroad presidents it will take some time and a good deal of hard work to shed the potential garb; let them know the pay that may be expected in the various grades and how slowly promotions are likely to come, particularly in the first few years;—here it would be well to have some of the professors listening in; gather a few statistics to give them an idea of the pay which they may expect in railroad work compared with that in other industries; inform them that, if they take up railroad work, their day's work will be done as to hours when it is done as to work and then tell them of some of the interesting features of railroad work.

Do this, establish a "look to the future" policy of recruiting and training, live up to the policy, and then let the college men come to the railroads. They will come, and those who stay through the test period will be such that any indictment to the effect that "the college man does not come up to expectations in most cases" will be a false indictment; railway engineering departments will be organized, and railway coaches will ride the rails just as smoothly as they have in the past and at less cost so far as engineering work is concerned.

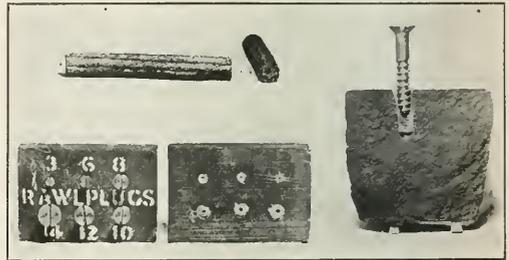
I believe that the railroads want college men; but how sincerely do they want them? Unless the desire is sufficiently sincere to be felt by those officials who direct corporation policies which department and sub-department heads must follow, it is not sufficiently sincere to alter or correct the conditions of which Mr. Richardson writes.

## Making Screws Hold in Any Material

THERE HAS RECENTLY been placed on the market a device known as the Rawlplug which permits fixing an ordinary screw into any kind of material so that it will hold permanently. By its use screws may be made to hold in metal, plaster, brick, concrete, slate, glass, or in fact any rigid substance.

The Rawlplug is especially advantageous in railroad work in connection with maintenance, signal and interlocking systems and for the original installation of interior trimming and fixtures for both steel and wooden coaches. Its use solves the problem of replacing screws in repair work on the interior of cars, as an old screw can be removed and again put in place permanently in the same hole by simply inserting a Rawlplug before placing the screw. The use of Rawlplugs in metal eliminates the need for tapping and does away with tapping costs.

Rawlplugs are hollow tubes of stiffened, longitudinal strands of jute fibre, so cemented that once in place they never crumble or pulp and are unaffected by moisture or temperature changes. They are installed by first making a hole with any common drilling tool or with the Rawlplug tool in the material into which the screw is to be fixed, this hole being the proper size to receive the Rawlplug with a sliding fit. The plug is inserted into the hole and as the screw is turned home in the plug, the fibre strands expand



A Rawlplug; Several Sizes in Place, with and without Screws; Cross-section Showing Plug Expanded and Threads Cut by Screw

and enter every minute pore of the material, practically becoming an integral part of it. The screw forms a perfect thread in the fibre plug. The threads cannot be stripped but they do permit withdrawing and reinserting the screw in the usual manner whenever desired.

Tests conducted under actual working conditions showed that Rawlplugs withstood a direct pull, expressed in pounds, varying from 150 in plaster up to 600 in iron, or 1,250 in common brick for a number 14, 2 in. screw. These results were obtained by a direct pull and the plugs withstood a correspondingly greater stress in every case for an indirect pull.

Rawlplugs are made in sizes to receive all screws from number 1 to number 32 and are furnished in  $\frac{1}{2}$  in.,  $\frac{5}{8}$  in.,  $\frac{3}{4}$  in., 1 in.,  $1\frac{1}{2}$  in. and 2 in. lengths. For convenience, tools for forming holes for Rawlplugs are made in sizes to correspond with plug and screw sizes. For example, a number 8 tool makes a hole of the proper size to receive a number 8 plug and a number 8 screw. Any type of drill may be used, however, for making the holes to receive Rawlplugs.

Rawlplugs are packed in boxes of 100 plugs of any one or assorted sizes. There are also various complete kits which include plugs, screws and tools. This product is manufactured by the Rawlplug Company, New York, which is represented in the railroad field by the Universal Packing & Service Company, Chicago.

# General News Department

The Railway Equipment Manufacturers' Association has decided on account of present business conditions not to hold a convention this September.

The Railway Claim Agents Association of Texas, embracing membership from the states of Louisiana, Arkansas, Oklahoma and Texas, will hold its ninth annual convention at El Paso, Tex., from July 14 to 16, inclusive.

Express Messenger Frank Beckman was shot and his safe was rifled, when two robbers attacked him in his car on Big Four passenger train No. 44 near Covington, Ind., on July 1, about 2 a. m. The robbers jumped off when the train slackened speed in passing through Vedersburg. Reports say the only valuables stolen were non-negotiable securities.

## N.R.A.A.-A.R.E.A. Meetings Moved

### Ahead One Week

Owing to inability to make the necessary arrangements for accommodations at the Coliseum, the National Railway Appliances Association has changed the date for its annual exhibition of railway engineering and maintenance of way equipment from March 20-23, 1922, inclusive to March 13-16, 1922, inclusive. The American Railway Engineering Association is contemplating a similar change in the date of its convention so that they will meet on March 14-16, inclusive.

## Traveling Engineers' Convention Postponed

The Executive Committee of the Traveling Engineers' Association has announced that the annual convention, scheduled to be held at the Hotel Sherman, Chicago, on September 6-9, 1921, has been deferred. There will be a business meeting instead at the same hotel, commencing Tuesday, September 6, at which reports on the following subjects will be considered: Distribution of Power and Its Effect on Operating Costs; Recommended Practice for Conservation of Locomotive Appurtenances and Supplies; What Are the Advantages of Self-Adjusting Wedges, the Feed-water Heater and Devices for Increasing the Tractive Power of the Locomotive in Starting and at Slow Speed? The Best Method of Operating Stoker-fired Locomotives To Obtain the Greatest Efficiency at the Least Expense; A Comprehensive Standard Method of Employing, Educating and Examining Engineers and Firemen; Operation and Maintenance of Oil-burning Engines; Revision of Progressive Examination for Firemen for Promotion and New Men for Employment; Committees on Subjects, Constitution and By-laws and Arrangements. All other committees are asked to attend and be ready to submit their reports.

## Passenger Traffic to Elk Convention

The Elk convention at Los Angeles, Cal., which began on July 11, furnished the Atchison, Topoka & Santa Fe and the Chicago & North Western with considerable additional passenger traffic and both of these roads figured in the special train movements both to and from the convention. The Santa Fe ran 14 special trains westbound and has to date 2 special eastbound trains scheduled. Some 2,000 passengers were carried to the convention on the special trains. The largest special train movement on this road was from Philadelphia, three trains coming from the eastern city which continued westward over the Santa Fe lines some ten minutes apart and maintaining an on-time schedule throughout the journey without mishap. Other specials handled by this road came from New York, Brooklyn, Baltimore, Pittsburgh, Washington and other points in the east and south.

The North Western had special trains from Chicago, Detroit,

Mich., Indiana and Madison, Wis., with a total passenger carry of some 500, while approximately 300 passengers were carried in special cars on the regular trains. An outstanding feature of this road's business during the convention month is the number of eastbound specials which have been scheduled. The New York delegation, St. Paul, Philadelphia, Omaha, Newark-New Jersey, and the "Purple" and "White" contingents of Brooklyn will return over this road, or a total of 7 special trains, which is unique in that the return passenger travel from a convention is generally scattered and spasmodic.

## Roads Urged to Purchase Coal

Chairman Cuyler of the Association of Railway Executives has written to Chairman Clark of the Interstate Commerce Commission saying that his letter urging the railroads to purchase reserve supplies of coal as early as possible was read at a meeting of the member roads of the association in New York on July 1, and the chairman was instructed to transmit it to all roads with the request that they comply with the request of the Commission in so far as it may be practicable. Mr. Cuyler said it was also ascertained that a very considerable number of roads had already made liberal purchases of coal during the present period.

## Locomotive Equipment Hearings at Chicago

Hearings on the construction and repair of the locomotive equipment of the Chicago & North Western, the Chicago, Milwaukee & St. Paul, and the Chicago, Burlington & Quincy, began at Chicago before Examiner Barclay of the Interstate Commerce Commission on July 6, when the case of the North Western was taken up by the examiner. George W. Hand, assistant to the president of the North Western, when called to the stand, stated that locomotives were sent to outside shops for repair because there were nearly 375 engines out of service and the road was being offered more business than it could handle. "There was never any suspicion, intention or suggestion," said Mr. Hand, "that engines be sent out to punish employees. We tried to keep our own shop forces at par." This was the substance of the testimony of F. H. Hammill, assistant general manager of the road; Robert Quayle, general superintendent of motive power and machinery; R. M. Blackburn, general storekeeper, and F. J. Berek, general purchasing agent.

The chief witnesses introduced by M. C. List, attorney for the Interstate Commerce Commission, were John L. Rogers, mechanical engineer of the Interstate Commerce Commission, and John R. Hale, of the Bureau of Analysis of the commission, who submitted detailed charts on repair costs compiled from the records of the commission. According to Mr. Rogers' testimony, the percentage of defective locomotives of those inspected rose from 53 per cent in 1917 to 65 per cent in 1920, and that of the 83 locomotives sent to outside shops, for repair, most of the units were rated in good or fair condition. Mr. Hale's charts showed a total increased cost charged to the corporation accounts on the 83 locomotives of \$857,282, which showed a large difference both as compared to the cost of repair work in other railroad shops and as compared with cost in the company's own shop. J. B. Sheehan, counsel for the railroad, sought to show that this was due to difference in materials, labor and overhead costs. In closing the case for the railroad, he stated that these alleged excessive cost charges were made of tentative bills and estimates, which had not been accepted by the railroad and were, in fact, a subject of litigation.

On July 8, the Chicago, Milwaukee & St. Paul's case was called. B. B. Greer, vice-president of this road, testified that the St. Paul was obliged to send out the work because of the shortage of boiler makers and refusal of those employed to work between October, 1919, and September, 1920, the St. Paul's case

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1921

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total (inc. misc.), Equip. maintenance, Way and car, Traffic, Trans- portation, General, Total, Operating ratio, Net from operations, Operating (or loss), Net (or decr.) in rentals, Increase (or decr.) in rentals last year.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger revenues, Total operating revenues, Maintenance of way and equipment, Traffic, Trans-shipment, General, Total, Operating ratio, Net from railway operation, Operating income (or loss), Net after depreciation, Increase (or decr.) with last year.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—Continued

Table with columns: Name of road, Average mileage operated during period, Operating revenues (Freight, Passenger, Inc. misc.), Total Way and Equipment, Maintenance of Way and Equipment, Traffic, Transportation, General, Operating ratio, Net from railway operations, Operating income (or loss), Net after tax, Increase (or decrease) comp. with last year.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—Continued

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total revenues, Operating expenses, Maintenance of way and structure, Equipment, Traffic, Trans- portation, General, Total, Operating ratio, Net from way operations, Operating income (or loss), Net after rentals, Increase (or decrease) comp. with last year's.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1921—Continued

Name of road.	Average mileage operated during period.				Operating revenues.			Operating expenses.			Total.	Operating ratio.	Net operating ratio.	Net operating income (or loss).	Net operating rentals.	Increase comp. with last year.
	Freight.	Passenger.	(Inc. total.)	Maintenances of way and equip. structure.	Traffic.	Trans- portation.	General.	Traffic.	Trans- portation.	General.						
West Jersey & Seashore.....	359	296,273	691,196	1,471,097	835,616	214,867	1,050,483	141,432	526,375	278,599	956,063	89,242	115,934	56,761	41,833	90,855
Peoria & Pekin Union.....	19	11,991	2,485	121,479	15,629	25,662	41,291	64,977	2,710,434	126,243	4,707,147	107.46	329,101	611,204	683,322	21,337
Iowa Marquette.....	2,238	2,387,002	448,535	3,088,511	522,228	740,580	1,262,808	47,222	1,317,977	113,696	2,753,411	89,151	335,070	241,259	137,074	54,770
Philadelphia & Reading.....	2,238	1,365,728	2,282,676	3,812,562	1,743,537	2,987,116	4,730,653	246,937	6,704,584	559,434	12,284,597	88,994	1,527,965	938,048	704,616	91,686
Atlantic City.....	177	150,110	263,383	414,921	52,877	57,014	110,891	3,286	201,444	1,447	316,067	76.18	98,851	75,399	49,888	17,989
Parkinson.....	5 mos.	41	1,406,265	1,406,265	3,810,629	10,220,708	291,751	15,642,482	821,780	30,970,200	88,119	413,634	2,947,509	1,869,043	1,995,266	1,995,266
Port Reading.....	5 mos.	21	116,290	.....	209,375	6,649	6,649	18	66,843	970	81,975	47.35	105,600	91,985	24,132	81,985
Pittsburgh & Shawmut.....	5 mos.	102	765,487	5,683	81,553	26,117	37,588	1,331	31,758	7,248	104,043	49.90	52,531	45,927	13,880	73,857
Pittsburgh & West Virginia.....	5 mos.	63	114,861	13,135	182,138	36,191	50,145	1,450	59,195	9,759	167,182	91.79	14,956	14,445	1,316	20,009
Pittsburgh, Shawmut & Northern.....	5 mos.	210	91,358	6,230	705,672	170,309	263,048	9,636	324,403	48,427	873,618	112.60	97,746	195,989	171,003	40,132
Quincy, Omaha & Kansas City.....	5 mos.	252	68,709	25,370	103,895	43,494	16,362	606	54,262	21,94	116,704	112.43	12,809	17,065	20,040	42,037
Richmond, Fredericksburg & Potomac.....	5 mos.	117	494,882	266,952	859,994	143,594	140,316	10,738	370,855	12,002	563,225	108.50	14,407	64,989	83,140	60,265
Rintland.....	5 mos.	415	281,356	1,590,590	2,329,691	469,983	561,338	42,691	1,105,808	74,405	2,323,225	99.74	1,567	1,131,666	1,282,719	170,206
St. Louis-San Francisco.....	5 mos.	476	2,368,776	8,577,075	43,543,308	3,690,453	6,601,074	423,836	14,025,123	1,109,323	23,620,166	74.38	7,924,144	6,860,749	693,178	463,966
St. Louis-San Francisco.....	5 mos.	235	89,465	41,174	145,782	36,192	26,596	1,183	68,856	6,217	141,282	96.91	4,301	8,233	5,689	45,190
St. Louis, San Francisco & Tex. Pac.....	5 mos.	134	120,276	16,586	131,122	26,690	26,690	1,272	73,822	3,900	134,235	102.37	11,111	11,111	1,376	3,924
St. Louis-Southwestern.....	5 mos.	968	1,214,886	132,715	1,046,063	159,640	219,747	47,400	400,349	58,861	894,937	63.58	519,034	451,351	408,000	173,838
St. Louis-Southwestern of Tex. May.....	807	433,622	97,772	569,532	159,410	145,883	19,567	315,927	42,319	682,500	68.06	2,173,24	1,967,984	1,211,155	94,610	94,610
San Antonio & Annapas Pass.....	5 mos.	807	2,290,130	494,101	3,019,126	742,726	903,393	106,383	1,689,583	188,323	3,633,944	110.36	614,818	347,062	455,452	344,466
San Antonio & Annapas Pass.....	5 mos.	738	384,803	79,792	490,636	202,845	112,586	9,334	274,264	25,663	534,362	106.92	33,932	48,065	58,402	48,426
San Antonio, Uvalde & Galf.....	5 mos.	317	349,252	125,746	475,098	131,456	84,285	4,592	146,056	6,978	263,282	76.07	31,464	38,676	18,562	33,104
Seaboard.....	5 mos.	3563	3,331,166	680,673	3,369,367	414,665	636,188	133,417	1,763,438	151,911	3,130,453	.....	2,389,914	86,808	67,057	570,126
Southern Ry.....	5 mos.	6,971	34,333,923	13,000,734	52,198,199	8,831,269	10,368,956	1,461,383	24,852,162	1,742,477	47,331,336	90.66	4,876,963	3,144,230	1,044,989	7,248,948
Alabama Great Southern.....	5 mos.	313	483,530	171,592	705,161	111,629	144,570	20,504	339,670	25,005	659,069	92.05	56,092	37,299	17,989	279,238
Cin., New Orleans & Tex. Pac. May.....	338	1,150,366	223,848	1,506,563	186,349	209,355	27,117	67,080	40,882	1,831,312	78.41	235,184	277,945	277,945	34,735	
Georgia Southern & Florida.....	5 mos.	338	4,440,868	1,534,726	7,436,930	1,027,363	1,916,264	148,606	3,304,864	209,327	6,669,340	89.80	577,478	512,208	510,357	1,189,090
New Orleans & Northeastern.....	5 mos.	402	2,432,500	69,892	343,811	75,289	64,969	8,074	194,866	12,305	357,242	103.91	13,331	30,230	65,513	167,910
Northern Alabama.....	5 mos.	110	49,198	12,145	64,535	17,859	4,093	1,823	32,895	3,217	59,888	92.80	4,447	8,33	13,384	6,051
Southern Pacific.....	5 mos.	710	296,225	3,697,772	381,130	83,052	26,189	9,588	207,775	17,086	343,689	90.18	37,440	16,923	53,311	68,861
Arizona Eastern.....	5 mos.	382	143,807	34,699	195,990	36,415	44,036	4,600	83,842	22,109	192,248	97.64	22,925	34,909	34,909	94,884
Atlantic S. Lines.....	5 mos.	382	1,077,274	234,017	1,406,269	234,134	234,097	19,321	521,072	112,689	1,157,001	83.38	249,467	114,723	54,885	167,157
Galveston, Harrisburg & S. Cont. May.....	1,380	1,308,407	438,129	1,862,578	438,044	415,616	99,124	783,669	87,083	1,778,266	95.47	1,404,312	1,404,312	1,404,312	1,404,312	
Galveston, Harrisburg & S. Cont. 5 mos.....	1,380	1,833,094	2,295,351	10,896,945	1,891,152	2,503,857	252,605	4,430,667	16,421	14,470,497	85.56	1,464,348	1,347,653	65,247	1,319,489	

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Total.	Operating railway operations.	Operating income (or loss).	Net after rentals.	Increase comp. wh. last year.
		Freight.	Passenger.	Total (inc. misc.).	Maintenance of way and structure.	Equipment.	Trans- portation.					
Houston & Texas Central.....	May 932	6,697,777	235,982	6,933,759	2,999,596	188,943	3,188,540	9,27,809	97.36	28,937	28,937	56,413
	5 mos.	32,747,157	1,099,439	33,846,596	15,389,982	892,095	16,282,077	47,665,103	93.06	331,933	331,933	38,108
Houston, East & West Tex.....	May 191	825,910	233,219	1,059,129	297,215	17,623	314,838	1,060,693	93.89	113,339	113,339	17,687
	5 mos.	4,112,981	1,113,981	5,226,962	1,749,323	87,258	1,836,581	7,063,543	93.78	469,968	469,968	162,870
Louisiana Western.....	May 207	255,450	365,472	620,922	70,509	114,232	184,741	273,849	74.83	91,985	91,985	38,511
	5 mos.	1,202,388	1,799,121	2,999,509	403,528	584,132	987,660	1,441,459	80.12	357,661	357,661	203,525
Morgan's R. & Tex. R.R. & S.S.	May 400	544,414	157,497	701,911	182,466	31,429	213,895	680,408	97.88	60,171	60,171	37,626
	5 mos.	2,677,048	835,275	3,512,323	826,438	1,091,427	1,506,899	3,620,765	91.58	104,997	104,997	794,580
Texas & New Orleans.....	May 475	435,630	145,091	580,721	218,502	11,810	330,312	797,632	129.98	204,455	204,455	178,467
	5 mos.	2,178,952	746,615	2,925,567	1,072,821	58,510	1,131,331	3,735,275	108.02	381,121	381,121	416,353
Spokane International.....	May 165	429,413	82,247	511,660	97,208	15,983	113,191	377,063	70.93	115,775	115,775	90,518
Spokane, Portland & Seattle.....	May 519	423,553	134,208	557,761	62,004	7,827	219,868	391,906	64.32	217,948	217,948	128,948
	5 mos.	1,923,140	602,567	2,525,707	283,374	42,865	1,123,907	2,124,737	74.51	726,992	726,992	300,367
Tennessee Central.....	May 292	683,303	243,417	926,720	183,319	44,361	227,680	725,572	129.60	51,538	51,538	68,204
	5 mos.	3,400,000	1,217,981	4,617,981	983,319	227,186	1,210,505	3,407,476	111.35	56,200	56,200	74,831
Term. R.R. Assn. of St. Louis.....	May 36	.....	.....	.....	69,313	20,544	89,857	227,201	62.87	133,614	133,614	8,703
	5 mos.	.....	.....	.....	1,830,213	417,053	1,683,353	4,311,166	74.33	469,748	469,748	34,933
East St. Louis Connecting.....	May 35	.....	.....	.....	19,988	3,352	23,340	77,661	59.18	53,352	53,352	48,700
	5 mos.	.....	.....	.....	682,602	104,418	233,009	489,164	71.66	193,438	193,438	116,312
St. L. Merchants Bridge Term.....	May 9	.....	.....	.....	304,606	43,093	347,699	81,014	101.14	81,014	81,014	8,703
	5 mos.	.....	.....	.....	1,467,409	206,263	1,261,146	3,160,564	74.33	469,748	469,748	34,933
St. Louis Transfer Ry.....	May 6	.....	.....	.....	90,108	12,286	102,394	305,352	59.18	53,352	53,352	48,700
	5 mos.	.....	.....	.....	478,015	52,324	15,111	489,164	71.66	193,438	193,438	116,312
Texas & Pacific.....	May 1,953	1,857,215	693,948	2,551,163	601,224	48,418	1,088,600	3,231,966	88.74	416,681	416,681	227,989
	5 mos.	1,948	3,783,658	15,152,369	7,674,713	3,270,859	27,037,927	13,411,406	88.51	1,740,963	1,740,963	1,094,020
Toledo, Peoria & Western.....	May 217	393,479	232,113	625,592	167,759	24,750	192,509	514,383	136.24	61,088	61,088	62,260
	5 mos.	2,111,113	1,311,113	3,422,226	866,656	107,759	1,173,258	1,311,406	71.67	17,687	17,687	28,160
Toledo, St. Louis & Western.....	May 454	684,645	29,434	714,079	135,517	135,507	381,968	1,146,081	70.14	155,067	155,067	88,094
	5 mos.	3,312,525	146,972	3,459,497	598,530	893,452	1,487,982	3,185,722	86.44	29,605	29,605	31,923
Trinity & Brazos Valley.....	May 368	194,846	16,856	211,702	44,941	4,257	49,198	148,522	86.44	29,605	29,605	31,923
	5 mos.	943,091	88,061	1,031,152	216,961	26,427	243,388	1,065,139	99.67	3,472	3,472	242,981
Utter & Delaware.....	May 128	207,606	109,397	317,003	20,056	27,840	47,896	223,640	76.59	68,966	68,966	37,701
	5 mos.	1,093,606	578,884	1,672,490	293,300	347,926	641,226	1,288,601	57.76	179,656	179,656	182,212
Union R.R. of Penn.....	May 45	.....	.....	.....	1,425,929	131,764	1,557,693	2,753,174	57.57	209,841	209,841	80,354
	5 mos.	.....	.....	.....	7,286,844	523,324	7,810,168	13,411,406	88.51	1,740,963	1,740,963	1,094,020
Union R.R. of Va. & N.C.....	May 2,223	1,555,165	498,043	2,053,208	407,419	331,666	739,085	2,812,393	87.99	1,088,600	1,088,600	563,038
	5 mos.	7,567,075	2,499,867	10,066,942	2,046,724	1,416,245	3,462,969	13,529,911	94.03	1,588,249	1,588,249	85,739
Union Short Line.....	May 258	201,008	8,558	209,566	35,167	3,518	38,685	248,251	66.44	140,116	140,116	38,725
	5 mos.	1,092,066	153,011	1,245,077	184,957	239,654	424,611	1,670,668	83.10	205,379	205,379	180,064
Union T. & N. W. R. & N. Va. Co.....	May 98	81,538	656	82,194	58,631	6,576	65,207	147,870	102.12	38,462	38,462	59,950
	5 mos.	405,623	2,570	408,193	312,629	36,256	348,885	857,569	105.85	458,690	458,690	27,076
Union T. & N. W. R. & N. Va. Co. (cont.)	May 96	1,839,138	801,598	2,640,736	342,940	1,671	344,611	4,141,412	91.33	46,860	46,860	84,883
	5 mos.	6,677,844	3,797,957	10,475,801	1,620,183	53,283	1,673,466	17,800,268	95.83	1,588,249	1,588,249	27,076
Union T. & N. W. R. & N. Va. Co. (cont.)	May 526	6,677,844	3,797,957	10,475,801	1,620,183	53,283	1,673,466	17,800,268	95.83	1,588,249	1,588,249	27,076
	5 mos.	32,747,157	1,099,439	33,846,596	15,389,982	892,095	16,282,077	47,665,103	93.06	331,933	331,933	38,108
Western.....	May 472	3,803,907	811,684	4,615,591	803,668	628,576	1,432,244	6,047,835	88.65	647,664	647,664	1,909,837
	5 mos.	18,714,714	4,611,411	23,326,125	4,978,477	3,864,701	8,843,178	21,173,808	86.68	2,079,474	2,079,474	4,749,403
Western Maryland.....	May 797	1,290,688	97,453	1,388,141	1,099,200	101,313	1,199,513	2,587,653	81.09	1,401,169	1,401,169	6,400
	5 mos.	6,756,274	465,079	7,221,353	5,931,241	511,313	6,442,554	15,664,100	90.19	1,215,739	1,215,739	87,250
Western Shore.....	May 1,011	715,087	106,159	821,246	95,814	51,170	146,984	967,230	93.97	38,540	38,540	276,355
	5 mos.	3,723,017	497,995	4,221,012	4,992,600	373,170	5,365,770	10,658,470	91.91	603,904	603,904	3,729
Western Va. R.R. & N. Va. Co.....	May 111	1,184,807	87,696	1,272,503	1,444,158	207,890	1,652,048	2,929,556	79.74	4,869,601	4,869,601	50,111
	5 mos.	4,470,433	416,015	4,886,448	5,264,102	723,572	5,987,674	10,873,776	89.11	573,017	573,017	90,923

50 compound locomotives to the Baldwin Locomotive Works to be repaired and converted to simple locomotives. It was stated on the witness stand that the repair work was such as to very greatly increase the tractive effort of the engines, the difference being equivalent to 10 additional locomotives at 35,000 tractive effort each. J. N. Anderson, superintendent of shops at Milwaukee, Wis., and R. W. Anderson, superintendent of motive power, also testified. John R. Hale brought in cost charts to show that the 50 locomotives cost \$731,196.84 more to repair in the Baldwin Works than if the work had been done in the St. Paul's own shops. He declared that the St. Paul could do such heavy repairs and that his cost figures had been properly weighed for the difference in wage scales, etc. The allocation of overhead cost on the work in the company's own shops, he said, was negligible. His figures showed that the average cost of 20 locomotives of the first lot sent to the Baldwin Works, December, 1919, was \$27,527.59, compared with \$16,978.37 in the company's own shop, or an average increase of \$10,549.22 per locomotive and a total increase for the 20 of \$210,984.40. L. Olds, director, and M. B. Gregg, member of the research bureau, Railway Employees' Department of the American Federation of Labor, putting in their intervening evidence, called attention to extensive charts and exhibits to prove the concentration of railroad, equipment and banking control in the hands of a few leaders. They also brought in material seeking to show that the high prices of steel maintained during the year, when other commodity prices had been steadily declining, "had been held up with the deliberate purpose of creating a winter of unemployment." Quoting the *Railway Age*, Mr. Olds undertook to show that the failure of the railroads to buy in normal amounts had been one of the principal causes of industrial depression. The carriers, he said, buy about 20 per cent of all commodities and "it is not stating the case too strongly to say that in the past the railroads have been among the worst disturbers of general business conditions." The influence of railroad purchases of raw materials and unemployment was also introduced in detail.

Hearings closed on July 12 with the case of the Chicago, Burlington & Quincy, when Kenneth F. Burgess, attorney for the Burlington, asked that the commission grant new oral hearings at Washington, before the entire commission. New evidence was presented on the last day to show a different, and, it was believed, fairer basis of figuring repair cost other than that indicated by the commission. The new method shows cost in terms of tractive effort ton miles restored instead of comparing locomotive with locomotive.

### Railway Returns for May

The railroads of the United States had a net operating income in May of \$37,246,000, which was approximately \$7,997,000 more than that for April. This is the largest amount earned by the railroads since last November, when their net operating income was \$54,343,793. Eighty railroads—28 in the Eastern, 19 in the Southern and 33 in the Western districts—had operating deficits in May while in April the total was 91.

On the basis of the tentative valuation fixed by the Interstate Commerce Commission for rate making purposes under the Transportation Act, the amount earned in May would be at the annual rate of return of 2.41 per cent compared with 2.2 per cent the previous month, and the carriers fell short by \$55,490,000 or 59.8 per cent of earning the amount contemplated by the Act.

The ratio of operating expenses to revenues during the month fell to 85.4 per cent as compared with 86.69 per cent in April and 87.19 per cent in March. Total operating revenues in May were \$444,566,000 or 2.8 per cent less than they were during the same month in 1920, while operating expenses totaled \$379,715,000 or a reduction of 13.2 per cent. The net operating income was \$37,246,000 compared with an operating deficit of \$5,519,000 in May one year ago.

During the nine months since September 1, 1920, when the guaranty period expired, the net operating income of the carriers has been \$316,302,000, which on the basis of their tentative valuation, would be at the annual rate of return of 2.41 per cent. This sum is \$469,696,000 below the amount contemplated to be earned under the rates established by the commission.

## Traffic News

The Pere Marquette has inaugurated a new local freight service schedule coordinated with the present symbol train system and the plan is expected to provide a more prompt delivery of freight.

The Southern Pacific has placed three new steamships in service since last November and a tank steamer is to be delivered the latter part of 1921. The new steamships are the El Estero, El Isleo and the El Lago, while the tank steamer has been named Tamiahua.

The Baltimore & Ohio reports that, with the week ending June 4, 1,194 carloads of freight had been secured as a result of a campaign on that road by veterans' and other employees' for the solicitation of traffic. The road also reports that a substantial passenger business has been derived through the same agency.

Representative Christopherson, of South Dakota, introduced a resolution in the House of Representatives on July 6 requesting the Interstate Commerce Commission to take up for consideration forthwith the matter of freight rates, giving special attention to the rates on agricultural products including livestock, with a view of promulgating new and lower schedules.

Shipments of fruits and vegetables throughout the United States this season are greater than last, according to reports received by the Bureau of Markets of the Department of Agriculture. Carload shipments for the season up to June 4, 1921, the report shows, total 367,741 compared with 309,181 during the corresponding period in 1920, or an increase of 58,460 cars.

Notice of a 5 per cent reduction in freight rates on all lines in the state of Michigan, operating south of the main line of the Michigan Central, was filed with the Michigan Public Utilities Commission on July 5. Representatives of the Michigan Traffic League appeared before the commission, following notice of the decrease, to protest against the new rates. They argued that with the present system of zone rates the reduction would simply add another zone to the state and further complicate present conditions.

The output of soft coal during the week ended July 2, according to the weekly bulletin of the Geological Survey, was 7,591,000 net tons, or 125,000 tons less than that of the week preceding. The bulletin says the decline was probably due in part to the approach of the Fourth of July holiday. The cumulative production for the first half of the year was 196,000,000 tons, which is 41,000,000 tons behind the average for the eight preceding years. But, the bulletin says, before concluding that this subnormal production indicates a future shortage, the greatly decreased consumption of coal caused by the depressed condition of industry in general should be considered. Cumulative production is but little less than that in 1914, which was also a year of general business depression. In that year no shortage of soft coal occurred.

The annual convention of the American Association of Traveling Passenger Agents, will be held at the Hotel Utah, in Salt Lake City, Utah, from September 12 to 14, inclusive. C. H. Cutting, assistant general passenger agent for the Los Angeles & Salt Lake, and chairman of the executive committee of the association, announces that the program will begin the morning of September 12 with an address of welcome by Governor Mabey of Utah, while the afternoon will be devoted to a sight-seeing trip about Salt Lake and vicinity, as will the afternoons of September 13 and 14, with business sessions to be held in the morning. Harry M. Cushing is chairman of the local entertainment committee, while H. W. Stoutenborough heads the local reception committee. Gordan G. Noble of Philadelphia, Pa., president of the association, will deliver an address at the opening session.

The board of governors of the Southern Traffic League has requested that the Interstate Commerce Commission make a formal inquiry into railroad freight rates to determine whether their reduction would aid business at this time. The board took the position that the commission should not consider the problem on the basis of mere letters of protest from shippers and carriers, but should institute formal proceedings of investigation, at which the facts can be developed from the sworn testimony and thus bring about a more orderly consideration of the question. In a letter to the commission the board said that whereas the President, Cabinet officers and members of Congress are urging that reduced rates be established as soon as possible, the commission has put itself in a position where it is being criticized for its failure to assist the administration and because of its handling of the problem on a purely informal basis. The letter asserts that if the commission should institute a formal investigation, much futile clamor for reduced rates would cease and, on the other hand, those whose claims are based upon merit would be able to present their arguments in an orderly way and receive a decision that would be controlling.

**Traffic Statistics for April**

The number of tons of revenue freight carried one mile by 174 Class I roads in April, not including switching and terminal companies, was 22,783,939,000 as compared with 27,323,760,000 in April, 1920, according to the monthly bulletin of traffic statistics published by the Interstate Commerce Commission. The average haul per road was 190 miles as compared with 185 miles last April. The average revenue per ton mile was 1.334 cents. The revenue passengers carried one mile were 2,832,811,000 as compared with 3,552,683,000. The average miles per passenger per road was 33.98 as compared with 36.09. The average revenue per passenger mile was 3.19 cents.

**Anthracite Shipments—June, 1921**

The shipments of anthracite for June as reported to the Anthracite Bureau of Information at Philadelphia, amounted to 6,031,937 gross tons, as compared with 5,793,895 tons in May, an increase of 238,042 tons. Cumulative shipments for the first three months of the present coal year beginning April 1, have amounted to 17,793,297 gross tons, as compared with 17,290,046 tons for the corresponding period in 1920, an increase of a little over 500,000 tons. The average monthly shipments for the present coal year have been 5,931,000 tons, against 5,780,560 tons for the coal year 1920-21, and 5,923,557 tons in the coal year 1919-20, and have exceeded the averages for any preceding years with the exception of the two war years 1917 and 1918, when washery coal recovered from the culm banks furnished a temporary excess supply.

Shipments by originating carriers were as follows:

	June, 1921	May, 1921
P. & R. R. W.....	1,157,738	1,108,476
L. V. R. R.....	1,069,521	1,027,688
C. R. R. of N. J.....	571,213	544,716
D. L. & W. R. R.....	1,009,119	915,191
D. & H. Co.....	763,893	753,039
Penna. R. R.....	441,693	409,027
Erie R. R.....	555,882	630,574
N. Y., O. & W. R. R.....	163,742	153,809
L. & N. E. R. R.....	299,136	251,375
Total.....	6,031,937	5,793,895

The bureau estimates that domestic consumers have in their cellars one and a quarter millions more coal than they had a year ago.

THE CHEAPNESS OF FREIGHT TRANSPORTATION in the New York State Barge Canal was discussed at length in the meeting of the Great Lakes, Hudson & Atlantic Waterways Association at Buffalo, N. Y., on June 29; and representatives of the Standard Oil Company and the General Electric Company told of the advantages they had derived from using the canal for certain classes of traffic. The Standard Oil Company runs barges between Rochester and New York City. The General Electric Company was able to use boats for cargoes in both directions between Schenectady and New York City.

**Commission and Court News**

**Interstate Commerce Commission**

The commission, upon its own motion has ordered an investigation into the question of the transportation of strawberries by express in carload lots in passenger trains from Florida to northern markets, and of requiring the express companies or the railroads to provide themselves with and furnish refrigerator cars for use in that transportation.

The commission has further suspended until August 29, the operation of an item published in Agent E. B. Boyd's tariff which proposes to reduce from 60,000 lb. to 33,000 lb., the carload minimum weight of sugar, from points in Colorado, Idaho, Kansas, Nebraska and Utah to destinations in Arkansas, Colorado, Iowa, Kansas, Louisiana, Missouri, Nebraska, New Mexico and Oklahoma.

The commission has rendered a decision finding that the charges for the transportation of passengers in sleeping and parlor cars required by state authority to be maintained by railroads within the state of Alabama are discriminatory against interstate commerce and the railroads were ordered to increase these charges by the amount of the increase authorized by the commission in the general rate advance case. The Alabama state commission had ordered a discontinuance of the surcharge for intrastate traffic after December 23, 1920.

The Public Utilities Commission of Kansas has filed a petition with the Interstate Commerce Commission asking a reduction in the interstate freight rates on grain, grain products and hay between all points in the Western group. The petition states that the latest advance in rates of 35 per cent in the Western group "vitiate all attempts at a readjustment toward economic normalcy" and is under present conditions unjust, unreasonable and discriminatory. It is stated that owing to a reduction in the market price of grain and hay unaccompanied by a reduction in the freight rate, the producers of Kansas are financially in a precarious position and that the result is destroying business throughout the West. The members of the Kansas commission, accompanied by members of the Kansas delegation in Congress, were to call on Chairman Clark of the commission on Thursday of this week to present the petition and ask for early action.

The Interstate Commerce Commission has made public a tentative report of an examiner representing the first formal case before the commission involving the reasonableness of rates for the transportation of oil through pipe lines. The examiner finds that the rates for the transportation of crude oil by pipe line from the mid-continent field of Oklahoma and Texas to Franklin and Lacy Station, Pa., are not unreasonable, but that the rule of the Prairie Pipe Line Company requiring shipments to be tendered in quantities of not less than 100,000 barrels is unreasonable to the extent that it requires tenders in excess of 10,000 barrels. The commission was asked to reduce the rates by the amount of the so-called gathering charge covering the transportation from producer's tanks to the trunk line of the pipe line system, which rate when the complaint was filed was 12 cents, but in September 1920, was increased to 20 cents. The commission was also asked to reduce the minimum to 2,000 barrels. The report says the only evidence offered as to the reasonableness of the rates was certain statistical tables pertaining to the earnings of the pipe line companies. The present minimum was held by the examiner to be unreasonable on the ground that it required an investment on the part of the shipper of approximately \$450,000 for tankage and oil in order to obtain service.

Western state commissions are being asked to join the Kansas Public Utilities Commission in a petition to the Interstate Commerce Commission for a general investigation of rates on grain, grain products and hay on the western railroads. At the same time, the chairman of the Kansas commission and the Kansas

delegation in Congress on July 7, at which the Kansas commission presented a petition asking the Interstate Commerce Commission to reduce the rates. Chairman Clark of the Interstate Commerce Commission asked whether it would be agreeable, if an investigation should be ordered, for the representatives of the grain producing states to appear before the commission in Washington and thus eliminate the necessity for holding various hearings in the different states. After the meeting J. E. Benton, solicitor for the state commissioners' association, telegraphed to the western state commission to get their views, in the hope that the plan of holding a single hearing would expedite the case. Chairman Clark said the commission realized the serious situation in the agricultural states and that it would approach the matter sympathetically. Chairman Reed, of the Kansas commission, predicted a shortage of box cars in Kansas within the next few days. He said the railroads have not furnished as many cars as they have promised and complained because some of the stronger western roads do not make more progress in repairing bad order cars.

### Regulations for Transportation of Explosives

The Bureau of Traffic of the Interstate Commerce Commission has issued the following notice to carriers:

"By amendment to the penal laws of the United States, approved March 4, 1921, the commission is required to formulate regulations for the safe transportation of explosives and various other classes of dangerous articles which shall be binding upon all common carriers that transport such articles by land or by water. Such regulations are law to the carriers as well as to the shippers and they cannot be changed except by act of Congress or by this commission.

"In the interest of safety and in view of the requirements of the statute, it is important that the regulations should be given the widest publicity. For convenience of tariff reference and in the interest of accuracy and authoritative publication such publicity may and should take the form of a separate tariff duly filed with the commission by all carriers affected and regularly posted under the provisions of section 6 of the interstate commerce act. Such a tariff circular may be most economically prepared and filed by a joint agent acting under powers of attorney granted by the respective lines. The Bureau of Explosives, 30 Vesey street, New York, N. Y., has expressed willingness to undertake publication and filing upon due execution of appropriate powers of attorney, and classification committees have endorsed that plan of publication. The bureau is in constant touch with shippers and carriers and seems peculiarly fitted to act as joint agent in this matter. The commission has no especial preference but makes free to express the thought that publication and filing by the bureau will be found more economical and satisfactory. It will expect publication and filing in tariff form within a reasonable time. It will afford the carriers a reasonable opportunity to formulate their plan of publication but some plan must be decided upon and put into effect promptly."

### Personnel of Commissions

Charles F. Staples, who has been associate director of valuation of the Interstate Commerce Commission, has been appointed acting director of valuation. Mr. Staples was formerly chairman of the Minnesota Railroad and Warehouse Commission.

J. A. Little, of the traffic department of the Railroad Administration, who has been in charge of short line adjustments, has been appointed to take charge of rate analyses and the supervision of accounting regulations for the Nebraska Railway Commission. Mr. Little was formerly connected with the North Dakota Commission and during the period of federal control was with the Railroad Administration handling car service matters in the short line section.

### Court News

The State of Texas' temporary injunction withholding the scrapping of the Southwestern railway, extending 27 miles from Henrietta to Archer City, has been set aside by the Federal Court. It is expected that as a result of the decision, the road will shortly be junked.

## Foreign Railway News

### German Interests to Build Railways in Bulgaria

LONDON

Hugo Stinnes, the German industrial leader, has formed a German-Bulgarian company for the construction of railways in Bulgaria. The new work involves some 170 miles of line.

### New Zealand Railway Orders

New Zealand has placed orders with British firms amounting to some \$8,000,000 for 12,000 tons of rails, 2,500 freight cars and 45 locomotives. The New Zealand government has also allocated about \$25,000,000 for the development of hydro-electric works in that country.

### Belgium Makes Lowest Bid on Rails for Argentina

According to Commercial Attaché Feely at Buenos Aires the lowest bids on 7,000 tons of steel rails for the Argentine Government Railways which were opened on May 20 were \$42 (at the current rate of exchange) per metric ton (2,205 lb.) by a Belgian concern and \$44 by a German concern. The lowest American bid was \$58.

### Great Western of Brazil to Extend Lines

The Great Western of Brazil has made arrangements with the federal government for a number of extensions in the states of Parahyba, Pernambuco and Alagoas, the work to be inaugurated within 60 days after specifications are approved. To cover the expense of the work the government will issue some \$24,000,000 of securities (milreis to dollars at par).

### Railway Commission Appointed in Peru

The government of Peru has, according to Commerce Reports, recently appointed a commission to "study the needs of the railways and to formulate changes in the general railway ordinance." The occurrence of several serious accidents lately, it is said, which have been attributed to faulty rolling stock, gave rise to the discussion which brought the matter to the attention of the government. The Minister of Public Works will head the new commission.

### Second Hand Railway Material for Mexico

Second-hand railroad construction material to the value of several million dollars may be purchased by the Mexican government for use upon extensions of the National Railways of Mexico which are now being built, according to advices received here from the City of Mexico. It is stated that former Governor W. P. Hobby of Texas is now in the capital and that he has submitted a proposition to President Alvaro Obregon for the sale of this material. Most of the rails which are offered come from abandoned logging roads in East Texas. Mr. Hobby is also negotiating for the sale of many thousand railroad cross-ties.

### English Coal Strike and the Railways

LONDON

Statistical reports have just been published showing how the first month (April) of the English coal strike affected the railways. The number of passenger journeys, excluding commutation travel, was 16.48 per cent less than in the preceding month and passenger train miles were reduced by 20.38 per cent. The total freight tonnage decreased 67 per cent as compared with April, 1920, and there was a decrease of 62 per cent in ton-miles. The average car load was 3.70 tons as against 5.45 tons in April, 1920, and the average train load was 94 tons as against 133 tons, or a decrease of 32.1 per cent and 29.3 per cent, respectively. The number of freight cars under and awaiting repair on April 30, 1921, was 3.1 per cent as compared with 5.4 per cent at the end of April last year.

### Proposed Extensions of a Mexican Railway

Financial interests which are said to be identified with Wells, Fargo & Company have purchased the Pachuca, Zimapan & Tampico Railroad, according to advices received from Pachuca. It is stated that the owners have taken preliminary steps to extend the line to Tampico, a distance of about 300 miles. Engineers have been in the field for some time making surveys of the route of the proposed extension. At Pachuca direct rail connection with the City of Mexico will be obtained. The project involves difficult engineering and construction work, on account of the almost precipitous decline of the mountains to sea level which the track will have to negotiate. This projected short line between Tampico and the capital has been talked of for many years and several different attempts to build the road have been made. The National Railways of Mexico had the line under construction at the time the Madero revolution was started ten years ago, but the project had to be abandoned on account of the upheaval.

### New General Manager for Great

#### Western Railway (England)

LONDON

Felix J. C. Pole has been appointed general manager of the Great Western Railway (England), superseding Charles Aldington, C. B. E., who has been compelled to resign owing to ill-health.

Mr. Pole entered the service of the Great Western Railway in the telegraph department at Swindon in 1891. He passed through the electrical engineer's and civil engineer's departments and in 1904 received an appointment on the general manager's staff, becoming assistant general manager in 1919. Mr. Pole was editor of the Great Western Railway Company's official magazine, and was the first to advocate the "Safety First" movement in Great Britain. He is an authority on labor questions, having been secretary to the company on the staff conciliation boards. He is a member of the Central Wages Board, and a strong supporter of the recent agreement between the railway companies and the trade unions.

### American Concern to Build

#### Important Bolivian Railroad

The Ulen Contracting Corporation of New York and Chicago has been awarded a contract by the Bolivian government for the construction of a railway from Atocha, Bolivia, to Villazon on the Argentine frontier. This line will connect the Bolivian system with that of Argentina and will shorten considerably the time necessary to make the trip from this country to Buenos Aires. This connecting line will be 128 miles in length and of meter gage, the Bolivian standard. The company will not only build the road but also all necessary buildings and will equip its shops and purchase motive power and rolling stock. In financing the work the company has assisted by purchasing \$7,000,000 of bonds from the Bolivian government. Surveys are being made now and work will begin by January 1. The country which the road must negotiate is quite difficult and five years are allowed for the completion of the line.

The Ulen Corporation is at present working on sanitation plants at La Paz and Cochabamba, Bolivia, involving some \$2,250,000. This work is about 50 per cent completed. The company is also building the 18-mile Shandaken water tunnel for the New York Board of Water Supply.

### Spanish Railway Bill Proposes

#### Government Ownership

Senor La Cierva, Minister of Public Works of Spain, has presented in the Spanish congress a bill providing for the gradual Nationalization of the railways of Spain, according to the Railway Gazette (London). The concessions to private lines were for 99 years and most of them have 40 years to run. This time has been reduced to 30 years in the new bill, giving the government the right, however, to foreclose at any time by the purchase of the outstanding capital stock at the rate of the average dividend for the past 10 years based on a 25 years' purchase.

Meanwhile the government is to enter into a partnership

with each company, each company to contribute its present capital stock and the government to contribute the funds it has already advanced and advances hereafter for increased wages and improvements. The capital thus contributed by the railways will receive a guaranteed dividend equal to the average for the past 10 years, but not more than 3 per cent. The first distribution of profit is to be 5 per cent to the government on its contribution. After the payment of the guarantee to the owners and the 5 per cent to the government there is to be paid a preference dividend to the owners and the government (that of the government to be 2 per cent on its investment) out of the remaining funds. There is to be a further dividend of 1 per cent to the companies and a bonus of 1 per cent to the personnel, if the funds are available, and further profits are to be distributed pro rata between the companies and the government.

Rates are to be fixed to pay all expenses, but the state may fix an unremunerative tariff on guaranteeing to cover the resulting deficit. Foreigners may not number more than one-third the board of directors of any company and no equipment or supplies to be had in Spain are to be purchased abroad. The operation of the roads is to be managed by a "Supreme Railway Council," on which representatives of the government, the owners, the employees and the public are to sit. Provision is made for the issue of loans for additions and improvements.

### John Fritz Medal Awarded to

#### Prominent English Metallurgist

As the seventeenth recipient of the John Fritz Medal, Sir Robert A. Hadfield, Bt., D.S., D.Met., F.R.S., was honored at the engineering conference of the Institution of Civil Engineers,

England, on June 29. Sir

Robert was unanimously

chosen metallist for the

year 1920, by the John

Fritz Medal Board of

Award for his invention

of manganese steel. The

presentation was made

by a committee made up

of Ambrose Swasey,

president, Warner &

Swasey Company, Cleve-

land, and chairman of

the John Fritz Medal

Board of Award, who

delivered the presenta-

tion address; Dr. Ira N.

Hollis, president,

Worcester Polytechnic

Institute, who presented

a memorial address on

behalf of the United En-

gineering Societies;

Charles T. Main, representing the American Society of Civil

Engineers; Dr. F. B. Jewett, representing the American Insti-

tute of Electrical Engineers; Christopher R. Corning, delegate

from the American Institute of Mining and Metallurgical En-

gineers; Colonel Arthur S. Dwight, representing the American

Institute of Mining and Metallurgical Engineers; John R. Free-

man, past president of the American Society of Mechanical En-

gineers, and Charles F. Rand, member and secretary of the John

Fritz Medal Board of Award. The presentation was attended

by George Harvey, the American Ambassador to Great Britain,

Lord Bryce and by high officials of the British government.

Sir Robert was born at Sheffield, England, November 2, 1859.

He was educated at the Sheffield collegiate school and entered

his father's works in 1876, becoming chairman and managing di-

rector of Hadfields, Ltd., in 1888. His discovery of manganese

steel dates from the year 1882. Sir Robert is a past president

of the British Iron and Steel Institute, a past president of the

Faraday Society and is an honorary member of many American

scientific societies. He was made a baronet in 1917.

Advantage was taken of this occasion by the technical so-

cieties of America for officially expressing the obligation which

the United States and the world generally owes to the engineer

in Great Britain for the part they played in winning the war.



R. A. Hadfield

## Equipment and Supplies

### Locomotives

THE PEKIN-MUKDEN RAILWAY (China) has ordered 5 Pacific type locomotives, from the Baldwin Locomotive Works.

THE CHINESE GOVERNMENT RAILWAYS, reported in the *Railway Age* of April 15, as inquiring for 35 locomotives, have placed an order with builders in Belgium, for 30 Prairie type locomotives, and 6 English type locomotives.

THE NATIONAL RAILWAYS OF MEXICO have ordered 8 Mikado type locomotives from the Baldwin Locomotive Works. These are in addition to the 10 Pacific type locomotives ordered from the same builders as reported in our issue of July 9.

### Freight Cars

THE TOLEDO & OHIO CENTRAL is asking for prices on the re-repairing of 250 steel coal cars of 50 ton capacity.

THE TENNESSEE, ALABAMA & GEORGIA has renewed its inquiry for 100 50-ton gondola cars and 150 50-ton box cars.

THE WESTERN PACIFIC has ordered 25 30-yard extension side dump cars, of 50 tons capacity, from the Clark Car Company, Pittsburgh, Pa.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has let 100 underframes and 100 gondola superstructures to the Haskell & Barker Car Company. This road is also in the market for repairs on 1,000 gondola cars.

THE CHINESE GOVERNMENT RAILWAYS, reported in the *Railway Age* of January 28, as inquiring for from 500 to 1,500 freight cars have placed orders for 300 cars with the American Car & Foundry Company, 600 with the General American Car Company and 240 cars with builders in Belgium.

### Iron and Steel

THE GREAT NORTHERN is inquiring for 200 tons rolled steel wheels.

THE ILLINOIS CENTRAL is inquiring for 50 tons of locomotive forgings.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 100 tons rolled steel wheels.

THE LEHIGH VALLEY has ordered 2,700 tons of steel, for a transfer table at its Claremont, Jersey City, N. J., terminal.

MITSUI & COMPANY, New York, has ordered from the U. S. Steel Products Company, 1,850 tons of steel bridge material, for the Hanshin Electric Railway, Japan.

### Track Specialties

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 200 tons universal plates and angles.

THE SOUTHERN PACIFIC is in the market for 4,800 kegs of spikes and 3,300 kegs of track bolts.

THE PEORIA & EASTERN is inquiring for 7,000 A. S. C. E. rail wrought iron tie plates f. o. b. its own tracks.

THE CINCINNATI NORTHERN is inquiring for 29,900 tie plates for 80 lb. A. S. C. E. rail, f. o. b. its own tracks.

THE CLEVELAND, CINCINNATI & ST. LOUIS is inquiring for 155,000 Dudley rail and A. S. C. E. rail tie plates f. o. b. its own tracks.

MITSUI & COMPANY, New York, has ordered from the U. S. Steel Products Company, 63 sets of railroad switches for the Tokio Municipal Railway.

## Miscellaneous

THE GREAT NORTHERN is inquiring for 100 tons of wire products—fencing, etc.

THE BALDWIN LOCOMOTIVE COMPANY has been given a large order for locomotive forgings, for export to India.

THE SHANTO RAILWAY has ordered, through Mitsui & Co., New York, from the Consolidated Steel Corporation, 900 steel tires for freight car wheels.

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock noon, July 20, for: 18 steel coil engine truck springs; 200 D-level soft steel bars; 120 rods of wire fencing; 2,500 pairs 85-lb. steel angle bars; 100,000 tie dating nails; parts for electrical apparatus, and electrical material.

### Signaling

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has placed orders with the Hall Switch & Signal Company, Garwood, N. J., for 153 style "LN" upper quadrant, three-position semaphore signals, which will be installed by the railroad company's forces.

### Trade Publications

**WATERPROOFING.**—Bulletin No. 101 issued by the Minwax Company, Inc., New York, describes the structures built by that company in connection with the track elevation project at Tonawanda, N. Y., with particular reference to the manner in which they were waterproofed. Various details of the expansion joints, culverts, gutters, down-spouts, etc., are described and illustrated with sketches. The particular object in mind in the preparation of the matter in this bulletin has been to point out the practical methods of handling the various details involved in the typical waterproofing project.

**BREAKDOWN INSTRUCTIONS, THE YOUNG LOCOMOTIVE VALVE GEAR.**—An eight-page pamphlet, bound in stiff paper cover, has been issued by the Pyle National Company, Chicago, describing the proper methods of procedure in case of the failure of various parts of the valve motion, in order that the locomotive may proceed on one side. Introductory to the breakdown instructions is a clear and concise illustrated description of the operation of the Young valve gear, which in the case of a number of the failures enumerated will continue to provide lap and lead motion on the affected side in addition to complete operation of the valve on the unaffected side.

**LACKAWANNA STEEL SHEET PILING.**—The Lackawanna Steel Company, Lackawanna, N. Y., has issued bulletin No. 109, 172 pages, illustrated, which is descriptive of the various types of sheet piling manufactured by this company and its application to construction work. The bulletin in reality is a text book on the application of sheet steel piling in construction work, wherein water, earth or other material is to be retained as in cofferdams, open caissons, foundations of bridges and buildings, etc. The application of sheet piling to all of these various classes of work is not only described in the written matter but is also illustrated by a large number of photographs showing the actual installations. Other photographs and drawings show all of the various types manufactured by this company as well as the different combinations for which they are adapted. Other sections of the bulletin describe and illustrate various methods for handling the piling under unusual or difficult conditions.

THREE UNIDENTIFIED TRESPASSERS were killed on June 30, when nineteen cars of a Missouri, Kansas & Texas freight train went into a ditch one mile north of Troy, Tex., and were destroyed by fire, originating in an oil car of the train. Two of the cars destroyed carried live stock.

## Supply Trade News

A. F. Zacher has resigned as district manager of the Buffalo office of the Economy Fuse & Manufacturing Co., Chicago.

The Walworth Manufacturing Company has removed its general offices from its Boston factory, First and O streets, to Pearl and High streets, Boston, Mass.

John Hyland has been appointed representative of the Globe Seamless Steel Tube Company, with headquarters in the Fourth National Bank building, at Atlanta, Ga.

The National Machinery Company, Tiffin, Ohio, has opened an eastern sales office in room 637, Knickerbocker building, Broadway and Forty-second street, New York City, in charge of F. J. Mawby.

G. A. Nelson, special representative of the Waterbury Battery Company, of Waterbury, Conn., has been elected vice-president and general sales manager, with headquarters at New York. Mr. Nelson was born in Chicago, and started his business career in that city with E. W. Gillett. In 1896 he was in Toronto, Ontario, in temporary charge of the Canadian business of E. W. Gillett, of Chicago. The following year he came to New York to open up and become manager of a branch factory of the Champion Chemical Works, Chicago, grinders and packers of caustic soda and similar chemicals. In 1901 he was elected secretary and treasurer of the Gordon Primary Battery Company, and continued his connection with that company until January 1, 1916, at which time he accepted the agencies for several lines of railway tools and supplies. In March, 1917, he was appointed special representative of the Waterbury Battery Company, and he now becomes vice-president and general sales manager of the same company, as noted above. Mr. Nelson has been an active member at the various railroad conventions. Since 1914 he has been secretary-treasurer of the Railway Telegraph & Telephone Appliance Association.

Victor M. Summa has opened an office as general consulting engineer at 415 Merchants-LaCade building, St. Louis, Mo. Mr. Summa was formerly in the service of the American Brake Company, St. Louis.

The Dominion Oxygen Company, Ltd., will begin work in July on a new oxygen plant at Montreal, Que., to cost \$250,000. The building will be 100 ft. by 100 ft., and will be a duplicate of the company's Toronto plant.

Barbour, Love & Woodward, Inc., machine tool dealers, formerly at 149 Broadway, has moved its temporary office and warehouse from 131 Washington street to its new offices and show rooms at 45 West Eighteenth street, New York City.

The Badger Concrete Mixer Company of Milwaukee and Watertown, Wis., has purchased a 27½ acre tract of land at Winthrop Harbor, Ill., north of Chicago, where it will erect a factory unit, 80 ft. by 260 ft. One-half of the tract is to be used for the erection of dwellings for its workmen and officers. In addition to its own line the company will manufacture at this plant the McVicker tie plate for the Railway

Safety Tie Company. It is expected that the factory will be completed for occupancy early in the Fall.

The Goddard & Goddard Company, Inc., Detroit, Mich., has opened an eastern sales office and permanent exhibition of milling cutters in the rooms of the Manufacturers Exhibit, Inc., 45 West Eighteenth street, New York. James W. Sederquist, eastern sales manager, is in charge of the sales office and exhibit.

The Dressel Manufacturing Corporation, New York, which is a reorganization of the Dressel Railway Lamp Works, has increased its capital to \$1,150,000 and has plans nearing completion for building a new and larger plant at Buffalo, N. Y. William Smith, who is president of the new corporation, is well known in the railroad field, having been in the railroad and railway supply business for over 30 years. He resigned as vice-president and general manager of the Montana Southern Railway to assume his new duties. F. W. Dressel is vice-president of the new corporation and F. H. Gregory is secretary and treasurer.

The Western Electric Company has opened a new warehouse at 395 Hudson street, New York City. The building occupies the entire square block bounded by Hudson, West Houston, Greenwich and Clarkson streets, an area of 338 ft. by 200 ft., with a total floor space of 706,000 sq. ft. Several departments of the Western Electric have already moved into the new quarters, but the New York shops and the supply divisions of the Eastern district territory, which includes New York, New Jersey, Pennsylvania and the New England states, and the International Western Electric Company will not remove to the same building at the present time.

Crerar, Adams & Company, Chicago, Ill., western sales agent for B. M. Jones & Co., Inc., New York, will in future carry a complete stock of Double Mushet high speed steel, also Titanic carbon tool steels, and can supply Taylors' Best Yorkshire Iron, in Chicago. F. W. Clifford, associated for a number of years with Crerar, Adams & Co., as a tool steel expert, will in future specialize on Mushet and Titanic tool steels. The Connelly & Kendal Company, 115 St. Clair avenue, N. W., Cleveland, Ohio, is now managing the Jones company's Cleveland branch, and R. G. White, who was manager of the Cleveland branch, has been appointed special western representative, with headquarters in Chicago.

## Obituary

Henry S. Manning, who retired in 1905, as senior partner of Manning, Maxwell & Moore, New York, died on July 9, in New York City, at the age of 76. Mr. Manning established the firm of H. S. Manning & Co., New York, in 1880, its name was changed to Manning, Maxwell & Moore, and in 1905, the present corporation was organized. After leaving Manning, Maxwell & Moore, Mr. Manning became interested in the firm of Milliken Brothers, New York. He was a member of the executive committee of the Kansas City, Mexico & Orient Railroad.

Albert Taylor, manager of the North Atlantic district, of the Electric Storage Battery Company, Philadelphia, Pa., died suddenly on July 6. He was taken ill in his office in New York City and died a few hours later in a hospital. Mr. Taylor was born in Liverpool, England, on February 6, 1864, and in 1884, he was graduated from Princeton University. He served an apprenticeship with the Edison General Electric Company and in 1885, joined the United States Electric Company. This company was absorbed by the Westinghouse Company in 1889, and in the Spring of 1890, Mr. Taylor became associated with the Stanley Electric Manufacturing Company, Pittsfield, Mass., remaining in its employ for eight years. In 1898, he entered the service of the Electric Storage Battery Company, as a salesman in its New York office. In January, 1900, he was made assistant manager; in March of the same year he was appointed manager of the New York office, and since February, 1920, he was manager of the North Atlantic district.



G. A. Nelson

# Railway Financial News

**ARKANSAS & LOUISIANA MISSOURI.—Authorized to Issue Stock.**—The Interstate Commerce Commission has authorized this company to issue at par for cash \$1,000,000 of capital stock, the proceeds to be used in acquiring and rebuilding a line from Monroe, La., to Crossett, Ark., formerly owned by the Arkansas & Louisiana Midland.

**ATLANTIC COAST LINE.—Not to Absorb L. & N.**—There has been no consideration of a consolidation of the Atlantic Coast Line and the Louisville & Nashville, according to a statement issued by Henry Walters, chairman of the boards of both companies.

**ATLANTIC COAST LINE.—To Lease California Southern.** This road will take over the properties of the California Southern, under a one-year lease, with an option to buy, effective on August 1. The railroad is 50 miles long and extends from Rice to Ripley and is reached from Barstow via the Santa Fe-Phoenix cutoff.

**BALTIMORE & OHIO.—Authorized to Issue Bonds.**—The Interstate Commerce Commission has authorized an issue of \$1,624,000 of refunding and general mortgage 6 per cent bonds for pledge and repledge from time to time as collateral security for short-term notes. The subsidiaries of the Baltimore & Ohio were also authorized to issue various bonds upon its order to the trustees under certain mortgages.

**CALIFORNIA SOUTHERN.—Leased to A. T. & S. F.**—See Atchison, Topeka & Santa Fe.

**CANADIAN NORTHERN.—Bond Sale.**—A banking syndicate, composed of the National City Company, Guaranty Trust Company of New York, Blair & Co., Inc., Lee, Higginson & Co., Bankers Trust Company and the Continental and Commercial Trust and Savings Bank of Chicago, have sold \$25,000,000 25-year 6½ per cent sinking fund gold debenture bonds at 96½ and interest to yield about 6.80 per cent.

The bonds are non-callable, dated July 1 and due July 1, 1946. A sinking fund of \$500,000 per annum is to be made available in equal installments during each six months for the purchase of bonds in the market, if obtainable at or below par. The bonds are the direct obligation of the Canadian Northern Railway Company which is owned by the government of the Dominion of Canada and forms part of the Canadian National Railways System, which will consist of over 22,000 miles, extending from the Pacific Ocean and reaching every important traffic center in Canada.

**CHARLES CITY WESTERN.—Authorized to Issue Bonds.**—The Interstate Commerce Commission has authorized an issue of \$373,600 of 10-year 6 per cent first mortgage notes, \$200,000 of the amount to be pledged and the remainder to be sold at not less than par.

**CHICAGO, ROCK ISLAND & PACIFIC.—Authorized to Issue Equipment Notes.**—This company has been authorized by the Interstate Commerce Commission to issue \$6,470,230 of rent notes for the purchase of equipment through the National Railway Service Corporation, to guarantee the obligations of the service corporation to the United States for a loan of \$1,568,540 and to pledge securities with the Secretary of the Treasury to secure the loan.

**DENVER & RIO GRANDE.—I. C. C. to Investigate Relations with W. P.**—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

**DENVER & RIO GRANDE WESTERN.—Authorized to Issue Stock.**—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

**EL PASO & SOUTHWESTERN.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1-Dec. 31)	\$11,865,369	
Operating expenses (March 1-Dec. 31)	8,826,313	
Net from railway operation	3,039,057	
Taxes	1,109,872	
Railway operating income	1,929,900	
Miscellaneous operating income (credit)	4,301	
Total operating income	1,924,599	

Income from lease of road	689,186	\$4,135,114
Gross income	3,524,814	5,599,094
Deduct—Rent for leased roads	1,948,859	1,927,032
Total deductions from gross income	2,474,500	2,470,384
Net income	1,097,314	3,128,710
Dividend appropriations	1,097,314	2,000,400

The annual report of the El Paso & Southwestern will be reviewed editorially in an early issue.

**FLINT BELT.—Perc Marquette Applies for Control.**—See Perc Marquette.

**GRAND TRUNK.—Arbitration Proceedings Ended.**—The arbitration proceedings which are eventually to decide the value to be allowed to the English holders of first, second and third preferred and the common stock of the Grand Trunk Railway, now taken over by the Dominion Government, together with actual ownership and control of the whole Grand Trunk system, came to an end in Montreal on July 8. The board has been in session, with one break of eight weeks, since February 1.

**GREAT NORTHERN.—Bond Syndicate Ends.**—The banking syndicate which sold \$20,000,000 Northern Pacific-Great Northern joint 15-year 6½ per cent bonds was dissolved July 5.

**ILLINOIS CENTRAL.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$8,000,000 of 15-year 6½ per cent secured gold bonds and to pledge as collateral security therefor \$8,225,000 of Illinois Central refunding mortgage 4 per cent gold bonds and \$3,820,000 of Illinois Central and Chicago, St. Louis & New Orleans joint first and refunding mortgage 5 per cent bonds. The new bonds are to be dated July 1, 1921, and the company has tentatively accepted an offer from Kuhn, Loeb & Co. to take them at 93¼. The proceeds are to be used to retire maturing obligations. The Illinois Central and the Chicago, St. Louis & New Orleans have also asked authority to issue \$136,700 of their joint 5 per cent bonds to reimburse the treasury for advances for expenditures on the Chicago, St. Louis & New Orleans.

**KANSAS CITY SOUTHERN.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues	\$18,668,388	
Operating expenses	15,051,665	\$90,477
Net from railway operation	3,616,723	
Taxes	833,550	100,970
Income from lease of road	485,919	3,536,228
Federal guaranty of income	1,130,332	
Gross income	4,807,939	3,636,425
Interest on funded debt	1,883,277	1,835,392
Total deductions from gross income	2,883,388	2,102,330
Net income	1,924,654	1,534,679
Dividends	840,000	840,000
Income balance	1,084,654	502,679

The annual report of the Kansas City Southern will be reviewed editorially in an early issue.

**KANSAS, OKLAHOMA & GULF.—Authorized to Issue Bonds.**—The Interstate Commerce Commission has authorized an issue of \$203,478 of 6 per cent cumulative income bonds for the purpose of satisfying claims against the Missouri, Oklahoma & Gulf railway and railroad companies which existed prior to the receivership.

**LIBERTY WHITE.—Asks Authority to Abandon Line.**—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of 24½ miles from Liberty to South McComb, Miss.

**LOUISVILLE & NASHVILLE.—Merger with A. C. L. Denied.**—See Atlantic Coast Line.

**MINNEAPOLIS & ST. LOUIS.—Authorized to Issue Equipment Notes.**—This company has been authorized by the Interstate Commerce Commission to issue \$1,593,033 of rent notes under the terms of the contract with the National Railway Service Corporation, to assume obligation as guarantor in respect of obligations of the service corporation to the United States for a loan of \$386,190, and to pledge with the Secretary of the Treasury securities to secure the repayment of the loan.

**MISSOURI, KANSAS & TEXAS.—Authorized to Extend Receivers' Certificates.**—The Interstate Commerce Commission has author-

ized the receiver to extend the maturing of \$3,000,000 of receivers' certificates from February 15, 1921, to February 15, 1922.

**NEW YORK CENTRAL.**—A review of this company's annual report for 1920 appears on another page of this issue.

**NORTHERN PACIFIC.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.**—*Authorized to Assume Additional Liability.*—This company has been authorized by the Interstate Commerce Commission to assume additional liability upon \$14,755,500 of its outstanding first and refunding mortgage 4 per cent bonds by the modification of the tax covenant therein, and the Union Pacific has been authorized to guarantee the payment of principal and interest thereon. The bonds are to be delivered to W. A. Clark as part payment for his interest in the Los Angeles & Salt Lake.

**PERE MARQUETTE.**—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for approval and authority for its acquisition of control of the Flint Belt by purchase of its capital stock. The Flint Belt has just been organized to construct a belt line at Flint, Mich.

**PHILADELPHIA & READING.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation accrued under federal control.....	\$2,656,513	\$16,009,826
U. S. Government guaranty.....	7,969,539	.....
Operating revenues (Sept. 1 to Dec. 31).....	38,547,921	.....
Operating expenses (Sept. 1 to Dec. 31).....	31,587,469	.....
Net revenue from operations.....	\$6,960,452	.....
Taxes.....	981,454	.....
Gross income.....	15,514,922	16,351,892
Deductions:		
Rent for leased roads.....	3,488,833	3,480,759
Interest on funded debt.....	1,956,195	1,961,582
Total, including other.....	\$5,874,863	\$6,640,353
Less corporate charges not included above:		
U. S. income taxes Jan. 1 to Aug. 31, 1920, and for year ended Dec. 31, 1919.....	596,000	1,089,515
Corporate expenses, January and February, 1920, and for year ended Dec. 31, 1919.....	33,269	629,269
Net income.....	\$9,010,790	\$8,460,763
Appropriated for investment in physical property.....	2,538,571	4,500,100
Dividends.....	6,372,255	4,248,170
Income balance.....	6,430,825	3,960,663

The annual report of the Philadelphia & Reading will be reviewed editorially in an early issue.

**ROCK ISLAND, ARKANSAS & LOUISIANA.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the issue of \$227,000 of first mortgage 4½ per cent gold bonds to the Chicago, Rock Island & Pacific for money advanced for certain additions and betterments.

**TENNESSEE & NORTH CAROLINA.**—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$250,000 of common stock in payment for the property formerly operated by the Tennessee & North Carolina Railroad, which has been reorganized as the Tennessee & North Carolina Railway.

**TENNESSEE, ALABAMA & GEORGIA.**—*To Be Sold.*—This road will be sold by Special Master Grayson on August 6, under orders issued by the Federal Court at Chattanooga, Tenn. The minimum bid has been fixed at \$400,000. The road, operating 90 miles of lines, has been in the hands of receivers since December, 1920.

**WESTERN PACIFIC.**—*J. C. C. to Investigate Relations with D. & R. G.*—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

**WICHITA NORTHWESTERN.**—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue \$600,000 of first consolidated mortgage bonds and to pledge them with the Secretary of the Treasury as collateral security for a loan.

**WILLIAMSPORT & NORTH BRANCH.**—*Authorized to Issue Securities.*—This company has been authorized by the Interstate Commerce Commission to issue at par \$200,000 of first mortgage 6

per cent gold bonds, \$200,000 of non-cumulative 6 per cent preferred stock and \$500,000 of common stock, in full payment for its railroad property, rights and franchises, acquired at a foreclosure sale.

**WISCONSIN NORTH WESTERN.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its line from Girard Junction to Taylor Rapids, 18.3 miles, in the county of Marinette, Wis.

### Guaranty Certificates Issued

The Interstate Commerce Commission has issued certificates for partial payments of the railroad guaranty for six months of 1920 as follows:

Georgia & Florida, \$150,000.	
Chicago & Alton, \$200,000.	
Total payments by the Treasury Department under the provisions of the Transportation act, and exclusive of payments made by the Railroad Administration to July 11 were as follows:	
(a) Under Section 204, for reimbursement of deficits during federal control.....	\$1,354,339.74
(b) Under Section 209:	
(1) To carriers to which final payment of the guaranty has been made under paragraph (g) including previous advances under paragraphs (h) and (i).....	1,690,114.71
(2) For advances under paragraphs (h) and (i) to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission.....	262,950,874.00
(c) Under Section 212:	
(1) For partial payments in respect to the guaranty provided in Section 209.....	159,372,690.05
(2) For partial payments in respect to the reimbursement for deficits during the period of federal control provided in Section 204.....	588,853.02
(d) Under Section 210, for loans from the revolving fund of \$300,000,000 therein provided.....	218,211,667.06
Total.....	\$644,168,538.52

### Dividends Declared

Central of Georgia.—Common, 2½ per cent; preferred, 3 per cent; both payable June 30 to holders of record June 30.  
 Huntington & Broad Top Mountain.—Preferred, 1 per cent, payable August 1 to holders of record July 15.  
 Pere Marquette.—Prior preferred, 1½ per cent, quarterly, payable August 1 to holders of record July 14.  
 Baltimore & Ohio.—Preferred, 2 per cent, semi-annually, payable September 1 to holders of record July 30.  
 Nashville, Chattanooga & St. Louis.—3½ per cent, semi-annually, payable August 1 to holders of record July 23.

THE SALT LAKE CITY PASSENGER ASSOCIATION held its first dinner session at Salt Lake City, Utah, on June 27, and a constitution and by-laws were adopted and a general plan outlined to furnish tourists in Salt Lake with suitable information.



Photo by International

British Troops in Silesia

# Annual Report

## Northern Pacific Railway Company— Twenty-Fourth Annual Report

### To the Stockholders of the

#### NORTHERN PACIFIC RAILWAY COMPANY:

The following, being the twenty-fourth annual report, shows the result of the operation of your property for the fiscal year ending December 31, 1920, to both the company and the United States Railroad Administration, the railroad having been operated by the United States during January and February.

#### CORPORATE AND FEDERAL INCOME ACCOUNT.

OPERATING INCOME	1919	1920	Increase— Decrease—D
Railway operating revenues	\$100,739,353.93	\$113,084,407.78	I \$12,345,053.85
Railway operating expenses	78,672,509.37	100,983,874.19	I 22,311,364.82
Net operating revenue	\$22,066,844.56	\$12,100,533.59	D 9,966,310.97
Railway tax accruals	9,000,737.47	10,168,686.38	I 1,167,948.91
Uncollectible railway revenues	23,940.16	18,468.90	D 5,471.26
Total operating income	\$13,091,522.19	\$1,939,316.11	D \$11,068,788.62
<b>NONOPERATING INCOME</b>			
Hire of freight cars—credit balance	\$4,310,307.64	18,804.41	D \$4,329,112.05
Rent from locomotives	196,400.89	180,864.61	D 15,536.48
Rent from passenger train cars	37,235.06	256,910.78	I 219,675.72
Rent from work equipment	167,369.59	134,128.93	D 33,240.66
Joint facility rent income	2,118,959.79	2,211,143.93	I 92,184.14
Income from lease of real property	288,419.36	289,703.28	I 1,283.92
Miscellaneous rent income	612,374.88	674,576.12	I 62,201.24
Miscellaneous nonoperating physical property	49,466.11	49,250.60	D 215.51
Separately operated properties—profit	31,067.31	31,067.31	I —
Dividend income	4,456,161.00	4,353,552.00	D 102,609.00
Income from funded securities	539,550.20	926,686.48	I 387,136.28
Income from unfunded securities and accounts	1,810,862.60	937,803.20	D 873,059.40
Income from sinking and other reserve funds	583,170.55	583,170.55	I —
Miscellaneous income	6,269.92	2,574.27	D 3,695.65
Total nonoperating income	\$10,866,139.95	\$14,358,568.95	I \$3,492,429.00
Compensation under contract with United States Government	\$30,089,691.88	\$5,301,309.04	D \$24,788,382.84
Guaranty under Transportation Act	14,760,606.14	14,760,606.14	I —
Deduct. Federal income included above	*18,353,596.64	*4,002,969.68	I 14,350,626.96
Gross corporate income	\$35,644,402.12	\$32,390,892.76	D \$3,253,509.36
<b>DEDUCTIONS FROM GROSS INCOME</b>			
Hire of freight cars—debit balance	\$313,897.55	\$72,825.04	D \$241,072.51
Rent for locomotives	\$1,072.57	—	D 1,072.57
Rent for passenger train cars	26,485.45	103,250.23	I 76,764.78
Rent for work equipment	20,766.43	10,791.63	D 9,974.80
Joint facility rents	781,431.39	931,225.71	I 149,794.32
Rent from lease of real property	51,331.86	51,322.02	D 9.84
Miscellaneous rents	10,157.84	9,643.07	D 514.77
Interest on funded debt	12,117,483.28	12,134,437.60	I 16,954.32
Interest on unfunded debt	248,526.77	14,060.03	D 234,466.69
Miscellaneous income charge	259,356.23	231,895.32	D 27,460.91
Total deductions from gross income	\$13,880,509.37	\$13,558,633.87	D \$321,875.50
Less Federal deductions	*1,072,843.99	*2,619,244.42	I 1,546,400.43
Net deductions	\$12,807,665.38	\$10,939,389.45	I 1,868,275.93
Net corporate income	\$22,836,736.74	\$19,094,183.31	D \$3,742,553.43
<b>DISPOSITION OF NET INCOME</b>			
Dividend appropriations of income	\$17,360,000.00	\$17,360,000.00	I —
Income balance for year—transferred to profit and loss	\$5,476,736.74	\$1,734,183.31	D \$3,742,553.43

Mileage operated December 31, 1919	6,642.26
Mileage operated December 31, 1920	6,655.29
Average mileage operated during the year	6,653.36

#### REVENUE TRAIN MILEAGE.

Revenue passenger train miles during the year were 9,977,960, an increase of 306,599 miles compared with the previous year.  
Revenue freight and mixed train miles during the year were 11,904,455, an increase of 420,650 miles.  
Revenue special train miles during the year were 12,820, a decrease of 5,662 miles.  
All revenue train miles during the year were 21,895,235, an increase of 721,587 train miles.

#### EARNINGS.

##### FREIGHT BUSINESS.

Freight revenue was \$81,090,389.63, an increase of \$8,155,667.04 or 11.18 per cent compared with the previous year. Freight revenue for 1917 was \$65,258,994.76.  
\$52,847,753 tons of revenue freight were moved one mile, an increase of 263,811,353 tons one mile, or 3.48 per cent compared with the previous year.

The average earnings per ton mile increased from 0.0961 to .01033.  
The revenue train load decreased from 660.85 to 659.66 tons. The total train load, including company freight, increased from 752.33 tons to 761.21.  
The number of miles run by revenue freight trains was 11,209,167, an increase of 401,421, or 3.71 per cent.

##### PASSENGER BUSINESS.

Passenger revenue was \$21,143,707.94, an increase of \$812,590.48, or 4.00 per cent compared with the previous year.  
Mail revenue was \$2,891,069.40, an increase of \$1,938,107.25 or 203.38 per cent; making allowance for hack mail pay received in 1920, there was an increase of \$1,788,081.93 or 11.87 per cent.  
Express revenue was \$2,326,076.90, an increase of \$304,817.35, or 15.08 per cent.

Sleeping car, parlor and chair car, excess baggage and miscellaneous passenger revenue was \$801,527.22, an increase of \$658,486.50, or 460.35 per cent. This increase was caused by The Pullman Company not paying any portion of earnings to railroads in 1919.

Total revenue from persons and property carried on passenger trains was \$27,162,381.46, an increase of \$3,713,801.58, or 15.84 per cent compared with the previous year. Total revenue from passenger trains in 1917 was \$18,874,197.67.

The number of passengers carried was 8,447,966, a decrease of 185,620 over the previous year, and the number of passengers carried one mile was 719,445,961, a decrease of 29,189,636, or 3.90 per cent.

The number of miles run by revenue passenger trains was 9,977,960, an increase of 306,599, or 3.17 per cent.

The average rate per passenger mile was 2.939 cents against 2.716 cents last year.

#### EARNINGS AND EXPENSES PER MILE OPERATED.

	1917	1918	1919	1920
Operating revenues per mile	\$13,526.37	\$15,594.28	\$15,282.27	\$16,406.59
Operating expenses per mile	8,171.39	10,857.13	11,934.71	15,177.88
Net operating revenue per mile	5,354.98	4,737.15	3,347.56	1,218.71
Taxes per mile	1,059.52	1,236.01	1,365.42	1,519.34
Net	\$4,295.46	\$3,501.14	\$1,982.14	\$299.37

#### RATIOS.

	1917	1918	1919	1920
Operating expenses to operating revenue	60.41%	69.62%	78.10%	89.30%
Taxes to operating revenue	7.83%	7.93%	8.93%	8.94%

\*The corporate expenditures for expenses and taxes are included in order to make proper comparison between the four years, 1917, 1918, 1919 and 1920, and for the same reason are also included in the ratios.

#### OPERATING EXPENSES.

##### CONDUCTING TRANSPORTATION.

The charges for transportation expenses were \$48,439,001.28, an increase of \$10,164,538.53 or 26.56 per cent, as against an increase in total operating revenue of 12.25 per cent. The charges for 1917 were \$28,531,412.99.

##### MAINTENANCE OF EQUIPMENT.

The charges for maintenance of equipment were \$25,593,923.34, an increase of \$5,784,804.48 or 29.20 per cent. The charges for 1917 were \$11,245,120.34.

##### LOCOMOTIVES.

Total number of locomotives on active list December 31, 1919, the date of the last annual report	1,406
Additions:	
Locomotives purchased	61
Locomotives remodeled	4
	65
Deductions:	
Locomotives sold during the year, from active list	1
Locomotives dismantled and withdrawn from service	24
	25
Total locomotives on active list December 31, 1920	1,446
In addition to the locomotives on active list there were:	
Withdrawn from service and on hand December 31, 1919	30
Withdrawn from service during the year	23
	63
Less—Dismantled during year	22
Rebuilt and reinstated on active list	4
	26
Leaving on hand locomotives withdrawn from service which may be sold	36
Of the 71 locomotives, the purchase of which was authorized during the year, 6 Mallet and 4 Switching, have not been delivered.	

##### PASSENGER EQUIPMENT.

On December 31, 1920, the Company owned 1,041 passenger train cars, a decrease of 23 cars, destroyed or transferred to other classes during the year.

Of the 1,041 cars owned, 710 were not due in shops for two months or more.  
No additional passenger equipment is under contract for construction or is building at company shops.

**FREIGHT EQUIPMENT.**

Of the total number of freight train cars on the road on December 31, 1920, 3.32%, or 7,067 were in need of repairs requiring one hour's labor or more per car, and 2,419, or 5.13%, required heavy repairs or in excess of twenty hours' labor on each car.

**MISCELLANEOUS EQUIPMENT**

The purchase of 90 caboose cars has been authorized, none of which have been delivered.

**MAINTENANCE OF WAY AND STRUCTURES.**

The charges for maintenance of way and structures were \$2,012,798.18, an increase of \$4,789,147.79, or 29.52 per cent. The charges for 1917 were \$1,072,178.23.

**GENERAL.**

**FINANCIAL RESULTS OF OPERATION.**

During the first two months of 1920 your property remained under Federal control. The compensation under contract with the United States Government for this period was \$5,301,309.04, out of which your company was obliged to assume operating expenses and war taxes amounting to \$696,097.69, leaving net compensation of \$4,605,211.35. The net railway operating income accruing to the Government from the use of your property was \$3,741,045.26.

As a result of the Government guaranty to your company for the succeeding six months there was included in the income account \$14,700,606.14. In actual operation there was a deficit for this six months' period of \$1,233,910.96.

For the last four months of the year the net railway operating income was \$6,142,521.61.

It is thus apparent that while the amount actually accruing to your company for the year from the use and operation of its property was \$24,270,328.14, its actual net railway operating income was only \$7,949,458.22.

The operating revenues, \$113,084,407.78, were the largest in the company's history and the decrease in total operating income was due entirely to the great increase in operating expenses (due largely to higher wages and prices of fuel and materials), and to increase in taxes.

**CLAIMS FOR BALANCES DUE FROM GOVERNMENT.**

Your management has reached an agreement with the Director General of Railroads as to the balance due to your company in connection with the use of its property during the period of Federal control ending February 29, 1920. Under this agreement your company will receive at once \$9,000,000.00.

The check of the quantities of material and supplies turned over to the Director General at the commencement of Federal control, and of the quantities returned to your company at the end of Federal control, has not been completed. Your company will receive, in addition to the amount above stated, the balance found due to it for the value of material and supplies delivered to the Director General which he has not made settlement.

Your company has also presented to the Interstate Commerce Commission, under the provisions of the Transportation Act, its claim for an amount which, when added to its net railway operating income for the six months period ending August 31, 1920, will equal the amount guaranteed by the Government for that period. On this claim payments amounting to \$12,000,000.00 have been made pending final consideration and settlement.

**VALUATION WORK.**

The Bureau of Valuation of the Interstate Commerce Commission has continued the work of valuing your property. The field work in connection with the compilation of the inventory of all of the property owned has been completed and it is understood that under the present program of the Commission preliminary Engineering and Land Reports will be served on the company some time late in 1921.

The number of company employees engaged in this work at the present time is 118 and the total expenditure for the company's portion of the work up to December 31, 1920, was \$1,399,745.64.

**STOCKHOLDERS AND EMPLOYEES.**

On December 31, 1920, there were approximately 36,000 holders of the stock of your company, an increase during the year of 5,235. This makes an average holding of about 69 shares for each stockholder, compared with an average holding on December 31, 1919, of 80½ shares. Average number of employees in 1920 was 35,244 and on March 31, 1921, there were about 27,000.

**LAND DEPARTMENT.**

The operations of the Land Department for the year 1920 are shown on pages 36 and 37. New sales were less by 2,968.90 acres than the acreage included in cancelled contracts. Payments of principal and interest by contract holders were much less than in the previous year. These results reflect the difficult situation which the farming and stock raising industries in territory occupied by your lines have had to confront. The Company's policy has been to treat contract holders leniently, and contracts have been cancelled only when no adjustments could be made.

**OIL DEVELOPMENT.**

The year 1920 has shown marked progress in oil exploration in Montana. During the year work was under way on ninety-seven wells in twenty-eight areas throughout the state. Omitting the Elk Basin oil district, which is largely in Wyoming, oil in commercial quantities has been produced in only one distinctively Montana field, the Cat Creek District in eastern Fergus County. On December 31, ten wells were producing oil and fourteen wells were being drilled in this field, several of which have since been brought in. The first oil was shipped out of the district in August and up to the end of the year 948 carloads had been shipped, all consigned to Wyoming points. The territory so far proved is quite limited, none of it being within the grant of lands to the Northern Pacific. A small commercial well was brought in on Northern Pacific land in the Devil's Head district near Miles, Yellowstone County, north of Roundup, but so far no oil has been shipped. Drilling is being carried on actively at numerous points in Central and Eastern Montana.

Although the oil thus far produced from Northern Pacific lands has been inconsiderable, there are within these lands a number of so-called "structures" of which the geology suggests that oil may be found under them. Your management has considered it unwise to give drilling rights in these lands until a thorough investigation could be made as to their oil bearing possibilities. With that end in view the Absaroka Oil Development Company was formed with an authorized capital of \$1,000,000.00. Control of this company will be retained by your subsidiary, the Northwestern Investment Company. The organization of the company has been completed and the work of examining the lands will be pushed forward energetically.

**SUBSIDIARY COMPANIES.**

The Spokane, Portland and Seattle Railway Company, owned jointly by your company and the Great Northern, has settled with the Government for the balance due for the use of its property. No settlement has as yet been reached by the Oregon Trunk, the Oregon Electric, or the Minnesota and International Companies.

**CHANGES IN BALANCE SHEET ACCOUNTS.**

The analysis of the accounts reflecting sales of lands granted in aid of construction by the United States and the State of Minnesota, to which reference was made in the last annual report, has been completed and the results are embodied in the general balance sheet statement below.

The entries covering the adjustments of these land grant transactions have been reviewed by the Interstate Commerce Commission and found correct in principle.

Further analysis of the "Investment in road and equipment" account developed that the cost of stocks and bonds of The Manitoba Railway Company to the amount of \$8,199,044.69 had been included in that account, and that a part of the cost of the stock of the Great Northern Central Railway Company to the amount of \$1,389,234.33 had not been included in that account. In accordance with the requirements of the Interstate Commerce Commission proper adjustments have been made.

As a result of these entries "Investment in road and equipment" account has been increased \$17,508,454.36, "Corporate surplus" has been increased \$15,484,873.04, "Funded debt" has been increased \$827,000.00 and other accounts have been changed \$1,193,581.32.

**REFUNDING OF NORTHERN PACIFIC GREAT NORTHERN, C. B. AND Q.**

**COLLATERAL JOINT 4% BONDS.**

The joint bonds issued in 1901, when your company together with the Great Northern Railway Company, acquired approximately 97% of the stock of the Chicago, Burlington & Quincy Railway Company, will mature July 1, 1921. The amount outstanding is \$215,227,000.00. For the payment of these bonds your company and the Great Northern Railway Company are jointly and severally liable.

It was necessary for the two obligor companies to make some provision for refunding this indebtedness, and application was made to the Interstate Commerce Commission for authority to issue the Joint Collateral Bonds of the two companies to the amount of \$230,000,000, payable in 15 years, bearing interest at 6½% per annum. This authority was granted and the new issue has been sold to the public at 90%.

The new joint 6½% bonds are convertible to the extent of \$115,000,000.00 into 6½% Gold Bonds of the Interstate Commerce Commission under its Refunding and Improvement Mortgage, and to an equal amount into the 7% General Mortgage Bonds of the Great Northern Railway Company.

The funds derived from the sale of the new issue of joint bonds will be used for the payment at maturity of the joint 4% bonds now outstanding.

**INCREASE IN FREIGHT RATES AND PASSENGER FARES.**

In July, 1920, the Interstate Commerce Commission authorized increases in freight rates and passenger fares throughout the United States. The increased rates and fares became effective August 26, 1920, on traffic moving in interstate commerce. Similar increases have since been authorized in all states served by your lines except the State of North Dakota. Proceedings begun to secure such increases in that state are now pending before the Interstate Commerce Commission, and it is believed that they will shortly be brought to a conclusion.

**COMPARATIVE STATEMENT OF PAYROLLS.**

On July 20, 1920, the United States Labor Board rendered its Wage Decision No. 2, effective as of May 1, 1920, under which wages for all employees covered by working agreements and properly before the Board, were granted substantial increases in rates of pay. It was necessary to grant similar increases to those not before the Board. These increases amounted in all to nearly \$11,200,000.00 per annum.

Comparison of your company's payroll for a period of years shows the cumulative effect of the wage increases since the beginning of the war:

Total payroll for year ending June 30, 1918	\$24,486,852.00
Total payroll for year ending December 31, 1917	28,204,609.00
Total payroll for year ending December 31, 1916	35,877,879.00
Total payroll for year ending December 31, 1915	49,632,127.00
Total payroll for year ending December 31, 1914	52,605,396.00
Total payroll for year ending December 31, 1913	66,503,794.00

**MATERIALS AND SUPPLIES.**

There has been a marked advance, within the past five years, in the prices of all materials used in the operation and maintenance of railroads. The following statement shows the extent of this advance in the single item of coal for locomotives:

Year Ended	Coal used by Locomotives	Average Cost per Ton	Total Cost
Dec. 31 1916	2,520,215	\$2.566	\$6,466,872.00
1917	2,745,034	3.308	9,117,453.00
1918	2,718,558	3.884	10,548,881.00
1919	2,460,428	4.908	10,899,723.00
1920	2,625,493	4.674	12,271,554.00

Because of difficulties in the eastern coal fields the companies operating coal docks at the head of Lake Superior were unable in 1919 to bring up an adequate supply of railroad fuel from those fields, and it became necessary in 1920 to purchase and use a considerable amount of Illinois coal. Eastern coal brought the highest prices ever paid, and it was necessary to grant to nine dollars per ton delivered on docks at the Head of the Lakes.

**TAXES.**

Taxes are constantly increasing and become more burdensome from year to year. The following statement shows the amounts charged to Railway tax accruals in each of the four years ending with 1920. It will be noted that the total amount charged in 1920 was more than 46% greater than the amount charged in 1917.

	1917	1918	1919	1920
State taxes	\$5,109,742.57	\$5,865,606.69	\$6,913,707.44	\$8,453,990.33
Federal taxes	1,727,242.85	2,204,762.40	2,055,483.31	1,620,591.91
Canadian and miscellaneous taxes	13,742.77	26,654.17	31,546.76	34,104.14
Totals	\$6,910,728.19	\$8,157,023.26	\$8,000,737.47	\$10,108,686.38

\*\$89,657.00 refunded by Government and credited to Profit and Loss.  
†\$89,657.00 refunded by Government and \$181,434.00 abated and credited to Profit and Loss.

‡\$181,434.00 abated by Government and not charged to Income.

**ST. PAUL DEBT DIVIDEND MORTGAGE BONDS.**

Since the last report your management, exercising the discretion allowed in its Art. III of the Agreement of November 15, 1900, between your company, and the Guaranty Trust Company, has acquired up to December 31, 1920, \$5,261,000 par value of the outstanding bonds secured by mortgage

on the St. Paul-Duluth Division of your railroad. These bonds were acquired by the use of funds derived from the sale of the St. Paul and Duluth lands. These funds had been invested in Liberty Bonds and a direct exchange was made, par for par, of Liberty Bonds for the St. Paul-Duluth Division Bonds of your company. There are still outstanding \$2,819,000 of these St. Paul-Duluth Division Bonds, and the company now has on hand funds derived from the sale of St. Paul and Duluth lands, available for their retirement.

**EXPRESS CONTRACT.**

Effective September 1, 1920, a contract was entered into between your company and the American Railway Express Company, giving to the latter the exclusive right to move express business over your railroad. The contract is terminable at the end of two and one-half years; if not then terminated it runs until September 1, 1925. It provides that your company shall receive all of the net earnings from express transportation over its railroad less a commission of 2½% to be paid to the Express Company.

**EQUIPMENT TRUST.**

It was considered necessary to acquire some additional heavy locomotives and other equipment during the past year, largely to replace units already retired or approaching retirement. To finance this purchase an Equipment Trust was created and \$4,500,000 of Equipment Trust certificates, bearing interest at the rate of 7% per annum were sold. The following equipment was acquired under this trust:

60 Air dump cars.	20 Pacific type locomotives.
300 Hart convertible cars.	20 Switching locomotives.
25 Mikado type locomotives.	6 Mallet locomotives.

**LOAN FROM GOVERNMENT.**

For the purpose of providing additional equipment and additions and betterments to existing equipment and to way and structures, your company filed application with the Interstate Commerce Commission under the provisions of Section 210 of the Transportation Act, 1920, for a loan of \$200,000. The application was approved and on November 23, 1920, your company issued note for \$6,000,000 payable in five years with interest at 6% and secured by \$6,000,000 United States Liberty bonds as collateral.

**CHANGES IN OFFICIAL ORGANIZATION.**

On the termination of Federal control Mr. J. M. Hannaford was re-elected President of your company. He held that office until December 1, 1920, when he resigned because of his desire to be relieved from its active duties and responsibilities. Mr. Charles Donnelly was elected to succeed him.

Since the last report, two of the company's most faithful and efficient officers have died. Mr. Thomas Couper, who held the office of Vice President and Land Commissioner at the time of his retirement on October 1, 1919, died at his home in Long Beach, California, on October 20, 1920. Mr. C. A. Clark, Treasurer of the company, and who had been in its service continuously since 1882, died at his home in St. Paul on August 1, 1920. Mr. H. A. Clifford, for many years the company's Cashier, was elected as his successor.

By Order of the Board of Directors.  
 HOWARD ELLIOTT, Chairman  
 CHARLES DONNELLY, President.

**NORTHERN PACIFIC RAILWAY COMPANY.**  
 GENERAL BALANCE SHEET, DECEMBER 31, 1920.

ASSETS.		LIABILITIES.	
<b>INVESTMENTS.</b>		<b>STOCK</b>	
Road and Equipment December 31, 1919.		Capital stock—common	\$248,000,060.00
Road	\$417,651,309.81	GOVERNMENTAL GRANTS.	
Equipment	82,170,700.50	Grants in aid of construction	3,406.60
	\$499,822,010.31	<b>LONG TERM DEBT.</b>	
Charges since December 31, 1919	8,591,166.56	Funded debt	*\$324,214,500.00
Adjustments during the year	17,595,454.36	Less—held in treasury	9,149,500.00
	\$525,918,631.23		315,065,000.00
<b>SINKINGS FUNDS</b>		Total Capital Liabilities	\$563,068,406.60
DEPOSITS IN LIEU OF MORTGAGED PROPERTY (Netmtyms in hands of Trustees for sale of land grant land, etc.)	594,150.83	<b>CURRENT LIABILITIES.</b>	
<b>MISCELLANEOUS PHYSICAL PROPERTY</b>	7,485,182.20	Traffic and car service balances payable	\$1,254,255.54
<b>INVESTMENTS IN AFFILIATED COMPANIES.</b>		Accounts and vouchers and wages payable	11,512,467.55
Stocks	*\$144,045,403.60	Miscellaneous accounts payable	841,200.38
Bonds	37,065,697.75	Interest matured unpaid	1,830,860.44
Notes	2,556,599.35	Unmatured dividends declared	4,340,000.00
Advances	2,976,081.13	Unmatured interest accrued	528,073.61
	186,643,781.83	Unmatured rents accrued	6,147.20
<b>OTHER INVESTMENTS.</b>		Other current liabilities	395,542.92
Bonds	\$9,773,668.30		20,708,547.64
U. S. Treasury certificates of indebtedness	3,305,000.00	<b>DEFERRED LIABILITIES</b>	
Contracts for sale of land grand lands	13,571,498.75	Other deferred liabilities	136,524.87
	26,650,167.05	Due U. S. Government account various transactions	\$11,109,411.05
Total Capital Assets	\$747,294,933.08	Due U. S. Government account expenditures for additions and betterments	17,412,603.48
<b>CURRENT ASSETS</b>		Due U. S. Government account value of material and supplies turned back	10,650,577.61
Cash	\$9,778,593.45		39,172,592.14
Special deposits	6,155,299.69	<b>UNADJUSTED CREDITS.</b>	
Loans and bills receivable	57,079.03	Tax liability	\$6,527,116.63
Traffic and car service balances receivable	2,333,853.25	Operating reserves	1,771,257.68
Net balances receivable from agents and conductors	1,022,744.94	Accrued depreciation of equipment	35,473,839.97
Miscellaneous accounts receivable	7,513,362.38	Other unadjusted credits	2,967,385.33
Material and supplies	14,372,325.02		46,739,599.61
Interest, dividends and rents receivable	479,071.97	<b>CORPORATE SURPLUS.</b>	
Due from U. S. Government under Federal control contract	19,046,128.87	Additions to property through income and surplus	\$128,184.59
Other current assets	133,854.56	Funded debt retired through income and surplus	15,214,356.79
	69,892,307.16	Miscellaneous fund reserves	206,362.77
<b>DEFERRED ASSETS.</b>		Profit and loss balance	\$15,548,904.15
Working fund advances	\$66,350.09		158,254,796.17
Other deferred assets	18,004.27		173,803,700.32
	84,354.36		\$843,629,371.18
Due from U. S. Government account various transactions	\$12,379,707.71		
U. S. Government—value of material and supplies turned over	9,998,851.11		
	22,378,558.82		
<b>UNADJUSTED DEBITS.</b>			
Rents and insurance premiums paid in advance	\$41,238.99		
Balance of Guaranty due from Government	9,760,606.14		
Other unadjusted debits	3,177,372.63		
	12,979,217.76		
	\$843,629,371.18		

\*Includes \$107,613,500 joint bonds made and issued by this Company and the Great Northern Railway Company to pay for stock of the Chicago, Burlington and Quincy Railroad Company.

\*Includes this Company's one-half of \$107,613,500 stock of the Chicago, Burlington and Quincy Railroad Company to secure \$215,227,000 joint bonds made and issued by this Company and the Great Northern Railway Company to pay for said stock, costing \$109,114,809.76.

**PROFIT AND LOSS ACCOUNT.**

DECEMBER 31, 1920		DECEMBER 31, 1919.	
<b>To</b>		<b>By</b>	
Loss on road and equipment retired	\$560,284.29	Balance December 31, 1919	\$121,178,242.69
Adjustment of operating expenses prior to January 1, 1918	233,579.25	Balance of income for year ended December 31, 1920	1,734,183.31
Discount on Liberty Bonds sold	432,123.20	Adjustment of Land Department transactions to December 31, 1919	31,341,592.60
Adjustment of cost of property acquired in 1898	436,000.00	MINNESOTA RATE CASE APPROPRIATION BALANCE WRITTEN OFF	330,107.07
Discount and expense in connection with insurance of equipment trust notes	164,625.42	DISCOUNT ON MORTGAGE BONDS PURCHASED AND CANCELLED	539,009.10
NET DEFICIT OF LAND DEPARTMENT—YEAR 1920	129,109.58	UNREFUNDBLE OVERCHARGES	5,679.80
COST OF ABANDONED SURVEYS CHARGED OFF	11,234.52	DONATIONS FOR INSTALLING SPUR TRACKS AND SIDINGS	112,473.79
BALANCE OF SURPLUS ACCOUNTS	544.34	UNCLAIMED WAGES 3 YEARS OLD	36,864.54
<b>SURPLUS APPROPRIATED FOR INVESTMENT IN PHYSICAL PROPERTY</b>	128,184.59	PROFIT ON ROAD AND EQUIPMENT SOLD	694.58
<b>SURPLUS APPLIED TO SINKING AND OTHER RESERVE FUNDS.</b>	15,420,719.56	INSURANCE AND CASUALTY RESERVES	5,803,205.98
Balance December 31, 1920	158,254,796.17	RECEIPTS FROM ST. PAUL AND DULUTH RAILROAD LAND	6,501,196.69
		UNADJUSTED INTEREST ON CONSTRUCTION EXPENDITURES	7,787,928.77
	\$175,771,200.92		\$175,771,200.92

# New York Central Railroad Company—Annual Report

## To the Stockholders of

### THE NEW YORK CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1920, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under federal control until 12:01 o'clock a. m. of the first day of March, 1920, at which time the company resumed the operation of its railroad property. The Board of Directors at its meeting of March 10, 1920, authorized the acceptance on behalf of the company of the guaranty provisions of Section 209 of the Transportation Act, approved February 28, 1920, and such acceptance was made before the Interstate Commerce Commission before March 15, 1920, as provided by the Act. The effect of this was that for the six months to September 1, 1920, the company was guaranteed a railway operating income not less than one-half the amount named in its contract with the Government as annual compensation.

The Interstate Commerce Commission by its order of July 29, 1920, granted an increase, effective August 26, 1920, in freight rates in eastern group territory of 40 per cent and of 33 1/3 per cent between points in eastern group territory and other territories. It also granted an increase in passenger rates of 20 per cent, with a surcharge on Pullman fares of 80 per cent accruing to the carriers. These increases were not immediately allowed by several of the States as to intrastate rates, so that the full effect of the advance was not measured by the percentages for interstate traffic, although, in most instances, they were subsequently allowed under further orders of the Commission.

For the full year 1920 the freight and passenger revenues showed marked advances over the previous year. The return, however, was not as great as it would have been had the business conditions due to the fact that the greater part of the tonnage increase was carried at relatively low rates. The principal source of additional tonnage was in shipments of coal and ores and other products of mines, these constituting an increase of 12,949,000 tons out of a total increase of 14,704,000 tons. There was also falling off in the amount of certain products, such as agriculture, live stock, fresh meats and packing house products, other products of animals and forest products, aggregating approximately 2,163,000 tons, while there were increases in manufactures and miscellaneous commodities of 3,918,000 tons.

The number of passengers carried during the year increased 7,238,014, this increase being entirely in local and commutation passengers carried. There were 416,416 fewer interline passengers carried than in 1919. This is reflected in the decrease of 4.29 miles in the average distance each passenger was carried. The advance in passenger rates, however, under order of the Interstate Commerce Commission, increased the average receipts per passenger per mile from 2.561 cents to 2.734 cents.

In the matter of payments for transportation of mail, which had been fixed by the Interstate Commerce Commission from time to time, an order was entered by the Commission in January, 1920, establishing increased rates from November 1, 1916, which, under the same order, were increased 25 per cent on January 1, 1918. Under this order the company received as additional compensation for the year ended November 30, 1920, \$1,917, approximately \$1,700,000, while the Railroad Administration received, as its share for the period of federal control, \$4,600,000. The 1920 figures include \$4,400,000 applying to the years 1918 and 1919, representing the greater part of the \$4,600,000 above mentioned.

The substantial increases in pay and the changes in working conditions during and since federal control have created a situation which is giving the company grave concern. Besides the actual increases in wages granted by the Director General by order of the Labor Board, there have been reclassifications of employees and special allowances which entail additional expense without compensating return in labor performed.

Under rule 60 of the Shop Crafts Agreement which provides that checks in which you are required to check in and out of your own time will be paid one hour extra at the close of each week and under rule 3 in the same agreement which provides 20 minutes without loss of pay if lunch, it is estimated that this company incurs an additional annual expense of \$1,000,000.

The abolition of piece work in the shops of the company has cost millions of dollars. Under the piece work system and other shop conditions existing in 1915, 2,799 men turned out 73,072,000 effective miles of equipment. In 1920, piece work having been abolished and classification and working conditions of employees having been changed and employees being restricted to one kind of work for each class of employment, practically the same effective miles of equipment were turned out, namely 74,655,000, but 4,514 men were required. The cost of the work in 1915 was \$2,903,700 and \$8,452,000 in 1920, an increase of \$5,548,300. To be sure, to say, there was an increase in men of 61.5 per cent, an increase in money of 187 per cent and an increase in effective mileage output of but 2 per cent.

The increase in payrolls from 1917 for the New York Central excluding those of the Boston & Albany Railroad is indicated by the following:

Date	Number	Monthly pay	Average monthly pay per employee
December 31, 1917	94,486	\$8,400,000	\$89.10
February 29, 1920	103,577	\$13,511,078.21	\$130.45
December 31, 1920	96,418	\$15,892,120.76	164.83

The total amount of payroll charged to operating expense in 1917 was \$83,053,280.34, while for 1920 it was \$177,289,631.71. The entire operating expenses for 1917 were \$153,597,905.35, or \$23,691,734.36 less than the 1920 payroll included in operating expenses.

The conditions existing in the equipment at the end of federal control has caused an unusual outlay for repairs, which are still under way. This will constitute the basis of a claim against the Director General of Railroads under the company's contract with him which stipulates that its property should be returned to the end of federal control in substantially as good repair and in substantially as complete equipment as on January 1, 1918.

There was a substantial increase in the cost of fuel. Final settlement of accounts with the Railroad Administration for the period of federal control has not been effected, but the company is actively engaged in the preparation of the data necessary for use in connection with the making of such a settlement.

The settlement with the United States Government for the guaranty period—six months, March to August, 1920 in connection with the guaranty provision of the act, is presently in progress.

The following is a comparative table of the mileage operated:

	1920 Miles	1919 Miles	Increase Miles	Decrease Miles
Main line and branches owned	3,699.19	3,699.18	.01	..
Leased lines	1,918.86	1,919.03	..	.17
Lines operated under trackage rights	460.13	451.20	8.93	..
Total road operated	6,078.18	6,069.41	8.77	..

Mileage of line wneed has been increased 1/100th of a mile as follows: Tonawanda Branch increased 2/100ths, due to correction of error; Clayton

Branch decreased 1/100th of a mile, due to change of a connection.

Mileage of line owned has been increased 1/100th of a mile as follows: changes; Decatur Branch of the Beech Creek Railroad decreased 3/100ths; abandonment of Main Branch of the Erie Railroad decreased 10/100ths due to relocation of connection with the Erie Railroad at Lakewood; Toledo & Milwaukee Railroad decreased 4/100ths, at Dundee, due to re-measurement in connection with valuation.

Mileage operated under trackage rights has been increased 8.93 miles as follows: on account of commencing operation over the Lake Erie & Eastern Railroad, the trackage rights over the Baltimore & Ohio Railroad from Niles Junction to Haselton, 14.06 miles, have been abandoned and rights acquired over the Pennsylvania Railroad from Niles Junction to Girard, 8.11 miles, and over the Lake Erie & Eastern Railroad from Girard to Struthers, 8.31 miles. Rights have also been acquired over the Wheeling & Lake Erie Railroad at Cleveland, 6.56 miles, under agreement of July 1, 1916, between the Wheeling & Lake Erie Railroad Company, the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, and the New York Central Railroad Company. All this new mileage is operated in freight service.

The total number of stockholders at the end of the year was 32,396, of whom 32,173 were in the United States and 223 Abroad. The par value held by these in the United States was \$248,170,795, and by those abroad, \$1,421,500, the average holdings being 77 shares and 64 shares, respectively. The following table shows the growth in the number of stock holders from 1915 to 1920, both inclusive.

Date	Total Number holding	In U.S.		Abroad	
		Number	Average holding	Number	Average holding
Dec. 31, 1915	25,042	22,270	77	271	66
Dec. 31, 1916	25,232	21,836	111	696	56
Dec. 31, 1917	27,102	26,771	91	31	69
Dec. 31, 1918	28,693	28,395	87	298	69
Dec. 31, 1919	30,445	29,139	82	265	67
Dec. 31, 1920	32,396	32,173	77	223	64

On September 15, 1920, the company issued and sold \$25,000,000 of its ten-year 7 per cent collateral trust bonds, dated September 1, 1920, secured by the pledge of a like amount of its 6 per cent refunding and improvement mortgage bonds, issued for the purpose of such pledge, and 175,000 shares Reading Company, and 10,000 shares of second preferred stock of the same company. The proceeds of this sale, amounting to \$24,451,475, were used, to the extent of \$15,000,000, to pay the company one-year 6 per cent collateral trust notes for that amount which matured September 15, 1920; to the extent of \$7,572,194.39 to reimburse the company for like amounts of bonds of the New York Central & Hudson River Railroad Company (\$130,000) and bonds of the Rome, Watertown & Ogdensburg Terminal Railroad Company (\$375,000), which matured in 1916, and (2) \$7,067,194.39 to pay for additions and betterments made prior to July 1, 1920, and the balance has been or will be used for additions and betterments subsequent to July 1, 1920.

Provision was made for financing the cost of 4,500 freight cars and 128 locomotives allotted to the company, during federal control, by the Director General of Railroads, all of which have been delivered, through an equipment trust, known as Equipment Trust No. 43, established by an equipment trust agreement dated January 15, 1920, providing for the payment of 75 per cent of the cost of the equipment in the company's 6 per cent equipment notes, dated January 15, 1920, maturing in equal annual installments until January 15, 1925. The balance, pursuant to an agreement, dated January 14, 1920, between the Director General and the company, to be deducted from the equipment depreciation and retirement credits arising in the company's favor under the standard contract with the Director General. The total cost of the equipment will amount to something less than \$18,000,000, \$13,674,000 of the cost of this equipment has been added to the equipment allocated to the company, and has been issued.

In addition to the equipment allocated to the company, and received from the Director General, the company ordered from manufacturers 196 locomotives, 268 passenger cars and 9,244 freight cars at an estimated cost of \$48,318,300, of which one-third of the equipment was delivered during the year 1920. Approximately 75 per cent of the cost of this equipment has been financed by the issue and sale at 90% of \$36,235,000 of 7 per cent equipment trust certificates dated April 15, 1920, maturing in equal annual amounts over a period of fifteen years, issued under the New York Central Railroad Company Equipment Trust No. 43, established by agreement dated April 15, 1920. The remaining 28 per cent (approximately) of such cost was borrowed in December from the United States under the provisions of the Transportation Act, as hereinafter set forth. Of this 1920 equipment, the company has received 1,515 locomotives, 160 passenger cars and 4,194 freight cars, of an estimated cost of \$23,072,088.89. The balance thereof is held by its affiliated companies as follows:

	Loose motives	Passenger cars	Freight cars	Estimated cost
M. C. C. & St. L. Ry. Co.	26	55	3,100	\$15,270,543
C. R. R. Co.	..	20	38	9,358,888
P. & L. E. R. R. Co.	5	11	..	637,668
T. & O. C. Ry. Co.	..	..	..	247,144.25
Totals	101	105	5,050	\$25,216,243.11

The sub-leases provide that each of the sub-lessees shall assume the pro rata share of the equipment trust certificates, principal and interest, and expenses of the trust and shall pay that part of the cost of the equipment which is not financed through the trust, and that it shall on the fulfillment of the trust become the owner of the equipment sold to it. On December 23, 1920, the company has received an estimated cost of \$14,850,000 and \$11,925,000, respectively.

The \$14,850,000 loan:

The company is using the proceeds of this loan for the following purposes:

1. For its proportion of the 25 per cent initial cash payment under the 1920 trust .. \$4,480,000
2. For additions and betterments to its existing equipment .. 48,000
3. Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company to enable that company to meet its proportion of the 25 per cent initial cash payment under the 1920 trust assumed by it under a sub-lease and for additions and betterments to its existing equipment .. 3,920,000
4. Loan to the Michigan Central Railroad Company to enable that company to meet its proportion of the 25 per cent initial cash payment under the 1920 trust assumed by it under a sub-lease and for additions and betterments to that company's existing equipment .. 3,920,000

The company received from the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and from the Michigan Central Railroad Company, respectively, their 6 per cent notes dated December 23, 1920, for the

amounts lent to them as above stated, divided into fifteen notes of each company, maturing in equal installments December 23, 1921-35.

For this loan \$4,189,000 this company gave to the Government its fifteen notes dated December 23, 1920, for \$994,000 each, maturing serially December 23, 1921-35, secured by the pledge of the notes of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and the Michigan Central Railroad Company equal in amount to \$994,000 of this company's 6 per cent refunding and improvement mortgage bonds, series B, issued for the purpose of such pledge; \$6,420,000 of 6 per cent deferred equipment trust certificates dated December 23, 1920, maturing in equal installments December 23, 1921-35, secured by agreement dated December 23, 1920, supplemental to the original 1920 equipment trust agreement heretofore mentioned; \$1,000,000 of 4 per cent general mortgage bonds of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and the 7 per cent demand note of the same amount given to the Government as collateral as above stated, which note is in turn secured by the pledge of \$4,189,000 of that company's 6 per cent refunding and improvement mortgage bonds, series A.

The \$11,925,000 loan:

The company is using the proceeds of this loan for the following purposes:

1. For additions and betterments to its way and structures .....	\$5,500,000	
2. Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company for additions and betterments to way and structures .....	\$4,560,000	
3. Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, which, in turn, made a loan for the same amount to the Cincinnati Northern Railroad Company to provide for additions and betterments to way and structures and equipment of that company .....	113,000	4,673,000
4. Loan to the Michigan Central Railroad Company for additions and betterments to way and structures .....		613,000
5. Loan to the Toledo & Western Railway Company for additions and betterments to way and structures .....		214,000
6. Loan to the Zanesville & Western Railway Company for additions and betterments to way and structures .....		60,000
7. Loan to the Kanawha & Michigan Railway Company for additions and betterments to way and structures and equipment .....		256,000
8. Loan to the Lake Erie & Western Railway Company for additions and betterments to way and structures and equipment .....		609,000
		\$11,925,000

This company received from the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the Michigan Central Railroad Company, the Toledo & Ohio Central Railway Company, the Zanesville & Western Railway Company, the Kanawha & Michigan Railway Company and the Lake Erie Western Railroad Company, respectively, their 6 per cent ten-year notes dated December 23, 1920, for the amounts lent to them as above stated, the note of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company for \$4,560,000 being secured by the pledge of the like amount of the company's 6 per cent refunding and improvement mortgage bonds, series B, the note of that company for \$113,000 being secured by the pledge of the 6 per cent ten-year note, dated December 23, 1920, of the Cincinnati Northern Railroad Company for a like amount, guaranteed by the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, and the note of the Michigan Central Railroad Company being secured by the pledge of \$507,000, principal amount, of that company's 6 per cent refunding and improvement mortgage bonds, series B. Upon this loan the company gave to the Government its 6 per cent ten-year note dated December 23, 1920, secured by pledge of (1) the above notes of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the Michigan Central Railroad Company, the Toledo & Ohio Central Railway Company, the Zanesville & Western Railway Company, the Kanawha & Michigan Railway Company and the Lake Erie & Western Railroad Company, guaranteed by this company, several of the said pledged notes being, in turn, secured by the pledge of this company's 6 per cent refunding and improvement mortgage bonds, series B, issued for the purpose of such pledge.

In addition to the funded debt outstanding, there were nominally issued during the year and pledged as collateral, as more fully set forth elsewhere, \$31,494,000 of New York Central Railroad Company refunding and improvement mortgage 6 per cent bonds, series B, and \$6,420,000 of New York Central Railroad Company Supplemental Equipment Trust of 1920 deferred 6 per cent equipment trust gold certificates. Upon the payment at maturity of \$15,000,000 one-year notes, the \$20,000,000 of New York Central Railroad Company refunding and improvement 4½ per cent bonds, series A, which were pledged in 1919 as part security for said notes, were returned to the treasury of the company and, upon resolution of the Board of Directors, cancelled.

The changes in the funded debt of the company are shown in the following statement:

Amount as reported on December 31, 1919, which has been increased as follows:		\$671,654,782.46
N. Y. C. R. R. Co. ten-year 7% Collateral trust gold bonds .....	\$25,000,000.00	
N. Y. C. R. R. Co. Supplemental Equipment Trust 6% notes of January 15, 1920, given to the Director General of Railroads .....	13,674,000.00	
N. Y. C. R. R. Co. Equipment Trust of April 15, 1920 .....	\$36,225,000.00	
Proportion allocated to other N. Y. C. Lines .....	18,927,490.05	17,297,509.95
Ten-year 6% promissory note given to the Secretary of the Treasury of the United States, dated December 23, 1920 .....	11,925,000.00	
Fifteen 6% promissory notes maturing serially at yearly intervals given to the Secretary of the Treasury of the United States, dated December 23, 1920 .....	14,850,000.00	82,746,509.95
		\$754,401,292.41

and has been reduced as follows:  
 Three-year mortgage favor East Cambridge Land Company, matured and paid off .....

Payments falling due during the year and on January 1, 1921, on the company's liability

for certificates issued under equipment trust agreements as follows:	
N. Y. C. Lines Trust of 1907, installment due November, 1920 .....	1,492,884.74
N. Y. C. Lines Trust of 1910, installment due January, 1921 .....	1,406,413.74
N. Y. C. Lines Trust of 1912, installment due January, 1921 .....	688,398.90
Boston & Albany Trust of 1912, installment due October, 1920 .....	500,000.00
N. Y. C. Lines Trust of 1913, installment due January, 1921 .....	742,117.61
N. Y. C. R. R. Co. Trust of 1917, installment due January, 1921 .....	1,117,000.00
leaving the funded debt on December 31, 1920 .....	\$748,354,477.42

In addition to the funded debt outstanding on December 31, 1920, the following loans and bills payable appear on the balance sheet:

War Finance Corporation .....	\$ 5,000,000.00
Secretary of the Treasury .....	6,500,000.00
Director General of Railroads .....	7,000,000.00
Banks, trust companies and miscellaneous .....	2,432,866.68
Total .....	\$33,432,866.68

On October 25, 1920, the company gave its 6 per cent demand note for \$7,000,000 to the Director General of Railroads to be applied upon the company's indebtedness to the United States for additions and betterments made during 1920. It was agreed that the note should be secured by the pledge of \$7,000,000, principal amount, of the company's refunding and improvement mortgage bonds, series B, to be issued, when authorized by the Interstate Commerce Commission, against additions and betterments made during 1920, contracts for the above loans and bills payable are renewals or extensions of those shown in the stockholders' report for 1919.

During the year the company acquired 193 shares, par value \$9,650, of the common stock of the Pittsburgh McKeesport & Youghiogheny Railroad Company. Its total holding in this stock on December 31, 1920 were 337 shares, par value \$1,566,850, or 39 per cent of the amount outstanding. The Pittsburgh & Lake Erie Railroad Company owns a like amount of this stock.

The capital stock of the Detroit, Toledo & Milwaukee Railroad Company is owned jointly and equally by the New York Central Railroad Company and the Michigan Central Railroad Company. The road of the Detroit Toledo & Milwaukee Railroad Company originally extended from Dundee, Michigan, to Allen, Michigan, a distance of 14 miles. A lease and purchase agreement dated January 1, 1905, provision was made for the operation of the section between Homer and Allegan by the Michigan Central Railroad Company and between Homer and Dundee by the Lake Shore & Michigan Southern Railway Company. In 1913, a section of this line between Allen and Battle Creek was sold to traction company, and the remaining mileage of the road was redivided for operation between the Lake Shore & Michigan Southern Railway Company and the Michigan Central Railroad Company, so that the portion assigned to the Lake Shore & Michigan Southern Railway Company was 49.8 miles between Dundee and Moscow and the portion assigned to the Michigan Central Railroad Company was the line between Moscow and Battle Creek, a distance of 47.15 miles. As the original agreement of January 1, 1905, had not been modified, the New York Central Railroad Company and the Michigan Central Railroad Company executed during the year an agreement with the Detroit, Toledo & Milwaukee Railroad Company, effective September 1, 1913, for the operation of the road based on the new division of mileage.

A controversy with the Western Union Telegraph Company in connection with wire mileage allowances was satisfactorily settled during the year.

In the operation of the Pension Department 255 employees were retired and placed upon the pension rolls. Of these retirements, 161 were authorized because of the attainment of seventy years of age and 94 because of permanent physical disability. The number of pensioners who died during 1920 was 187. The number of retired employees upon the pension rolls at the close of the year was 676. The average pension during the year of these is \$39.61. The total amount paid in pensions during the year was \$615,020.52.

On July 28, 1920, the Board of Directors authorized the execution of a uniform contract for express operations over rail lines with the American Railway Express Company subject to the approval and authorization pursuant to law by order of the Interstate Commerce Commission. The contract was duly executed in behalf of this company, and the approval of the Interstate Commerce Commission having been duly given, it became effective on September 1, 1920. The contract is in the nature of an experiment, being the outgrowth of the merger of the express companies and other conditions created during federal control. It is for a term of five years and thereafter until the expiration of four months' notice by either party, but may be terminated by this company, on six months' notice, on February 28, 1923, or, under certain conditions, on that date by the express company.

In order to preserve continuity of comparisons, operating revenues, operating expenses and other statistics have been reported in net dollar value where in this report for the full calendar year 1920 regardless of federal control, guaranty period or corporate operation.

The income to the corporation, arrived at by the addition of compensation received under federal control, the guaranteed net rate of operating income under Section 209 of the Transportation Act of 1920, and the net railway operating income for the four months September to December, 1920, inclusive, was less by \$8,246,181.33 than that received as compensation from the United States Government during the federal control year 1919. The results for the four months September to December, 1919, however, indicated pro rata the return provided for under the Transportation Act and contemplated in the rate increases granted by the Interstate Commerce Commission.

During 1920 the results of operation of the stockyards at East Buffalo were included in miscellaneous operating accounts. The same was indicated pro rata the return provided for under the Transportation Act and contemplated in the rate increases granted by the Interstate Commerce Commission.

The decrease in income from lease of road, the increase in income from separately operated properties-profit, the decrease in miscellaneous rent, depreciation and miscellaneous tax accruals are chiefly due to adjustments of accruals, etc., in the accounts and not to greater or smaller income.

Miscellaneous rent income shows an increase of \$263,785.13, mainly due to additional amount accrued during the year on land leased. Revenue from miscellaneous non-operating physical property decreased \$81,809.33. This is a net account and the decrease is mainly due to the inclusion in 1920 of accumulated charges for expense of operating and maintaining corporation offices in the Mail Service and Office Building for the years 1918 and 1919 as well as those for 1920.

The increase in dividend income of \$636,548.38 is principally accounted for by extra dividends declared during the year by the Mahoning Coal Railroad Company and by the Merchants Dispatch Transportation Company.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended Dec. 31, 1920	Year ended Dec. 31, 1919	Increase or decrease
Compensation accrued for the possession, use and control of the property of this company and its leased lines, as stated in contract with the Director General of Railroads—January 1 to February 29, inclusive.....	\$9,300,438.41	.....	.....
Additional compensation accrued account completed additions and betterments—January 1 to February 29, inclusive.....	237,569.11	.....	.....
Guaranteed net railway operating income under section 209 of Transportation Act of 1920—March 1 to August 31, inclusive.....	\$28,699,177.36	.....	.....
Less operating income items audited March 1 to August 31, inclusive, applicable to the period prior to January 1, 1918.....	330,721.10	28,368,456.26	.....
Net railway operating income—corporate account—September 1 to December 31, inclusive.....	11,537,942.97	.....	.....
TOTAL (compared with compensation accrued in 1919 under contract with Director General of Railroads).....	\$49,444,406.76	\$57,690,588.00	-\$8,246,181.33
<b>MISCELLANEOUS OPERATIONS</b>			
Revenues.....	\$473,803.22	\$2,825.69	\$470,977.53
Expenses and taxes.....	268,274.15	4,275.34	263,998.81
NET INCOME.....	\$205,529.07	\$1,449.65*	\$206,978.72
<b>OTHER INCOME</b>			
Income from lease of road.....	\$84,612.05	\$103,725.39	-\$19,113.34
Miscellaneous rent income.....	1,309,837.75	1,046,042.62	263,795.13
Miscellaneous non-operating physical property.....	501,876.60	583,686.02	-81,809.33
Separately operated properties profit.....	1,033,775.29	871,601.52	162,173.77
Dividend income.....	6,655,251.13	6,018,702.75	636,548.38
Income from funded securities.....	1,009,042.39	859,863.25	149,179.14
Income from unfunded securities and accounts.....	4,734,223.16	4,039,728.66	694,494.50
Income from sinking and other reserve funds.....	60,037.34	45,880.52	14,156.82
Miscellaneous income.....	72,156.93	50,135.47	22,021.46
TOTAL OTHER INCOME.....	\$15,459,902.73	\$13,619,366.20	\$1,840,436.53
GROSS INCOME.....	\$65,109,738.56	\$71,308,954.64	-\$6,198,766.08
<b>DEDUCTIONS FROM GROSS INCOME</b>			
Rent for leased roads.....	\$10,366,097.64	\$9,288,648.35	\$1,077,449.29
Miscellaneous rents.....	739,238.35	675,986.84	63,251.51
War taxes accrued.....	1,173,749.36	1,830,550.40	-656,801.04
Miscellaneous tax accruals.....	170,320.54	193,678.10	-23,357.56
Separately operated properties loss.....	149,374.42	82,015.95	67,358.47
Interest on funded debt.....	30,736,911.26	29,227,222.10	1,077,449.29
Interest on unfunded debt.....	5,889,446.74	5,100,843.42	788,603.32
Amortization of discount on funded debt.....	440,032.96	552,076.06	-112,043.10
Maintenance of investment or reorganization.....	3,499.72	4,772.88	-1,273.16
Miscellaneous income charges.....	318,660.15	325,290.21	-6,630.06
Corporate general expenses.....	276,587.51	915,800.46	-639,212.95
TOTAL DEDUCTIONS FROM GROSS INCOME.....	\$50,263,818.65	\$48,194,884.77	\$2,068,933.88
Less revenues and expenses applicable to period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration.....	1,111,231.95*	3,106,369.22	-2,085,137.27
NET CORPORATE INCOME.....	\$13,734,687.96	\$19,917,250.65	-\$6,182,562.69
<b>DISPOSITION OF NET INCOME</b>			
Dividends declared (5 per cent each year).....	\$12,479,614.76	\$12,479,611.28	\$3.51
Sinking funds.....	4,816.87	4,576.56	240.31
TOTAL APPROPRIATIONS OF INCOME.....	\$12,484,431.63	\$12,484,187.81	\$243.82
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS.....	\$1,250,256.33	\$7,433,062.84	-\$6,182,806.51

\*Net deficit.

Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1919.....	\$87,623,144.87
<b>ADDITIONS:</b>	
Surplus for the year 1920.....	\$1,250,256.33
From United States Government in adjustment of mail pay for years 1916-1917.....	1,646,161.61
Profit on road and equipment sold.....	21,899.69
	2,918,317.63
<b>DEDUCTIONS:</b>	
Surplus appropriated for investment in physical property.....	\$23,096.20
Depreciation prior to July 1, 1907, on equipment retired during year.....	502,362.54
Loss on retired road and equipment.....	29,121.99
Sundry adjustments (net) and uncollectible accounts.....	53,326.52
	607,907.16
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1920.....	\$89,933,553.34

Income from funded securities increased \$149,179.14, this being attributable to interest received on old first mortgage bonds of the Kanawha & Hocking Coal and Coke Company, and accrued interest on first mortgage sinking fund bonds of that company received during the year in exchange for the old bonds in connection with a general settlement with the old and coke company.

The increase of \$694,194.50 in the income from unfunded securities and accounts is largely due to interest received from temporary investment in United States Treasury Certificates and other securities, of equal value to sale of equipment trust certificates of April 15, 1920, until such time as the funds were required to pay for new equipment.

The increase of \$22,021.46 in miscellaneous income largely represents profit resulting from the purchase of foreign exchange for payment of dividends.

Rent for leased roads increased \$1,077,449.29. This is almost entirely caused by larger payments to the Mahoning Coal Railroad Company since February 29, 1920. During federal control the company paid, under agreement with the Mahoning Coal Railroad Company, a rental based on 40 per cent of the average annual earnings during the test period, while, since the termination of federal control, the payments have been on the basis of 49 per cent of the actual gross earnings.

The decrease of \$656,901.04 in war taxes is the result of a change in method of accounting since August 31, 1920, war taxes for the last four months of the year having been included in railway tax accruals.

Largely contributing to the increase of \$67,258.47 in charges for loss in connection with separately operated properties is this company's proportion of an increased deficit in an operation of the Indiana Harbor Belt Railroad.

The increase of \$1,509,689.16 in interest on funded debt is due to the increase of such debt as noted elsewhere, while the increase in interest on unfunded debt is mainly in that accrued on deferred payments on additions and betterments on road and equipment and on other accounts due the United States Government, this more than offsetting the saving in interest due to the reduction in the short term debt of the company.

The corporate general expenses shown for 1920 represent only those for the months of January and February during which the property was under federal control, expenditures of this character for the remainder of the year being included in operating expenses. This accounts for the decrease of \$639,212.95 as shown.

The net corporate income for the year was \$13,734,687.96, a decrease of \$6,182,562.69 as compared with 1919. After payment of the dividends of 5 per cent and sinking fund deductions of \$4,816.87, there remained for the year a surplus to be carried to profit and loss of \$1,250,256.33.

Expenditures during the year for improvements on property were as follows:

Improvements on owned property used in operation.....	\$3,776,663.77
Equipment purchased and acquired less equipment retired and transferred.....	3,349,574.02
Improvements on leased property.....	2,159,424.07
Improvements on miscellaneous physical property.....	2,136,678.33

The net increase in property investments during the year 1920 was.....

\$11,422,340.19

The cost of the equipment allotted to the New York Central Railroad Company during federal control by the Director General of Railroads and covered by equipment trust agreement dated January 15, 1920, was included in the detailed lists of expenditures for improvements to property contained in the annual reports for the years 1918 and 1919. About one-third of the equipment covered by the New York Central Railroad Company's Equipment Trust established by agreement dated April 15, 1920, was delivered in 1920 and its cost appears in the detailed tabulations in this report. The cost of the remainder of this equipment, which it is expected will be delivered in 1921, will appear in the report for that year.

This company owns 67 per cent of the capital stock of the New York and Harlem Railroad Company and operates its steam line under lease. The traction lines of the New York and Harlem Railroad Company were operated by the Metropolitan Street Railway Company under a 999 year lease dated June 11, 1896, and following reorganization of the lessee, were operated by the New York Railways Company, as successor, subsequent to January 1, 1912, and by Job E. Heiders, Receiver of the New York Railways Company, after March 20, 1919, until midnight of January 31, 1920, when, by order of the United States District Court, the lines were returned to the New York and Harlem Railroad Company and have since been operated by that company.

On July 22, 1920, in Paris, France, occurred the death of William K. Vanderbilt, concerning whose character and service with this company an appropriate minute will be found on another page of this report.

The Board also records with deep regret the death of Dwight W. Parlee, Secretary of this company, at his home in Ithaca, New York, on February 21, 1920, after forty-four years of service with the New York Central Lines. Edward F. Stephenson was appointed Secretary, effective February 4, 1920.

On January 28, 1920, Messrs. Albert H. Harris and Bertram Cutler were elected directors of this company.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors.

ALFRED H. SMITH,  
President.

## Railway Officers

### Executive

**D. M. Swobe** has been elected president and traffic manager of the McCleod River with headquarters at San Francisco, succeeding J. H. Queal, deceased.

**Charles S. Lake** has been appointed assistant to the president of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Richmond, Va., effective June 1. Mr. Lake was born on May 27, 1871, at Front Royal, Va., and received his education at private schools and at the Front Royal Academy. He entered railway service in May, 1885, as a telegraph operator with the Richmond & Allegheny (now a part of the Chesapeake & Ohio) and subsequently served that road and the Norfolk & Western in yard and train service. In September, 1888, he became a dispatcher for the Norfolk & Western and from 1890 to 1897 served in the same capacity on the Chesapeake & Ohio. In January, 1897, he returned to the Norfolk & Western and until 1902 served in turn as night chief dispatcher, general yardmaster and assistant trainmaster at Roanoke, Va., and Bluefield, W. Va. For five years he served as trainmaster and superintendent of the Danville and Washington division of the Southern. He then became superintendent of the New York, New Haven & Hartford, first at Hartford and then at Waterbury, Conn., and served in that capacity until 1912, when he was appointed general superintendent of the Minneapolis & St. Louis. From May, 1914, to June, 1917, he served as general manager of the Seaboard Air Line and left to perform special service for the president of the Erie, where he remained until the period of federal control, during which he served as assistant director, division of operation, and assistant to the director general of railroads. At the expiration of federal control he remained until August, 1920, with the United States Railroad Administration, when he became general manager of the Norfolk-Southern, in which capacity he was serving at the time of his recent appointment.



Copyright Faber & Son, Norfolk, Va.

Chas. S. Lake

**Operating**

**J. A. Davis**, district superintendent of the Pullman Company, with headquarters at San Antonio, Tex., has been transferred to Louisville, Ky., and has been succeeded by **T. J. Eddings**, who has been district superintendent at Mexico City, Mex.

**R. G. Fagan** has been appointed superintendent of freight protection of the Southern Pacific with headquarters at San Francisco, effective July 1. The work of preventing loss of and damage to freight shipments has been assumed by the operating department.

**J. H. Walsh**, assistant superintendent of the Southern Pacific, with headquarters at San Antonio, Tex., has been promoted to superintendent of the Austin division, with headquarters at Austin, Tex., succeeding **T. T. Player**, who resigned recently. **C. H. Maguire**, trainmaster of the Austin division, with headquarters at Austin, Tex., has been promoted to assistant superintendent, with headquarters at Houston, Tex., succeeding **A. L. Kuykendall**, who was killed recently

in a motor car accident at Houston. **H. F. Kelly**, chief clerk to the division superintendent, with headquarters at San Antonio, Tex., succeeds Mr. Maguire.

**W. J. Edwards**, whose appointment as general superintendent of the Southern with headquarters at Chattanooga, Tenn., was announced in the *Railway Age* of June 10 (page 1378), was born at De Kalb, Kemper county, Miss., in 1866. He entered railway service at the age of 16 as a track laborer with the Mobile & Ohio and was later promoted to track foreman. Mr. Edward then entered train service as a brakeman and subsequently served as freight and passenger conductor, and roadmaster. In 1914, he was appointed division superintendent at Birmingham, Ala., which position he held at the time of his recent appointment. Mr. Edwards has served continuously with the Mobile & Ohio and the Southern for 39 years, with the exception of one year, when he was in the service of the St. Louis Iron Mountain & Southern as division engineer.

**James H. Aydelott**, whose promotion to superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, was announced in the *Railway Age* of July 2 (page 50), was born in Jersey County, Ill., in 1883. Mr. Aydelott entered railway service as a stenographer and clerk in the mechanical department of the Chicago, Burlington & Quincy at St. Joseph, Mo., in September, 1902. Six years later he was promoted to chief clerk to the division superintendent at St. Joseph. After three years' service in that position, he became chief clerk to the general superintendent, with headquarters at St. Louis, Mo., and one year later was transferred to Chicago as chief clerk to the assistant general manager. In 1916 he was promoted to trainmaster, with headquarters at La Crosse, Wis., and after one year's service at that location he was promoted to superintendent, with headquarters at Hannibal, Mo. During the next three years, Mr. Aydelott served as superintendent at Hannibal, at Omaha, Neb., and at Casper, Wyo., and in August, 1920, was advanced to assistant superintendent of transportation, with headquarters at Chicago, the position he occupied at the time of his recent promotion.

### Traffic

**L. R. Capron** has been appointed assistant freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., effective July 1.

**F. C. Jerome** has been appointed general eastern freight agent of the New York Central with headquarters at New York, succeeding **L. M. Souders**, resigned.

**A. C. Irons**, general passenger agent of the Chicago Great Western, with headquarters at Chicago, has resigned to become associated with the D. H. Howland Sugar Company of Detroit, Mich.

**F. M. Hicks**, comptroller of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., has been appointed traffic manager, succeeding **T. D. Geohegan**, whose resignation was noted in the *Railway Age* of July 8 (page 941). **L. C. Hollingsworth**, auditor of receipts, with headquarters at Mobile, Ala., has been appointed assistant general freight and passenger agent, with the same headquarters, effective July 2. **J. S. Gibson**, succeeds Mr. Hollingsworth.

### Mechanical

**D. D. Briggs** has been appointed master mechanic in full charge of the mechanical department of the Alabama, Tennessee & Northern with headquarters at Mobile, Ala., effective July 1.

### Obituary

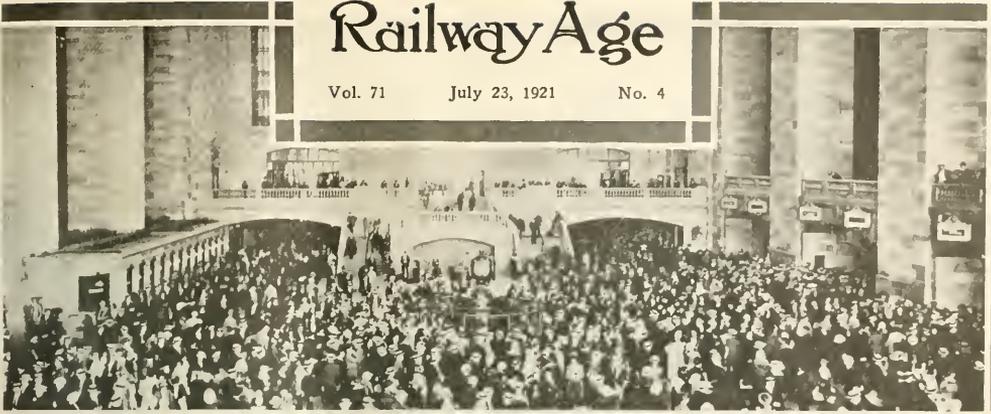
**Dr. Norman H. Morrison**, for 30 years chief surgeon of the Atchison, Topeka & Santa Fe Coast lines, died at his home in Los Angeles, Cal., on July 3, after an operation. Mr. Morrison was 68 years old.

# Railway Age

Vol. 71

July 23, 1921

No. 4



A Busy Day in Grand Central Station, New York

## Contents

France Undertakes Huge Electrification Program	Page 155
Utilization of Available Water Power and High Price of Fuel Are Most Important Considerations Suggesting Economy of Electrification, by O. F. Allen.	
Inadequate Recognition of Chief Clerk's Position	159
Salaries Smaller Than Those of Many Organized Employees and Foremen, While Duties Are Often of an Official Nature, by a Chief Clerk.	
Unit Cost Data Reduce Freight Train Expense	161
Prompt Distribution of Information Aids in Cutting Wage Charges Per Hundred Ton Miles, by J. E. Hutchison.	

### EDITORIALS

The Condition of Cars Grows Worse	145
Cross-Tin Purchases and Economy	145
Encourage the Associations	145
Recognition of Faithful Service	145
The May Net of \$37,080,654	146
Inadequate Maintenance Affects Net	146
British ERI Has No Guaranty	146
The Pennsylvania's Come-Back	140
Give Your Men the Chance	147
Futility of the Labor Conference	147
Good Material and Workmanship Needed	147
The Contracting of Maintenance of Way Work	148
Reduce the Accumulation of Bad Order Cars	148
The Farmer and the Railroad Employee	149
Virginian Railway	149
Union Pacific	150

### LETTERS TO THE EDITOR

Statistical Reports to the Interstate Commerce Commission, by M. O. Lorenz	152
The Dining Car Department An Advertising Asset, by H. Ferry	152
A Train of 201 Cars	153
Do Railroads Want College Men? A. J. Wood	154

### LETTERS TO THE EDITOR—Continued

A New Plan for the Settlement of Per Diem Accounts, by H. E. Sanders	154
--	-----

### GENERAL ARTICLES

France Undertakes Huge Electrification Program, by O. F. Allen	155
Railroad Settlement Plan Tentatively Agreed Upon	158
Inadequate Recognition of Chief Clerk's Position, by a Chief Clerk	159
Unit Cost Data Reduce Freight Train Expense, by J. E. Hutchison	161
Freight Car Loading	163
Tentative Valuations Issued	164
Reduction of Live Stock Rates Proposed	165
Locomotives of American Design for Use in Spain	167
Labor's Bill of Rights and the Seniority Rule, by L. E. Gardner	168
Chesapeake & Ohio Wants to Unify Properties	169
"No Exception" Month on the Illinois Central	170
Water Softening as a Factor in Fuel Conservation, by C. R. Knowles	171
Modern Refinement in Coalting Station Design	172
A Many Purpose Locomotive Crane	174
GENERAL NEWS DEPARTMENT	175

Published every Saturday and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building. CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Urasigmac, London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. H. ADAMS  
H. F. LANE  
R. E. TRAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STUEBING  
C. W. FESS  
K. E. KELLENBERGER  
ALFRED G. OEHLEK  
P. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
L. M. SANDWICK  
J. G. LYNE  
Y. H. DUNN  
D. A. STEEL

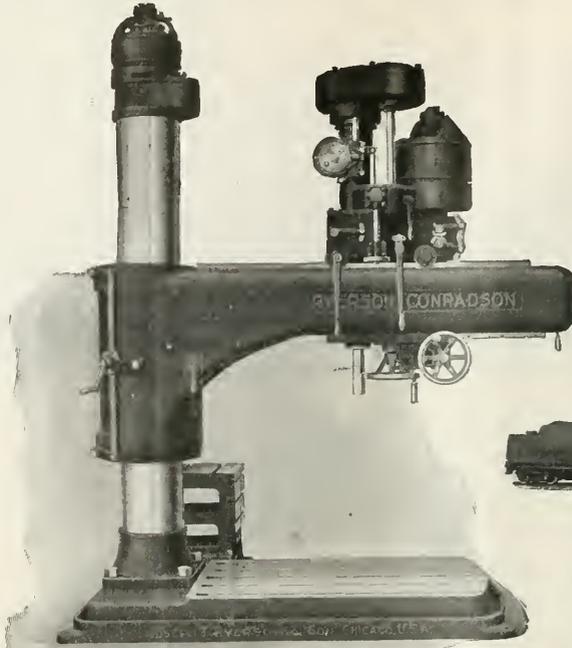
Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$3.00. Foreign Countries (excepting daily editions), \$10.00 £2 0s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue, 9,050 copies were printed; that of these 9,050 copies, 3,150 were mailed to regular paid subscribers, 67 were provided for counter and news company sales, 374 were mailed to advertisers, 82 were mailed to employers and correspondents, and 375 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 284,250, an average of 9,802 copies a week.

(A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)



Modern big locomotives have added to the shop's burden.

Ryerson-Conradson Railroad Radial will help lift it.

## A Growing Problem

To perform efficiently, modern locomotives with their numerous improvements and increased number of parts must be properly maintained.

Their maintenance involves work of great variety.

Ryerson-Conradson Railroad Radials are designed for just this kind of work.

Twin motor drive, elimination of bevel gears, reduction by one-half of the number of gears used in the ordinary radial and convenient control—all speed up repair production, and reduce maintenance cost.

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The condition of freight cars is steadily growing worse. The total number of cars reported in bad order on July 1

### The Condition of Cars Grows Worse

was 354,611, or 15.4 per cent of the total number, as compared with 15.1 per cent on June 15. The number of box cars in bad order was 180,544, and the number of gondolas, 136,144.

The number of cars of each of these classes reported in bad order showed an increase. These figures are the worst ever reported in the history of American railroads so far as this paper knows. The wage reduction granted by the Railroad Labor Board went into effect on the date on which these figures were reported. The statistics given in the next report will be interesting and significant. Undoubtedly many railroads postponed repairs on all the cars they could until July 1 in order to get the benefit of the reduced labor costs. It would be a healthy sign if the next report should show a reduction in the number of bad order cars. Just how long it will be before a substantial revival of traffic will occur cannot be safely predicted. It does seem, however, that there soon should be a rapid increase in the demand for box cars to move grain, and gondolas to move coal. Both railroad earnings and public sentiment would be adversely affected if the railways should find themselves unable this fall and winter to handle all the traffic of any kind offered because of too much delay in beginning to improve the condition of cars.

In securing the greatest economy in the purchase and use of cross-ties, there are numerous factors to be considered just

### Cross-Tie Purchases and Economy

as in the purchase and utilization of any other material on a railroad. A low first price is by no means the determining factor in all cases and at all times, for there are often many other

points which must be taken into consideration in arriving at true economy. It would seem that this should be so well known by this time as not to need repetition, yet from time to time instances come to notice which tend to show that it is not as well known as one might think. Just where the fault lies it is difficult to say. It would seem, however, to rest with the purchasing methods pursued by the roads involved. In the past few years a large amount of information relative to the economical selection of ties has been made available through the research work and the studies of the various committees of such organizations as the American Railway Engineering Association, the American Wood Preservers Association and others. Thus it has become possible for maintenance men and others sufficiently interested to determine the classes of ties that would be most economical for any particular road. In general maintenance officers have availed themselves of this information with varying success, though on some roads little of this accumulated knowledge has been put to effective use. In some cases this may be due perhaps to the fact that the finances of the road are in such a shape that the cheapest tie in first cost is the only tie it can afford to buy. There are other roads, though, that are able to look beyond first cost and yet do not always do so. There is a tendency on some such roads where the specification of ties is largely out of the control or guidance of the tie men of the maintenance department to think in

terms of branch line ties—cheap ties. And on such roads it will be found that usually there are far too many branch line and siding ties for such tracks and far too few good ties available for main line service. The result is obvious—the uneconomical use of ties. The remedy is equally obvious.

The critical period through which the railroads have passed during the last ten months has put a damper on the activities of several sections of the American

### Encourage the Associations

Railway Association as well as on some of the independent associations of railway men. In some cases the meetings have been abandoned; in others the

work has been greatly curtailed. While this may not be a serious matter in the case of a technical group subjected to direction by the A. R. A., in the case of an independent association, the failure to hold an annual meeting may readily jeopardize its very existence. This is the case at present with one of the smaller associations composed of men of the foreman and general foreman class, who, because of reductions in compensation and the drastic curtailments of their work by the various roads, have suffered a heavy loss in esprit de corps. As a consequence the officers of this association despair of instilling the necessary enthusiasm in the membership to insure a successful program at this year's meeting. The value of these technical associations of railway men is generally recognized. They constitute a most wholesome influence for loyalty and interest in the welfare of the properties. The railways can ill afford to allow the work of these organizations to lapse because of any lack of encouragement or guidance on the part of the managements.

In examining a list of the officers of the railways of Great Britain a striking characteristic is at once apparent to one

### Recognition of Faithful Service

who ordinarily refers only to such lists of American railroad officers. Directly under the name of every important officer is found the name of his chief clerk, before the subordinate officers

are listed. This practice is in strong contrast to the procedure in this country, where in the usual list available to the public not even the names of chief clerks to the highest executive officers are given. The duties of a chief clerk are admittedly of great importance. Upon him depends to a great extent the proper functioning of the property under the supervision of the officer for whom he works. Often the chief clerk's duties take on the characteristics of those of an officer and not infrequently he is called upon to assume the responsibilities of his absent superior. In view of the importance of the position and the recognition accorded it in other countries the question as to whether or not American railroads as a whole are giving adequate recognition or compensation to the chief clerks of our railroads is a natural one. Many of these men naturally take the position that they are not receiving the recognition their service merits and this view is ably expressed in an article written by a chief clerk which appears elsewhere in this issue. At all

events the subject is one of greatest importance and merits the fullest discussion as does any suggestion of injustice in any quarter—and all the more in the case of these men who number so largely among the loyal servants of our railroads.

The Class I railroads of the United States in May, 1921, had a net railway operating income of \$37,080,654, as compared with a deficit in May, 1920, of \$5,429,769. For the first four months of this year the net was \$90,332,121 as against but \$26,400,110 in the first five months of 1920. Even though the

**The May  
Net of  
\$37,080,654**

May, 1921, net represented but 2.41 per cent instead of 6 per cent on the aggregate value of the property used in the service of transportation, the situation has certain favorable aspects, for it indicates that some progress is being made. The difficulty is, however, that too much of this progress has had to be brought about through economies of the most drastic order and represents the severe methods adopted to meet a most difficult problem rather than improvement in the traffic and general situation. The business handled in the first five months of 1921, as is only too well known, has been much less than that carried in the first five months of 1920. The higher freight rates even with the smaller traffic have kept the freight earnings on a par with the 1920 period; the freight earnings in the first five months of 1921 being \$1,547,860,564 and in the same period of 1920, \$1,518,840,239. The total operating revenues, however, have been less. Now, it is well known that with the decreasing traffic, operation cannot be handled as efficiently. The train load cannot be maintained and in general economies in transportation cannot keep pace with the falling off in business. In the first five months of 1921 total operating expenses were \$1,984,693,193, or \$106,209,104 less than the same period of last year. Transportation expenses were \$33,288,859 less. Expenses for maintenance of way and structures, however, were \$51,556,966 less and for maintenance of equipment \$37,689,558 less. It is, therefore, evident that the improvement in net has been too largely due to savings in maintenance rather than to a real improvement in the situation. The stock exchange has a somewhat uncanny way of reflecting improvement or the lack of it in the properties behind the securities in which it trades. The absolute lack of interest in railroad securities at present is probably due to various reasons, but, no doubt, one of them is a recognition of the facts of the case that are here noted.

Analysis of the net earnings for May and the first five months of 1921 taking into consideration some of the major factors which affect them, shows that

**Inadequate Main-  
tenance Affects  
Net**—the emphasis that has been placed on the improvement over the showing in the corresponding month of 1920, is hardly justified. As has been pointed out in a

preceding note, the larger part of the increase in net as compared with last year has resulted from reduction in expenses for maintenance of way and structures of \$51,556,966 and for maintenance of equipment, \$37,689,558. These great reductions would indicate that road bed and equipment were not being kept up. If confirmation were needed, it is to be found in the statistics of the number of employees. The latest figures are for March and in that month less than one-half as many section men were employed as in August, 1920, while the various classes of shop employees show reductions averaging about 25 per cent. It would be interesting to see what the net earnings in May or the five months would have been had the proper amount of work been done on the track and rolling stock. No ready measure of the deficiency in maintenance of way work is available, but the

statistics of bad order cars furnish a rough indication of the deferred expenses in the equipment department. From April 1 to May 1, to take one month, the number of heavy bad order cars increased 36,568. The average cost of properly repairing heavy bad order cars is placed at \$1,000 to \$1,200 each. Assuming that the roads had repaired these 36,000 cars instead of applying bad order tags, taking \$1,100 as the average cost of repairs, the expenses for maintenance of equipment in the month of April would have been increased \$40,000,000 and the net operating income would have been changed into a deficit. Of course many of these cars may be retired, but even so there will be a considerable charge to operating expenses. The results for April are typical of the first six months of this year. In that period the heavy bad order cars increased 139,193 for which the estimated cost of repairs is \$153,000,000. Railway officers realize that the properties have not been kept up to the proper standard in recent months and now that wages have been reduced, the amount of maintenance work is being increased. This will affect the financial results and net earnings may show little increase, despite the reduction in wages. At any rate, it will be extremely difficult to judge whether the roads are on a sound basis financially until maintenance reaches a normal volume.

What apparently is the most valid criticism of the British railway bill which is now in committee is the fact that super-

**British Bill  
Has No  
Guaranty**

vision practically as thorough as outright government control is contemplated under its provisions without the compensating feature, even for the period of transition, of financial responsibility on the part of the government. The justice of this criticism becomes apparent when recent income figures are examined. In April of this year the roads incurred an operating deficit of \$28,472,116, calling for a payment of \$46,386,076 by the government to bring receipts up to the guaranteed return on the basis of the year 1913. In May the deficit was \$25,475,945 and the government's liability \$44,196,665. The situation in which the roads will find themselves next month when government control, and consequently the government guaranty, ceases can scarcely be considered an enviable one. It is doubtful if the most optimistic advocates of the bill could expect the economies hoped for under the consolidations provided by the bill to be great enough to compensate for the cessation of the government guaranty. At any rate the contemplated savings can not be expected to make themselves felt immediately and, until they do, Britain's transportation system will be in jeopardy. Meanwhile the time remaining for the consideration of the bill is becoming shorter and the hope that ample opportunity would be provided for the fullest discussion in committee and on the floor of the House of Commons has all but disappeared.

One of the striking features of the May revenues and expenses of the individual Class I roads—published in last week's issue of the *Railway Age*—was the somewhat remarkable improvement

**The  
Pennsylvania's  
Come Back**

in net shown by the Pennsylvania Railroad. The Pennsylvania, considering it as a road of 7,323 miles, rather than as a system of over 10,000 miles, had a gross income in May, 1921, of \$40,773,400 as compared with a gross in May, 1920, of \$40,408,665 or about the same amount. Its net railway operating income, however, for the month of May was, in 1921, \$3,848,609 as compared with a deficit in May, 1920, of \$5,727,323; in other words there was a difference, or an increase in net of no less than \$9,575,933.

For the first five months of 1921, the net railway operating income was \$6,370,846; in the first five months of 1920, operations resulted in a deficit of \$30,944,101, an increase in 1921 over 1920 of \$37,314,949. The Pennsylvania today is carrying only about 75 per cent of the amount of traffic handled in the early part of 1920. It is, however, apparently keeping the situation well in hand. For one thing, its average train load in May, 1921, was 877 as compared with 887 in May, 1920, and an average for the year 1920 of 880. The per cent of locomotives in bad order in May was 22.8 as compared with 31.1 in May, 1920, or with 28.9 in January. Bad order freight cars were 10.3 per cent in May an increase from 3.9 per cent in January; this indicates a trend in the wrong direction and shows that part of the savings in costs of operation have come in maintenance of equipment but attention may be drawn to the fact that the average percentage of bad order cars in May for the country as a whole was approximately 14 per cent. The Pennsylvania is far from being back where it ought to be, but its progress towards recovery is quite decisive.

It is a well-known fact that, regardless of the conscientiousness of the efforts made, familiarity with a job or problem frequently acts as a deterrent in attempts made towards improved methods of carrying on work. In other words it is possible to get so close to one's own work as to secure a distorted perspective. Probably no class of men suffer more from this handicap than railway division officers. The work carried on under their direction is at all times urgent, leaving little time for the minor officials or foremen charged with its actual prosecution to visit and learn how their neighbors are meeting similar problems. The handicap is general, existing in all departments—mechanical, maintenance of way, engineering, traffic, etc. Various schemes for broadening the vision of the men engaged in a particular line of work have, at different times, been tried out on the roads of this country with the same success that attended a recent experiment made in England where, as reported in the Railway Gazette for May 6, 1921, the London & North Western invited the personnel of the permanent way department to submit suggestions for improving methods generally. The response was generous and several devices for saving both labor and time were received and thus made available for general adoption. Usually such schemes have been somewhat departmental in character, the efforts of a particular road being confined to a single department and often to a single department of a particular division, thus localizing the benefits and leaving the general situation little improved. However, the better methods which have been developed more or less locally seem to indicate that much good might result from making the experiments more comprehensive and to include all divisional work and all divisions of a road.

### Give Your Men the Chance

One of the greatest farces in the history of American railroads was enacted last month. The officers of two hundred railroads met with dummy representatives of the employes and went through the motions of negotiating rules. At the end they were no nearer agreement than at the beginning, for progress was blocked by the instructions which the American Federation of Labor gave to the local labor committees. In the decision on the national agreements the Labor Board said, "Naked presentation as irreducible demands of voluminous forms of contracts regulating working conditions with instructions to sign on the dotted line is not a per-

formance of the obligation to decide disputes in conference if possible." The unions absolutely disregarded this decision. The local committees of employes were governed entirely by instructions from a sub-committee of the National Agreement Committee of the Railway Employees' Department of the American Federation of Labor, which, before the conferences were opened, laid down the procedure that all committees were to follow. It will be recalled that at this time the president of the machinists' union was trying to get into Soviet Russia. Perhaps the sub-committee was not authorized to deviate from the policies laid down before he departed. After trying to arrange conferences with groups of carriers covering certain territories, the local committees on the individual railroads presented to the managements as the proposed new agreement the national agreement, with the exception of those rules dealing with wages. When this was rejected by the railroads, the program outlined by the sub-committee was followed. Almost without exception, the employes refused to accept rules proposed by the railroads and the only portions of the agreement accepted by both parties were those rules in the national agreement which were acceptable to the roads. It is clear that throughout the controversy the roads did not negotiate with their employes, but negotiated through them with the officers of the Railway Employees Department of the American Federation of Labor, who alone were authorized to give a decision on the acceptance of the rules. Will future conferences be a repetition of this nonsensical procedure and will the department heads of all the railroads be obliged to take several weeks from constructive work and spend it in fruitless argument with committees who can take no action without the sanction of union officers? If so, the sixteen points, and in fact the whole machinery established by the Transportation Act for the settlement of labor disputes, will be a mockery.

Two things greatly needed at the present time in both railroad shops and roundhouses are an improved quality of material used for repairs and a higher grade of workmanship in applying that material. It costs just as much to apply poor, as good material and when the former fails consistently in service, more reliable, higher priced material must be purchased, the labor cost of one removal and application being a total loss. During the war, it may have been necessary for the railroads to accept poor material in order to obtain output, but this practice should be discontinued. It results in excessive failures, high maintenance costs and delayed equipment. All railroad materials should be purchased with a view to the use for which intended, price not being the only factor considered. It is becoming more and more the practice for progressive railroads to purchase materials on practical and conservative specifications. Every assistance should be afforded the American Railroad Association committees in writing and passing on specifications and good results will follow if these specifications, once accepted, are rigidly adhered to. The way any material is standing up in service can be determined by checking periodically the amounts ordered against that on hand and what has been used. If certain articles are being ordered in unusually large quantities, this will indicate excessive failures and, therefore, defective design or poor material. It always pays in the end to purchase durable material, owing to reduced maintenance and operating costs, and no matter how cheap the first cost, any material requiring frequent repair, patching or renewal, is expensive. Good workmanship also is essential. If output regardless of quality was ex-usable during the period of the war, that emergency has finally passed and railroad repair shop and roundhouse work should be brought back once

### Good Material and Workmanship Needed

Good workmanship in applying that material. It costs just as much to apply poor, as good material and when the former fails consistently in service, more reliable, higher priced material must be purchased, the labor cost of one removal and application being a total loss. During the war, it may have been necessary for the railroads to accept poor material in order to obtain output, but this practice should be discontinued. It results in excessive failures, high maintenance costs and delayed equipment. All railroad materials should be purchased with a view to the use for which intended, price not being the only factor considered. It is becoming more and more the practice for progressive railroads to purchase materials on practical and conservative specifications. Every assistance should be afforded the American Railroad Association committees in writing and passing on specifications and good results will follow if these specifications, once accepted, are rigidly adhered to. The way any material is standing up in service can be determined by checking periodically the amounts ordered against that on hand and what has been used. If certain articles are being ordered in unusually large quantities, this will indicate excessive failures and, therefore, defective design or poor material. It always pays in the end to purchase durable material, owing to reduced maintenance and operating costs, and no matter how cheap the first cost, any material requiring frequent repair, patching or renewal, is expensive. Good workmanship also is essential. If output regardless of quality was ex-usable during the period of the war, that emergency has finally passed and railroad repair shop and roundhouse work should be brought back once

### The Futility of the Labor Conferences

One of the greatest farces in the history of American railroads was enacted last month. The officers of two hundred railroads met with dummy representatives of the employes and went through the motions of negotiating rules. At the end they were no nearer agreement than at the beginning, for progress was blocked by the instructions which the American Federation of Labor gave to the local labor committees. In the decision on the national agreements the Labor Board said, "Naked presentation as irreducible demands of voluminous forms of contracts regulating working conditions with instructions to sign on the dotted line is not a per-

more to a consistently high standard. This can be accomplished only by educating the shop men and developing able, conscientious inspection forces. One railroad official recently said, "It would pay us, I believe, to get better work with less output, than to get high output with low quality workmanship as the latter only adds to the difficulty of maintaining locomotives at enginehouses. Engine failures increase, trains are delayed and operating costs mount."

## The Contracting of Maintenance of Way Work

ONE OF THE DEVELOPMENTS of the last few years in the conduct of maintenance of way work which has received a great impetus during the last few weeks is the performance of certain work of this department by contract. The railways have very generally followed the practice of contracting the construction of new lines or facilities for many years. They have, however, almost universally opposed the contracting of maintenance of way work which in any way affected the operation of trains, preferring to do work of this character with their own forces, over which they had undivided control. Conditions in recent years have caused a number of roads to forego their scruples in this direction.

During the acute labor shortage in 1917 and 1918 several roads contracted with outside parties for the performance of certain work, particularly in the vicinity of the large industrial centers, on the basis of actual cost plus a fixed percentage, thereby allowing the contractor to pay whatever price was necessary to secure the required number of men at the particular location without disturbing the railway's wage rate elsewhere on its system.

In these instances this plan was adopted as a means of increasing the wage rates locally. More recently this plan has again been resorted to for the opposite reason. With the standardization of railway wages throughout the country and the fixing of the wages for common labor at figures considerably above those prevailing in most localities, contractors, who are free to take advantage of the lower wages denied the roads, are able to do work for the railways at marked savings in cost.

This has led to the development of at least three general forms of contract. A number of roads are turning certain work over to contractors with a cost-plus-fixed-percentage arrangement. Other roads are contracting on a force account basis, whereby the contractor is paid on the basis of an agreed price per hour for all men employed. With both of these arrangements the roads secure the benefit of the lower wages at which a contractor can secure labor, while the work is commonly done under the supervision of the same railway officers who would handle it with company forces. A third form of contract which has been adopted by a few roads for several years involves the performance of certain fixed tasks at unit prices. While this last kind of contracting is limited necessarily to those classes of work which can be measured readily, it has the advantages of contracting in general to commend it without the possibility of the abuses which may creep into work that cannot be readily measured. It is a significant commentary on the wage decision of the Labor Board that it has produced conditions resulting in so much contracting of work which heretofore has been done by the railways themselves. The facts show that the Labor Board, like other governmental agencies, cannot set aside the law of supply and demand by arbitrary decisions which disregard obvious economic acts. The fact is, labor can be obtained for section work at lower wages than those fixed by the Labor Board; and it is unfortunate that the Labor Board makes it necessary for the railways to obtain it indirectly rather than directly.

## Reduce the Accumulation of Bad Order Cars

ON MAY 1, Car Service Division reports showed approximately 310,000 freight cars in bad order, or 13.2 per cent of the cars reported on the lines of the Class I railroads. Of these 310,000 cars, 228,200, or 74 per cent, were in need of heavy repairs. On June 1, 341,300 cars, or 14.8 per cent of the cars on the lines of the Class I railroads, were reported in bad order, of which 74 per cent, or 252,682 cars, were in need of heavy repairs. From the middle of April to the middle of June the net surplus of freight cars declined from a high point of over 500,000 to slightly less than 382,000 at an average rate of about 13,000 cars a week. This marked decline in surplus freight cars has been the result of an increase in traffic which, although definite enough, is still materially behind the average seasonal movement for certain commodities, the most important of which are coal and the merchandise and miscellaneous loadings which make up the great bulk of finished products of the country. Another factor which must be taken into account is the probability that as compared with last year's movement, the demand for grain cars will be materially heavier owing to a general desire to market this year's crop promptly.

There is reason to believe, therefore, that even though the general business activity of the country does not completely revive, there is likely to be an accelerating increase in the demand for cars during the next few weeks, particularly for coal cars, which at its climax may be as great as that reached last fall. If such a demand is to be met satisfactorily, large numbers of bad order cars in need of heavy repairs will have to be placed in service. Unless these cars are to be placed in service without the much needed and long deferred heavy repairs, their number cannot long continue to increase, and vigorous measures will have to be taken by all railroads.

The present equipment conditions are in no small part the result of drastic curtailments of expenditures which the roads were compelled to make during the last winter and spring in a struggle for solvency. For most roads interest payments become due on July 1 and January 1, and it is evident that, whatever the results of the struggle during the past six months, they cannot now be changed. It is now time to look ahead and appraise the situation likely to confront the railroads during the next six months. It is evident that whatever the change in general business conditions may be, there must be a material increase in the traffic movement during the coming six months as compared with that during the first half of the year, and that the longer this increase is delayed, the greater and more insistent will be the demand for cars when the increase finally takes place. If the railroads fail to meet this demand because of an abnormally large accumulation of bad order cars, they will deserve and will receive little public sympathy. The carriers cannot now afford to overtax the public's patience.

The greatest need of the railroads from the standpoint of their own interest is a heavy traffic. Should a car shortage accumulate with several hundred thousand freight cars still in bad order, how can any railroad management justify to its stockholders a policy which did not prepare to take full advantage of a heavy traffic when offered?

It should be stated in passing that equipment conditions are no worse on those roads of comparatively weak financial standing than on those that are comparatively strong. But can any management, irrespective of its financial condition, now justify itself in continuing a policy of curtailing maintenance expenditures likely to jeopardize the service which the public has a right to expect as well as the ability of the road to best serve its own interests? An immediate and extensive campaign of freight car rehabilitation should be inaugurated.

## The Farmer and the Railroad Employee

SAMUEL GOMPERS and other labor leaders, including leaders of the railway labor unions, are trying to bring about some kind of organized co-operation between the labor unions and the farmers. The purpose would be joint offensive action by the farmers and the labor unions against the railroads and large industrial and commercial concerns. The labor unions would especially like to get the assistance of the farmers in keeping up railway wages and forcing down railway rates. The result would be to bankrupt the railroads and force government ownership and management, or the Plumb plan of employees' management, on the country; and this is what the railway labor unions want.

Organized co-operation between the farmers and the labor unions regarding railroad matters would, under existing conditions, be extremely anomalous. The reasons why it would be so can be made clear by the presentation of a few facts showing the wide differences between the situations in which the farmers, on the one hand, and railway employees, on the other, now find themselves. The farmer usually is both a capitalist and a working man. The investment he has in his land, buildings, machinery, etc., makes him a capitalist. From this point of view he is just as truly a capitalist as the man who has money invested in a railroad or factory. Most farmers themselves perform a large part of the manual work on their farms. From this point of view they are working men. Both the farmer's return on his investment, and the wages for his work, are derived from the money he receives from the sale of his products.

The farmer is working as many hours a day and as many days a year as he was eight years ago. The latest report of the Bureau of Statistics of the United States Department of Labor shows that in June, 1921, the average wholesale price of farm products was only 13 per cent more than in 1913, before the world war began in Europe. From his investment and his manual labor the farmer is getting only 13 per cent more than before the war. The same statistics show that the average wholesale prices of all commodities were 48 per cent higher in June, 1921, than in 1913, and the average retail prices 44 per cent higher. In other words, while the farmer is receiving 13 per cent more for his labor, he is paying approximately 44 per cent more for what he buys.

Contrast these facts regarding the farmer's situation with the following regarding that of the railway employee: In 1913 the average wage of a railway employee was \$761. Since the 12 per cent reduction made by the Railroad Labor Board, effective on July 1, the average wage of a railway employee is approximately \$1,695, or 123 per cent more than in 1913. Nor is this all. Railway employees, since before the war, have been granted substantial reductions in their hours of work. About ninety per cent of them are paid on an hourly basis. The average wage per hour of these employees, because of the increases in their wages and the reductions in their hours, is now, even since the recent reduction of wages, at least 140 per cent more than in 1913. In other words, with the retail prices which the railway employee, like the farmer, pays, about 44 per cent more than in 1913, the railway employees who work on an hourly basis are receiving approximately 140 per cent more for each hour they work than in 1913.

There is much agitation among the farmers regarding railway rates. They wonder why, since the prices of their products have declined so much recently, the railway rates cannot, and should not, be substantially reduced. Most of the explanation can be derived from the foregoing figures. In 1913 the total wages paid by the Class I railroads amounted to \$1,338,612,385. As a result of numerous advances, including that granted by the Railroad Labor Board in July, 1920, this was raised to an annual basis of \$3,900,000,000, or almost 200 per cent. The 12 per cent reduction

granted by the Railroad Labor Board, effective on July 1, would make it, if the railroads were handling a normal traffic and employing the same number of men as they did last year, \$3,432,000,000, or 156 per cent more than it was in 1913. The railroads are not handling a normal business, however. Because of the decline in business they reduced the number of their employees from 1,993,524 in the first quarter of 1920, to 1,691,471 in the first quarter of 1921, or 15 per cent. This was a smaller number than they had in 1913, when the average number was 1,759,020. They could not long continue to maintain and operate their properties with this greatly reduced number of men, with the reductions in hours of work which have occurred since 1913. Even, however, on the basis of a 15 per cent reduction in employees, the annual pay roll on the basis of present wages would be \$3,000,000,000, or 120 per cent more than in 1913.

On the basis of the same number of employees as last year, the total wages of the railways at the present time would be running at the rate of about \$3,400,000,000, which is more than the total amount of money that they ever earned from all the service they rendered—freight, passenger, mail and express—in any year before the calendar year 1916. The principal explanation of the fact that the farmer is having to pay higher rates than for years is that the railways are still required by the Railroad Labor Board to pay so much more for labor than in past years.

Just how Mr. Gompers and the leaders of the railway labor unions expect to succeed, in the light of such facts as these, in persuading the farmers that they should co-operate with the labor unions in keeping the railway pay roll up and getting freight and passenger rates reduced is somewhat difficult to surmise. The rates have to be kept up mainly to meet the pay roll. The question of railway wages has been settled for the present. The question of the rules and working conditions of employees established under the national agreements has not, however, been settled at all. The national agreements are still in effect, and the rules and working conditions established by them are continuing to inflate the pay rolls and the operating expenses, thus contributing toward making necessary the rates of which the farmers complain. If the farmers' own leaders would present to them the real reasons why the present rates of the railways are necessary, Mr. Gompers and the leaders of the railway labor unions would meet with insuperable difficulties in enlisting the co-operation of the farmers in an attack upon the owners of the railroads, who, at the present time, are getting only one-half as large returns on their investment as they did eight years ago, while railway employees are receiving wages more than twice as large.

## Virginian Railway

SO MUCH HAS BEEN SAID in the columns of the *Railway Age* recently, notably in the issue of May 27, pages 1203 to 1208, regarding the operation of this road that the review of the annual report of the company can be made brief.

The year 1920 was a good year for the Virginian Railway. It was marked by large net earnings and by the carrying out of several progressive developments. In 1920 the Virginian Railway had a net railway operating income, as reported in the monthly statement for December to the Interstate Commerce Commission, of \$4,944,243. This compared with the net railway operating income for 1919 of \$2,541,603. So far this year the Virginian has kept ahead of its 1920 figures. The net railway operating income for the first four months of this year has been \$1,288,717, compared with \$1,020,025 in 1920. In the article which appeared in the *Railway Age* of May 27 considerable stress was placed on the importance of export trade and coal in the Virginian's operations. The

figures which are given above show how this new business has been reflected in net earnings.

Referring now to the corporate income account, which takes into consideration the standard return for January and February and the guaranty for the six months of the guaranty period, it will be noted that the net income for the year ended December 31, 1920, which figure is subject to settlement with the United States government, was \$3,287,462, as compared with a corporate income to 1919 of \$1,845,632.

Inasmuch as so much information concerning the operations of the Virginian was given in the article previously referred to, it is hardly necessary to say much concerning them here. However, in 1920 the Virginian carried 7,784,517 tons of revenue freight, its traffic aggregating 2,848,422,083 ton-miles, as compared with 5,985,824 tons and 2,114,771,380 ton-miles in 1919. Of the total tonnage carried in 1920, 7,145,731 tons were bituminous coal. In carrying this tonnage the railroad secured an average number of freight cars per train of 65.22, an average load per car of 53.32 tons and an average revenue train load of 1,718 tons.

The progress that was made by the Virginian in 1920 was of a character which should permit the road to make a considerable increase in its capacity as a bituminous coal road. During the year the road acquired the first part of an order of 1,000 of the new 120-ton coal cars. With this acquisition the number of freight cars was increased from 8,875 at the end of 1919 to 9,425 at the end of 1920 and the total capacity of 451,148 tons to 512,330 tons. In view of the fact that this increase was secured with only a portion of the total order, it is apparent that the 1921 report will show a similar increase.

Considerable attention has been given at various times in the columns of the *Railway Age* to the double-tracking of the 2.07 per cent grade between Elmore, W. Va., and Clark's Gap. This improvement will add considerably to the capacity of the railroad and will solve one of its most serious operating problems. To assist in carrying out the work, the road has secured a loan of \$2,000,000 from the revolving fund.

The railroad has also been making some extensive as well as intensive development. The extensive development includes the lease of the Virginia & Wyoming Railway, which had in process of construction, or about to be constructed, about 14½ miles of line extending from a point on the Virginian near Maben to a point on Laurel Fork of the Guyandot. The new line is now in process of construction and it is hoped to have it completed during the present year. It will open up an entirely new territory west of the territory at present served by the Virginian's lines and should have an appreciable bearing on the future business of the company.

The following gives the figures for operation in 1920 as compared with 1919:

	1920	1919
Mileage operated:		
Freight revenue	\$15,737,818	\$10,268,428
Passenger revenue	909,686	742,508
Total operating revenue	18,158,853	12,075,318
Maintenance of way expenses	3,229,597	1,838,773
Maintenance of equipment	3,710,211	2,662,387
Traffic expenses	100,168	56,343
Transportation expenses	6,513,536	4,421,566
General expenses	379,634	300,748
Total operating expenses	12,908,982	9,274,535
Net from railway operation	5,249,871	2,800,770
Income from operation	4,133,169	2,536,937

The corporate income account is as follows:

Tentative net railway operating income for the ten months ended December 31, 1920	\$4,510,729	
Compensation due from U. S. Government (January and February, 1920; full year 1919)	513,365	\$3,247,603
Tentative railway operating income for the year subject to settlement with the United States Government	5,024,095	
Total non-operating income	\$284,209	
Gross income	\$5,308,304	\$3,548,577
Total deductions from gross income	2,020,842	1,767,012
Net income (tentative for year 1920, subject to settlement with U. S. Government)	\$3,287,462	\$1,845,632

## Union Pacific

IN ANALYZING the operations of the Union Pacific System, it must be borne in mind that in addition to being made up of a group of well operated properties, the system is characterized by being somewhat of an unusual investment organization. The Union Pacific System properly speaking consists of the Union Pacific Railroad, 3,614 miles; the Oregon Short Line, 2,359 miles, and the Oregon-Washington Railroad & Navigation Company, 2,224 miles. The Los Angeles & Salt Lake, the St. Joseph & Grand Island, etc., are controlled by the Union Pacific System, but they may better be spoken of as affiliated rather than as constituent companies. In this review, the facts stated and the figures given will relate, unless otherwise stated, to the system as made up of the three constituent companies and excluding all offsetting accounts.

The best way to show that the properties are well operated is to indicate that the constituent companies of the Union Pacific System were very much in the way of exceptions in that they were among the very few carriers who earned during the period of federal control more than their standard return. Operating ratios are not supposed to be given too much importance; however, the operating ratio of the system in 1920, despite all the handicaps for which that year is justly noted, was but 75.07 per cent.

Similarly, the best way to indicate the importance of the system as an investment organization is to point out that on December 31, 1920, the Union Pacific owned \$70,932,147 par value of stocks and \$115,282,300 face value of equipment trusts, short term notes and mortgage bonds of companies not affiliated with the Union Pacific System, and, in addition \$15,232,300 of Liberty and Victory loan bonds. The ownership of securities of companies affiliated with the system, such as the Los Angeles & Salt Lake, the St. Joseph & Grand Island, the Pacific Fruit Express (in which the Union Pacific has a half interest), etc., but excluding the Oregon Short Line and the Oregon-Washington, totaled on December 31, 1920, \$38,846,503 par value of stocks and \$41,449,198 face value of bonds and notes. On this total enormous investment, the company received in dividends in 1920 the sum of \$4,172,396 and in interest \$7,331,211, or including some \$800,000 interest on loans and open accounts, etc., a total of \$12,298,957. The size of this figure is indicated by comparing it with the total fixed charges in 1920, which were \$15,419,279.

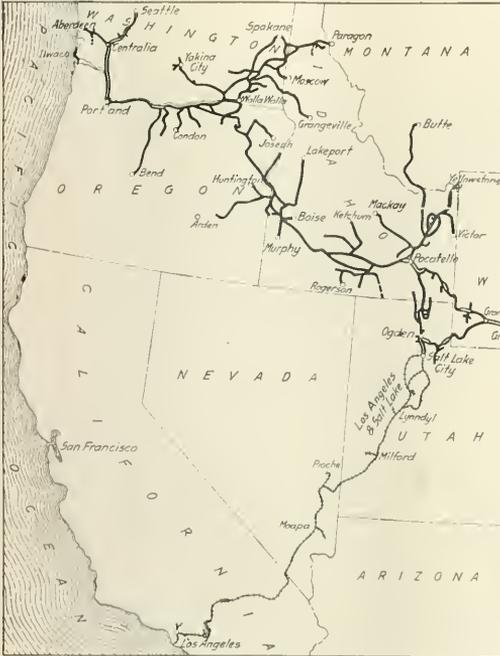
The Union Pacific pays dividends of 10 per cent. This rate was established in October, 1906, reduced to 8 per cent in July, 1914, shortly after the distribution of the Baltimore & Ohio stock and restored to 10 per cent in December, 1916. When the rate was established it was announced that 6 per cent was paid out of the return from railroad operations and 4 per cent from the return on investments. The story of the Union Pacific's investments is interesting; it is one of the brilliant spots in the history of American railroad finance and inasmuch as it has been treated in complete detail by numerous writers of the highest standing it is not necessary to enlarge upon it here except insofar as affects present conditions.

The Union Pacific, as above noted, owns \$70,000,000 in stocks and \$115,000,000 of equipment trusts, short term notes and mortgage bonds of companies not affiliated with the system. It is interesting to see what may have been the effect on this investment of the present decline of stock and bond prices, the lowering of dividend rates or the passing of dividends. The \$70,000,000 of stocks of unaffiliated companies consists principally of \$22,500,000 Illinois Central stock; \$21,000,000 of New York Central; \$10,343,100 of Chicago & Alton preferred; \$4,420,600 of Chicago & North Western common; \$3,594,035 Baltimore & Ohio common and \$1,805,992 preferred; \$1,845,000 of Chicago, Milwaukee & St. Paul, preferred, etc. The holdings in some of these

companies have presumably been of value to the Union Pacific because of traffic relationships; the Union Pacific's operating strength lies largely in its favorable connections.

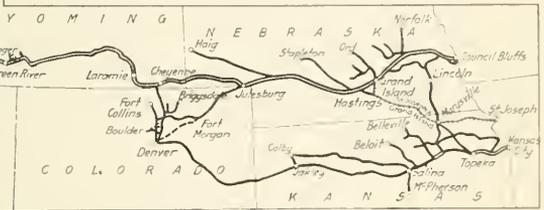
However, it happens that some of these stocks were bought at very high figures. The Illinois Central stock, which is now selling at 91½, cost about \$163 a share; the North Western common, now selling at 65, was secured at 168; the New York Central, now selling at about 70, was secured at from par to 136; the Alton, preferred, now quoted at 8 bid and 12 asked, cost about 161; B. & O. preferred, now selling at 51, cost about 93; the B. & O. common, now selling at 39, cost about 120. Because of the present low state of the bond market, depreciation from the \$115,282,500 face value of the bonds, notes, etc., has also taken place, but, of

is indeed unlikely that any of these four companies will be unable to maintain the present dividends on the respective stocks mentioned. In concluding this portion of our review, the point can be made that the Union Pacific has suffered severely from the decline in railroad securities, particularly in the case of stocks which were purchased at high prices, but on which dividend payments have since ceased. The depreciation in values it has been able to compensate for out of its surplus, but it has nevertheless lost considerable additional income. There is, however, the compensating factor that its ownership of stocks in these other companies has helped its traffic relations with these roads and has presumably assisted it in getting business which it otherwise might not have had.



The Union Pacific System

The distinguishing feature of the Union Pacific's operations is, as already noted, that its constituent companies earned for the Government during the 26 months of federal control considerably more than the standard return covering these properties, and that in 1920 despite the high costs of operation the system as a whole was able to keep its operating ratio down to 75.07 per cent. The standard return for the system was \$39,369,411. In 1919 the net railway operating income was \$43,937,233, or \$4,000,000 more than the standard return. In 1920 the net railway operating income was \$39,261,267, or about equal to the standard return. Operations for January and February yielded a return slightly in excess of the government payments for those



months. For the guaranty period March 1 to August 31, however, the net railway operating income was \$4,661,444 less than the guaranty. From the standpoint of net operating revenues, September and October were the two best months of the year. This would indicate that the Union Pacific had kept its operating expenses so well in hand, even with the adverse conditions, that it would have been able to continue the progress manifested during the federal control period. It happens, however, that the decline in business beginning in November has been especially sharp.

The total operating revenues in 1920 were \$209,049,510, or 17.8 per cent more than in 1919; the operating expenses, \$156,939,935, or 27.9 per cent more than in the preceding year, and the operating ratio 75.07 in 1920 and 69.64 in 1919. The total tons of revenue freight carried in 1920 were 28,320,410, the revenue ton-mileage being 12,882,042,232, or 9 per cent in excess of 1919. On this freight the Union Pacific secured a haul of 455 miles. The net tons per train in 1920 were 659; in 1919, 645; the average car load, 26 in 1920 and 24.54 in 1919.

The Union Pacific, however, makes its chief claim for attention in so far as its operating statistics are concerned in its remarkable daily freight car mileage, particularly on the Union Pacific Railroad itself as distinguished from the O. W. R. & N., or the O. S. L. For the year 1920 this averaged no less than 69.8 miles, as compared with a daily car movement in 1919 of 58.4. In October, 1920, a figure was reached of 84 miles. The net ton miles daily per car in 1920 averaged 1,229 as compared with 977 in 1919. In October, 1920, the average was 1,414. The Oregon Short Line in 1920 had a daily car movement of 43.5; the Oregon-

course, because of the different factors involved to a considerably lesser extent. A drop in the value of securities owned such as has been here indicated would have proved a staggering blow to almost any company—that is, except one of the financial strength of the Union Pacific. The company some years ago was able to compensate for it by the establishment of a reserve for depreciation of securities. This is now carried on the balance sheet at \$50,000,000; in view of the conditions the matter does not seem to present particular difficulty for the company's future.

Another factor that is worthy of consideration is the matter of future return on this investment in stocks and bonds of unaffiliated companies. The bonds which are owned are high grade; the railway situation would have to get very bad, indeed, to jeopardize the return on the equipment trusts, notes and bonds owned. Insofar as concerns the stocks, little reduction in dividends in stocks of companies not affiliated with the system other than that which has already taken place may be expected. The stocks that are at present paying dividends include the B. & O. preferred; the North Western common, the Illinois Central and the New York Central. It

Washington 29.3; a combined figure for the system is not given.

The Union Pacific, referring to it again as a system, has been especially hard hit by the present slump in business. The total freight revenues in the first five months of 1921 were \$45,469,077, a considerable reduction from the \$53,934,226 of the first five months of 1920. The net railway operating income for the period in question this year has been \$7,750,671. In the first five months of 1920 it was \$18,510,956. One of the results of this decrease in business has been an end to the record-breaking figures of miles per car per day. In May, 1921, the daily car movement on the Union Pacific Railroad was but 33.3 and the ton-miles daily per car but 595.

The Union Pacific is noted as being a rather keen buyer of equipment. In 1920 there was spent for extensions and branches \$74,351; for additions and betterments to roadway and structures \$6,450,765 and for equipment \$10,335,658. The additions to equipment during the year included 155 locomotives, 355 freight cars and 2 passenger cars. The company during 1920 placed orders for 100 locomotives, 2,069 freight cars and 81 passenger train cars. The additions in 1920 included such deliveries as were made on these orders and 55 locomotives allocated by the Railroad Administration.

The corporate income account of the Union Pacific shows for 1920 a surplus after the payment of dividends amounting to \$6,452,454 as compared with \$8,196,937 in 1919. The 1920 figures, however, do not include any amount covering the payment due from the government for operations during the guaranty period. The net railway operating income, as noted above, was \$4,661,444 less than the guaranty. As in the case of the claim for undermaintenance during the guaranty period, the amount will be credited to income after the final settlement is made.

The operating results in 1920 compared with 1919 are as follows:

	1920	1919
Mileage operated .....	8,192	8,183
Freight revenue .....	\$150,160,928	\$128,914,433
Passenger revenue .....	38,170,277	35,738,572
Total operating revenue .....	209,049,510	177,447,698
Maintenance of way expenses .....	34,770,779	25,753,722
Maintenance of equipment .....	38,869,167	31,469,737
Traffic expenses .....	2,162,518	1,119,860
Transportation expenses .....	69,055,557	54,663,519
General expenses .....	7,318,804	5,989,549
Total operating expenses .....	156,939,935	122,682,049
Net revenue from operation .....	52,109,575	54,765,649
Taxes .....	12,086,046	8,908,937
Railway operating income .....	39,261,267	43,937,233

The corporate income account is as follows:

	1920	1919
Revenues over expenses (March 1 to Dec. 31) .....	\$40,148,812	.....
Rental .....	7,009,453	\$39,369,411
Railway operating income .....	47,248,264	39,369,411
Federal income and other taxes .....	10,754,015	2,293,226
Net income from railroad properties .....	35,962,262	36,549,100
Income from investments and other corporate income .....	12,298,957	13,026,687
Total income from all sources .....	48,261,218	49,575,786
Interest on funded debt and miscellaneous corporate charges .....	15,586,987	15,156,573
Net income from all sources .....	32,674,231	34,419,214
Dividends on stock of Union Pacific Railroad Co.:		
Preferred stock at 4 per cent .....	3,981,740	3,981,740
Common stock at 10 per cent .....	22,229,160	22,229,160
Surplus, transferred to profit and loss .....	6,452,454	8,196,937

COMMERCIAL TRAVELERS renewed their battle for a reduction in passenger fares on July 11, when a petition signed by more than 1,000 business men of the middle west was presented to the Western Passenger Association at Chicago, asking that the railroads west of Chicago and east of the Rockies put on sale an interchangeable mileage book at a 20 per cent discount from regular tariffs. It is stated by Franklin H. Dietz, representing the Interstate Commercial Travelers, that the organization would present the traveling men's argument at the next general meeting of the association.

## Letters to the Editor

### Statistical Reports to the Interstate Commerce Commission

WASHINGTON, D. C.

TO THE EDITOR:

In an article by F. J. Lisman on remedies for wastes in railway operation, in your issue of July 9, it is stated that methods could be found to consolidate the various reports to the Interstate Commerce Commission and abolish a great many of these reports. There is mentioned a report on the number of livestock cars. It suffices to state that the Interstate Commerce Commission requires and receives no such report.

Mr. Lisman, moreover, suggests, in other parts of his article, the desirability of additional information that would involve more detailed reports than are now required. He suggests that the commission ascertain the usage of freight stations by various commodities, the segregation of car repairs by classes of cars, the distribution of loss and damage by commodity classes, and the further subdivision of yard expenses. I think that careful study of the matter in detail will show that the commission is in reality very modest in its statistical requirements. A great deal of desirable information has not been called for simply because of the expense involved. Before any important statistical innovation is introduced, the cost and method of compilation is discussed with the representatives of carriers. Is it not incumbent upon Mr. Lisman to show where saving could be effected by abolishing reports to the Interstate Commerce Commission and to specify the particular reports now made which can properly be termed useless?

Some persons might perhaps mention the separation of expenses between freight and passenger services as useless, but Mr. Lisman appears to be among those who think it should be continued. It will not be denied that salaries of clerks are a considerable element in operating expenses, and it is possible that economies in clerical work can be effected. But it is important to distinguish the cost of furnishing statements to the Interstate Commerce Commission from the cost of compiling the data which are necessary to the management for proper supervision, and which would be compiled anyhow in a similar form even though the commission should not require such information.

M. O. LORENZ,

Director of Statistics, Interstate Commerce Commission.

### The Dining Car Department

#### An Advertising Asset

SEATTLE, Wash.

TO THE EDITOR:

The value of the dining car department as a traffic producer is in general underestimated by the higher railroad officers today, and as a result the management and present standing of this department are woefully in need of improvement. One of the most objectionable examples of mismanagement, in my estimation, is the getting together of dining car superintendents to arrange portions, prices, etc., a system inaugurated by the United States Railroad Administration, which has been continued. We can all understand that agreement must exist among the railroads insofar as freight and passenger rates, schedules and so on, are concerned, but I fail to see the advisability of agreements on prices in dining cars if we really want competition.

With equipment practically standardized and running

time between terminal points practically the same, competition on the various roads today is left to the dining car departments. If we want competition it does not appear reasonable that the various dining car superintendents should meet to establish a practical uniformity in prices and portions on the different roads.

I do not believe that a non-competitive policy is wanted by the railroads or at least by some of them, because as long as the dining car department has to lose money, it will be much better for it to render the service that will advertise the road. It has been proved that the dining car can be the biggest, cheapest and most effective advertising medium a road can have.

In the past the dining cars were operated principally for the convenience of a very few passengers. It is my belief that we should get away from that exclusive atmosphere that still pervades our dining cars and the aloofness of the majority of the dining car crews, which is felt by what we might call the common everyday passenger. Let us run our cars as popular priced restaurants, where good food, cleanliness and willing service are given to the public at reasonable prices.

It is an absolute impossibility to continue the present a-la-carte service and expect to be able to furnish meals to dining car patrons at prices within the reach of the majority. I have frequently seen lunch baskets carried nowadays on standard Pullman cars, something that was unknown in years gone by and there is no question in my mind but that this is caused by the high prices prevailing in dining cars. There is only one solution and that is to go back to the old table d'hote system wherever this is possible. This does not mean in any way a step backward for the table d'hote service has been in evolution as has anything else. Experiment has shown that the table d'hote plan has conserved more food than the a-la-carte system and also effected a considerable saving in man-power.

The average railroad officer will probably discredit this, adding that we had table d'hote service years ago and that that was done away with on account of the great waste. Two of the principal objections to the system were the size of the menu, the privilege of the patron to order anything or everything that was on the menu and the easy way for dishonest dining car crews to make money. These objections do not now exist.

First, there is no waste in the present manner of giving table d'hote service because the menu is limited; second, in addition to an up-to-date system of checking table d'hote meals, the working conditions on dining cars are so much better than they used to be, that it is now worth while for an employee to keep his position.

Another important point is the system of buying and the interference with the dining car department by other departments. A dining car department cannot be run successfully unless it is made a department by itself. By this I mean that the superintendent of dining cars should report direct to the president or maybe to one of the vice-presidents, certainly not to any traffic manager or general passenger agent who as a rule knows less about dining cars than the dining car man knows about running an engine. The dining car department should be in charge of an officer called a "Manager of Dining Cars" who will have all the authority that this title implies.

I do not believe we shall ever be able to make any money in the dining car department, but if we can run the dining cars at a limited loss, if we can give service and make them an efficient advertising medium, that is all we can expect to do.

It would only be justice that when a dining car department is a real business getter, it should be given credit for its proportional amount and have it entered up to either operating or advertising.

H. FERRY.

## A Train of 201 Cars

NEW YORK CITY.

TO THE EDITOR:

The report which you have printed of a trial run on the Virginian Railway with a train of 100 coal cars, making a train about one and one-tenth miles long, calls to mind the fact that long freight trains are getting to be somewhat common. This train on the Virginian evidently will make a record for length, as well as for weight and for the other elements which you mention.

While the matter is fresh in mind I want to call your attention to the movement of a train, in the year 1914, which was about 1½ miles long. I think perhaps that run was not much advertised, but it is well authenticated, and you ought to make a note of it, in your scrap book, alongside the Virginian record.

This train was run from New Haven, Conn., to Harlem River, N. Y., on the 15th of November. It was made up largely of empty cars; but even with empties a train over 8,000 ft. long is something of an event—(201 cars, estimated average length 40 ft.). This train was made up at New Haven and it consisted of 197 empties and four loads, with a caboose. It weighed 3,962 tons and was drawn by three large locomotives. From Bridgeport to Rye, 32 miles, it was run without a stop. There are on this section some up-grade sections of about 30 ft. per mile, but none of these is over about one mile long.

Just beyond Rye the coupling parted behind the 155th car and the train was stopped, with the locomotives west of Mamaroneck. The hind end was back near Harrison, making an unusual spectacle for the natives. It was deemed best not to risk the delay of coupling up, and so the engines, with the 135 cars, went on to Harlem River. The 66 cars constituting the rear part of the train were taken through to Harlem River by another locomotive.

This division of the New York, New Haven & Hartford is, as everyone knows, a busy passenger line, four-track, and in ordinary practice trains are limited, not by reason of the grades or curves or the power of the locomotive, but by the exigencies of the passenger service; the passenger trains must not be delayed. Therefore, the ordinary limit is 80 cars to a train. This long train was experimental. R. W. H.

## Do Railroads Want College Men?

STATE COLLEGE, Pa.

TO THE EDITOR:

Of course the railroads need college men, but do they want them? The question raised by Mr. Richardson under the above title in your issue of June 17, goes further and asks if the railroads want the pick of college men. Mr. Richardson, who graduated in June, speaks for the undergraduate, but he also has had practical railroad experience.

If the American Railway Association will adopt the suggestion for some form of working relation, forming a link between the association and railway students, it will give an additional incentive to develop railroad courses and should form the basis for a more general student response similar to results in other national societies. It may also assist the railroads in obtaining more picked men.

I do not infer that Mr. Richardson intends to criticize present college courses, or all of the railroads, for lack of interest in the railroad student, for he knows full well the co-operation between our railroad mechanical course and the Pennsylvania system and other railroads. I have found the railroads, when requested, willing to do their part in assisting us in our work, and believe that further advancement will be made if such co-operation becomes more general. It is, however, a well-known fact that the railroads as a whole and the railroad associations have led some of the

best college men to feel that the railroads are indifferent. This impression can be corrected, but only in one way.

There is a good reason, known to railroad men, why no representative from railroads came to this college the past year, but there has been one or more in previous years, and the graduates in railroad mechanical engineering could be placed many times over. During the last year, five lectures were given to seniors by men from outside representing the railroads and allied interests, and this is more than was delivered in any other single branch of engineering in the same period of time.

A. J. WOOD,  
Professor, Railroad Mechanical Engineering.

## A New Plan for the Settlement of Per Diem Accounts

CHICAGO.

TO THE EDITOR:

Much has been said recently regarding the necessity for reducing expenses and I feel that a brief outline of one step which might advantageously be taken in that direction is not now amiss. Therefore, I am presenting the following plan, which contemplates the compiling of per diem accounts direct from interchange reports on a car balance basis, which can be used for the settlement of per diem balances through a clearing house or with direct connections, for the consideration of those interested in advancing the efficiency of accounting:

### DEFINITIONS:

**CARS**—All cars owned by roads subscribers to the per diem agreement.  
**CAR BALANCE**—The difference between the total number of owner's cars on foreign lines and the total number of foreign cars on that line.  
**POTENTIAL (OR UNUSED) DAYS**—A car away from home has a potential earning power in days, in any month, equal to the number of days in that month.  
**LAST DAY**—The last day of the month preceding the installation of the plan.

All cars have a potential earning power in days, counting the date interchanged as unused, equal to the number of days remaining in the month. Therefore, the delivering road would charge its connections the total number of cars shown on the interchange report each day of their total value in unused days for that date.

Thus—On September 1, 30 cars at 30 days each = 900 days,  
September 2, 20 cars at 29 days each = 580 days.

Assuming that the roads had 100 per cent ownership on line on the first of the month, the difference between the total potential days on cars delivered and the total potential days on cars received for the month would be the actual per diem balance for that month.

The difference between the total number of cars delivered and the total number of cars received for the month would constitute the car balance and would be charged to the owing road, or the clearing house, on the first day of the following month at their total potential value in days for that month.

Car balance would be carried forward from month to month with the result that a carrier receiving a car and signing the interchange report therefore would pay per diem on that car perpetually unless it, in turn, delivered it, and secured a receipt for it, from the same or some other carrier. This would automatically force each carrier to complete deliveries, either by proper interchange report at the time the car was delivered, by supplementary report or pay the penalty.

The usual way of arriving at a car balance is to take the car ownership as a basis, inventory all cars on line and the difference between cars owned and cars on line constitutes the car balance. It is plain that figures arrived at in this way could hardly be used as a basis for clearing house settlements. A basis for a clearing house settlement can be arrived at, however, by having each carrier make a per diem report in triplicate, one to the clearing house, one for the owner of the car or cars remaining on its line on the last day of the month prior to the installation of the new plan, and one for its record.

Theoretically, we would then have the location showing the initial and number of all cars away from home on a certain day, in a permanent form and separated as to ownership. There would probably be cars not reported. These the owners would be required to trace. When a car was located and per diem report rendered to the owner for the one day due, the clearing house would adjust the car balance and per diem as explained later.

The total number of cars reported by all roads would constitute the debit to the clearing house. A commercial bookkeeper would term it a control account. The several items in this debit control account would be distributed to the debit of each carrier, in one item, covering all cars reported by it. The total of the distribution would balance the control account. Likewise, all cars reported must be credited to the different owners. The total number of cars reported would now be the credit control account to the clearing house, and the items would be distributed to the different roads according to ownership. The distribution would balance the credit control account. The clearing house would now be in a position to begin doing business without a deficit.

The difference between the total number of foreign cars reported as being on its line by a carrier and the total number of its cars reported by all other carriers would be the existing car balance, as reported, for that carrier. This balance should agree with the balance as carried on the clearing house books and it would be the basis for settlements.

An error in car number or initial on an interchange report would not impair the correctness of the per diem accounts.

A car omitted from an interchange report would be added to that report if the error was discovered in time to include in the current month. Where an error is discovered in the following or any subsequent month, the car would be reported to the clearing house on a supplementary report signed by the proper officer of both carriers. The car would carry a charge in days equal to its potential value on the date interchanged, plus all days in each of the following months, including the month it is taken into account.

A car entered on an interchange report in error would be deducted from the report if the error was discovered in time for correction in the current month. Otherwise it would be handled in the same manner and would carry the same value in days as an omitted car in the reverse direction.

When a car, not reported to its owner for the last day, was located, the erring road would be charged the sum of the days in each month, including the month in which the adjustment was made, for all time elapsed since the date the plan went into effect. The movements of the car since the plan went into effect would have no bearing on the claim. As all cars would finally be located by their owners, a carrier would gain nothing by a failure to report a car.

Switching and other reclaims to be handled as at present, with settlement through the clearing house.

Some of the advantages of the plan are as follows:

Does not require a large force of train employes.

The effective data could be made retroactive to any month that the drafts are not yet drawn against per diem reports.

Its benefits could be extended to cover non-subscriber roads by local agreements between the roads interested.

It would not require any change in present car records.

A force of examiners would not be needed.

Reports could be balanced with those of immediate connections, as each road would be working from the same reports. Settlements could be made the following month without fear of making overpayments, which would result from the same procedure under the present plan.

Relieve the banks throughout the country of the burden of to them for collection every month.

Finally, it would make possible a saving in labor and clearing the hundreds of thousands of drafts now turned over to expense, which each car accountant can figure for himself.

H. E. SANDERS.

# France Undertakes Huge Electrification Program

Utilization of Water Power and High Price of Fuel Are Most Important Considerations

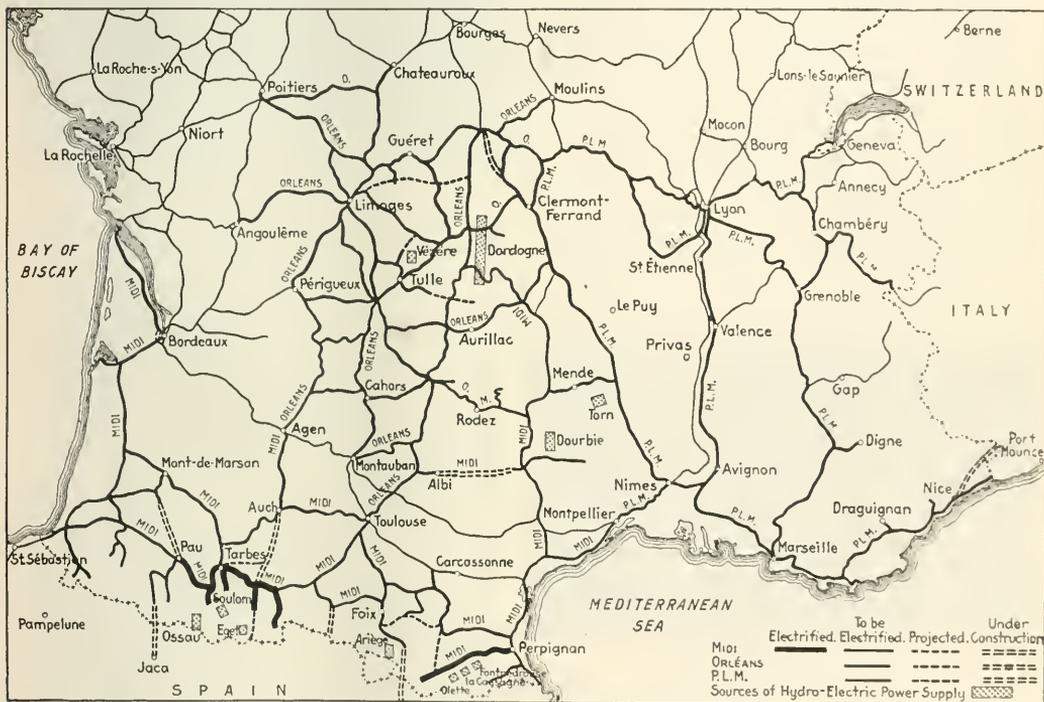
By Oliver F. Allen

Formerly Major of Engineers, American Expeditionary Forces

THE ELECTRIFICATION of French steam railway lines, as distinguished from street car or interurban service as those terms are understood in America, began by the equipment about 1900, and almost simultaneously, of the tunnel and connecting tracks between Quai d'Orsay station and the Austerlitz station of the Paris-Orleans Railway in Paris with an extension for suburban service as far as Juvisy and the suburban line from the Invalides station in Paris to Versailles on the old Western Railway, now known as the State Railways. A division from Fayet to Chamnoix on the

electrifications, in the French Alps and in the Pyrenees, were made to meet the requirements of mountain grades and to take advantage of water power. These first installations are all still in service, and the further extension of three of them are the first steps in the present program.

The successful operation of these early installations, the facility with which they took care of increased traffic with a moderate increase in investment, combined with the successful development of electric traction in America and elsewhere, led the French railway engineers to study, before the



Southern France, Showing Lines to Be Electrified

Paris-Lyons-Mediterranean line was electrified about 1902, and one on the Southern Railway, in the Pyrenees, from Villefranche to Vernet-les-Bains by 1910. The two electrifications at Paris radiating out from the centers of the city, were made for the purpose of increasing terminal facilities, improving suburban service and removing the smoke nuisance. They were of the same general order as the early electrifications in America at the New York City terminals and the Baltimore & Ohio tunnel at Baltimore. Current for both of these early Paris electrifications has always been supplied by steam plants burning coal. The other two early

war, the problem of reducing their coal bill by the electrification of their main lines.

The electrification of the lines from Limoges to Gannat and from Clermont-Ferrand to Tulle and the development of steam power stations in the central plateau, the Massif Central, where coal is to be found, was studied by the engineers of the Paris-Orleans before the war. The electrification of the mountain divisions of the Paris, Lyons & Mediterranean Railway northeast from the French terminal of the Mt. Cenis tunnel at Modane and of more Southern Railway lines in the Pyrenees was all carefully studied before 1915.

During the two years preceding the war, the Southern Railway had completed preliminary negotiations for electric locomotives and had placed firm orders for samples.

It is apparent that irrespective of the great economic changes resulting from the war, especially in the matter of cost of coal and labor, the electrification of the French railways would have gone ahead under pre-war conditions and it is possible that had France not been set back five years by the war, a considerable portion of the present program would be an accomplished fact today.

As soon as mobilization began in the last days of July, 1914, the entire resources of the French railways were placed at the disposal of the government, and from then until after the armistice all the railways were operated as a unified command under the fourth section of the general staff of the French army. Under war conditions no attention was paid to the matter of electrification.

### The Reconstruction Program

The undreamed of increases in the cost of coal and the diminution of personnel, combined with the eight-hour day movement, forced the study of reconstruction and after-the-war railway economic problems while we were all still fighting the Boches. This study was so far advanced that three days after the armistice, that is, on November 14, 1918, a committee was formed by a decree of the Ministry of Public Works for the study of the electrification of the standard gage steam railways. Within two weeks, November 23, 1918, this committee was organized and a program adopted for the study of the electrical operation of railroads all over the world, particular attention to be paid to what had been accomplished in America, France, Switzerland, Italy, England, Sweden and Germany. The visit of representatives of this committee to the United States in 1919, and their exhaustive reports on electrification in this country as well as in Europe have been published and are so well known to railway engi-

the same characteristics. That decision has been made by the railways and approved by the Ministry of Public Works and the Ministry of War. It standardizes 1,500 volts continuous current for all French railways. Incidentally it is interesting to note that this French action has been followed by the adoption of the same standard for Belgium and for England.

### Both Overhead Wire and Third-Rail

#### Current Collection Will Be Used

The voltage selected permits the use of either overhead trolley wires or third-rail for delivering the current to the



St. Lazare Station of the State Railways, Paris

locomotive and it is probable that both will be used according to local conditions and the relative cost. Irrespective of the exact method of suspension of overhead wire or of support or type of third-rail which may be used by any particular railway, standardization will be carried to such a point that the pantographs and contact shoes of all the locomotives will be so designed and located that they can collect current on any electrified line in the whole country.

The investigations showed so plainly the restrictions on the development of electric traction resulting from lack of standardization in other countries, especially in America, that the French railways and government very soon realized the necessity for an organization to study and make effective standardization work begun by the decision to use only one kind of current. Something over a year ago the State Railways, the Southern Railway, the Paris, Lyons & Mediterranean Railway, the Paris-Orleans Railway and the railways of Alsace and Lorraine, with the co-operation of the Ministry of Public Works, created an organization for the study of railway material known as l'Office Central d'Etudes de Material de Chemins de Fer. It will be noted that the Northern and Eastern Railway systems are not included in this group. It was felt that their problems of reconstruction were so difficult that they should be left entirely free to restore service by any means available. In articles which have appeared recently in the *Railway Age* the terrible destruction of the Northern Railway has been referred to. Certain parts of the Eastern Railway suffered in exactly the same manner and the parts of their lines which were not destroyed were subjected to the most intensive traffic possible by the requirements of the French and American armies.

### Frontier Development Must

#### Provide for Military Factors

Another aspect of the matter is the military situation and the realization that along the frontier it must always be possible not only to mobilize an army quickly but to move it and its supplies across the frontier rapidly and efficiently. If the railway lines near the frontier were equipped for electric traction, it might be possible to mobilize as rapidly



First Electrification in France

Low building facing park is Invalides Station, Paris, whence suburban line to Versailles was electrified in 1900

neers that further reference will not be made to this committee's work except to point out a few important results which might be advantageously considered by American railways.

### Equipment for All Lines to Be Standardized

Realizing that successful electric traction must be as flexible and as universal in its application as steam traction, the French concluded that all their main line electrifications must be standardized to such an extent that the electric locomotives of any company can circulate on all the lines in France just as easily as steam locomotives can. This involves agreement by all of the railways to use electric current of

as with steam locomotives, but getting an army across the frontier would be another matter. There is some doubt about the relative reliability of the necessary interconnected generating stations, distributing stations, transmission lines, etc., for electric locomotives and the supply of water and fuel for steam locomotives, when subjected to the hazards of long range shelling and airplane bombing. This question is still so far from being decided that the electrification of the railways of the north and east of France is not contemplated now.

### Immediate Development Will Be Limited to Terminals and Suburban Lines

While the State Railways are in the group which created this standardization committee their electrification for many



Northern Railway Station at Paris

years to come will probably be confined to terminals and extension of suburban service in the immediate vicinity of Paris. The major portion of their lines as well as the lines of the Northern and Eastern Railways cover territory in which there are not only no large water powers available but in much of which the amount of condensing water to be had is so limited as to curtail seriously the construction of very large power plants. It is probable that in those parts of France north of a line running southwest from Paris to the Atlantic Ocean at St. Nazaire, and those between Paris and the Belgium and Luxembourg frontiers, the railways will not be equipped for electric traction until electric power may be available either from the Rhine or the Alps, nor until the electrification of the other parts is largely completed. In view of the demands for power in the neighborhood of Paris and between Paris and the German and Swiss frontiers, all electric energy which may be available within the next twenty years will probably be utilized before it gets to the north and northwest, or for the metallurgical and other industrial plants in the north and east where needs for electric power are economically more urgent than those of the railways.

### Effects of High Cost of Fuel and Labor

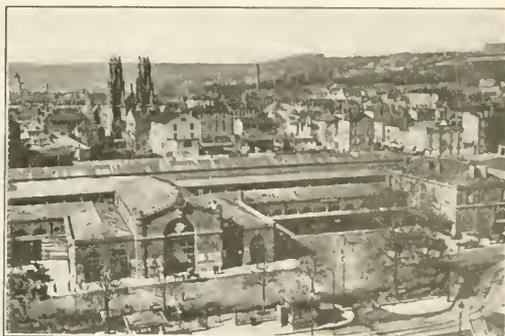
This standardization committee of the principal railways outside of the north and east is working for general standardization and in many aspects of its work, through the Ministry of Public Works and the close affiliation of all the railway executives and engineers, it will affect all of the railways, including the north and east. So far as its practical application to electrification is concerned its work will be confined for a long time to the railways which made their first electrification twenty years ago and the railways in the recovered provinces of Alsace and Lorraine. In fact, the men who are most active today in carrying on the French railway electrification program are the very men who personally had to do with the four original installations referred to above.

The electrification of the French steam railways is not a

new proposition resulting from the war, but is the natural and logical evolution of those first applications at terminals and in mountains almost a generation ago. It is true that the war has brought about certain economic changes, particularly in the cost of fuel and labor, which will tend to expedite the change from steam to electric power. For instance, the cost of coal before the war was from 20 to 30 francs per metric ton and since the war reached the maximum in 1920 of 300 francs per ton with a peak of 500 francs, which is the price actually paid by one railway for part of its coal. It is now descending to between 100 and 150 francs per ton. There is little likelihood, however, of coal going to less than about 75 francs per metric ton, that is, three to four times pre-war price, for many years to come. On the other hand, the tremendous increase of the public debt in France and the general economic losses resulting from five years of war tend to retard the expenditure of the vast sums of money required for extensive electrification and it is doubtful if the urgency of the high fuel cost and the labor situation is not so far offset by the financial situation as to make the carrying out of the program move slower rather than faster than it would have had there been no war. Our French friends seem to have taken the lead in the world in standardizing and adopting electric traction for steam railways, and in spite of the delays and embarrassments resulting from the war they may still go ahead faster than we will in this country, particularly in the matter of high speed passenger service.

### Reasons for Electrification

Their reasons for electrification are substantially the same as influenced similar decisions elsewhere and are too well known by railroad men to be discussed in detail here. The determining factors are: first, utilization of water power to reduce the amount of coal imported into France each year and to reduce operating expenses; second, the ability to increase terminal facilities and improve terminal service by substitution of motor cars for suburban service and electric



Eastern Railway Station at Nancy

locomotives for main line passenger trains and freight service; third, the ability to handle heavier freight trains and move greater tonnage on mountain divisions than is possible with steam locomotives without great expense for enlarging tunnels, strengthening bridges, and other items of increasing the number of tracks. There are many other reasons which have affected the decision to start a comprehensive program of electrification, but they are more or less subsidiary to these main considerations.

### Program Calls for 1,200 Miles of Main Line Each Year

The program, the execution of which is being seriously undertaken, involves electrification within the next fifteen years of approximately 6,000 miles of main lines mostly

already double track and the building of hydro-electric plants and high tension transmission lines of the first magnitude. French engineers have gone so far as to promulgate a tentative program involving electrification of over 1,200 miles of main line per year and putting into service of not less than 400 new electric locomotives every year. Financial considerations will probably greatly curtail such a program, but the more conservative one of the electrification of 6,000 miles within fifteen years will involve buying between 200 and 300 new electric locomotives per year, which is a bigger project than has yet been undertaken in any other country.

### Power Supply

The hydro-electric developments to furnish the necessary power will be carried on simultaneously in the Pyrenees for the lines of the Southern Railway; on the central plateau for the Paris-Orleans Railway and in the French Alps for the Paris, Lyons & Mediterranean Railway. These are being studied in connection with the development of a great network of power transmission for industrial requirements. Under the leadership of the Ministry of Public Works a program has been prepared for a transmission network at 220,000 volts for the main lines and 100,000 to 150,000 volts for the secondary lines which will cover all the northern, eastern, central, southern and southwestern part of the country with great trunk lines from the upper Rhone valley and from the Rhine valley in Alsace in long loops across the country to Paris.

The first plants and transmission lines will be built partly by private organizations, including some of the railways, and partly by the government. Some of the 100,000 and 150,000 volts lines are now under construction and the first additional hydraulic plants with a total capacity of the order of 300,000 h.p. may be under construction within a year.

### Belgium

In Belgium the program covers several of the lines which converge at Brussels. The first step will be to take care of the intensive passenger traffic between Brussels and Antwerp. The next, the freight traffic in the metallurgical district where there are steep grades and great tonnage. The rapid fall in the price of coal (that mined locally plus that shipped in from Germany has already accumulated until Belgian stocks on hand present a serious problem) combined with the delay in getting any reparation payments from the always delaying Germans has set back the Belgian electrification program indefinitely.

## Railroad Settlement Plan Tentatively Agreed Upon

WASHINGTON, D. C.

**D**EFINITE announcement is expected before the end of the week of the plan for funding for 10 years at 6 per cent the indebtedness of the railroads to the Railroad Administration for additions and betterments made during the federal control period, and a compromise plan for expediting the settlement of the railroad claims against the Railroad Administration for the balance of their rental due and other items. This will make possible some early payments to the roads of cash which they can use to pay their outstanding bills and increase their maintenance work.

A plan under which the railroads would surrender a large part of their claims for undermaintenance in return for the funding and for a more expeditious settlement of their claims was tentatively agreed upon, after many conferences with the government officials, at a meeting of the steering committee of the Association of Railway Executives in Washington on Monday and was submitted to the member roads of the asso-

ciation at a meeting in New York on Wednesday afternoon. President Harding also discussed the matter on Monday with Chairman Clark of the Interstate Commerce Commission and Director General Davis of the Railroad Administration and on Tuesday he held another conference on it with Secretary Mellon of the Treasury, Secretary Hoover of the Department of Commerce, and Chairman Cummins of the Senate Committee on Interstate Commerce. While the details have not been made public at this writing the plan contemplates that the government shall accept 6 per cent securities of the railroads for the capital expenditures and that the War Finance Corporation shall advance the cash which the Railroad Administration will need, in addition to some \$200,000,000 which it still has available, to pay its obligations to the railroads. It is to furnish the cash by taking over railroad securities from the Railroad Administration which it is not desired to place on the market at this time but which can be readily marketed under more normal conditions, in accordance with a suggestion made by Director General Davis in his letter to the House committee on appropriations some time ago as an alternative to an additional appropriation for the Railroad Administration. The War Finance Corporation has a book credit with the Treasury which it would require legislation to make available for this purpose, and it would be necessary for the Treasury to sell certificates of indebtedness to obtain the funds, but it would not require a Congressional appropriation.

The plan does not contemplate an immediate payment to the roads of any definite sum but the funding of the capital expenditures will make it possible for the Railroad Administration to pay the railroads some large sums on account of the undisputed items of their claims in advance of a final settlement, and the railroads, under the tentative plan, would agree to give up certain principles on which their undermaintenance claims have been based. It is understood that the principal concession required of the roads was that they waive that part of their claims for undermaintenance based on the inefficiency of labor and that they accept in general the interpretation placed on the standard contracts by the Railroad Administration, which would measure its obligation to maintain the properties on the expenditures during the test period plus an allowance for the increase in wages and prices of materials. The roads had taken the position that this was insufficient without an allowance for the fact that more man-hours were required to perform a given unit of work during the control period than in the test period.

The Interstate Commerce Commission has had the same question before it in connection with the claims for the six months guaranty and it is understood that its ruling on the maintenance interpretation has been withheld pending the negotiations covering the federal control period in which Chairman Clark has participated.

Agreement by the executives to the plan for the funding of the roads' obligations to the government was indicated in a statement given out by T. DeWitt Cuyler, chairman of the Association of Railway Executives, at the close of the meeting of the member roads of the association at New York on Wednesday. The statement follows:

"Today's meeting was for the purpose of receiving a report from the steering committee—now known as the executive committee—on the efforts to reach a final settlement with the government of all matters pending from the period of federal control. Any further statement on the situation must come from the President of the United States."

THE PENNSYLVANIA has completed preliminary arrangements for the use of the Belt Line terminals of the Muskegon Railway & Navigation Company, Muskegon, Mich., and will develop a car ferry service across Lake Michigan, connecting with railroads at Milwaukee.

# Inadequate Recognition of Chief Clerks' Position

Salaries Smaller Than Those of Many Organized Employees,  
While Duties Are Those of Officers

By a Chief Clerk

THE PLIGHT of the American railroads and the questions concerning their rehabilitation are matters that interest everybody. The question of the responsibility for the desperate situation in which the railroads now find themselves is rather interesting and has provoked much fruitless argument. Labor is shouting at the top of its voice that capital is solely to blame, but this assertion is not corroborated by the facts. It is true enough that labor fared badly in that non-too-distant era when the word of capital was like the laws of the Medes and Persians. It is also true that the labor unions were natural products of that era and those conditions, organized as means of self-defense. But no sooner did they grow strong enough to stand on their own legs than they began to use the very tactics they had been organized to combat. They schemed to get maximum pay for minimum work, to protect their lazy and incompetent members and to harass the representatives of capital needlessly and often without hope of reward.

The first big mistake of the labor unions was in contending for uniform rates of pay. No well-informed person believes that all workers of any given occupation are worth exactly the same amount per hour or per month. If the best mechanic in an average railroad shop is worth just 85 cents an hour, the poorest mechanic in that shop is probably worth not more than 10 cents an hour. If the poorest mechanic is worth 87 cents, the best is worth something like six to seven dollars an hour. Men are not created equal nor can they be equalized. The uniform scale is a source of perennial discouragement to the ambitious workman and a misguided solace to the drone.

The fatal mistake of some of the railroad labor unions was made during the World War. When the Railroad Administration signed agreements with the various unions awarding large increases in rates of pay and outlining working conditions that labor might well have regarded as almost ideal, the labor leaders had a golden opportunity to strengthen and fortify their organizations by urging the men to deliver what the administration had agreed to pay for, but instead of doing this some of the organizations were apparently foolish enough to curtail production systematically by working more slowly and by such other methods as were available. This policy was suicidal. Disaster was certain to result and is now resulting. Nothing can be enjoyed that is not first produced.

## Loyal Service Penalized

On the other hand, some of the policies of the average railroad management have been for many years and still are, as I see it, surprisingly short-sighted. Consider the case of the railroad clerk. This has probably been the most loyal, the hardest-working and the least appreciated of all classes of railroad workers. For years prior to government control, the roads used all means in their power to prevent the clerks from organizing; and they succeeded on a majority of the roads. At the beginning of government control, the average railroad clerk's rate per hour worked was disgracefully small, but the organized classes had been granted, from time to time, increases of rates and other concessions affecting their working conditions and had gradually reached a state which, compared with the situation of the clerks, resembled affluence. It seems obvious that the wise policy would have been for the railroads to have given the unorganized clerks everything

that was given to the organized classes. In this manner the railroads could have proven what they claimed: that there was nothing tangible to be gained by organization. Moreover, there is never any legitimate excuse for penalizing fidelity and loyalty.

There is only one class of workers on the railroads now, I believe, that is not organized and not classed as official. This class is the chief clerks. When the readjustments of rates were worked out in 1918, the average shop foreman was given an increase about double that given the average chief clerk. The only apparent reason for this was that the foremen had formed a national organization early in 1918, whereas the chief clerks belonged to no organization and were therefore not in position to demand the same consideration that everybody else on the railroads received. Prior to that time, the foremen and the chief clerks in division offices had received approximately the same rates but the new rates of the chief clerks mentioned were generally far below the new rates of the cheapest foremen.

A chief clerk who is successful must have education, intelligence, experience, energy, enthusiasm, executive ability and numerous other attributes and qualifications that are thought to be valuable. When the office organization breaks down, the officer in charge is in a serious predicament. The details of the business revolve around the chief clerks in the division and higher offices. When an officer is off his territory, for any reason, the chief clerk usually runs the railroad; and the chief clerk attends to the details of the business at all times. If the chief clerk is competent to do this, he should be paid what the service is worth, and if he is not competent, he should be replaced.

## Inadequate Recognition

Not only is the pay of chief clerks comparatively poor, as I see it, but the recognition accorded them otherwise is much less than they are entitled to by reason of the service required. They are certainly assistants to the officers in charge and I maintain that they should be so classified. There may be sound objections to this proposal but I cannot think of any. Possibly the railroads fear that such action might be made the basis of argument for increases in rates of pay. But the salary should be based on the character of the service required and delivered and should be forthcoming regardless of the classification. There may be some railroad officers so narrow as to oppose official titles for chief clerks on the theory that this might detract from the prestige of the officers themselves but I do not believe that such officers are numerous. The average railroad officer is a man of considerable breadth of mind, has a proper amount of confidence in his own ability and does not consider it necessary to suppress his subordinates in order that he may be more conspicuous. The subordinates constitute the organization and the organization makes or breaks the officer at its head—therefore the wise and prudent officer encourages the ambitions of his subordinates and recognizes honest merit wherever he finds it. "A chain is no stronger than its weakest link." The strength of any organization depends on the strength of its individual members.

A few years ago a certain young man whom we will call Harvey Hammond was chosen as chief clerk in the office of a general officer of the operating department of a certain railroad. Young Hammond was well educated and had ex-

perience in all lines of operating department office work, having started as a stenographer and mounted, round by round, the short ladder reaching to the position of chief clerk. He was energetic, loyal, resourceful; had plenty of initiative and executive ability. He also had that rarest of combinations, brains and balance.

The officer in question did not enjoy the best of health and eventually his health broke down completely. His physician forbade his talking business with anybody for months. He had no assistant and the management did not appoint another officer pro tem. Harvey Hammond suddenly found himself charged with all the duties and responsibilities of a general officer—without the title—or the salary. He did not hesitate but welcomed the opportunity to show his calibre. Committees of the labor unions appeared before him with grievances, real and fancied, and he fought them single-handed when they were wrong or agreed to their demands when they were right. He was an expert in the various agreements between the railroad and the labor unions. If he made mistakes they were so slight that they passed unnoticed. His work in this unique situation naturally attracted a good deal of attention. All who had an opportunity to watch his performance during this period agreed that he made good as a general officer—without the title—or the salary.

At a later date, the rivalry between two railroads for the services of Harvey Hammond was decidedly keen. Each wanted him as a chief clerk and he went with one of them in that capacity, at a salary much smaller than the average shop foreman draws. His name does not appear in the Pocket List nor on any correspondence. His present salary is considerably below that of any shop foreman in the metal trades but every shop foreman, even the most unimportant, is regarded as an officer of the railroad he serves.

An unusual case? Certainly. But it illustrates my point: that a chief clerk is expected to measure up to any emergency. Every chief clerk meets emergencies at times and his competency is judged largely by the manner in which he meets them. If he is incompetent, any little emergency will unhorse him, but if he understands his business and is conscientious, the percentage of his mistakes will be gratifyingly small.

I do not claim that the average chief clerk could or would have duplicated the performance of Harvey Hammond but I do maintain that the average chief clerk would cheerfully have tackled the problems and done his best; and he would have done much better in this emergency than the average foreman who is designated as an officer of the railroad and whose salary is much higher. The plan of organization on the railroads shows that this fact is clearly recognized. In every case where the officer in charge is absent from his post for any reason, the chief clerk takes charge in the name of the absent officer. If any of the foremen were supposed to

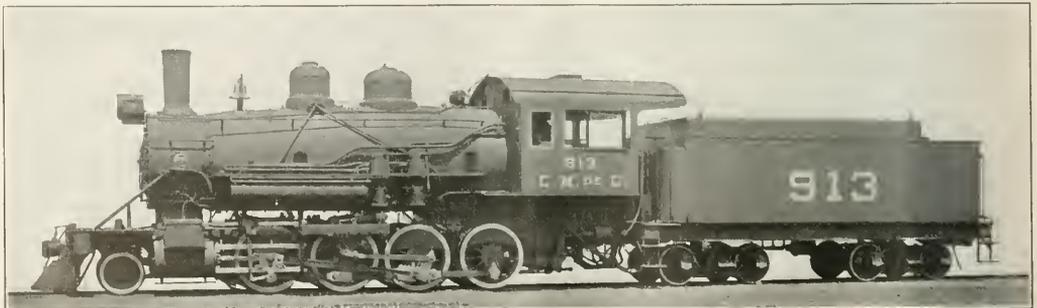
be better equipped to cope with a situation of this kind, such foreman would naturally be called upon to act in place of the absent officer.

It is sometimes argued that a chief clerk is not entitled to as much consideration as a shop foreman because he has not served an apprenticeship of any kind. This fallacy is conspicuous. The shop foreman has served an apprenticeship of four years whereas the chief clerk, if he is properly equipped for his job, has spent no less than seven to fifteen years in acquiring an education, after which he has spent perhaps three to fifteen years in learning the details of the various office jobs over which he has supervision. This comparison is not intended to disparage the shop foreman. His importance on a railroad is obvious and is universally conceded. For many years his slender salary was a very good example of what may be termed wasteful economy. Now that the wrongs of the foremen have been righted, the wrongs of the chief clerks should have attention, for the latter hold positions every whit as important as those of the foremen. A good man in any capacity who does not get proper recognition will eventually become discouraged, and discouragement impairs efficiency.

#### Commendation Not Adequate Remuneration

No railroad officer of marked ability fails to appreciate the value of a good chief clerk but this appreciation, for some mysterious reason, appears to be purely personal. The officer may say to the chief clerk: "Your excellent handling of the office relieves me of endless details and I appreciate it." Not every officer will commend a subordinate to his face but many of the best of them will. The normal man is susceptible to flattery and the abnormal man is abnormally susceptible to it. Remarks of this kind are gratifying but the fact remains that all the recognition accorded even the exceptional chief clerk is some private commendation.

In offering these sentiments, let me disclaim any malice or any desire to place the blame on any man or group of men. The conditions to which I call attention are a part of the system under which the railroads are operated. The railroads, like people, are slaves of custom. The policy of the big roads and of some of the smaller ones is and has ever been to concede nothing that could not be taken by force or the withholding of which would not endanger their own welfare. This policy has proven unwise. The organization that is rewarded for using dynamite will certainly return next week or next month or next year with more dynamite; and the patient, loyal, dependable employee who received only a two per cent increase when the dynamiters got ten per cent will just naturally ask himself what he has gained by his patience and loyalty. It pays to be fair. The most stupendous mistake of all history was Germany's recent attempt to prove that might makes right.



Consolidation Built by Baldwin Locomotive Works for Mexican Fuel Company



out a unit cost data of freight train operation that would give me a measure in money of the cost of operation immediately after the movement of the trains were completed.

In May, 1920, arrangements were completed to start compiling this data. It was realized it was going to take a great deal of effort to get the data sufficiently accurate that it would be dependable and also to get the division superintendent and his staff sufficiently interested in the data to make it valuable. With this end in view a very competent man was assigned to the work of installing these reports, following them up, checking them for accuracy and going over the performance with the superintendents picking out the bad units of operation and devising ways and means to correct them. It was found necessary to make some changes in the forms then in use in order to get the information in proper shape and from May until August was consumed in revising the forms and getting the reports nearly enough correct to be relied upon. By the first of August the reports were so nearly accurate that we began to apply them with some degree of assurance.

These reports are now prepared each day as soon as the train sheet for the day before is completed, and the superintendent has placed on his desk every day a full report for the day before by freight train districts, showing the performance of each freight or mixed train, including the cost per 100 gross ton miles and this data consolidated to show the average train load and cost per 100 gross ton miles, for each class of service by directions; also this information further consolidated for all classes and directions, as well as the amount of deadheading, penalty, called and not used, etc., for the freight district or sub-division. This is all consolidated in the car accountant's office into 7, 14 and 21 day and whole month reports, showing freight districts or sub-divisions separately, as well as a division and system report. The unit of 100 gross tons per mile has been used in order to differentiate more closely between the performance of individual trains on the same district, in the same service and with the same power, carrying the cost to two decimal points. If it is desired to compare with a cost based on 1,000 gross ton miles it is of course only necessary to move the decimal point over one figure.

In August we had a peak load of business, with every train on the road handling its maximum tonnage. There was a minimum of light movements—practically none at all. In September and October business remained heavy. In November the business commenced to fall off considerably and it was more difficult to get a maximum train load. This condition became more marked steadily through November, December, January, February, and continuing into March; yet in spite of this fact we were able to reduce our cost for moving 100 gross tons one mile about one cent. The accompanying form is the only form we use for the daily report (except three small forms for gathering the information), and from which it will be seen that the wage cost for 100 gross ton miles is shown for every train run. For the last two or three months the accumulated figures from these daily reports have been so accurate that the variation from the operating sheet and the income account has only been about one per cent. On some divisions the variation has been less than half of one per cent, so that the report can be said to be absolutely accurate.

Its value lies in the fact that the report shows in a very condensed form the cost of operating each freight train, divided into classes, through freight, local freight and branch lines, so that the superintendent can compare the operation of the cost of the various trains at a glance and incidentally pick out the trains on which the cost is excessive and can determine the cause of the excess cost. These causes, of course, may be numerous, such as the overloading of the engine, bad train dispatching, bad performance of the engine, or any other of a number of causes, an analysis of which causes the superintendent to take steps to overcome these

conditions and prevent a similar occurrence in the future.

Each superintendent very soon has fixed in his mind a certain figure of cost and when these reports come to his desk covering the previous day's operation, if the cost is higher than this figure he immediately starts looking for the reason and is able to locate instantly the train or trains that produced the higher cost.

When we first began to make real use of this report in August, a conference was held with the superintendents and they were told that they should reach a certain cost per hundred gross ton miles. This result was accomplished the first week in March, at which time they were commended for the result produced and a new figure set for them to strive to reach. The cost varies somewhat, of course, on different divisions, on account of different conditions, and a mark has been set for each division to work to. The superintendents are fully alive to the importance of this data and are using it more than they ever used any report of any kind that we have ever seen.

As stated, the reduced cost has been produced in the face of a condition that made the building up of a maximum train load absolutely impossible. Business was light and fluctuated and light miles were necessarily made, and, as a matter of fact, the train load showed a very marked falling off.

We have been able to determine almost definitely the exact point at which to fix the train load on different operating districts and a good many previous figures and ideas have been shown to be entirely inaccurate. In many cases we have produced a decreased cost by decreasing our train load. As an illustration, in a detail check made on one of our sub-divisions, a period of four days was taken, as they were running. Then a reduction in tonnage of not to exceed 200 tons was authorized and the same check was made for second period of four days after the reduction was made effective, which resulted in a reduction in the average train haul of 46 tons, a decrease in cost of 0.5 cents per 100 gross ton miles, a saving based on the business handled during the second period of \$472, an increase of 1,498 gross ton miles per crew hour, and an increase of 533 gross ton miles per engine hour (including time on roundhouse tracks). In other places we have produced the same result by increasing our train load.

As a further illustration, the average train load for the entire railroad for December, 1920, was 19 tons less than November, yet the cost per 100 gross ton miles was 0.12 cents less in December than November—a saving of \$10,526.

The valuable part of the arrangement is that the superintendent knows immediately following the day's performance just what he did. He does not have to wait until the month is completed and then wait three or four weeks for the operating sheet and the income account to determine whether or not his operation was economical, but he knows each day what his operation was the day before, and can put his finger on the train or trains that caused any excess cost and can also figure out almost at a glance the trains that could have been operated more cheaply or economically.

With this report we are able to analyze the operation in a way that we never could prior to its installation. It had been the opinion of everyone that in order to get a report of this kind an enormous amount of detail work and accounting would be necessary and that the expense of it would make it prohibitive. The accuracy was seriously questioned. These theories have all been exploded. We are able to discontinue enough reports and data of one kind and another that we had been assembling before in an effort to analyze our train operation so that we did not have to add any cost at all in our division offices to prepare these reports. The only thing the report has cost us to date is the paper it has been printed on and the one man employed as an expert to work the system out and make it effective.

The difference in cost of moving 100 gross ton miles now and prior to using this report means a saving of more than

\$75,000 per month on this railroad in wage costs for freight train operation. I believe that this result is due entirely to this cost data immediately at hand, and I am thoroughly convinced that we have not yet worked out all of the economy that can be secured by careful study and application.

But the most valuable part of it, as I see it, is that we have a cost item definitely worked out that will be of the greatest possible value in preventing an increase in unit costs, because we can so quickly detect any increase and locate it accurately and correctly, and that, of course, means that we can take steps immediately to overcome it.

cars, a decrease of 156,493 cars as compared with the corresponding week last year and of 170,147 cars as compared with the corresponding week in 1919.

Reductions, compared with the week before, were reported in the loading of all commodities, the greatest being in merchandise and miscellaneous freight which includes manufactured products; coal and forest products. Because of the holiday in the week of July 9, however, comparisons with the preceding week in which there were six full working days are out of line.

The summary for the week of July 2 is tabulated below:

Decrease of Surplus Cars Continues

Freight Car Loading

WASHINGTON, D. C.

OWING to the observance of the Fourth of July holiday there was a falling off of 135,110 in the number of cars loaded with revenue freight during the week ended on July 9 as compared with the previous week, according to reports compiled by the Car Service Division of the American Railway Association. The total for the week was 639,698

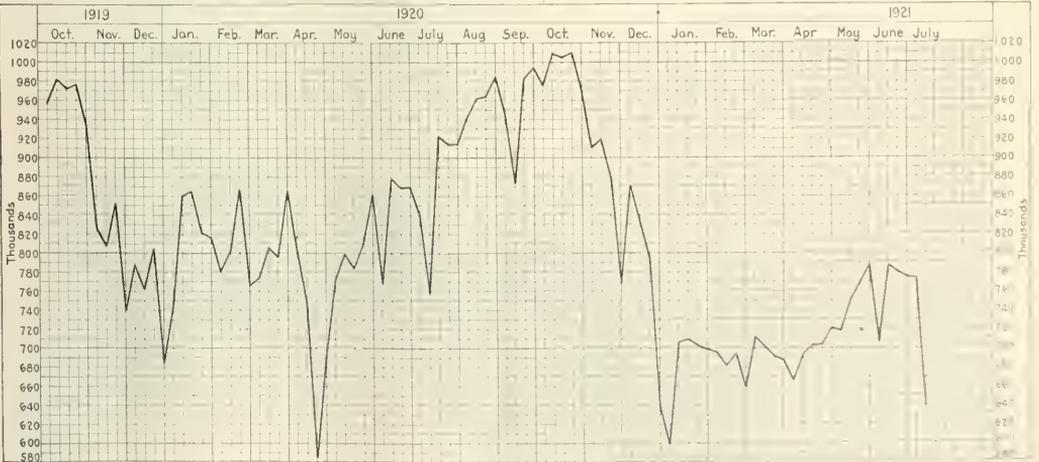
The gradual decrease in the number of surplus freight cars continued during the first eight days in July. The average was 369,525, a decrease of 4,266 cars as compared with the previous week. Surplus box cars totaled 145,112, a decrease of 1,186, due largely to a brisk demand for grain cars in the west where shortages have developed on several roads. There was also considerable demand for ventilated box cars owing to heavy loading of perishable products in the south. A further reduction of 931 in the number of surplus coal cars

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago.										For Week Ended Saturday, July 2d, 1921			
Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded		Received from connections	
										This year	Corresponding year 1920	This year	Corresponding year 1920
Eastern	1921	6,233	2,511	41,021	867	4,704	2,076	57,572	70,872	185,846	218,267	176,888	195,909
	1920	5,850	2,798	56,089	2,283	7,944	7,705	24,635	110,963	157,018	172,073	149,916	254,200
	1919	2,318	2,403	47,982	2,276	2,600	6,731	43,812	48,896	157,018	33,929	30,104	104,954
Allegheny	1921	2,277	2,849	50,343	4,858	3,355	10,120	36,663	61,608	113,088	121,836	107,953	119,978
	1920	120	116	24,773	12	1,318	34	2,339	5,337	33,929	35,263	30,104	13,543
	1919	100	212	23,283	607	1,724	143	105	9,089	110,015	153,875	133,133	19,393
Poconchos	1921	120	116	24,773	12	1,318	34	2,339	5,337	33,929	35,263	30,104	13,543
	1920	100	212	23,283	607	1,724	143	105	9,089	110,015	153,875	133,133	19,393
	1919	100	212	23,283	607	1,724	143	105	9,089	110,015	153,875	133,133	19,393
Southern	1921	3,047	1,667	20,471	384	14,991	481	37,394	34,653	113,088	121,836	107,953	60,517
	1920	2,712	1,912	24,067	220	16,385	3,085	21,710	48,745	118,049	128,272	97,493	74,062
	1919	10,356	7,199	5,687	490	12,586	19,659	28,888	33,204	118,049	128,272	97,493	42,720
Northwestern	1921	9,715	7,121	10,822	1,156	14,076	44,888	21,979	44,118	110,015	153,875	133,133	60,517
	1920	13,038	9,107	13,771	1,778	5,034	582	31,118	37,187	110,015	153,875	133,133	52,018
	1919	5,338	9,930	21,813	440	5,265	5,084	32,758	43,444	128,272	153,875	133,133	72,026
Central Western	1921	5,445	1,920	3,560	147	6,309	792	14,784	23,906	56,863	62,035	48,139	41,374
	1920	3,859	2,241	6,617	93	6,916	647	16,803	24,861	62,035	62,035	48,139	52,146
	1919	40,517	24,923	157,265	4,354	47,542	30,335	215,887	53,955	774,808	891,621	743,226	511,035
Southwestern	1921	34,051	27,063	193,034	9,657	55,665	71,672	157,651	343,828	891,621	891,621	743,226	651,932
	1920	27,504	23,981	154,934	.....	53,784	63,489	.....	419,634	.....	.....	.....	584,596
	1919	6,496	.....	.....	.....	.....	.....	.....	58,236	.....	.....	.....	.....
Total, all roads	1921	30,517	24,923	157,265	4,354	47,542	30,335	215,887	53,955	774,808	891,621	743,226	511,035
	1920	34,051	27,063	193,034	9,657	55,665	71,672	157,651	343,828	891,621	891,621	743,226	651,932
	1919	27,504	23,981	154,934	.....	53,784	63,489	.....	419,634	.....	.....	.....	584,596
Increase compared	1920	6,496	.....	.....	.....	.....	.....	.....	58,236	.....	.....	.....	.....
Decrease compared	1920	2,140	35,769	5,303	8,123	41,337	.....	215,887	88,873	116,813	.....	.....	140,897
Increase compared	1919	13,043	942	2,331	4,354	.....	.....	215,887	31,582	.....	.....	.....	.....
Decrease compared	1919	.....	.....	.....	.....	6,242	33,054	.....	165,679	.....	.....	.....	73,561

L. C. L. Merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

June 25	1921	38,821	28,229	156,999	4,557	49,427	28,921	215,678	252,249	775,061	911,503	845,684	516,603	664,420	591,200
June 18	1921	40,994	28,541	157,243	5,102	50,472	28,866	215,622	253,901	780,741	916,736	807,907	514,358	675,443	574,895
June 11	1921	41,119	29,135	163,088	4,788	51,393	30,179	215,740	253,555	788,997	930,976	807,205	509,129	681,514	563,838
June 4	1921	41,394	24,039	142,674	4,642	48,227	28,311	195,246	221,975	706,508	828,907	776,610	480,162	657,709	524,731



Curve of Revenue Car Loading

Week ending July 9, 1921	639,698	Week ending July 9, 1920	796,191
Week ending July 2, 1921	774,808	Week ending July 9, 1919	845

was also reported, the total on June 8 being 161,606 compared with 162,537 on June 30. Coke cars in excess of current requirements increased nearly 120 during that period to a total of 11,643. Greater demand for stock cars reduced the total for that class of equipment to 17,221, or about 950 cars below what it was at the end of last month. Small reductions in a number of other classes of cars were also reported.

**Bad Order Cars July 1, Total 15.4 Per Cent**

The number of bad order freight cars, however, continues to increase. The report for July 1 shows a total of 354,611, or 15.4 per cent, as compared with 15.1 per cent on June 15, while the percentage of bad order box cars was 17.4 as compared with 17.1 and of gondola cars 14.1 as compared with 13.7. Of all freight cars, 88,224 or 3.8 per cent, required light repairs and 266,387, or 11.6 per cent, required heavy repairs, while of the box cars 4 per cent required light repairs and 13.4 per cent heavy repairs. Not only is the percentage of bad order cars much greater than a year ago, but the proportion requiring heavy repairs is larger.

**Tentative Valuations Issued**

**T**HE Interstate Commerce Commission has issued a number of additional tentative valuations.

**Toledo, St. Louis & Western**

In the case of the Toledo, St. Louis & Western the commission finds a final value as of June 30, 1916, of \$17,282,997 for the property owned and \$17,326,253 for the property used, which includes a small amount leased from other companies. The total track mileage covered is 625 miles. The final value found is very much less than the total capitalization or investment account. The outstanding capitalization on the date of valuation was \$48,412,413 and the investment in road and equipment as readjusted is stated as \$39,339,257, which includes \$35,500,000 face value of securities issued by the carrier in accordance with the reorganization plan of the Toledo, St. Louis & Kansas City less net cash receipts from the reorganization committee and plus expenditures for improvements and additions. The original cost, the report says, cannot be ascertained and figures are given for only a small part of the property. The cost of reproduction new and the cost of reproduction less depreciation of common carrier property other than land are given as \$16,742,614 and \$12,980,050, respectively.

**Ann Arbor**

In the case of the Ann Arbor, the commission places the final value as of June 30, 1915, as \$11,127,277 for the property used, a total of 420 miles of track. The total capitalization outstanding at the valuation date was \$17,271,538. The

cost of reproduction new of the common carrier property other than land is given as \$4,056,034. the cost of reproduction less depreciation as \$3,038,625.

**Chicago, Milwaukee & Gary**

The Chicago, Milwaukee & Gary is given a final value as of June 30, 1915, of \$2,889,974, which covered 99 miles owned. The report says that the funds provided for the initial construction amounted to something less than \$3,380,000, while the total capitalization outstanding on the valuation date was \$13,093,187. No dividends have ever been paid on the stock and no interest has ever been paid or even accrued in the accounts on the first mortgage bonds. The original cost to date is found to be an indeterminate amount in cash within a maximum of \$3,694,357. The cost of reproduction new other than land is given as \$2,609,678 and the cost of reproduction less depreciation as \$2,086,718.

**Trinity & Brazos Valley**

For the Trinity & Brazos Valley the commission states the final value as of 1916 as \$9,064,566; the capitalization was \$17,531,645, the book investment \$11,467,726 and the original cost approximately \$9,889,581 in money and \$1,518,338 in securities. The cost of reproduction new is given as \$10,528,526 and the cost of reproduction less depreciation as \$8,043,452.

**St. Louis Southwestern of Texas**

In the case of the St. Louis Southwestern of Texas, which on June 30, 1915, owned 897 miles of tracks and used 1,019 miles, the commission found a final value of \$23,831,840 for the property owned and \$26,029,939 for the property used. The capitalization as of the valuation date was \$27,590,936. The report says the original cost cannot be ascertained but the maximum expenditure of the company and its predecessors in creating and improving the property was \$21,685,529. The cost of reproduction new of the carrier property other than land was given as \$28,156,973 and the cost less depreciation as \$21,352,005, while the present value of the carrier land was reported as \$2,458,778.

The commission has also reported tentative values of a number of smaller roads in which the final value of the property used is given as follows:

Lithonia & Arabia.....	1916	\$51,858
Milstead.....	1916	31,924
Blaney & Southern.....	1916	56,000
Sunset.....	1916	1,468,226
Timpson & Henderson.....	1917	392,643
Gulf Texas & Western.....	1917	1,667,771
White River.....	1917	392,223
South Manchester.....	1916	184,425
Montana Western.....	1915	186,500
Peoria Railway Terminal.....	1916	1,126,355
Mount Hood.....	1916	507,463
Gideon & North Island.....	1917	130,906
Garden City Western.....	1916	192,099
Washington & Choctaw.....	1915	147,685
Sardis & Delta.....	1916	116,000



**Ten-Wheeled Locomotive Built by the H. K. Porter Co. for the Manila Railroad**

A duplicate order for 10 locomotives of this type was shipped recently. The equipment includes vacuum brakes and electric headlights.

# Reduction of Live Stock Rates Proposed

Interstate Commerce Commission Examiner in Report Recommends Readjustment to Aid Farmer

WASHINGTON, D. C.

**O**RAL ARGUMENTS were heard by the Interstate Commerce Commission at Washington on July 15 on the first important complaint asking a reduction of rates increased by the commission's order in Ex Parte 74 that was filed with the commission following that advance. The case is that of the National Live Stock Shippers' League and other live stock interests against the western railroads and the proceeding was expedited by the commission so that the argument was held on the day following the issuance of a proposed report in the case by Attorney Examiner Disque, who recommended to the commission a finding that the rates for the interstate transportation of ordinary live stock in carloads in the Western and Mountain-Pacific groups in the aggregate are not excessive from a strictly transportation standpoint, but are unreasonable from an economic standpoint and that the carriers should favorably consider the making of substantial reductions in those rates for the benefit of the live stock industry and business generally. Mr. Disque found that, judged by the usually recognized standards employed in rate cases, the live stock rates are relatively low for the service performed, but he recommended a reduction of the rates in the two western groups by the amount of the increase put in effect last August, which was 25 per cent in the Mountain-Pacific group, 35 per cent in the Western group and 33 $\frac{1}{3}$  per cent on inter-territorial traffic. This was strenuously opposed at the argument by the attorneys for the roads.

The complaint asked for a blanket reduction in the live stock rates on the ground that it was impossible for the live stock industry to thrive under the present rates and that they injure business generally. The rate making authorities of several states intervened as complainants and the commission was asked to eliminate both the increase of 25 per cent with a maximum of 7 cents per 100 pounds or \$15 per car, made by the Railroad Administration under General Order 28, and the increase ordered by the commission in Ex Parte 74. For the most part the important live stock rates in the West had been fixed by the commission before these advances were applied.

## Live Stock Industry in Serious Condition

The report discusses in detail the situation of the live stock industry, pointing out that the market prices are determined largely by the law of supply and demand and that the proceeds of the farmer are based on the price at the market less transportation and marketing charges. "The record establishes," Mr. Disque said, "that the live stock industry is in a very serious condition. Millions of dollars have been lost within the past year or so because of the rapid and severe decline in market prices of live stock. When the live stock industry is in a depressed state the whole section of the country is depressed." For hauls up to 400 or 500 miles, he said, the increases under General Order 28 and Ex Parte 74 resulted in rates about 68 per cent higher than those in effect before the war. For greater hauls the increase was less severe, but in general exceeds 50 per cent.

"The market prices of live stock are near the pre-war levels and the indications are that as a general rule the live stock grower at best is not receiving and will not receive," the report said, "if present producing and marketing costs and selling prices continue, anything more than a nominal

return over and above the out of pocket costs, to say nothing of interest on investment and an allowance representing a salary for the farm or ranch owner-manager. The present relatively low price may be due largely to a possible oversupply on the market.

"The present rates discourage and to an extent actually prevent the free interchange of cattle among ranchmen, thus reducing railroad traffic. Future traffic is also threatened. Many have discontinued the raising of live stock and many more are expecting to do so. Freight charges are the only item aside from commission charges which is at its peak."

The complainants pointed out, the report says, that the value of live stock is far below what it was when Ex Parte 74 was heard and that the value of the commodity is one of the important considerations in rate making. The reduction in rates is not sought on the ground that it would substantially increase the present movement but on the theory that it would stimulate the industry, help save it from ruin and preserve it as a future and continuing source of traffic for the carriers. The desired benefit to the industry might be accomplished if substantially increased prices for live stock could wisely be fixed by law, the examiner said. Possibly when the present period of liquidation has spent itself and production is reduced higher prices will come about naturally.

## The Railroad Point of View

"The railroad situation is a matter of common knowledge," the report continued, "and need not be considered here. Suffice it to say that the evidence is calculated to establish that the carriers, like the live stock industry, are in a bad way and that they are in no position to make extensive reductions in rates. The defendants roughly estimate that on the basis of 1919 traffic the reduction sought would cost them about \$34,000,000. Complainants perhaps would have us regard this amount as defendants' just contribution toward an early return to normal conditions. If only the Ex Parte 74 increases were taken off the loss would be about \$22,500,000. The carriers say that if there is any commodity which should be excepted from a reduction, it is live stock. They have offered what they regard as the most comprehensive and convincing evidence ever submitted in a live stock case. That the rates in the aggregate are not excessive from a strictly transportation standpoint is so abundantly shown that it is not deemed necessary to do more than state the ultimate facts. The evidence establishes beyond and question of doubt that the present rates contribute to the revenues of the carriers in less proportion than do most other commodities of importance. In other words, judging them by the usually recognized standards employed in rate cases, they are relatively low for the service performed. Live stock rates have not been increased as much in the last 10 years as most other rates. On account of the light loading the car milk earnings are far below what they are on most other important commodities. We have no hesitation in saying that our judgment is that they should be substantially reduced to assist in tiding the live stock industry over its present period of adversity and to hasten the return of normal conditions. In other words, it is our view that the rates are unreasonable from an economic standpoint.

"It is not every line of business that would be materially helped by a reduction in freight rates but here is one which would be. It is our view that in the long run a substantial reduction would redound to their (the carriers') advantage.

"The defendants fear that if they make reductions on one commodity the same thing will be demanded on many others and that if they yield most of them will be shortly found in bankruptcy. We cannot believe, however, that the country will allow such a thing to come to pass as a general condition of receivership. We think the carriers in the public interest should favorably consider the matter of eliminating for the most part, temporarily at least and especially for longer hauls, the increases in live stock rates made following Ex Parte 74. This exception is not to be taken as any indication of what course we may pursue as to some other commodity. A reduction in rates on traffic in general seems unwarranted at this time and in our view no adequately compensating benefit would be thus achieved. However, the rates on certain commodities are stilling industry and should be reduced. If the carriers cannot live on rates that will permit industry to thrive, special measures may have to be adopted to maintain and preserve the efficiency of our transportation system."

#### Argument on Behalf of Railroads

Kenneth W. Burgess, arguing in behalf of the railroads, said that the present condition of the livestock industry is due entirely to economic factors other than freight rates and that a reduction in freight rates will not relieve the situation. To illustrate this he showed that while the deflation in the farm values of live stock in the western district in 1920 was \$819,660,288 the freight rate increase made last year was only \$7,488,336 or less than 1 per cent of the decrease in values, the advance having been in effect for four months. The present value of the western live stock at the market is \$2,419,200,000 and the entire reduction in freight rates asked, \$34,000,000, is only 1.2 per cent of the value, while the reduction proposed by Examiner Disque is less than 1 per cent. He also showed that the value of a car of live stock at the market is \$1,800 to \$2,000 a car, while the average freight rate in the western district is \$66 a car. These figures illustrate in a general way, he said, the fallacy of charging the commission with causing the deflation in the value of live stock or Congress with dereliction of duty in passing the transportation act.

No general rate reduction is possible at this time in the western district, he continued, and live stock cannot be singled out for a rate reduction at this time in the light of the circumstances and conditions of transportation which are attendant upon it. Under the law as defined by the courts and the commission rates on one class of traffic cannot be decreased so as to throw a burden on other classes of traffic. Upon the facts of record it appears, Mr. Burgess argued, that this result would follow if live stock rates are reduced. The courts have frequently held, Mr. Burgess said, that the reasonableness of a freight rate does not depend upon whether the customers of the railroads are making money in their business and the examiner in his report has undertaken to set up a new test of the reasonableness of a rate, the economic reasonableness, unknown to the law, without giving any measure to tell what would be reasonable.

Commissioner Campbell asked if he contended that the commission should keep on raising rates in an effort to make them produce 6 per cent. Mr. Burgess said that he would not make any such contention but that in this case it is not claimed that the reduction of the rates would even stimulate traffic. It is claimed that live stock has been moving merely because it was necessary for the producers to realize cash. The western railroads have been earning only at the rate of 2.87 per cent.

Mr. Burgess went into a detailed discussion of the causes for the deflation in live stock prices to show that a reduction in freight rates would not result in any material or permanent benefit to the industry and concluded by saying that if the commission should find, as the examiner has found, that

the rates are reasonable from a transportation standpoint, he challenged its jurisdiction to reduce the rates.

#### Argument of Shippers

S. H. Cowan and Clifford Thorne, representing the live stock shippers, and J. E. Benton, representing the state commissions that have intervened in the case, emphasized the argument that the commission can reduce rates on a single class of traffic on the ground of their inherent unreasonableness regardless of whether the rates as a whole are producing the return prescribed in the law and upon the superiority of the rights of the public to ship on reasonable terms from the standpoint of the shipper, to the rights of the stockholders. Mr. Thorne and Mr. Cowan also objected strenuously to the finding of the examiner that the live stock rates are reasonable from the transportation standpoint and that rates generally can not be reduced, saying that such findings are unnecessary in this case and may cause trouble in the future. They also referred at length to exhibits used in previous live stock rate cases which they claimed demonstrated that live stock rates are remunerative as compared with the rates on other commodities when compared on the basis of net ton miles rather than on car mile earnings.

Mr. Cowan said that the reduction is asked so that the live stock industry may prosper so that the railroads may prosper because the prosperity of the railroads depends in great measure on that of the live stock industry. The business now is paralyzed, he said, and the shippers did not even have the money to prepare an abstract of testimony in this case. It is not contended that the railroads are wholly responsible for the condition, he said, or that the western roads are earning the return prescribed by the law, but that the commission is empowered to make rates which are fair and reasonable in the circumstances, which means rates that will enable the industry to live. He denied that the live stock traffic costs more per net ton mile than other traffic, saying it is the most desirable traffic in the west that moves in volume.

Senator Kendrick of Wyoming, who is president of the American National Live Stock Association, also made a statement to the commission, describing the serious condition of the live stock industry and arguing that a reasonable freight rate must be one that is reasonable to the shippers. He said the last increase in rates had more to do with discouraging those who were financing the live stock producers than any other factor and seemed to have brought them to the conclusions that the business could not be made successful. He said that reduction is asked on traffic which must be moved whether the rates are reduced or not because the cash must be realized from it and he urged expedition in deciding the case because the heaviest movement will be early in August. Senator Kendrick declared that the freight rate represents 25 per cent of the net return from live stock and that the reduction asked would not enable the producer to realize the cost of production but would merely reduce his losses.

Clifford Thorne answered Mr. Burgess' figures by saying that the condition of the industry is the result of many factors which collectively are of large importance and that one of the largest factors in the list is the freight rate burden. Chairman Clark asked whether there is anything in the record to show whether the producer of live stock would get the benefit of a reduction in rates. Mr. Cowan interjected that the farmer gets the price at the market less the freight rate and Mr. Thorne added that anything that reduces the cost of shipping is important and it is up to the shipper to see that he gets the advantage of it.

THE RULE REQUIRING all engineers and conductors on the Atchison, Topock & Santa Fe to have standard watches, has been extended so that it includes all firemen, brakemen, switchmen and train porters of the system.

# Locomotives of American Design for Use in Spain

## Pacific Type Handles Heavy Express Trains on Madrid, Zaragoza & Alicante with High Efficiency

THE Madrid, Zaragoza & Alicante is one of the two large railroad systems in Spain. Having 2,267 miles of line, it constitutes about 25 per cent of the total railroad mileage in the kingdom, which is 9,610. The road is of 5 ft. 6 in. gage, this being the standard used on 75 per cent of the mileage in the country, the balance being meter gage. The road operates three main lines out of Madrid, the first running easterly through Zaragoza to Barcelona and along the coast to the French border, the second southeasterly to Alicante with a branch to Cartagena, and the third southerly and westerly to Cordoba and Seville. The rolling stock consists of 879 locomotives, 1,643 passenger coaches and 20,964 freight cars.

American built locomotives of the balanced compound 12-wheel type have been in operation on the Madrid, Zaragoza & Alicante for several years, but they were constructed from drawings furnished by the railroad and were duplicates of previous locomotives used on the road which were built in Germany. A full description of these engines was given in the *Railway Age*, April 13, 1917.

In May, 1920, the Madrid, Zaragoza & Alicante placed

These Pacific type locomotives conform as closely as possible to American practice. They are, however, equipped with copper fireboxes and staybolts and screw reverse gear. Automatic vacuum brakes are used for the driving wheels and on the tender, with auxiliary hand brakes on the tender.

The superheater is designed to raise the temperature of the steam to 725 deg. F., or 350 deg. above that of saturated steam. This extremely high temperature requires the use of special oil and a great amount of care on the part of the enginemen. Due to lack of experience with steam of such high temperature, several of the valves were scratched during the first two months of service, but no trouble has been experienced recently.

Despite the fact that so many details of construction conformed to American practice and were therefore new on the road, the men soon became familiar with these engines and now handle them as perfectly as the older types of locomotives. Although the Pacific type locomotives are of smaller power than the older 12-wheel type, they are satisfactorily handling the same loads, run easily at the fastest speeds allowed and if delayed are usually able to make up lost time.



American Design of Locomotive Giving Good Service in Spain

an order with the American Locomotive Company for 15 passenger locomotives of the Pacific, or 4-6-2 type, to be built in accordance with American designs. They were completed in 100 days after the signing of the contract, but shipment was delayed on account of the protracted strike of the longshoremen. They were finally received at Alicante early in September, erected at the roundhouse at that point and placed in service on express passenger and mail runs from Madrid to Barcelona, Santa Cruz, Alicante and Cordoba. As these new locomotives, numbers 901 to 915, are used in the same service as the earlier 12-wheel locomotives of the 1,300 class, the following information which has just been received from E. Maristany, superintendent of motive power, relating to their performance after they have been in service for several months, is of particular interest.

The service requirements specified were the handling of 280 tons back of the tender at a speed of 31 miles an hour on 1.5 per cent grades and curves of 1,312 ft. radius, 310 tons at a speed of 37.3 miles an hour on 1 per cent grades and curves of 1,312 ft. radius and 400 tons at a speed of 62.1 miles an hour on level track and curves of 2,297 ft. radius.

The arrangement of the trucks and the disposition of the suspension permits running at high speed without trouble from journal heating.

The workmanship on these locomotives has received very favorable comments and refutes the opinion frequently held in Europe that American workmanship is of a low grade. Due to the results thus far obtained, the impression made by these locomotives is a very favorable one. In two or three years when they are taken in for heavy repairs, it is hoped that a comparative report can be obtained between the cost of repairs on these locomotives and other locomotives of European design.

At the present time economy of operation is of vital importance in Spain as well as in other parts of the world as the coal now available on the Spanish roads is not only of a lower grade than that formerly obtained, but the cost is two or three times as much per ton as it was before the war. During the month of April, 1921, the average total mileage made by the fifteen engines was 3,510 with an average coal consumption of 71.5 lb. per train mile, while the amount of oil used per mile was 0.12 pint, or 8.3 miles per pint of oil. In coal and oil consumption the results obtained with these

engines compare very favorably with that of the most economical locomotives on the road.

The general dimensions and the weights of the locomotives are given in the accompanying tabulation.

Tractive effort (85 per cent of working steam pressure).....	28,830 lb.
Gage.....	15 ft. 6 in.
Cylinders.....	23 in. by 26 in.
Boiler.....	
Diameter.....	65 in.
Length between sheets.....	19 ft.
Working pressure.....	170 lb.
Grate area.....	45.3 sq. ft.
Tubes.....	28—5 $\frac{3}{8}$ in.
Gage.....	2 in.
Heating surface, firebox.....	143 sq. ft.
Heating surface, arch tubes.....	13 sq. ft.
Heating surface, tubes.....	1,305 sq. ft.
Heating surface, total.....	1,461 sq. ft.
Heating surface, superheating.....	705 sq. ft.
Wheels.....	
Driving.....	69 in.
Truck, front.....	38 $\frac{3}{4}$ in.
Truck, trailing.....	45 $\frac{3}{8}$ in.
Weights.....	
On driving wheels.....	105,800 lb.
Engine light.....	169,000 lb.
Engine in working order.....	188,500 lb.
Engine and tender in working order.....	293,500 lb.
Tender.....	
Water capacity.....	717 cu. ft., 9,600 U. S. Gals.
Fuel capacity.....	3 $\frac{1}{2}$ tons

## Labor's Bill of Rights and the Seniority Rule

By L. E. Gardner

MR. JEWELL in setting forth labor's "Bill of Rights," said the reason for so doing was to show to the Labor Board "how easy" it would have been for employees and the railroads to get together on the National Agreement had the railroads shown a "sincere desire" to meet those selected and instructed by the railroad employees to adjust the matter of national agreements. Even the most casual consideration of the "eleven points" of the "irreducible minimum" on which labor would have an agreement, shows the labor leaders to be begging the question. It is difficult to say which of these "eleven points" is the most objectionable. The purpose of this article is to discuss only one of them, namely, the tenth, which demands: "Craft, point seniority, limiting seniority to the local shops or points, and not permitting interchange of seniority with other shops, crafts, or departments of railroads."

It does not seem that "those selected" by railroad employees to adjust this matter are acting in the best interests of railroad employees in asking for any such disastrous rule, or that in doing so, they really voice the wishes of the employees as a whole. Under present working conditions, many employees do not have an opportunity, or at least do not see fit to exercise the opportunity of expressing their real convictions. A closed shop is closed in more ways than one.

This rule not only places the emphasis on seniority instead of on ability, but does not even make mention of the ability or fitness of the employee. Seniority alone is to be considered. Such a rule might benefit the incompetent workman who had no qualification other than seniority by which to win promotion, but would have a very discouraging effect on the success of any worthy or ambitious workman. No matter what the workman's natural talent, or his special fitness for the job in question, or the training he had received in preparation for just such work, he could not hope for the job so long as anyone else wanted it who happened to have more seniority than he. And just what is this talisman of "seniority," this "open sesame" to all job preferment? It isn't a question of the man's fitness or faithfulness, or even of his length of service. But one of "craft, point, departmental seniority." Let us consider each of these three phases of this rule.

First craft seniority: nothing that the workman ever did before becoming a member of the craft is to be considered.

If he spent four years in an apprenticeship preparing for service in that craft he may have less seniority than the so-called McAdoo mechanic, who was made a mechanic over night, by a stroke of a pen, and happened to become a member of the craft the day before the young apprentice completed his four year course, even though the date the latter completed his course may have been delayed by two years or more spent overseas in his nation's service. The handyman's seniority dates from the day he began doing mechanic's work, but not so with the apprentice. He has absolutely no seniority until he begins drawing full mechanic's pay, and even then he has no more seniority with the employer for whom he has worked these several years than in a shop in which he had never entered. So much for "craft" seniority.

But even after becoming a member of the craft, and having craft seniority his chances of success and advancement are further limited by "point seniority," which in brief stipulates that nothing the workman ever did at any other locality is to be of any avail to him. He may have been broadened and developed by experience in some of the best shops in the country, or may have given a lifetime of efficient and faithful service to this same employer, but possibly his own health or the health of some member of his family, may have made it necessary to move to some other section of the country and to seek employment in another shop of this same company. Should this be necessary, he finds to his sorrow that in the choice of work and in times of reduction, he has less "point seniority" than the most incompetent boomer who happened to light in that shop a day ahead of him. Though he has given his former employer good and faithful service, this rule would tie the company's hands and make the management powerless to reward him for his service. Truly this seniority rule is a great protection to the workman.

But it is not sufficient that the workman should be handicapped by craft seniority and point seniority, he must be still further restricted by "departmental seniority." His ability is not to be considered. His seniority in the craft is not sufficient, his years of service with the company is worth nothing, not even his service with the company at that particular point, unless he also has "departmental seniority." Any fellow workman, who happened to start in that particular department ahead of him, no matter how inefficient or unworthy, would have seniority rights over him as to choice of jobs and as to being retained in service in times of reduction. If the man accepts work in a small department he limits his chance for advancement. The man in a large department finds that once he loses a desirable position, he must start again at the very bottom in a class of work not only very distasteful to him, but work for which he is really not fitted. For instance, if a skilled cabinet maker or inside finisher suffers a break in his service, for any reason whatever, voluntary or otherwise, he cannot ask for similar employment with his former employer, nor even on any other railroad in the country, but can only ask for the least desirable job in the freight car department. In this as in other cases, nothing is of any value but the "technical seniority," the conditions of which he cannot always foresee, as many workmen have recently learned to their sorrow.

During these recent reductions in forces, the management would have gladly rewarded many of these men for their faithful service, and would have found some way in which to take care of them, but no, they must follow a rule the conditions of which are such that not only is no guarantee made for merit of any kind, but the employer is even denied the opportunity of giving any consideration to a worthy employee not given to the most worthless and unworthy of those able to get by. And yet labor leaders include such a rule in the "irreducible minimum" on which they would make an agreement, and in doing so claim they are acting in the best interests of the men they are supposed to represent.

But the frequent injustice to the workman himself is not

the worst of it. Railroad men are human beings, endowed with the desire for self betterment and service to others. Like all normal individuals, as a whole, they at heart believe in reward of merit; they know that some men are more capable than others, that some men are adapted to the work they are doing while others are industrial misfits; that some make the most of their opportunities while others fail to do so. While they and their employers feel that old and faithful employees should be rewarded for the service rendered, they realize, too, that the quality and quantity of work done by the individual employee should receive its own reward. Imagine the effect, if you please, on a competent, energetic workman seeing an ignorant, incompetent, slow and lazy fellow-workman given preference over him in choice of work or other favors in the shop. If this happens not once, not twice, but scores and scores of times, what effect is it bound to have on his efficiency and ambition, his feeling toward his employer and toward his fellow-workmen. If such a condition should continue day in and day out, year after year, what would be the result in a decade or a generation? What would be the quality and quantity of work turned out by a body of workmen from whom all incentive to individual effort had been removed? What would be the earning power and consequent income of this same body of workmen, what their feeling toward each other, what their respect for themselves?

Let us view this obnoxious seniority rule from a different angle, from the viewpoint of the output of the shop, in case the management has nothing to say as to the placement of the men. If all jobs must be bulletined, if from the foreman is taken the right to place his men in work for which they are fitted, and where they will work as a whole to the best advantage, if his men know that he had nothing to say as to their present assignment of work and will have nothing to say about such assignments in the future, what will be the effect on shop discipline, what the effect on the immediate and the ultimate output of the shop? Where is teamwork going to come in? How is the work of the various jobs going to be co-ordinated and the whole body of workmen formulated into an efficient working unit? What would have been our chance of defeating the Germans had our army been organized in such a manner, and the various positions filled, and men detailed for special duty merely on the basis of seniority alone?

If the shop management is to have nothing to say as to placement of men, and to have no opportunity for rewarding merit, but must bulletin each job, shut its eyes and take what comes, what will be the inevitable result, either in present output or future progress and efficiency? If this arrangement is to be continued in the assignment of work to the definite craft, would it also be extended to foremanship and other leaders? In short, would the oldest man in the shop be made superintendent, the oldest man in the state be made governor, and the oldest man in the nation be made president? These illustrations sound ridiculous, but they serve to show the ridiculousness of the seniority demands.

Under the individual effort system, by which is meant any system which recognizes effort and ability, men are not promoted, they promote themselves. It is just as natural for some men to rise to the top and others to go to the bottom, as it is for material objects to obey the laws of gravitation. There may occasionally be a few instances where men of ability are temporarily passed over by favors shown men with a pull, but such cases are rare and are daily becoming more so. Even from a purely selfish point of view, a foreman or other official is not going to injure his own success and chance of advancement by tying about his neck a lot of dead weight in poor subordinate assistants. Even if a sense of fairness and justice would not influence him, his own interests in the matter would result in his rewarding those of his men who show most ability and fitness.

As the individual workman increases his efficiency and usefulness, so will the usefulness and prosperity of the workman as a whole increase. As output is increased and the company's earnings increase, the cost of transportation will be lowered and the public correspondingly benefited. This question is a most serious one and is of direct concern not only to the railway employees and railway managements but to the public as well. In brief we might as well expect the race to be won by the oldest horse on the track as to expect to win out in the present industrial struggle with a system recognizing length of service alone, with no regard for merit or fitness.

## Chesapeake & Ohio Wants to Unify Properties

WASHINGTON, D. C.

THE CHESAPEAKE & OHIO has filed an application with the Interstate Commerce Commission (noted briefly in the Railway Financial News Column) for authority for the conveyance to it of the property of the Chesapeake & Ohio Northern, which indicates that the provisions of the Transportation Act interpose numerous technicalities in the way of a consolidation of the properties of a railroad system in advance of the publication by the commission of its tentative plan for a general consolidation of the railroads into a limited number of systems.

It has been the policy of the Chesapeake & Ohio to unite the properties of its various subsidiaries with its own property by deeds of conveyance from time to time, but in order to carry out this policy in the case of the Chesapeake & Ohio Northern, which in part connects its line with that of the Hocking Valley, it has asked for authority under three separate provisions of the act.

In the first place it applies for a certificate that public convenience and necessity require the operation by the Chesapeake & Ohio of the Chesapeake & Ohio Northern and permitting the abandonment by the Northern of its line coincident with the assumption of operation by the Chesapeake & Ohio. Application is also made for an order approving and authorizing the acquisition of control through conveyance to the Chesapeake & Ohio of the rights, properties and franchises of the Northern company, or for authority to assume direct liability for the bonds of the latter. The Chesapeake & Ohio built the Northern line under the name of a separate company of which it owns the stocks and bonds and the application states that the properties are now and always have been operated as parts of a single system under one management and are in substance commonly owned. The application is made under the provisions of section 1, paragraphs 18 to 22 and section 5 paragraph 2, either or both, and under section 20a of the interstate commerce act, but not under section 5, paragraph 6, which provides for the consolidation in one corporation of properties in separate ownership.

The paragraphs referred to in section 1 are those which provide for the issuance of certificates authorizing the construction or acquisition of extensions or the abandonment of existing lines, but the commission has held in several recent finance cases that paragraph 18 does not apply in the case of a railroad which was in operation in interstate commerce prior to its effective date last year. Section 5, paragraph 2, under which application is also made, authorizes the commission to approve the acquisition by one carrier of the control of another carrier either under a lease or by the purchase of stock "or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation," while Section 5, paragraphs 4 to 6, provide for consolidations but only in case they are in harmony with and in furtherance of the complete plan of consolidation mentioned in paragraph 5 on which the commission is now work-

ing with the assistance of Professor W. Z. Ripley of Harvard University.

The application of the Chesapeake & Ohio says the object is to acquire by purchase and operate the property of the Northern company. Applicant is advised that Section 10 of the Clayton law is susceptible of a construction which may have a serious effect on the heretofore efficient and economical operation of these properties as a single railroad system because of the restrictions thrown around dealings between companies having common officers and directors, and it is stated that the steps taken by the applicant to meet the technical difficulties arising from this construction of the act are proving very expensive and otherwise embarrassing. The effect of granting the application, it says, will be to change an equitable into a legal title to the property and a guaranty into a principal and in addition to effecting accounting and other economies will result in the restoration of efficient operation impaired by Section 10 of the Clayton Act.

### “No Exception Month” on the Illinois Central

**D**URING THE PERIOD of federal control very satisfactory results were obtained in reducing the number of casualties to employees by means of “no accident” or “safety first” campaigns. With this past experience in mind, officers of the Illinois Central were of the opinion that a similar campaign, to be known as “No Exception Month,” might obtain worthwhile reductions in the number of loss and damage claims on their road. The plan seemed so feasible that the month of April, 1921, was set aside for the campaign, which was to be known as “No Exception Month,” and which had for its immediate purpose the reduction of exception reports, with their subsequent claims. The general method chosen for accomplishing this end was to enlist the cooperation of employees in a general effort to handle more carefully all freight delivered to the road for transportation, so as to insure its reaching its destination in the same good condition in which it had been received, thereby obviating the necessity for exceptions of any kind.

It was decided that the territory to be included in this “no exception campaign” should embrace all lines of the Illinois Central south of the Ohio river, consisting of the two so-called grand divisions, the Illinois Central Southern lines and the Yazoo & Mississippi Valley, a total of seven divisions.

#### Campaign Well Advertised

General superintendents and superintendents were notified two weeks in advance of the campaign in order that they, in turn, could issue preliminary instructions to all supervising officers and agents. To further insure the success of “No Exception Month,” supervising agents from each division were called together at Memphis, Tenn., where a uniform program was discussed and adopted for the use of all agents and their forces. An outline of this plan which, it is believed, was largely responsible for the extraordinary success of the campaign, follows:

1. Notices, fully outlining the campaign, were sent out to all agents, trainmasters, master mechanics, roadmasters, yardmasters and local freight conductors.
2. Supervisory forces conducted a personal campaign among the employees of every department.
3. Meetings were held at all the larger stations at which the agents could instruct both their office and platform organizations.
4. Platform foremen held ten minute meetings daily with their forces.
5. Agents and foremen at the principal stations were required to ride local freight trains frequently during the campaign to check up any bad practices in the handling of freight which might come under their observation.
6. All foremen in charge of transferring and repairing carload shipments were made familiar with the details of the campaign

and were impressed with the importance not only of transferring all lading carefully, but also of using the utmost care in selecting the cars to be used.

7. Agents at the larger stations were urged to inform shippers of the campaign and to solicit their co-operation.

8. Inspectors from the department of the superintendent of stations and transfers were assigned to each division one week before the inauguration of the campaign. They were to co-operate with the superintendents, supervising agents and other division officers in making the campaign a success, and were free to handle any details which might be assigned them after conference with the division staffs.

9. On the last day of March, 1921, superintendents sent notices to all heads of departments on their division, calling their attention to the fact that the campaign was to become effective on the following day, and issuing instructions that the employees should be called together before going to work to be impressed with the importance of giving close attention to the proper handling of all carload and l. c. l. shipments, and otherwise making every effort toward success in the campaign.

#### Excellent Results Obtained

The exception reports received as the result of improper handling of freight during this period were tabulated daily, being charged to the station and division responsible for them. Report was made by telegraph daily to the general superintendents of the number of exceptions received against each division and larger station, together with the total to date.

In addition to the general “no exception campaign” a special effort was made to reduce exceptions resulting from bad order equipment. As a result of this effort, these exceptions, which had totaled 1269 on the two grand divisions in March, were reduced to 364 in April, a reduction of 905 or 71 per cent. This was accomplished largely by interesting the stowmen in the proper loading of freight, by instructing yard and train officers in methods of careful handling, and by bulk-heading “through destination cars.” As an example of this latter remedy, there were 105 bad order exceptions reported on outbound freight from Louisville, Ky., during March, and this number was reduced to 20 in April, solely by bulk-heading merchandise cars. A test showed that of 127 cars bulkheaded only 8 were damaged.

The general campaign itself resulted in a reduction of more than 70 per cent in the number of exceptions received on the grand divisions in the handling of less than carload freight in April, as compared with March. The reduction as compared with October, 1920, was more than 80 per cent. It must be borne in mind, however, that while the tonnage in March and April was approximately the same, that in April was 50 per cent less than in October, 1920. The table which follows illustrates in detail the exceptions which were received against the two grand divisions during the month of April, in comparison with the totals for March, 1921, and October, 1920:

	Southern Lines	Y. & M. V.	Total April 1921	Total March 1921	Decrease	Per cent of Decrease
Shorts .....	46	108	154	666	512	76.8
Bad orders .....	146	218	364	1,269	905	71
Filferages .....	10	32	42	118	76	64
Overs .....	102	98	200	537	337	62
Astrays .....	46	73	119	430	311	72
Total, April, 1921...	350	529	879	3,020	2,141	70
Total March, 1921...	1,426	1,594	3,020	.....	.....	.....
Total October, 1920...	2,311	2,796	5,107	.....	.....	.....

Decrease in April as compared with October, 4,280, or 82 per cent

#### Interest of Employees Continues

The entire campaign, according to the officers of the Illinois Central immediately in charge, was marked by the co-operation of every officer and employee. Intense interest and rivalry were created between the larger loading stations and between the various divisions, with the result that interest among the employees in preventing loss and damage to freight has been permanently increased. An especially gratifying result of the campaign has been the increased activity of the employees on the grand divisions during the month of May. Reports received up to and including May 16 indicated that a better showing was made during that month than was made even in April, while the campaign was on.

# Water Softening as a Factor in Fuel Conservation

By C. R. Knowles

Superintendent of Water Service, Illinois Central, Chicago

FUEL SAVING is only one of the many benefits to be derived from water softening, others including the longer life of flues and firebox sheets, a reduction in the cost of labor for cleaning and repairing boilers, fewer boiler failures due to leaking, greater locomotive mileage between stoppings, fewer locomotives required to do the same work and a material saving in overtime and delays. Space will not permit of discussing the many advantages of water softening in detail; this article, therefore, will be confined as closely as possible to a discussion of fuel economy through the use of properly softened water.

The cost of fuel to the Class 1 railroads of the United States in 1920 was \$765,870,663, according to the report of the Interstate Commerce Commission to the Senate, the quantity and cost of various fuels being as follows:

Pituminous coal .....	155,343,635 tons	\$641,234,469
Anthracite coal .....	5,779,819 tons	24,268,764
Oil .....	55,590,783 bls.	97,874,094
Coke .....	91,642 tons	1,027,336
Wood, etc. ....		1,476,000

The fact that some of this fuel is wasted or consumed unnecessarily is generally recognized and railroads have waged extensive campaigns in the interest of conservation of fuel. These campaigns, however, have been directed largely toward effecting economies in the handling and use of fuel, neglecting to a certain extent at least the quality of the water furnished and its possible effect upon the fuel consumption. If we stop to consider that practically all of the fuel used on railroads is for the purpose of converting water into steam and that much of the steam is used for heating or handling water it will be realized that a campaign against fuel waste is not complete unless a careful study is made of the water supply as well as the coal pile.

Chief among the many fuel wastes is that caused by boiler scale. No locomotive or other boiler is absolutely free from scale after it has been in service for a short time, the extent of the scale depending entirely upon the character of water used. The calcium and magnesium sulphates and bicarbonates are the most important scale-forming elements commonly found in boiler waters. Sulphate scale usually has a higher heat-insulating value than carbonate scale, due to the greater density in structure, although this may vary to some extent under different conditions and with water differing in character. Scale is objectionable in boilers for more than one reason, but the principal objection is due to its great heat-insulating value and the resultant loss in fuel necessary to drive the heat through the accumulated scale.

It is, of course, preferable to develop a natural water supply of satisfactory quality rather than to install a treating plant, but unfortunately this is not always possible, except at a prohibitive cost. Therefore, if a natural water supply of good quality cannot be developed the proper treatment of the available supply is necessary.

For convenience water treatment may be roughly divided into two general methods, namely, "Interior" and "Exterior" treatment, the first covering the use of chemicals and boiler compounds introduced directly in the boiler, the second covering the treatment and removal of the scale-forming materials before the water enters the boiler. Where facilities are not provided for fully treating the water outside the boiler, the use of a good compound is often advisable and is followed by good results when properly applied. The existing objections to the use of boiler compounds are due largely to their improper application rather than to the failure of the compounds themselves, and they have often been condemned as unsatisfactory when the fault lay in the failure

to apply them as instructed. However a properly designed treating plant offers the most satisfactory and economical method of treating boiler waters, and the use of compounds should be confined to those points where the results to be obtained will not justify the expense of maintaining and operating a treating plant.

The lime-soda process in general use on American railroads is so well known that a detailed description is hardly necessary. It is sufficient to describe briefly the principal actions of the chemicals as applied to the water during treatment. Calcium and magnesium carbonates are soluble only in water containing carbonic acid gas; when the carbonic acid is removed the carbonates become insoluble and are precipitated. This is accomplished by adding enough lime to take up the carbonic acid.

The sulphate hardness is removed by adding soda ash which combines with the sulphates of lime, and forms carbonates of lime and sulphate of soda. Additional lime is then necessary to neutralize any carbonic acid present, the carbonate of lime is then precipitated leaving the sulphate of soda dissolved in the water.

The sulphate of magnesia and the nitrates and chloride of lime and magnesia, when present, are treated in a similar manner. The sodium salts left in the water after treatment will, if present in considerable quantity, cause trouble from foaming, particularly in the presence of suspended matter. This condition may be corrected by blowing down boilers, or the use of anti-foaming compounds, or both.

Water softeners are built in two general types, the intermittent and continuous. In the intermittent treating plant two or more tanks are always required, as it is necessary to allow the water to stand after treatment until reaction and precipitation have taken place. In the continuous treating plant the process of reaction and precipitation takes place as the water is passing through the softener.

Professor Schmidt, of the University of Illinois determined that boiler scale only 0.02 in. thick caused a loss of boiler efficiency of 5.4 per cent. The following table shows the heat losses through the formation of scale of different thickness:

Character of scale	Thickness	Composition	Per cent loss
Hard .....	1/50 in.	Mostly carbonate	5.4
Soft .....	1/32 in.	Mostly carbonate	7.2
Hard .....	1/32 in.	Mostly carbonate	8.5
Soft .....	1/25 in.	Mostly carbonate	8.0
Hard .....	1/25 in.	Mostly sulphate	9.3
Hard .....	1/20 in.	Mostly sulphate	11.1
Soft .....	1/16 in.	Mostly sulphate	16.8
Soft .....	1/16 in.	Mostly carbonate	11.0
Soft .....	1/16 in.	Mostly carbonate	12.4
Hard .....	1/16 in.	Mostly carbonate	12.6
Soft .....	1/11 in.	Mostly carbonate	15.0
Hard .....	1/9 in.	Mostly sulphate	15.9

It may perhaps be considered unusual to find an accumulation of scale of the maximum thickness given in above table, but as a matter of fact this amount of scale is less than the thickness usually found in a locomotive at the shopping period in most sections of the country. In a report on the results of water treatment on a middle western railroad in the June 30, 1916, issue of the *Railway Age Gazette*, photographs were presented of samples of boiler scale, one of which was 1 1/2 in. thick, taken from a front flue sheet brace after 10 months' service; another showed a sample of sulphate scale 1/4 in. thick which put a boiler out of commission after three months' service; another specimen completely clogged up the space between the tubes after eight months' service.

In another case on a railroad operating through Iowa, scale 3/4 in. thick was removed from the sheets of a locomotive after 56,000 miles. This represented the maximum thickness of scale in the boiler and was present only on the outer sheets. The scale was, of course, much lighter on the fire-box and flue sheets.

These examples represent extreme conditions of scale formation and are, of course, not representative of average

conditions, as a scale  $\frac{1}{4}$  in. thick will in many cases probably cause the sheet to burn or the boiler to leak to such an extent that it must be taken out of service.

A middle western railroad, in a report covering the operation of treating plants for 1920, estimates that a saving of at least 60,000 tons of coal was accomplished by the removal of 4,517,883 lb. of scale-forming material; 750 engines were operated in the treated water territory, therefore, the scale forming solids removed from the water averaged over 6,000 lb. per engine. Assuming that only 25 per cent would have adhered to the tubes and sheets, the average thickness of scale formed in these boilers would have been  $\frac{3}{16}$  in. As the heat loss through  $\frac{3}{16}$  in. of scale is from 20 to 30 per cent the estimated saving of 60,000 tons of coal would appear to be very conservative.

A saving of the entire cost of a water softening plant in less than two months' time through the resultant economy in the fuel used in locomotives constitutes an unusual demonstration of the value of water treatment. This, in short, is the nature of the results secured by a contractor on railroad construction in the boilers of two steam shovels, six locomotives and two hoisting engines. The demonstration is especially conclusive because the isolation of the equipment limited its supply of water to a single source and because the record of performance gives a check not only on the total quantity of fuel but also on the relative amount of fuel used per unit of equipment performance.

The Walsh Construction Company, Davenport, Ia., contractor for the grading for the new Markham Yard of the Illinois Central at Homewood, Ill. (near Chicago), found the water upon which it was dependent for its boiler supply so unsatisfactory as to cause serious difficulty in the operation of equipment. As a result, a water softening plant was installed which treated all the water used in the boilers after October 27, 1918, and records of the fuel used before and after the installation of the softener constitute the basis for the conclusions reached with regard to the fuel economy.

This treating plant was placed in service October 27. In the period from September 6 to October 27 there were a total of 650 boiler shifts in the course of which an average of 4.2 tons of coal per boiler shift was used. Considering this with the quantity of earth moved by the contractor during this period the cost of the coal used per cubic yard of earth handled amounted to \$.0306 per cu. yd. For a period of not quite two months following the installation of the water softener the coal consumed decreased to 3.1 tons per boiler shift, resulting in a cost of only \$.0204 per cu. yd. of material graded. In this case 25 per cent of the coal per boiler shift was saved through the treatment of water and operating conditions were improved to such an extent that the cost of fuel per cu. yd. of material graded was reduced 33 per cent.

The following data are taken from Bulletin No. 11 of the Engineering Experiment Station, University of Illinois. An Illinois Central Engine having run 21 months and accumulated a scale deposit averaging  $\frac{3}{64}$  in. in thickness, was given a two days' test according to the test code of the American Society of Mechanical Engineers. It was then cleaned and after two days, the following shows the water evaporated from and at 212 deg. F. per pound of combustible before and after cleaning:

EVAPORATION PER POUND OF COMBUSTIBLE	
Before cleaning .....	7.53 lb.
After cleaning .....	8.48 lb.
Increase after cleaning.....	0.95 lb.

In the above case 485 lb. of scale was removed from the boiler, resulting in the saving of over  $10\frac{1}{4}$  per cent in fuel.

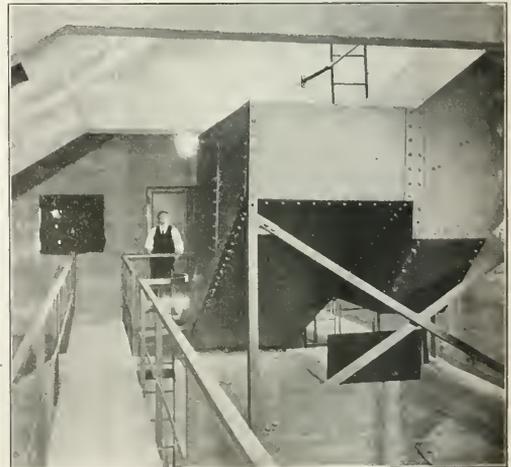
From the best information available the locomotives and power plants on the railroads of the United States consume annually 720,000,000 gal. of water. While there is no complete record of the number of water treating plants in service on the railroads of the country a fairly accurate

estimate would be in the neighborhood of 600 plants and from the known capacity of some 200 plants the average amount of water treated by each plant is 36,000,000 gal. per year, making approximately 21,600,000,000 gal. of treated water used annually on our railroads. Assuming that 50 per cent of the water used is of such quality that treatment would be economical, it means that we have less than six per cent of the treating plants that are needed. As previously stated in this article, in some instances the existing bad water conditions may be relieved by the development of a good water supply within a reasonable distance, but the proper treatment of the existing supply is the only remedy in the majority of cases.

The fuel Director for the United States Railroad Administration stated in 1918 that "all locomotives have  $\frac{1}{16}$  in. of scale 40 per cent of the time and many have scale from  $\frac{1}{8}$  to  $\frac{1}{4}$  in. in thickness." He further states "that in some districts it is not unusual to find  $\frac{1}{2}$  in. of scale on the boiler sheets." His estimate of the loss of fuel on account of scale on boiler sheets for the year 1918 was \$50,000,000. If we use the same ratio of loss on the cost of fuel for 1920 we have an annual loss of \$60,000,000 on the railroads of the country which represents 6 per cent on an investment of one billion dollars. When we consider that the fuel saved represents only a portion of the saving to be effected through improving the quality of boiler water it is apparent that there are few investments that can be made on a railroad that will show quicker or greater returns than a properly designed water treating plant.

## Modern Refinement in Coaling Station Design

THE COALING STATION and sanding plant recently completed for the Philadelphia & Reading at the Tulip street engine terminal in Philadelphia is unique in the degree of refinement that has been carried out in the perfection of both structural details and operating facilities.



View Above the Bin Showing the All-Concrete Roof and the Partitions Between the Three 200-Ton Coal Pockets

The building is of reinforced concrete throughout, including the superstructure over the bins and the housing for the elevating bucket and the stairway which is entirely en-

closed. The facilities also include a steam heated wash and locker room for employees.

The plant has a storage capacity of 600 tons of coal and, for the purpose of providing separate storage for an-



General Elevation of the Station, with the Wash Room on the Left

thracite coal, lump coal and stoker coal, the bin is divided into three pockets, each holding 200 tons. The bins are equipped with gates in such a way that the coal in each one is available to three tracks. The stoker coal is passed



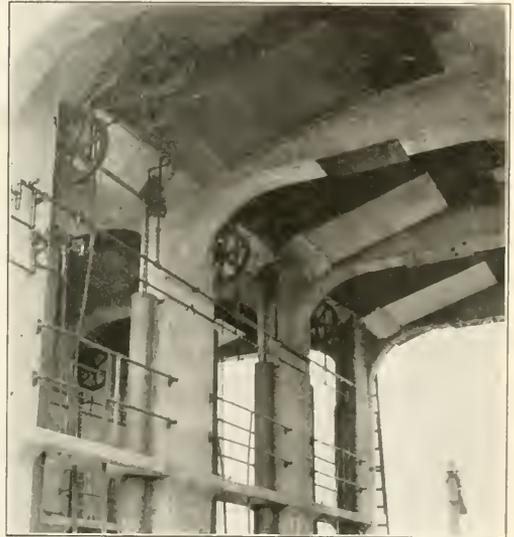
The Plant from the Receiving Track Side Showing the Concrete Cover Over the Track Hopper

through screens in the discharge chute 12 ft. long by 6 ft. wide of the lip design and offset. The perforations are 2 in. wide by 6 in. long.

The coal is received from cars in an all-concrete receiving

hopper which is 24 ft. long in the clear and has a slope of 50 deg. to make it suitable to handle green sand also. The coal or sand, whichever may be handled, is discharged by gravity into a three-ton capacity measuring feeder which is actuated by the ascent and descent of the elevating bucket. This feeder automatically loads the three-ton, ball-bearing coal bucket which is connected with a 7/8-in. hoisting cable to a direct-connected electric hoist which is equipped with a 22-hp. alternating current electric motor with solenoid brake.

Working in connection with the electric motor is an automatic controller enclosed in steel cabinet. The controller is equipped with a push button starting and stopping station which permits the continuous and automatic operation of the elevating bucket as desired. By pushing one button the machinery is started and the bucket operates up and down without attention, and when it is desired to stop, the second push button brings the motor to rest by setting the



"Safety-First" Undercut Coaling Gates with Hooded Aprons, All Operated from Platform Between the Coaling Plant Columns

brake. The hoist and controller are located in a separate reinforced concrete machinery house.

An unusual feature of this plant is a wash house which has been provided for the convenience of the workmen about the terminal. This room is equipped with 20 all-steel lockers, 8 wash bowls with hot and cold water, 2 toilets, 4 urinals and 1 shower with hot and cold water. The wash-house is heated by steam radiators equipped with standard central apparatus. The plant is also thoroughly wired for electric lights.

The facilities for handling the sand are also very complete. After being elevated in the bucket, the green sand is by-passed to a reinforced concrete pocket having a storage capacity of 100 tons of green sand. This bin is equipped with three special control gates through which the sand gravitates to three Beumer rectangular steam sand dryers. As the sand dries it escapes through the coils and is gathered on a large steel hopper, where foreign matter, pebbles, etc., are screened out by gravity.

The dry sand passing through the screen falls into a hopper on a Tyrone automatic sand drum and, by the con-

trol of two air valves, is blown in a straight line, four-inch, extra-heavy pipe to an all-concrete dry sand bin located over the pocket. This dry sand bin is lined with hollow tile to prevent condensation and keep it thoroughly dry. From this bin the dry sand gravitates through discharge pipes to three moisture-proof undercut sand valves for supplying dry sand to locomotives on three coaling tracks. The receiving hopper is covered with an all-reinforced concrete canopy to protect the men from the elements when unloading coal.

This plant was designed and built throughout, including the foundation, by the Roberts & Schaefer Company, Chicago, under the direction of Charles Corwin, acting superintendent, the work being subject to the general direction of Samuel T. Wagner, chief engineer of the Philadelphia & Reading. The contract price for the plant was \$115,000.

## A Many Purpose Locomotive Crane

**I**N THE HANDLING of materials in railway terminals, shops, store yards, etc., as well as in construction and maintenance work, there is an increasing necessity for employing better and quicker methods of carrying on the work. In meeting this necessity light, portable, high speed locomotive cranes are becoming more and more important factors. These machines are being used economically for many purposes such as the loading and unloading of rail, ties, spikes, angle bars, tie plates, frogs, switches and numerous other heavy materials in store yards, tie treating plants, and out on the line. Such cranes are also useful in bridge work for handling material which is not heavy enough to require a wrecking crane.



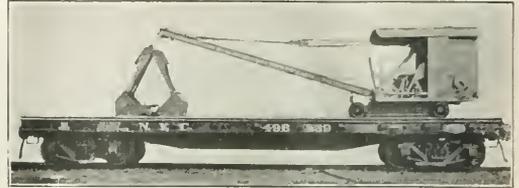
The Truck Body Can Be Shifted on the Axles, Reducing the Clearance to 6 ft. 6 in.

Equipped with a grab bucket the cranes economically move dirt, coal, cinders, etc., and when fitted with a magnet may be used for handling scrap in reclamation plants or other places.

For work of this character, the Universal Crane Company, Elyria, O., has developed a portable locomotive crane of three to four tons capacity, which can be handled by one man. It is operated by its own 4-cylinder gasoline engine or electric motor and handles a clam shell bucket, magnet or hoist block. Various other equipments such as a dragline bucket, an exciter generator for furnishing current to an electric magnet, a capstan head for snaking loads or shifting cars, etc., can be added as desired.

This crane can be mounted to suit the work it has to do. It may be mounted on a motor truck, a rubber tired trailer, a continuous tread, or a wide tired steel wheel industrial truck that will operate on the ground or standard gage track. To suit the railroad field, the mounting illustrated has been

developed after extensive investigations to determine a convenient form. This mounting consists of a low wheel truck built to travel under crane power over a pair of rails which are laced together and laid on standard railroad flat cars. Two or more of the rail sections may be used and moved ahead by the crane as desired, or the rails may be laid from car to car over a train for the crane to operate over. The flat cars need not be permanently tied up, as, when it is not in



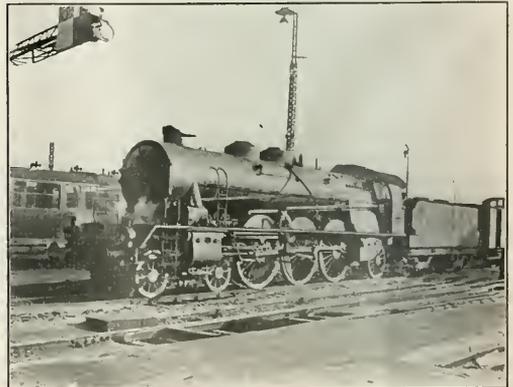
The Crane Travels Under Its Own Power Over Rails Laid on the Flat Car

use, the crane can be run off onto a platform, this relieving the cars for other service.

One of the most important features of this crane is its compactness. The rear swinging clearance is 7 ft. 6 in. This clearance from the center of the car can be decreased to 6 ft. 6 in. (half of 13 ft. track centers) by mechanically shifting the truck body on the axles one foot in either direction where it locks. This allows the crane to be used without fouling traffic on an adjacent track.

THE CHICAGO, ROCK ISLAND & PACIFIC has created a new department of personnel and public relations under the supervision of H. S. Ray, assistant to the president. Mr. Ray will be especially concerned with the maintenance of cordial relations between the employees themselves, and between the management and the employees.

AN ATTEMPT TO WRECK an American Express Company's train of fourteen cars was made 2 miles west of Willoughby, Ohio, on the New York Central, early on the morning of July 14. Officers of the road reported that spikes had been pulled and tie plates removed from the rails with tools stolen from the Willoughby tool house. Although the train jumped the track when it struck the spot where the spikes had been removed, no cars were overturned.



Compound Pacific, Equipped with Superheater, on the Paris, Lyons & Mediterranean

# General News Department

The Union Pacific, on July 17, re-employed 1,500 men on its Mountain division who had been laid off with the slump in business.

The request to suspend the 5 per cent freight rate reduction made by the railroads operating south of the Michigan Central in Michigan, was filed by the Traffic Department of the Michigan State Farm Bureau, and the Grand Rapids Association of Commerce, and not by the Michigan Traffic League, as reported. According to T. H. Wallace, of Lansing, Mich., president of the League, that body, however, will soon file joint complaints with the Michigan Public Utilities Commission and the Interstate Commerce Commission, asking for hearings on the adjustment of the entire Michigan class rate situation.

According to an article appearing in the "Illinois Central Magazine," the freight on a \$1.25 meal, served in Springfield, Ill., consisting of beef from Iowa, salmon from Oregon, and other foods from as far away as Louisiana and New York, is approximately 1 cent and 2 mills. In this computation, the cost of transportation is based on carload rates from the producers and manufacturers to the wholesalers, and the less-than-carload rates from the wholesalers to the retailers. The products figured in on the meal were coffee, pepper, salt, beef, wheat, butter, salmon, strawberries and sugar.

## Work of C., B. & Q. Homeseekers' Bureau

Through the efforts of the Homeseekers' Bureau of Chicago, Burlington & Quincy, the co-operation of the State Immigration Bureau and the several government land offices, 2,222,380 acres of land were homesteaded in the Buffalo, Douglas, Newcastle and Cheyenne, Wyoming, land districts, during 1920. In addition about 10,000 acres of irrigated homestead land were taken up in the Shoshone, Wyo., and North Platte, Neb., projects. It was estimated that the number of families received at western stations along the Burlington and recognized as new settlers and so reported by agents, totaled 5,692.

## P. R. R. Insurance Department

### Increases Death Benefits

The Voluntary Relief Department, the company insurance plan of the Pennsylvania System, has announced amendments in the regulations pertaining to death benefits. Under the new rules, which went into effect June 1, the maximum death benefit has been increased and now ranges from \$1,000 in the first class to \$5,000 in the fifth class. The premium rates are very low, ranging from \$14.40 annually per \$1,000 of insurance for employees not over 45 years of age, to double that amount for employees over 60 years of age. These low rates are made possible by the fact that all operating expenses are paid by the railroad company.

## M. K. & T. Locomotive Makes Record Run

Missouri, Kansas & Texas locomotive No. 392, a coal burning Pacific type of 41,000 lb. tractive effort, recently made a continuous run of 1,024 miles, so far as is known the longest on record. The occasion was the movement of a special train of Shriners from Waco, Texas, to Kansas City on the way to the Shriners convention at Des Moines. The locomotive was suitably decorated at Denison, Tex., and ran light to Waco where it was immediately turned and started on its trip on the Shriners' special. The average speed on the trip was 40 miles an hour. The engine was in perfect condition upon arrival at Kansas City

and because of its elaborate decorations it was desired to run it to Des Moines but it was too heavy for the connecting line to handle.

## "Management Engineering"

"Management Engineering" is the title of a new monthly publication issued by the Ronald Press, New York. Its contents are devoted to a discussion of problems of management and production, the object, as stated in the first issue, being "to help executives better to discharge their duties in preparing, organizing and directing industry to secure maximum production."

L. P. Alford is editor of Management Engineering and E. W. Trec, associate editor. Mr. Alford was formerly editor of the American Machinist and later of Industrial Management. He is a vice-president of the American Society of Mechanical Engineers and chairman of the Management Division of that society.

## Salary Reductions on the Baltimore & Ohio

Coincident with the wage reductions for employees which went into effect on July 1, the Baltimore & Ohio also reduced "in like manner the compensation of those general, division and other officers and monthly employees who in the light of the higher cost of living were granted increases in their compensation at or since May 1, 1920," according to an announcement made on July 18. The announcement continued: "While the wages of such officers and employees do not come under the decision of the Labor Board, it was deemed necessary, because of the general conditions which so adversely affect the revenues of transportation companies, that such action be taken, notwithstanding it is recognized that during the period of inflation the officers did not receive increases in their salaries at the time or of the extent generally granted to many classes of officers and employees of industrial organizations nor in proportion to the increases granted from time to time to other classes of railroad employees generally."

## Unique Position of the Texas-Mexican

No railroad in the United States, perhaps, occupies a more unique position so far as ownership and management is concerned than the Texas-Mexican, which runs between Laredo, Tex., and Corpus Christi, 160 miles. It is a part of the National Railways of Mexico, a little less than 51 per cent of the stock of which is owned by the Mexican government, notwithstanding the fact that the Texas-Mexican division is situated wholly in the United States. Naturally, when the Mexican government took charge of the operation of the National Railways several years ago as a revolutionary war measure, it did not extend this control to the Texas-Mexican. The latter line has continued to be operated by a separate corporation, as required by the laws of Texas. The Texas-Mexican was built as an independent line, but it passed into the hands of the old Mexican National Railroad Company many years ago. When the merger of the latter into the National Railways of Mexico was put into effect the Texas part of the system went in along with the rest.

At the recent annual meeting of the board of directors of the Texas-Mexican Railway Company, held here, the following officers were elected to serve during the ensuing year: Miles T. Cogley, president; S. DeWolf, vice-president and general manager; M. M. Leyendecker, general superintendent; K. Wolf, auditor; C. M. Fish, traffic manager; Alden B. Miller, secretary-treasurer.

Operating Statistics of Large Steam Roads — Selected Items for the Month of May, 1921,

Region, road and year	Average miles of road operated	Locomotive-miles			Car-miles		Ton-miles (thousands)			Locomotives on line daily												
		Train-miles	Principal and helper	Light	Loaded (thousands)	Per cent loaded	Grcs. Excluding locomotive and tender	Net. Revenue and non-revenue	Service-able	Un-service-able	Per cent un-service-able	Stored										
<b>New England Region:</b>																						
Boston & Albany	1920	394	246,113	266,860	31,010	4,464	63.4	242,334	95,605	124	29	19.0	...									
Boston & Albany	1920	394	349,859	372,430	38,295	6,931	79.0	374,227	171,069	133	32	19.4	...									
Boston & Maine	1920	2,469	517,318	577,398	48,135	10,888	68.7	578,209	243,861	357	104	22.6	69									
Boston & Maine	1920	2,469	601,013	911,818	87,160	16,601	75.3	868,685	399,434	369	99	22.3	...									
N. Y., N. H. & H.	1921	1,959	430,278	461,892	31,319	9,303	84.8	502,388	212,078	291	79	21.4	36									
N. Y., N. H. & H.	1920	1,938	462,890	483,374	33,649	10,904	73.1	507,553	226,741	269	97	26.5	...									
<b>Great Lakes Region:</b>																						
Delaware & Hudson	1921	880	347,632	458,688	31,349	8,538	69.8	577,956	285,840	283	33	16.4	121									
Delaware & Hudson	1920	858	461,650	660,415	45,557	13,048	72.7	815,443	439,509	265	33	11.1	11									
Del., Laek. & Western	1921	997	490,449	598,516	114,985	14,758	66.9	833,101	383,779	307	53	14.7	48									
Del., Laek. & Western	1920	997	454,948	554,059	104,634	12,703	71.6	734,351	380,288	280	73	20.7	18									
Erie (inc. Chic. & Erie)	1921	2,259	826,571	924,621	43,358	27,257	67.7	1,624,761	770,095	562	134	19.3	143									
Erie (inc. Chic. & Erie)	1920	2,259	1,006,924	1,140,214	42,023	34,796	74.8	1,993,841	1,018,282	606	94	13.4	63									
Lehigh Valley	1920	1,430	338,852	590,284	60,519	15,166	63.6	929,394	427,402	430	105	19.6	136									
Lehigh Valley	1920	1,430	338,852	590,284	60,519	15,172	72.2	924,795	490,777	358	185	34.1	102									
Michigan Central	1921	1,829	418,226	428,476	17,926	12,875	61.8	708,668	269,455	339	78	18.7	116									
Michigan Central	1920	1,826	433,635	440,006	17,379	14,588	77.3	732,622	350,415	351	64	14.4	...									
New York Central	1921	5,655	1,543,562	1,698,839	131,794	54,502	62.1	3,167,332	1,365,010	1,046	604	36.6	358									
New York Central	1920	5,646	1,995,111	2,239,857	173,245	76,234	68.6	4,281,953	1,999,550	(1)	(2)	(1)	(1)									
N. Y., Chic. & St. L.	1921	572	308,138	308,373	674	9,260	66.9	475,550	182,327	109	52	32.3	40									
N. Y., Chic. & St. L.	1920	573	278,483	280,544	1,031	3,709	82.1	424,417	201,465	112	54	25.5	35									
Pere Marquette	1921	2,207	300,957	312,055	6,636	7,501	60.6	438,066	186,385	165	44	21.1	17									
Pere Marquette	1920	2,200	338,461	372,292	6,733	8,901	81.6	485,302	252,555	158	41	20.6	...									
Pitts. & Lake Erie	1921	225	91,281	96,284	475	2,930	61.4	217,370	124,748	67	13	16.3	20									
Pitts. & Lake Erie	1920	225	45,704	49,585	1,127	1,737	78.1	123,912	79,605	68	11	23.9	49									
Wabash	1921	2,418	514,735	541,719	6,980	15,443	69.1	806,193	345,861	237	66	19.2	54									
Wabash	1920	2,418	493,272	504,500	7,919	14,582	86.9	724,223	353,152	259	74	28.2	15									
<b>Ohio-Indiana-Allegheny Region:</b>																						
Baltimore & Ohio	1921	5,185	1,630,907	2,034,767	131,241	38,908	59.5	2,576,366	1,267,155	1,025	406	28.4	182									
Baltimore & Ohio	1920	5,154	2,017,619	2,552,935	137,387	57,653	71.1	3,624,567	1,956,026	1,054	256	16.7	44									
Central of N. J.	1921	607	246,818	273,374	34,719	5,501	55.0	350,573	182,077	194	68	26.0	15									
Central of N. J.	1920	609	288,973	372,266	35,670	6,470	64.8	420,436	222,527	212	57	21.2	...									
Chicago & Eastern Ill.	1921	1,131	212,437	213,257	3,821	4,982	63.0	299,930	147,957	123	45	26.8	48									
Chicago & Eastern Ill.	1920	1,131	259,027	261,594	4,817	6,303	67.2	375,661	196,091	132	60	31.3	6									
C., C. & St. L.	1921	2,382	631,733	659,521	20,999	16,785	65.6	1,068,423	472,993	395	121	25.5	51									
C., C. & St. L.	1920	2,382	695,414	760,860	21,111	19,891	69.1	1,167,279	564,224	303	102	25.2	9									
Elgin, Joliet & Eastern	1921	837	83,312	90,979	5,304	2,434	66.2	127,999	93,871	98	10	9.3	34									
Elgin, Joliet & Eastern	1920	837	176,584	196,124	16,467	5,712	72.0	383,617	212,942	94	14	13.0	...									
Long Island	1921	395	39,946	44,970	7,450	4,313	69.8	63,961	39,985	34	4	11.4	3									
Long Island	1920	395	40,149	45,024	12,121	4,532	61.8	63,998	39,985	34	4	11.4	3									
Pennsylvania System	1921	10,874	3,744,448	4,067,990	286,556	95,709	61.7	6,625,486	3,282,743	2,699	795	22.8	958									
Pennsylvania System	1920	10,844	4,807,270	5,343,048	407,644	127,301	69.4	7,967,205	4,260,222	2,042	921	31.1	28									
Phila. & Reading	1921	694	485,206	550,479	70,442	12,024	61.9	822,871	430,683	379	79	24.4	171									
Phila. & Reading	1920	691	672,356	782,894	107,357	18,425	70.3	1,234,076	683,018	281	89	24.1	...									
<b>Pocahontas Region:</b>																						
Chesapeake & Ohio	1921	2,545	793,410	852,002	24,863	22,759	57.2	1,008,986	984,641	444	113	20.2	50									
Chesapeake & Ohio	1920	2,520	866,965	967,900	25,028	26,386	63.4	1,909,821	1,056,957	420	119	22.0	12									
Norfolk & Western	1921	2,210	742,584	900,841	37,103	35,065	61.9	1,646,025	809,209	587	109	15.7	199									
Norfolk & Western	1920	2,190	770,174	996,345	50,861	23,158	65.8	1,668,064	936,076	462	219	32.2	59									
<b>Southern Region:</b>																						
Atlantic Coast Line	1921	4,887	630,964	633,362	9,842	14,430	62.0	750,846	275,739	292	120	29.1	15									
Atlantic Coast Line	1920	4,891	807,363	813,424	13,614	17,399	70.1	889,779	367,508	281	148	34.5	...									
Central of Georgia	1921	1,913	236,385	239,351	3,518	4,883	76.8	251,370	115,376	103	17	14.2	...									
Central of Georgia	1920	1,913	236,385	239,351	3,518	4,883	76.8	251,370	115,376	103	17	14.2	...									
I. C. (inc. V. & M. V.)	1921	6,151	1,560,660	1,567,420	68,372	38,912	62.3	2,467,197	1,075,745	747	102	12.6	15									
I. C. (inc. V. & M. V.)	1920	6,151	2,066,533	2,077,691	43,560	55,221	69.7	3,253,664	1,498,431	722	104	20.6	20									
Louisville & Nashville	1921	5,026	1,200,449	1,200,449	33,379	59,000	63.8	1,883,740	788,867	550	101	15.5	36									
Louisville & Nashville	1920	5,026	1,600,535	1,746,625	57,840	28,778	60.4	1,740,170	852,749	510	129	20.2	...									
Seaboard Air Line	1921	3,537	409,898	415,609	6,141	8,715	67.0	446,821	172,746	167	91	35.3	...									
Seaboard Air Line	1920	3,537	510,075	516,448	8,467	11,565	73.0	589,778	258,572	190	78	29.0	...									
Southern Ry.	1921	6,942	1,176,851	1,196,243	28,705	31,333	61.3	1,322,636	623,626	891	228	20.4	94									
Southern Ry.	1920	6,942	1,542,209	1,578,940	47,310	37,161	74.0	1,899,117	864,631	919	185	16.8	3									
<b>Northwestern Region:</b>																						
C. & N. W.	1921	8,394	1,243,392	1,265,943	13,960	25,476	60.1	1,388,442	587,354	669	287	29.7	50									
C. & N. W.	1920	8,003	1,687,241	1,720,689	23,441	38,377	67.5	2,138,142	937,637	693	212	23.8	1									
C., M. & St. P.	1921	10,618	1,718,311	1,783,881	15,850	30,648	60.9	1,644,906	726,711	798	257	24.0	171									
C., M. & St. P.	1920	10,626	1,671,611	1,735,357	75,696	45,453	73.8	2,162,831	1,127,685	677	293	30.0	3									
C., St. P., M. & O.	1921	1,726	261,690	270,958	10,054	4,629	71.8	331,866	92,792	161	52	24.4	50									
C., St. P., M. & O.	1920	1,726	339,607	363,580	15,924	6,682	79.1	331,778	156,766	158	49	23.7	23									
Great Northern	1921	7,925	670,823	670,823	18,429	28,067	62.8	1,055,357	819,283	477	221	31.7	28									
Great Northern	1920	7,925	402,748	432,816	11,656	8,488	69.9	438,509	191,795	347	53	13.7	53									
M., St. P. & S. Ste. M.	1921	4,227	531,551	516,335	11,696	13,021	78.3	690,174	306,530	322	74	18.7	28									
M., St. P. & S. Ste. M.	1920	4,227	657,641	686,389	15,006	17,534	77.3	1,056,254	484,403	554	162	29.2	153									
Northern Pacific	1921	5,408	657,641	686,389	15,006	17,534	77.3	1,056,254	484,403	554	162	29.2	153									
Northern Pacific	1920	5,408	657,641	686,389	15,006	17,534	77.3	1,056,254	484,403	554	162	29.2	153									
Ore.-Wash. R. R. & Nav.	1921	2,198	180,957	199,632	23,994	4,504	72.2	256,608	126,330	120	44	26.8	10									

Compared with May, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Average number of freight cars on line daily			Per cent un-service-able	Gross tons per train, excluding locomotive	Net tons per train	Net tons per car loaded	Net tons per car-day	Car miles per car-day	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Passenger service Train-miles Passenger car-miles				
	Home	Foreign	Total												
<b>New England Region:</b>															
Boston & Albany.....1921	3,347	4,012	7,359	7.8	747	983	388	21.4	419	30.9	7,829	196	313,659	1,997,778	
1920	5,595	9,349	14,944	3.9	.....	1,070	489	24.7	554	32.0	14,009	191	319,460	2,041,267	
Boston & Maine.....1921	18,104	13,480	31,584	18.9	3,765	1,118	471	22.4	249	16.2	3,187	151	861,064	4,602,054	
1920	7,339	35,087	42,426	6.8	.....	1,084	499	24.1	304	16.8	5,222	151	861,817	4,762,631	
N. Y., N. H. & H.....1921	23,872	14,695	38,567	20.4	2,156	1,169	493	21.6	177	12.0	3,492	168	1,033,610	5,077,744	
1920	8,427	40,675	49,102	5.5	.....	1,097	490	22.7	149	9.0	3,774	193	1,135,550	7,268,347	
<b>Great Lakes Region:</b>															
Delaware & Hudson.....1921	11,207	5,157	16,364	9.7	1,839	1,563	822	33.5	563	27.7	10,473	186	189,581	1,049,617	
1920	3,675	16,399	20,074	5.0	.....	1,766	952	33.7	706	28.8	16,516	191	188,453	1,034,887	
Del., Lack. & Western.....1921	17,938	7,184	25,122	9.4	1,389	1,700	783	26.0	493	28.3	12,240	172	496,329	3,546,485	
1920	5,263	17,492	22,755	4.2	.....	1,543	836	29.9	523	24.4	12,307	171	470,466	3,370,370	
Erie (inc. Chi. & Erie).....1921	40,767	14,485	55,252	15.5	14,994	1,966	932	23.8	332	15.5	10,928	199	677,615	4,882,567	
1920	8,915	51,898	60,813	6.2	.....	1,990	1,011	29.3	540	24.7	14,543	142	688,020	4,704,181	
Lehigh Valley.....1921	31,975	9,487	41,462	17.8	3,756	1,761	810	28.2	333	18.5	9,637	164	360,584	2,778,574	
1920	10,228	16,680	26,908	5.4	.....	1,700	783	26.0	493	28.3	12,240	172	496,329	3,546,485	
Michigan Central.....1921	19,236	1,426	20,662	15.7	2,247	1,694	644	29.2	376	16.6	11,079	179	375,980	2,801,530	
1920	4,177	35,511	39,688	5.7	.....	1,689	808	24.0	285	15.3	16,192	120	508,643	4,480,877	
New York Central.....1921	91,024	48,913	139,937	12.8	39,452	2,052	884	25.0	315	19.9	7,786	117	2,330,506	18,526,118	
1920	27,645	126,688	154,333	7.1	.....	2,146	1,002	26.2	413	22.9	11,424	111	2,478,340	19,402,592	
N. Y., Chic. & St. L.....1921	5,664	4,871	10,535	15.8	2,026	1,102	455	20.5	258	15.4	2,819	109	85,246	556,816	
1920	893	7,223	8,116	6.3	.....	1,524	723	23.1	891	42.2	11,711	139	209,165	1,478,438	
Pere Marquette.....1921	11,390	9,073	20,463	17.0	1,000	1,457	618	24.8	289	15.2	2,719	130	296,229	1,425,049	
1920	3,700	17,943	21,643	6.1	.....	1,354	705	26.3	376	17.5	3,703	155	295,445	1,441,112	
Pitts. & Lake Erie.....1921	16,861	6,533	23,394	19.5	1,587	3,381	1,366	42.6	172	16.6	17,914	90	109,854	581,822	
1920	4,314	21,470	25,784	8.1	.....	2,712	1,342	31.2	318	15.2	14,525	101	541,853	3,709,519	
Wabash.....1921	13,062	9,680	22,742	10.4	.....	1,566	672	22.4	491	31.7	4,614	159	525,292	2,720,849	
1920	4,692	19,662	24,354	9.5	.....	1,468	716	24.2	468	23.9	4,712	171	545,706	2,887,849	
<b>Ohio-Indiana-Allegheny Region:</b>															
Baltimore & Ohio.....1921	72,111	28,639	100,750	13.7	7,512	1,580	777	32.6	408	21.1	7,884	178	1,381,220	8,771,469	
1920	23,166	79,077	102,243	6.6	.....	1,796	969	33.9	617	25.6	12,244	171	316,301	2,324,492	
Central of N. J.....1921	21,155	8,094	29,249	25.3	4,730	1,509	738	33.1	201	10.4	8,656	171	341,513	1,606,504	
1920	5,111	18,239	23,340	7.5	.....	1,388	734	34.4	308	13.8	10,576	171	346,849	1,518,166	
Chicago & Eastern Ill.....1921	16,938	2,912	19,850	9.2	4,949	1,412	696	29.7	240	12.8	4,220	159	233,991	1,467,428	
1920	9,173	10,687	19,860	2.1	.....	1,621	731	31.8	318	15.2	5,630	159	339,925	1,949,554	
C., C., C. & St. L.....1921	17,684	15,179	32,863	11.8	2,617	1,691	747	29.0	461	28.6	6,391	138	778,088	4,882,567	
1920	3,981	32,155	35,176	5.7	.....	1,747	848	28.4	517	26.2	7,605	139	750,807	4,700,433	
Elgin, Joliet & Eastern.....1921	10,101	3,299	13,400	5.6	3,759	2,137	1,127	38.6	226	8.8	3,199	139	.....	.....	
1920	8,048	7,732	15,780	8.7	.....	2,249	1,243	37.1	444	16.6	8,210	143	454	199,477	1,136,821
Long Island.....1921	2,387	4,374	6,761	4.3	274	600	297	40.7	107	10.0	3,743	454	199,477	1,136,821	
1920	583	4,583	5,166	2.6	.....	575	238	21.2	50	4.4	782	100	197,721	1,105,164	
Pennsylvania System.....1921	219,665	67,941	287,606	10.3	76,766	1,659	877	34.3	348	17.4	9,738	136	5,082,701	33,696,841	
1920	107,615	215,957	323,572	5.6	.....	1,769	887	33.8	463	18.6	12,673	136	5,360,433	35,506,420	
Phila. & Reading.....1921	27,416	10,747	38,163	10.1	8,007	1,668	868	35.6	364	16.4	20,017	183	529,010	4,414,834	
1920	6,335	32,180	38,515	3.9	.....	1,835	1,016	37.1	573	22.0	31,898	183	520,546	2,248,128	
<b>Peachwater Region:</b>															
Chesapeake & Ohio.....1921	40,644	11,357	52,001	9.0	5,615	2,280	1,241	43.3	611	24.7	12,480	123	438,100	2,475,912	
1920	19,909	34,270	54,179	11.1	.....	2,203	1,219	40.1	969	38.2	13,530	123	432,872	2,446,187	
Norfolk & Western.....1921	36,133	5,634	41,767	9.5	4,118	2,171	1,210	40.0	549	24.3	13,811	153	407,365	2,500,831	
1920	12,343	19,483	31,826	4.6	.....	2,166	1,213	40.4	949	35.7	13,789	153	399,072	2,542,603	
<b>Southern Region:</b>															
Atlantic Coast Line.....1921	22,777	7,478	30,255	16.8	.....	1,189	437	19.1	394	24.8	1,820	129	742,481	4,781,963	
1920	7,050	19,018	26,068	13.2	.....	1,102	455	20.5	348	24.1	2,419	129	742,481	4,781,963	
Central of Georgia.....1921	5,527	3,598	9,025	2.1	.....	1,075	474	24.0	405	25.2	1,919	151	314,367	1,534,109	
1920	1,521	6,587	8,108	5.8	.....	1,063	489	23.6	459	25.3	1,946	151	311,543	1,538,095	
I. C. (inc. Y. & M. V.).....1921	48,138	16,040	64,778	10.1	9,132	1,861	882	27.6	536	31.1	5,641	133	1,480,424	9,186,515	
1920	13,063	53,527	66,590	5.4	.....	1,574	725	27.1	727	38.4	7,858	167	1,466,339	9,123,609	
Louisville & Nashville.....1921	38,888	5,531	44,388	25.2	1,118	513	306	47.9	230	13.1	5,030	168	770,792	5,599,819	
1920	13,646	29,712	43,358	10.5	90	1,087	533	26.6	324	32.2	5,766	168	806,212	5,482,727	
Seaboard Air Line.....1921	12,199	7,214	19,413	23.7	.....	1,090	421	19.8	287	21.6	1,575	178	577,383	3,349,214	
1920	4,137	17,768	21,905	8.5	.....	1,156	508	22.1	381	23.3	2,361	182	556,116	3,093,691	
Southern Ry.....1921	40,459	17,554	58,012	11.3	5,383	1,125	441	21.9	200	21.6	2,422	199	1,336,361	7,601,450	
1920	15,250	43,765	59,015	4.6	.....	1,231	561	23.3	418	24.3	4,018	199	1,465,807	9,215,236	
<b>Northwestern Region:</b>															
C. & N. W.....1921	48,723	20,885	69,608	8.0	6,500	1,117	472	23.1	272	18.2	2,273	194	1,647,224	10,000,349	
1920	24,746	57,303	82,049	6.4	.....	1,285	564	24.8	374	22.3	3,836	199	1,637,959	9,907,964	
C., M. & St. P.....1921	20,481	59,835	80,316	7.8	4,337	1,388	675	24.8	453	24.7	3,234	159	1,474,066	9,088,634	
1920	4,254	11,581	15,835	11.1	3,983	355	209	18.0	131	17.3	1,878	188	321,322	1,804,664	
Great Northern.....1921	1,624	10,457	12,081	8.6	.....	975	460	23.4	417	22.6	2,920	131	313,087	1,863,809	
1920	47,201	5,567	52,768	17.7	.....	1,574	748	27.5	304	17.2	2,028	158	989,612	8,808,457	
M., St. P. & S. Ste. M.....1921	14,511	19,146	33,657	11.8	2,727	1,388	675	24.8	453	24.7	3,234	159	1,474,066	9,088,634	
1920	18,423	5,202	23,625	11.3	4,732	1,064	476	22.6	262	16.7	1,464	131	430,334	2,330,661	
Northern Pacific.....1921	5,997	14,485	20,482	7.0	.....	1,167	577	23.5	483	26.1	2,339	131	428,162	2,397,728	
1920	38,753	6,519	45,272	13.8	11,333	1,607	737	25.5	345	20.1	2,441	137	851,936	5,557,764	
Ore.-Wash. R. R. & Nav.....1921	4,905	3,244	8,149	3.6	2,180	1,418	69								

## Heavy Holiday Traffic at New York

The movement of passengers in and out of New York at the time of the Fourth of July holidays is believed to have been the greatest on record. At least the figures of passengers who passed through Grand Central Station and the passenger traffic figures of the Long Island Railroad point in that direction. During the week ending July 7 a total of 717,089 passengers arrived and departed through the Grand Central Station. The largest business was handled on Friday, July 1, when 136,561 passengers arrived and departed. The exceptionally heavy business in addition to the crowds leaving the city for the holiday has been ascribed to the movement of passengers who attended the Carpentier-Dempsey fight. The greatest number of trains was handled on July 2, when 5,098 cars, in 679 trains, entered and left the station. This figure shows that 257 more cars were used than on the similar day in 1920.

The Long Island handled a total of 1,633,900 passengers in the five-day period including the holidays. The largest business was on July 4, when 370,400 passengers were carried. Some of the Long Island's traffic statistics given in the following table for previous years give some measure of the increased business.

Figures for five days—	1918	1919	1920	1921
Passenger train movements.....	4,857	5,179	5,470	5,705
Passenger car movements.....	26,519	30,674	31,054	32,835
Baggage car movements.....	1,342	1,481	1,353	1,264
Passengers carried.....	1,121,560	1,433,600	1,569,800	1,633,900

## Railway Returns for May

The Interstate Commerce Commission's summary of revenues and expenses for 203 class I roads, for May and five months, is as follows:

Item No.	Item	May		Five Months	
		1921	1920	1921	1920
1	Average number of miles operated.....	235,592.68	235,175.88	235,592.75	234,723.57
<b>Revenues:</b>					
2	Freight.....	\$313,057,371	\$314,147,944	\$1,547,860,564	\$1,518,840,239
3	Passenger.....	193,516,961	98,901,290	2475,351,696	459,006,233
4	Mail.....	7,829,078	7,765,173	41,429,429	93,324,866
5	Express.....	6,960,929	13,129,574	34,067,352	62,257,845
6	All other transportation.....	13,442,177	11,455,701	64,103,531	54,882,408
7	Incidental.....	9,633,699	11,738,423	49,854,098	56,099,025
8	Joint facility—Cr.....	627,983	599,860	3,257,891	2,937,905
9	Joint facility—Dr.....	193,109	179,000	970,965	934,400
10	Railway operating revenues.....	444,875,089	457,559,065	2,214,953,596	2,246,414,121
<b>Expenses:</b>					
11	Maintenance of way and structures.....	65,089,327	88,981,644	301,690,485	353,247,451
12	Maintenance of equipment.....	101,137,808	116,395,011	542,843,905	580,533,463
13	Traffic.....	7,207,309	5,454,958	36,057,393	25,556,965
14	Transportation.....	189,107,818	209,257,948	1,012,692,069	1,045,980,868
15	Miscellaneous operations.....	3,892,733	4,973,361	20,717,886	22,898,674
16	General.....	14,169,471	13,020,652	73,345,106	63,992,218
17	Transportation for investment—Cr.....	563,232	253,816	2,653,591	1,307,342
18	Railway operating expenses.....	380,041,234	437,829,758	1,984,693,193	2,090,902,297
19	Net revenue from railway operations.....	64,833,855	19,729,307	230,260,403	155,511,824
20	Railway tax accruals.....	22,415,730	23,032,592	112,959,526	110,216,113
21	Uncollectible railway revenues.....	102,469	87,506	424,083	444,821
22	Railway operating income.....	42,315,656	3,390,791	116,876,794	44,850,890
23	Equipment—				
24	Dr. balance.....	3,977,689	562,036	19,230,452	10,705,190
25	Joint facility rent—				
26	Dr. balance.....	1,257,313	1,476,942	7,314,221	7,745,590
27	Net of items 22, 23 and 24.....	37,080,654	5,429,769	90,332,121	26,400,110
28	Ratio of expenses to revenues (per cent).....	85.43	95.69	89.60	93.08

<sup>1</sup>Includes \$2,744,334, sleeping and parlor car surcharge.  
<sup>2</sup>Includes \$13,128,190, sleeping and parlor car surcharge.

## Meeting of Protective Section of the A. R. A.

The Protective Section of the American Railway Association met at the Hotel Pennsylvania, New York, on July 14 and 15. Among the principal speakers were R. H. Aishton, president of the American Railway Association; General W. W. Atterbury, vice-president of the Pennsylvania, and E. J. Pearson, president of the New York, New Haven & Hartford. The general theme of all was the recognition by the railroads of the necessity for closer co-operation between

the police departments of the railroads and state and federal authorities.

The heavy losses chargeable to robberies was emphasized. From September of last year to March of this year the loss from this source was in excess of \$3,000,000. It was said that the shipment of liquor was causing trouble to the railroads, and that the losses through these shipments were soaring each month. It was said it took more police to guard those trains than to handle any other kind of shipment of like value.

The advisability of having the railway police commissioned by the states or by the federal government was discussed. A terminal police association in all large cities, to work with the Protective Section, and a more uniform method of handling witnesses and the expenses of getting evidence were advocated.

More prompt reports on loss when noted and a strict surveillance of auction rooms where stolen material is sometimes placed for sale were also advocated as methods of reducing this loss. A more uniform method of handling witnesses with expenses for obtaining evidence and other kindred matters were discussed. It was contended that an educational campaign should be instituted to teach shippers the importance of crating their goods in a more serviceable manner and in stronger containers to avoid their being broken into. It was urged by some of the members that robberies of freight be first reported to the local police by the railroad agents or other employees instead of to railroad officials.

## Commission to Investigate Grain Rates

The Interstate Commerce Commission, on petition of the Kansas Public Utilities Commission, which was joined by a number of other western state commissions, has ordered, upon its own motion, a proceeding of investigation into the reasonableness and propriety of the level of interstate rates on grain, grain products and hay, in carloads, in the western territory, with a view to prescribing such reasonable rates as the facts and circumstances may appear to warrant. No testimony will be admitted with respect to the relationship between particular points under the existing rates. A hearing has been set for August 15 at Washington before Commissioner Lewis. The Kansas commission asked for a reduction of the increase put in effect last summer on the ground that it is ruining business in the west and a number of western commissions have combined to prosecute the case. A similar investigation was undertaken by the commission on formal complaint of the western livestock interests and expedited so that the oral argument was heard on July 15. The two proceedings thus bring into question the matter of proposed reductions of the advances on two of the most important classes of traffic for the western lines.



Scrapped Because of Excessive Size When Seven-foot Gage Was Abolished. Great Western, England, 1892.

## Traffic News

The Detroit, Toledo & Ironton filed a freight schedule with the public utilities commission of Ohio on July 18, providing for a 20 per cent reduction in rates between all points on its line but not affecting connecting line rates.

Members of the Southern Hardwood Traffic Association voted unanimously in favor of filing an immediate complaint with the Interstate Commerce Commission against the present excessive freight rates on logs, lumber, cooperage and other forest products at Memphis, Tenn., on July 12.

The Railroad Commission of the state of California on July 13, on its own volition, directed an order to river transportation companies to show cause why increases granted last year should not be cancelled and the old rates restored. The order applies to all river lines operating on the Sacramento and San Joaquin rivers and their tributaries and on San Francisco Bay. The hearing is set for July 20.

The decision of the State Railroad Commission of California, making a substantial reduction in charges and rates for switching in the South San Francisco industrial zone, has been extended to include the Oakland-Alameda, Oakland-Berkeley and Berkeley-Emerlyville switching territories, making a total of six large industrial zones now on an equality as to distances and rates, with the same substantial reductions in charges.

Executive officers of the Eastern roads leading into Chicago, on July 14, finally approved an agreement to allow the Erie, Wabash and the New York, Chicago & St. Louis a differential passenger rate east of the Mississippi river. While the new agreement will not authorize differentials between many points that enjoyed the lower rates before the war, nearly all of the main points will be restored to the lower level. Before the war there were no differentials rates from St. Louis to the east, but according to the new arrangement they will prevail out of that city on the Wabash and any road that operates through cars in connection with the Erie, Wabash and Nickel Plate. The agreement will go to the Interstate Commerce Commission in a few days, and if promptly approved, the tariff should be ready by September 1.

The Interstate Commerce Commission has rendered its decision in the Kansas intrastate rate case, ordering an increase of the state rates by the percentages applied last year to interstate traffic except on petroleum products. The Kansas commission had allowed increases somewhat less than the interstate increases on the ground that many of the Kansas intrastate rates were already on a higher basis than the interstate rates. Commissioners Eastman, Campbell and Lewis dissented, the two former on the ground that the commission's jurisdiction had not been sufficiently increased under the transportation act to authorize it to step in and order increases in state rates in the circumstances, and the latter on the ground that the majority opinion in this case carries the doctrine of federal authority to unjustified extremes.

### Utilities Urged to Buy Coal

Secretary Hoover of the Department of Commerce has written a letter advising public utility companies to buy their winter coal supply as early as possible instead of waiting for lower prices, saying that he is convinced that, due to the general depression, the prices of bituminous coal at the mines are not too high at the present time. "If there should be a recovery of business activities in the Autumn," he said, "taken in connection with the large increase in the percentage of disabled cars and the inability of the railways to finance their maintenance, there are possibilities of developments of a most serious situation as regards coal movement. I cannot but feel that the Interstate Commerce Commission, in the face of warnings they have sent out in this connection, would not be disposed to give any priority in such an event."

## Commission and Court News

### Interstate Commerce Commission

The commission has reopened for further hearing part of an application filed by R. H. Countiss, as agent, for authority to continue rates on wool in sacks and in bales from Pacific Coast terminals to Atlantic Seaboard territory and points intermediate lower than from intermediate points of origin.

The Interstate Commerce Commission has authorized F. A. Leland, as agent for the southwestern lines, to file on five days' notice tariffs reducing the rates on lumber from the southwest to points in Kansas, Nebraska, Iowa and border points in Minnesota, but not the principal gateway points, to meet the recent reduction in rates on lumber from the northwest.

### State Commissions

The Railroad Commission of the state of California, on June 30, denied the petition of the Southern Pacific for a re-hearing in the South San Francisco switching cases, and the decision of May 13 stands. By this decision the three big industrial centers of the state—San Francisco, Oakland and Los Angeles—were placed on an equal footing as to switching charges. The charges are uniform, being 37½ and 50 cents a ton depending on the distances cars are moved. The rate from South San Francisco to San Francisco was reduced from 80 to 50 cents. The railroad had proposed a rate of 70 cents.

### Regulation of Wire Crossings

The general assembly of the state of Ohio has enacted a law which will go into effect on September 6, authorizing the public utilities commission of the state to determine the "standard of maintenance and operation, and also the nature, location and character of the construction to be used where telegraph, telephone, electric light, power or other electric wires of any kind cross, or more or less parallel, the line of a railroad, interurban railway or other public utility." The bill further gives power to the commission to act upon complaints by the carriers and interurban railways when their properties are injured by these lines.

### Illinois Commerce Commission Bill

The law regulating public utilities in the state of Illinois, which was known as the State Public Utilities Commission Act, was superseded on July 1, 1921, by a new law, known as the Illinois Commerce Commission Bill under which the name of the commission is changed to the "Illinois Commerce Commission." This law provides that the number of commissioners be increased from 5 to 7; assistant commissioners are created not to exceed 8 in number and each is to receive a salary of \$5,000; other employees, such as assistant commissioners, accountants, engineers, experts and one private secretary to each commissioner and assistant commissioner, are exempted from the civil service, while branch offices of the commission may be established at places other than the seat of government. Any railroad or transportation company may, by the terms of the new law, grant reduced rates for the transportation of any materials to be used in the construction, maintenance or repair of public highways. The act provides that any party to a proceeding before the commission, may inspect the records of all hearings or inquiries and submit suggestions as to other matters to be investigated, whereupon if the commission sees fit, it may require questions propounded to be answered and if the utility to whom the inquiries are directed shall refuse to comply, the commission shall refuse relief if that utility is the one seeking it, or may grant the relief prayed for by the opposing party if such utility is defeated. It is further provided that a re-hearing may be applied for within 30 days after the service of an order. The commission must grant or deny the application for a re-hearing within 20

days, while no appeal lies from an order of the commission, unless and until an application for a re-hearing thereof shall first have been filed and acted upon by the commission; cities are given the right by the new law to appear as complainants in any investigation relating to rates or services of utilities operating within their limits; appeals from orders and decisions of the commission shall be taken to the circuit or superior court of the county in which the subject matter of the hearing is situated rather than to the Circuit Court of Sangamon County; Article VI (Local Utilities) is entirely new and provides that any city may, with respect to any utility (except trunk line railroads), furnishing service within its limits, exercise power and jurisdiction over the rates, service and extensions of such utility, in substantially the same manner, and to the same extent, that the powers of the Illinois Commerce Commission are exercised. The matters of accounts and the issuance of securities, however, are left under the jurisdiction of the commission. This question of so-called home-rule is to be submitted to the electors of any city at certain general elections upon the petition of 25 per cent of the legal voters thereof, and requires a majority vote for adoption. The article further provides that any utility dissatisfied with any action of the city may appeal to the Illinois Commerce Commission for a review of the city's order.

## Personnel of Commissions

Charles F. Staples, who has been appointed acting director of the Bureau of Valuation of the Interstate Commerce Commission, succeeding C. A. Prouty, deceased, has been associate director of the valuation bureau and has been connected with it since the Division of Valuation was organized in 1914, when he resigned as a member of the Minnesota Railroad and Warehouse Commission to become a member of the advisory board of the division. Mr. Staples was born August 4, 1856, at St. Paul, Minn. He was educated in common and private schools and later taught school for three years. He was a practical farmer and dairyman for 15 years and for 10 years was engaged in banking. He was a member of the school board of St. Paul for 26 years, chairman of the town board for 10 years and chairman of the board of county commissioners for four years. He was elected a member of the lower branch of the Minnesota legislature in 1892 and re-elected for three successive terms. He was elected a member of the railroad and warehouse commission in 1900 and was several times re-elected.

## Court News

### Need Not Inspect Car Used by

#### Consignee in Intraplant Service

While a carrier's duty of inspection of cars includes, in some instances, a duty to an employee of the consignee, it would seem that it does so only when a duty of the consignee to exercise like care for its employee has not arisen. When a duty of inspection by another than the carrier arises after unloading—as where a consignee takes over a car for its own purpose, a purpose entirely dissociated from that for which it had been delivered by the terminal carrier in the discharge of its business—and the one owing that duty fails to perform it, that breach of duty, intervening between an injury to an employee of the consignee and a previous breach of a like duty at one time owed by the carrier, is the proximate cause of the injury. When a consignee assumed full control over a car, put it in its intra-mill transportation service, and there used it for 48 days between the day it was unloaded and the day of injury to an employee, the Circuit Court of Appeals, Third District, holds that the consignee assumed the duty of inspection for the protection of its employees, and the railroad's responsibility for its failure previously to inspect and discover a defect not 'ecret ceased. The railroad's liability to the employee also ceased, unless it assumed a duty of inspection after delivery. Collection of demurrage on the car was not proof that the railroad knew the car was being used in intra-mill traffic, so as to make it liable for its unfitness for such traffic.—West Jersey & Seashore v. Cochran, 266 Fed. 609.

## Foreign Railway News

### Consulting Engineer Appointed

#### for Bolivian Construction

Fred Lavis, consulting engineer, with offices at New York, has been appointed consulting engineer to the Bolivian government and the Ulen Contracting Corporation in connection with the construction of the Atocha-Villazon railway line, some details of which were published in the *Railway Age* of July 16 (page 133). Mr. Lavis expects to sail for Bolivia early in August.

### American Loan for Brazilian Railways

According to Commerce Reports, the Brazilian press reports that the state of Rio Grande do Sul has entered into negotiations with New York bankers for a state loan of between \$10,000,000 and \$30,000,000. The funds thus acquired will be spent in improving the railway systems of the state and in completing the port works of Porto Alegre, both of which are state property.

### Great Reduction in Traffic on British Railways

In March of this year the railways of Great Britain hauled 22,783,195 tons of freight, a decrease of 8,614,037, or 27.44 per cent, when compared with the same month last year. Ton miles handled were 1,272,873,399, or a decrease of 29.72 per cent from the total of March of last year. The average receipts per ton mile, exclusive of collection and delivery charges, were 4.186 cents. The heavy decline in traffic affected the operating results adversely—the average tonnage per car was 5.23, as compared with 5.49 tons for March last year, and the average train load was 123.52 tons, as compared with 136.06 for March, 1920.

### New Zealand Railways Make Good Showing

The returns of the New Zealand Government Railways for the fiscal year ended March 31, 1921, have just been announced, and show that the railways experienced another good year, according to Consul General Wilber at Auckland. The revenue amounted to \$33,620,361 (normal exchange), as compared with \$27,994,478 for the fiscal year 1920, with expenditures at \$27,430,514 against \$19,977,308, leaving a net revenue of \$6,189,847, as compared with \$8,017,170. The number of passengers carried during the year was 15,315,614, as compared with 12,760,814 for the preceding year, a gain of 2,554,800. Freight carried totaled 6,085,360 tons, being an increase of 488,128 tons.

### An Important African Project

During the war the South African—Rhodesian—Congo trunk line was pushed northward to Bakuma, in the Belgian Congo, on the navigable Congo river, providing through-rail connections with South African ports. To link the Atlantic coast to the west with Bakuma a line from Lobito bay, in Angola, westward to Bakuma, was projected. Before the war this railway was completed to Chinguar, a distance of 322 miles, and the roadbed was completed to Bié, 66 miles farther. Recently track laying has commenced on this section, which will soon be ready for service. Financial arrangements for the completion of the line from Bié to Bakuma are now under discussion, according to the Times (London) Engineering Supplement. The Benguela Railway, as this line is called, will be 1,155 miles in length from the Atlantic coast to its junction with the trunk line from Capetown, just south of Bakuma. The railway when completed will provide the shortest route from the interior to the coast.

A great part of the mileage of this line will be through mountainous country which will necessitate some sharp curves and heavy grades. On the existing line there is a short section of rack rail which it is proposed to eliminate. The road is of 3 ft. 6 in. gauge—the same as that of the South African Railways.

### Operating Results of the French Railways In 1920 as Compared With 1913

The Minister of Public Works of France has recently published some very interesting statistics on railway operations in that country. The operating results of the six large railways are shown in Table I for 1920, and compared with those for the year 1913, the last normal pre-war year.

The 486 per cent increase in the railway expense account in 1920 as compared with 1913 is attributed to the increased cost of labor, materials and fuel. In Table II is shown the number of

### Proposed New Railroad in Yugoslavia

According to Consul A. R. Thomson at Zagreb, Yugoslavia, a local concern has been granted authority to build a 25 mile railroad through a rich agricultural and mining country from Cernomej, Slovenia, to Generalaki Stol, Croatia. This road will form a connecting link between two important lines and the promoters believe that with the prevailing premium on the dollar it offers an important opportunity for the investment of American capital and a consequent assured market for railway equipment and supplies.

TABLE I—OPERATING RESULTS

Items	Northern	Eastern	Paris, Lyons & Mediterranean	Paris-Orleans	Total All Roads	
					1920	1913
Operating revenue	\$167,324	\$139,346	\$306,484	\$176,916	\$77,586	\$1,043,358
Expenses	234,688	169,647	355,699	239,320	111,534	1,388,056
Net operating revenue	d67,164	d30,301	d49,215	d63,304	d33,968	d344,698
Charges	43,618	34,354	66,778	31,459	15,054	231,021
Net operating income	d110,782	d64,655	d115,993	d94,763	d49,022	d575,719

OPERATING RATIOS

Year	1920	1913	1920	1913	1920	1913
Year 1920	140.0	121.7	116.0	135.2	148.0	157.0
Year 1913	61.3	60.6	57.0	59.7	55.0	85.4

employees and their compensation for the year 1913 as compared with 1920

The total increase in the number of employees in 1920 as compared with 1913 is 40.6 per cent, while the total compensation paid employees during the same period increased 319.2. This increase in compensation does not include the cost of living and family indemnities, nor does it allow for certain conditions brought about by the installation of the eight-hour day. In addition, the average price per ton paid for coal by the railways in 1913 was \$4.63, as compared with \$46.51 in 1920, which represents an in-

### New Officers for South Manchuria Railway

The president of the South Manchuria Railway, Dr. R. Nomura, and the vice-president, S. Nakanishi, some time ago presented their resignations and S. Hayakawa, a Japanese business man and banker, has been elected to the presidency, according to the Trans-Pacific (Tokyo). The former officers resigned, it would seem, while under suspicion of certain irregularities in the management and it is said that Mr. Nakanishi is being prosecuted under the charge of breach of trust in connection with the purchase by the

TABLE II—EMPLOYEES AND COMPENSATION

Road	Number of employees	Per cent increase 1920 over 1913	Compensation		Per cent increase 1920 over 1913
			1913 (In thousands)	1920	
Northern	53,053	76,909	\$23,372	\$101,325	335.7
Eastern	54,259	75,326	22,002	90,710	312.3
Paris, Lyons & Mediterranean	81,000	118,577	40,337	154,400	282.8
Paris & Orleans	50,338	72,179	18,335	94,570	415.8
Midl	27,489	35,331	8,357	46,127	696.8
State	78,815	106,586	31,439	115,993	268.7
Totals	344,944	484,908	143,862	603,125	319.2

crease of over 900 per cent. Rails in 1913 were \$34.74 per ton, ties \$0.98 apiece, while in 1920 the roads were obliged to pay \$161.15 per ton for rails and \$4.05 apiece for ties.

The true measure of traffic is not the number of cars moved, but the ton-miles, and the operations of some of the individual French roads indicate that there has been an increase in the ton-miles in 1920 as compared with 1913, even though the number of cars moved per day have decreased. This condition is a result of greater carloads and longer hauls during the year 1920. The French roads are now exerting every effort to care for the increased traffic, in spite of the increased prices they are compelled to pay for material and fuel.

The *Railway Age* is indebted to the Bureau of Railway Economics for supplying the above information, which was obtained from the Revue Politique et Parlementaire.

### Locomotive Exports in May

May showed some improvement in the number and value of locomotives exported, largely due apparently to a movement of 62 to Mexico. The month's total was 109, valued at \$2,647,441. The detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Number	Dollars
Canada	1	5,115
Mexico	62	1,433,280
Cuba	7	193,891
Argentina	6	226,500
Peru	1	26,837
Chosen	2	27,060
Straits Settlements	20	496,000
Dutch East Indies	3	30,850
Japan	1	12,875
New Zealand	1	14,958
Philippine Islands	5	180,475
Total	109	2,647,441

company of a large colliery at what would appear to be an exorbitant price. It is expected that the new president will make many changes in the executive personnel of the road. The South Manchuria Railway Company was organized in 1906 to take over the railways ceded to Japan at the end of the Russo-Japanese War, and the Japanese government owns a large block of its capital stock. The road has an improvement program before it involving the expenditure of some \$210,000,000 in the next four years.

### Prospective Construction in Mexico

The British capitalists interested financially in the Kansas City, Mexico & Orient, in Mexico, who spent some time in Chihuahua recently going over the road, expressed themselves as well pleased with the prospects, and they returned to London with the avowed intention of arranging for the immediate expenditure of many millions of dollars in the completion of the road, according to the information published in Commercial Mexico. A careful study has been made of the entire situation in Mexico, and the visitors left with an optimistic belief that stable conditions have returned to that part of the country which for nearly ten years has been scourged by civil war, and that now is the time to undertake work on railroads and those other public utilities so badly needed for the development of the immense resources of the State of Chihuahua.

The original concession of the K. C. M. & O. calls for the building of the line to connect Kansas City, by way of Chihuahua, with the Pacific coast port of Topolobampo in the state of Sinaloa. The completion of this line would bring Chihuahua into prominence as a railroad center, as the road would cross the lines of the Mexico Central, which runs from Juarez, on the Mexican

border, to the City of Mexico, and would also cross the line of the Southern Pacific of Mexico as it passes through the state of Sinaloa. It would place Chihuahua in direct touch with Kansas City, Chicago and the Middle West, and would make it the marketing center for a large and fertile portion of Northwestern Mexico.

The completion of the line to the Pacific Coast involves many engineering difficulties. The building will be expensive, as there are gorges and passes in the rough slope of the Sierra Madre which will have to be bridged before the gentle Pacific slope is reached, and it is believed that the work, if undertaken now, will not be completed within three years. The road will open up rich lumber and mining country, with immense possibilities for development. Western Chihuahua and the highly mineralized valleys of Sierra Madre have been neglected in the past because of the lack of transportation facilities.

The representatives of the British stockholders of the Orient were enthusiastic as to the future of the line, and while it was stated that nothing definite could be said at present as to the prospects of commencing work of building to Topolobampo in the immediate future, it seems reasonably certain that the work of linking up the line between Falomir and Alpine will be begun as soon as the necessary financing can be arranged in London.

### Exports of Car Wheels and Axles

Each month shows a further decline in the exports of railway equipment. May exports of car wheels and axles were valued at \$207,966, as against \$304,659 in April. The detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Dollars
Norway	7,690
England	196
Canada	38,639
Costa Rica	565
Honduras	915
Mexico	8,724
Cuba	7,700
Virgin Islands of United States	87
Argentina	123,162
Brazil	7,018
Chile	1,346
Colombia	334
Ecuador	1,011
Venezuela	277
British India	1,088
Straits Settlements	282
Dutch East Indies	400
Japan	7,765
Australia	697
Philippine Islands	4,000
Portuguese Africa	2,070
Total	207,966

### May Car Exports

Further declines in the exports of cars are shown by the May figures. No passenger cars were shipped and only 465 freight cars, valued at \$639,454. The detailed report by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follows:

Countries	Freight and other		Parts of cars Dollars
	Number	Dollars	
Germany	...	...	259
Netherlands	...	...	46
England	...	...	227
Scotland	...	...	1,675
Canada	10	15,000	40,545
Costa Rica	...	...	43,085
Guatemala	...	...	38
Honduras	58	74,896	22,367
Mexico	105	138,630	19,335
Newfoundland and Labrador	...	...	363
Jamaica	...	...	41,178
Cuba	66	140,617	3,469
Dominican Republic	...	...	1,750
Argentina	...	...	43,954
Brazil	21	28,716	9,009
Chile	...	...	4,665
Colombia	...	...	3,497
Ecuador	...	...	646
Peru	56	6,442	19,472
China	...	...	109,631
Che sen	...	...	7,911
British India	...	...	460
Dutch East Indies	76	14,201	11,256
Hongkong	20	15,000	8,396
Japan	...	...	190
Zealand	...	...	18,820
Philippine Islands	...	...	19,472
British South Africa	...	...	11,256
Portuguese Africa	50	186,480	8,396
Total	465	639,454	405,423

## Equipment and Supplies

### Locomotives

THE MIDLAND TERMINAL is inquiring for 1, 2-8-2 Mallet type locomotive.

### Freight Cars

THE MAINE CENTRAL is asking for prices on 200 steel center constructions.

THE CHICAGO GREAT WESTERN is in the market for repairs on 175 to 200 box cars.

THE NORTHERN PACIFIC is asking for figures on 1,000 steel center sills and 1,000 underframes.

THE CHICAGO & NORTH WESTERN is asking for prices on the repair of from 1,000 to 5,000 freight cars.

THE BUFFALO, ROCHESTER & PITTSBURGH is asking for prices on the repair of from 500 to 1,000 freight cars.

THE ILLINOIS CENTRAL has contracted for the repair of 400 gondola cars with the Haskell & Barker Car Company.

### Track Specialties

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, August 1, for its present requirements of track bolts, track spikes, angle bars, tie plates, frogs, switch points and switches, switch plates, crossing frogs, terminal stud track bonds, guard rails, knuckle rails and movable points for crossings.

### Machinery and Tools

DWIGHT P. ROBINSON & COMPANY, INC., New York, is inquiring for lathes, planers, shapers, rail drills, and blacksmith shop machinery for export to Brazil.

### Miscellaneous

THE GREAT NORTHERN is inquiring for 136,000 bolts.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 200,000 bolts.

THE LONG ISLAND will receive bids until 2 p. m., July 25, for 750,000 to 800,000 gallons fuel oil of a density from 14 deg. to 16 deg. Baume.

THE CHICAGO & NORTH WESTERN will accept bids until 12 o'clock noon, July 29, for 34,000 gallons of burner oil in barrels; 6,000 gallons of burner oil in tank cars, and 15,000 gallons of mineral seal oil in barrels.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, August 2, for a minimum of 600,000 gal. and maximum of 800,000 gal. of Asphaltum base fuel oil with gravity of 18-20 deg. Baume, cold test 10 degrees.

THE NORFOLK & WESTERN will receive bids on July 27, at Roanoke, Va., for 116,711 lbs. steel plates; 75,000 lbs. steel bars; requirements of the railroad of Mazda incandescent electric lamps for one year from August 1, 1921; parts for electrical apparatus and electrical material.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, August 3, for its shop requirements until September 1, 1921, on black galvanized and blue annealed sheets, driving and truck tires for freight and passenger service, seamless steel tubes, car and tender axles, car axles for axlelight system, driving and trailer truck axles, front engine truck axles, standard wire nails, galvanized and polished fence staples, steel bars, steel shapes and steel plates, galvanized tie dating nails, bridge warning poles and woven wire fence.

## Supply Trade News

**Theodore L. Dodd & Co.**, Chicago, have been appointed district sales agents of the middle west for the **Foster-Songer Company**, Pittsburgh, Pa.

The **Miller Train Control Corporation**, Danville, Ill., has opened offices in the Riggs building, corner Fifteenth and G streets, N. W., Washington, D. C.

**E. J. Brennan**, formerly superintendent of motive power, Lines East, of the Chicago, Milwaukee & St. Paul, is now sales manager for **The Rogotchoff Company**, Baltimore, Md.

**Edgar L. Keitbley** has established an office at 1323 Alaska building, Seattle, Wash., as a representative of **The Central Foundry Company**, New York, makers of universal cast iron pipe, soil pipe and general castings.

The **Canadian Chicago Bridge & Iron Company, Limited**, of Bridgeburg, Ont., and Montreal, Que., has changed its corporate name to **Horton Steel Works, Limited**. The new name has been selected in honor of the late Horace E. Horton, who founded the Chicago Bridge and Iron Works in the United States in 1865.

The **Universal Packing & Service Company**, Chicago, in addition to handling spring journal box packing, has enlarged its organization to take care of the railroad field and mid-western commercial field for the development and sale of Rawlplugs, a device which enables an ordinary screw to hold in any material. **The Rawlplug Company** has its offices at 461-475 Eighth avenue, New York City.

The **Du Pont Company**, Wilmington, Del., has developed a formula for the manufacture of straight dynamite which results in that explosive being proof against freezing even in zero temperatures. The new explosive has been fully tested and proved and the formula for making it has been made standard in all the plants of the company producing dynamite. As a consequence of this development the company has determined to discontinue the manufacture of its former straight dynamite and hereafter all this kind of explosive will be made by the new low-freezing method.

**E. C. Richardson**, manager of the **Western Electric Company Italiana**, at Rome and Milan, since 1910, and who also saw foreign trade service at Antwerp, has been transferred to Peking, China, as general manager of the **China Electric Company**, the Far Eastern subsidiary of the **International Western Electric Company**, New York. He succeeds **C. H. Minor**, who has supervised the operations of the China Electric Company ever since it started business early in 1918. Mr. Minor is returning to the European organization of the international company, with headquarters at London.

**Alfred L. Kuehn**, vice-president in charge of operation of the **American Creosoting Company**, of Louisville, Ky., has been elected president of the company, succeeding the late **Alvin T. Hert**, effective June 21. Mr. Kuehn was born on August 16, 1877, at Chicago, and was educated at the University of Illinois, from which institution he graduated in 1900. In 1892 he entered railway service as a clerk and operator on the Illinois Central and was later a clerk in the machinery department. On June 1, 1898, he was appointed assistant engineer on the Wheeling & Lake Erie, a position he held until December, 1898. From June 1 to October 1, 1899, he was assistant engineer on the Chicago Drainage Canal. During the next year he was appointed assistant engineer on the Chicago & Alton and thereafter served as assistant engineer on the Cincinnati, Richmond & Muncie. In 1902 he was appointed engineer maintenance of way on the Chicago, Cincinnati & Louisville. Two years later he was appointed engineer maintenance of way of the Michigan division of the Cleveland, Cincinnati, Chicago & St. Louis, and in 1905 was transferred to the Chicago division, with

headquarters at Indianapolis, Ind. Four years later Mr. Kuehn was appointed general superintendent of the **American Creosoting Company**, a position he held until 1918, when he was promoted to vice-president in charge of operation, the position he held at the time of his recent appointment.

### Waterbury Battery Company

The **Waterbury Battery Company**, Waterbury, Conn., has completed a reorganization of its officers and directors, which has been occasioned by the deaths of **Charles B. Schoenmehl** and **E. E. Hudson**. The officers of the company are now **Martin L. Martus**, of Waterbury, Conn., president; **G. A. Nelson**, vice-president and general sales manager at New York; **Francis T. Reeves**, treasurer, and **Harold B. Schoenmehl**, secretary, both at Waterbury. The directors are: **Francis T. Reeves**, **Martin L. Martus** and **Darragh De Lancy**.

**Martin L. Martus**, who has been elected president, has been associated with the company since April, 1911; for the past nine years as secretary and factory manager. He was born in New Haven, Conn., and became associated with the **Scovill Manufacturing Company** in 1901. In 1906 he was chief engineer for one of the subsidiary plants of **The American Brass Company**, and in 1911 became associated with **The Waterbury Battery Company** as factory manager, which position he has held until the present time.

**Judge Francis T. Reeves**, treasurer, was born in Thomaston, Conn., and has been a director of **The Waterbury Battery Company** since October, 1916, and its general counsel since 1914. He is director and trust officer of **The Manufacturers National Bank**, of Waterbury, Conn., and is a practicing attorney in Waterbury.

**Harold B. Schoenmehl**, the newly elected secretary, is the eldest son of the late **Charles B. Schoenmehl**. He has been associated with the **Waterbury Battery Company** for the last six years, engaged in laboratorial and experimental work.

**Darragh De Lancy**, the newly elected director, was formerly president of the **Waterbury Chamber of Commerce** and during the late war served with the **War Department** and the **United States Shipping Board**.

### Obituary

**Alvin T. Hert**, president of the **American Creosoting Company** of Louisville, Kentucky, and chairman of the board of directors of the **American Tar Products Company**, who died



A. T. Hert

on June 7, was born at Owensburg, Ind., on April 8, 1865. Mr. Hert started his business career in his father's store at Owensburg and thereafter was engaged in the general merchandising business until 1894, when he was appointed general superintendent of the **Indiana reformatory**, a position he held until 1903. In 1904 Mr. Hert was a principal in the organization of the **American Creosoting Company**, which at that time started its first plant at Shirley, Ind. Shortly thereafter Mr. Hert was elected president of the company, which today, with its affiliated companies, operates 17 plants in various parts of the country. From 1916 to 1920 inclusive, he was a member of the republican national committee and of the executive committee of this body from Kentucky, and in 1916 he was western manager of the republican presidential campaign. Mr. Hert had his home at Hurstbourne Farms, Jefferson County, Kentucky.

## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company contemplates the construction of a new passenger station, hotel, and Harvey house at Newton, Kan.

**ATCHISON, TOPEKA & SANTA FE.**—This company, which was noted in the *Railway Age* of June 10 as contemplating the construction of an addition to its power house at Albuquerque, N. M., to cost about \$150,000, has authorized this work and will shortly accept bids.

**ATCHISON, TOPEKA & SANTA FE.**—This company has authorized and will shortly accept bids for the construction of a viaduct over Merlin street, Dallas, Tex., to cost approximately \$107,000. The company will also soon accept bids for the construction of a new passenger and freight station at Longview, Tex., to cost about \$28,000.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.**—This company, which was noted in the *Railway Age* of July 2 (page 42) as contemplating the construction of a new freight station at French Lick, Ind., closed bids on July 16 for the structure, which will be of brick construction with dimensions of 26 ft. by 52 ft., and will cost about \$10,000.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company contemplates the construction of a freight house at Omaha, Nebr., and a new roundhouse at Memphis, Tenn.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company is accepting bids for the construction of a 50-ton frame coaling station at Pipestone, Minn., and a 100-ton frame coaling station at Livermore, Ia.

**ILLINOIS CENTRAL.**—This company is accepting bids for the construction of a one-story brick express building at Mattoon, Ill. The company is also accepting bids for the construction of a frame engine house, with dimensions of 60 ft. by 200 ft., at Herrin, Ill. The new facilities at Herrin will also include concrete cinder pits, a sanding plant, and water and sewer improvements. The Illinois Central is also accepting bids for the construction of a new frame passenger and freight station at Duck Hill, Miss.

**MISSOURI PACIFIC.**—This company is accepting bids for the construction of an employees' hospital at Grand and Shaw avenues, St. Louis, Mo. The building will be a seven-story structure with a two-story annex, and will be of concrete, brick and stone construction.

**OKLAHOMA & ARKANSAS.**—This company has applied to the Interstate Commerce Commission for certificate authorizing the construction of 20 miles of line from Salina, Okla., to Kansas, Okla.

**STATE OF NEW YORK.**—The superintendent of public works of New York announced on July 1 the opening of the bids which were submitted for the construction of the barge canal terminal building at Rochester, N. Y. All the bids were under the engineer's estimate, which was \$233,310. At the same time bids for the construction of a bridge across the Hudson river from Troy, N. Y., to Cohoes were opened. Three of the six bids were lower than the estimate of \$572,180. No contracts have been awarded as yet.

**SUSQUEHANNA & WESTERN.**—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch from Bloomfield to Blain, Pa.

**WABASH.**—This road has purchased 65 acres of land west of Oakwood, at Detroit, Mich., as a site for railroad yards and general development of its property. It is reported that the average price of \$4,000 an acre was paid. The strip is approximately 500 feet wide and a mile long, extending from Raupp road to Allen road and north of this railroad's present right-of-way. It is just north of the land bought in 1916 by the Pennsylvania-Detroit.

## Railway Financial News

**ATCHISON, TOPEKA & SANTA FE.**—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire the control by lease of the California Southern and for the operation of its railroad and property.

**CHESAPEAKE & OHIO.**—*Asks Authority for Conveyance of Property of Subsidiary.*—This company has filed with the Interstate Commerce Commission an application for a certificate that public convenience and necessity require the operation by the Chesapeake company of the Chesapeake & Ohio Northern, which forms part of the connection between its lines and those of the Hocking Valley, and also for permission for the abandonment by the Northern company of the operation of its line coincident with the assumption of operation by the Chesapeake & Ohio; or, an order approving and authorizing the acquisition by the Chesapeake & Ohio of control of the Northern through conveyance to it of its rights, properties and franchises; or, authority to assume direct liability for the bonds of the Northern company. The application states that it is made under the provisions of section 1, paragraphs 18 to 22, and section 5, paragraph 2, either or both, and under section 20a of the Interstate Commerce Act, but not under section 5, paragraph 6, which provides for the consolidation into one corporation of properties under separate ownership. The Chesapeake & Ohio owns the stock and bonds of the Northern company.

See also article on another page of this issue, entitled "Chesapeake & Ohio Wants to Unify Properties."

**CHICAGO UNION STATION COMPANY.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the issue of \$6,000,000 of first mortgage 6½ per cent bonds, the proceeds to be used in the construction of the union passenger station and facilities at Chicago, and has authorized the owning companies to guarantee the principal and interest of the bonds.

**DENVER & RIO GRANDE.**—*Stockholders Welcome I. C. C. Investigation.*—The decision of the Interstate Commerce Commission to investigate the financial operations, accounts and practices of the Western Pacific and Denver & Rio Grande Railroad companies, as noted in last week's issue of the *Railway Age*, page 111, is called a great victory for the stockholders of the Denver & Rio Grande by Arthur M. Wickwire and Daniel W. Blumenthal, counsel to the protective committee. In a joint statement they said:

It is now certain that the entire history of the proceedings and financial operations of both the Denver & Rio Grande and Western Pacific companies will be laid bare and the country will learn how the wrecking of the Denver & Rio Grande was accomplished and the stockholders placed in their present plight.

The committee, through its counsel, intends to participate in the hearings and investigation at Washington before the Interstate Commerce Commission. While this investigation will doubtless be of great benefit to the stockholders as well as to the whole country, the protective committee will relentlessly continue the legal proceedings already instituted, and others to be instituted for the purpose of vindicating the rights of the stockholders and compelling full restitution from those who are responsible.

**DULUTH & NORTHERN MINNESOTA.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of its entire line of railroad extending from Knife River to Cascade, Minn., 99.25 miles. The Minnesota commission had authorized the abandonment after April 1, 1921, but the district court had reversed the order on the ground that the commission had exceeded its jurisdiction and the case was appealed to a higher court. The attorney general of Minnesota had objected to the jurisdiction of the Interstate Commerce Commission on the ground that the railroad is intrastate, but the commission expresses the opinion that it has jurisdiction. The company claimed that the road has not been and cannot be operated except at a loss. It was built by a lumber company to reach timber which has now been cut down to such an extent that the lumber operations were discontinued. The commission says that apparently certain elimination of most of its traffic in forest products will diminish its present insufficient revenues by at least 90 per cent.

**FLORIDA & EAST COAST.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, is given as follows:

	1920	1919
Operating revenues	\$10,868,520	
Operating expenses	8,950,204	
Net operating revenues	\$1,918,316	
Taxes	502,472	
Railway operating income	1,395,796	
Compensation from U. S. Government (January and February, 1920)	394,782	\$2,408,171
Balance on guaranty	621,930	
Gross income	2,523,793	2,418,422
Interest on funded debt	592,333	1,790,000
Total deductions from gross income	1,136,084	2,014,265
Surplus	1,387,708	404,158

**GREAT NORTHERN.**—*Asks Authority to Abandon Linc.*—This company has applied to the Interstate Commerce Commission for authority to abandon a branch line in Stevens County, Wash., 7.49 miles.

**MISSOURI, KANSAS & TEXAS.**—*Bondholders' Committee Opposes Reorganization Plan.*—The committee representing the second mortgage bonds claims that the reorganization plan discriminates in favor of liens junior to the second mortgage, and holders of that issue are asked to deposit their bonds in an effort to defeat or modify the plan under consideration. The reorganization plan of the company has not yet been published, but has been submitted to the committee representing the second mortgage bonds, which is headed by Edwin G. Merrill, president of the New York Life Insurance and Trust Company. The American committee representing these bonds already has on deposit about half the bonds outstanding in this country, or more than \$6,000,000. The total issue is \$20,000,000.

**NEW ORLEANS, TEXAS & MEXICO.**—*Authorized to Issue Equipment Notes.*—This company has been authorized by the Interstate Commerce Commission to issue \$3,499,122.50 of conditional sale purchase notes for the acquisition of equipment through the National Railway Service Corporation, to guarantee a note for \$926,000, to be given by the service corporation to the United States for a loan, and to issue and pledge bonds as collateral security.

**NEW YORK CENTRAL.**—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$4,425,000 of 4 per cent consolidated mortgage bonds from time to time to be exchanged for New York Central & Hudson River 3½ per cent bonds under the terms of the agreement of April 27, 1914, in connection with the consolidation of the Lake Shore.

**NORFOLK SOUTHERN.**—*Asks Authority to Abandon Linc.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of the Carthage & Pinchurst, 12.2 miles.

**OKLAHOMA & ARKANSAS.**—*Asks Authority to Issue Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue \$307,500 of stock for the construction of 20 miles of line from Salina to Kansas, Okla., and for the purchase of a locomotive.

**UNION PACIFIC.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**WHEELING & LAKE ERIE.**—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$451,000 of 6 per cent refunding mortgage bonds to reimburse the treasury on account of expenditures for additions and betterments and to be pledged as collateral.

**Guaranty Certificates Issued**

The Interstate Commerce Commission has issued partial payment certificates on account of the six months' guaranty, as follows:

Buffalo, Rochester & Pittsburgh	\$135,000
Chicago, St. Paul, Minneapolis & Omaha	115,000
Minneapolis Eastern	17,000
St. Joseph Belt	62,500
Trans-Mississippi Terminal	55,000

**Railroad Administration Settlements**

The United States Railroad Administration has made a final settlement with the West Side Belt for \$1,080,000 and with the Pittsburgh & West Virginia for \$720,000.

**Railway Officers**

**Executive**

**J. C. Murray**, traffic manager of the Missouri & North Arkansas, with headquarters at Harrison, Ark., has been elected receiver, with the same headquarters, succeeding C. A. Phelan, who has resigned.

**Carl L. Gray**, president of the Union Pacific, has been elected president of the Los Angeles & Salt Lake, in addition to his other duties. **H. M. Adams**, vice-president in charge of traffic of the Union Pacific, has also been elected vice-president.

**Operating**

**G. R. Mabie** has been appointed superintendent of the Louisville Railway & Navigation Company with headquarters at Shreveport, La., succeeding H. L. Graham, transferred, effective July 1.

**A. L. Hayden**, contract agent of the Southern Pacific with headquarters at San Francisco, having resigned, the position has been abolished and the duties assumed by Wm. M. Singer, contract attorney.

**J. J. Sexton**, trainmaster of the Northern Pacific with headquarters at Livingston, Mont., has been transferred to Seattle, Wash., in a similar capacity, succeeding J. F. Fitzsimmons, resigned. **R. T. Taylor**, trainmaster with headquarters at Forsyth, Mont., succeeds Mr. Sexton at Livingston. **W. D. Pearce**, supervisor of bridges and buildings with headquarters at Glendive, Mont., has been appointed trainmaster at Forsyth, succeeding Mr. Taylor. These changes were effective June 15.

**W. L. Barnes** having resigned as executive manager of the Car Service Division of the American Railway Association, with office at Washington, D. C., to return to his position of general superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, the position of executive manager has been abolished, effective as of August 1, and **M. J. Gormley**, director of the transportation division of the American Petroleum Institute, has been appointed chairman of the Car Service Division, reporting to the president of the American Railway Association. **C. A. Buch**, who has been assistant to Mr. Barnes, has been appointed secretary of the Car Service Division. A photograph and sketch of Mr. Barnes were published in the *Railway Age* of October 8, 1920 (page 637), and a photograph and sketch of Mr. Gormley were published in the issue of February 27, 1920 (page 647).

**Traffic**

**W. W. Baker** has been appointed industrial survey agent of the Baltimore & Ohio with headquarters at Baltimore, effective July 1.

**W. W. Blakely** has been appointed general freight agent of the Sharpsville, with headquarters at Pittsburgh, Pa., succeeding O. S. Lewis. Mr. Blakely will also serve as general freight agent of the Baltimore & Ohio, which company controls the Sharpsville.

**W. R. McFarland**, assistant general passenger agent of the Pennsylvania, with headquarters at Chicago, has been appointed general passenger agent of the Chicago Great Western, with the same headquarters, succeeding A. C. Irons, whose resignation was announced in the *Railway Age* of July 16 (page 144).

**A. S. Gimble**, general agent of the Gulf Coast Lines, with headquarters at Brownsville, Tex., has been appointed general agent, with headquarters at Monterey, Mex., in addi-

tion to his other duties. **L. R. Jones** has been appointed general agent, with headquarters at Mexico City, Mex. The appointments were effective July 11.

**Golder Shumate**, whose appointment as general freight traffic manager of the Baltimore & Ohio was announced in the *Railway Age* of July 9 (page 94), was born February 1, 1877. He began railway work in July, 1897, as a clerk in the general freight office of the Baltimore & Ohio at Washington, D. C., resigning from that position in October of the following year. He returned to the service of the Baltimore & Ohio in April, 1899, and the following September became a correspondent in the general freight department. In 1903 he became a rate clerk; two years later he was promoted to chief rate clerk, and, in April, 1912, to chief clerk in the general freight department at Baltimore, Md. On May 1, 1916, he was promoted to division freight agent at Youngstown, O., and the following December was transferred in a similar capacity to Baltimore. In March, 1917, he was promoted to assistant general freight agent and in November of the same year to general freight agent. In January, 1920, he was appointed acting freight traffic manager of the Baltimore & Ohio under the Railroad Administration. On the return of the roads to their owners he was appointed freight traffic manager with headquarters at Baltimore, which position he was holding at the time of his recent promotion.

**O. S. Lewis**, whose appointment as freight traffic manager of the Baltimore & Ohio, with headquarters at Baltimore, was announced in the *Railway Age* of July 9 (page 94), was born on March 8, 1873, at Lawrenceburg, Ind. He was educated in the public and high schools and began railroad work as a clerk in the accounting department of the Kentucky Central (now a part of the Louisville & Nashville) at Covington, Ky. From January, 1892, to the following November he was in the accounting department of the Chesapeake & Ohio at Richmond, Va., and in the office of the agent of the same road at Cincinnati, O. Then until 1896 he was in the accounting department of the Ohio & Mississippi (now a part of the Baltimore & Ohio). He next served, successively until 1906, as agent of the Baltimore & Ohio Southwestern at Lawrenceburg, Ind., and as chief clerk to the division freight agent at Vincennes, Ind. From 1906 to 1912 he was in the general freight office of the same road at Cincinnati and then, for a year, he served as division freight agent of the Cincinnati, Hamilton & Dayton, at Dayton, Ohio. He then went to the Baltimore & Ohio Southwestern at Cincinnati in the same capacity and, in 1915, was appointed assistant general freight agent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton. The following year he was promoted to general freight agent of the Baltimore & Ohio.



Golder Shumate



O. S. Lewis

**G. M. Schleyer** has been appointed executive general agent of the St. Louis-San Francisco with headquarters at Birmingham, Ala. Mr. Schleyer will report directly to the president except on rate matters when he will report to the vice-president in charge of traffic. His jurisdiction will include Birmingham and the coal mines in the immediate vicinity of that city.

### Mechanical

**J. I. Mailer**, master mechanic of the Fort Smith & Western with headquarters at Fort Smith, Ark., has been appointed superintendent of motive power with the same headquarters, effective July 1. The office of master mechanic has been abolished.

### Engineering, Maintenance of Way and Signaling

**C. M. Staples**, assistant to the corporate engineer of the Southern Pacific, with headquarters at San Francisco, Cal., has been appointed division engineer of the Houston division, with headquarters at San Antonio, Tex., succeeding **R. W. Meek**, who has been assigned to other duties. These changes were effective July 15.

**H. M. Righter** has been appointed division engineer on the Erie with headquarters at Susquehanna, Pa., succeeding **Charles M. Lewis**, transferred to Jersey City, N. J. Mr. Lewis takes over a part of the territory formerly under the jurisdiction of **S. J. Malloy**, division engineer with headquarters at Jersey City. In company with the above changes, the headquarters of **J. C. Patterson**, regional engineer, has been changed from New York City to Jersey City.

### Purchasing and Stores

**G. H. Pinion**, assistant purchasing agent of the Texas & Pacific, has been appointed general storekeeper with headquarters at Marshall, Texas, succeeding **A. D. Walther**, resigned to accept service in another department. The position of assistant purchasing agent has been abolished.

### Obituary

**William A. Henderson**, formerly general solicitor of the Southern, died at Washington, D. C., on July 16.

**James Hughes**, chief horticulturist of the Denver & Rio Grande with headquarters at Denver, was drowned in the Columbia river in Washington on July 19.



Photo by Keystone.

Idle Locomotives—Built in England for War Service in France—Too Heavy for Service in England

# Railway Age

Vcl. 71

July 30, 1921

No. 5



The De Witt Clinton, the New York Central's First Locomotive, and One of Its Modern Pacifics; Photo by International

## Contents

### Railroad Settlement Plan Announced by President . . . . . Page 193

Railroad Indebtedness to Government to Be Funded and Roads Surrender Part of Claims to Expedite Adjustment of Some \$500,000,000 Due Them.

### Expenditures of the Railways for Labor and Material . . . . . 199

Over a Billion Dollars' Worth of Material Used in the Operation and Maintenance of Class I Railroads in 1920—Bad Order Car Situation.

### Operating Revenue and How It Was Expended . . . . . 203

Charts in Color Showing How Railway Operating Revenues Have Been Expended from 1912 to 1920—The Great Decreases in Net Earnings.

#### EDITORIALS

Interesting Statistical Material . . . . .	187
The Chilean Electrification . . . . .	187
When Do the Railways Get Their Profits? . . . . .	187
Knowing What It Costs . . . . .	187
A Contrast in Practices . . . . .	188
Make Use of What Others Have Done . . . . .	188
The Equivalent of Rate Reduction . . . . .	188
An Age of Specialization . . . . .	188
One of the Few Exceptions . . . . .	189
Use the Service Representatives . . . . .	189
"What the Traffic Will Bear" . . . . .	189
Locomotive Resistance Formulas . . . . .	190
El Paso & Southwestern . . . . .	190
St. Louis-San Francisco . . . . .	191

#### GENERAL ARTICLES

Railroad Settlement Plan Announced by President . . . . .	193
Missouri & North Arkansas to Suspend Operation . . . . .	196
New Cornwall Railroad Shop Has Walls of Glass, by J. C. Childs . . . . .	197
Expenditures of the Railways for Labor and Material . . . . .	199
Operating Revenue and How It Was Expended . . . . .	203
A Striking Diagram for Railroad Stockholders, by Julius Kruttschnitt . . . . .	207
Car Surpluses and Shortages . . . . .	209
Freight Car Loading . . . . .	209
Locomotive Resistance and Mechanical Efficiency, by Kichii Asakura . . . . .	211
Canadian Pacific Uses Heavy Slabs for Bridge Spans . . . . .	216
Shall the Crossing Alarm Whistle Be Modified by E. H. Hemus . . . . .	217
Edgar E. Clark Resigns from Interstate Commerce Commission . . . . .	218
The "De Witt Clinton" Moves Under Its Own Power . . . . .	219

#### GENERAL NEWS DEPARTMENT . . . . . 220

Published every Saturday and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building . . . . . CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34 Victoria St., Westminster, S. W. 1.

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Urssigmecc, London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

F. T. HOWSON  
H. B. ADAMS  
H. F. LANE  
R. E. THAYER  
C. B. FECK  
W. S. LACHER  
J. G. LITTLE

A. E. STEERING  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEHLEK  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

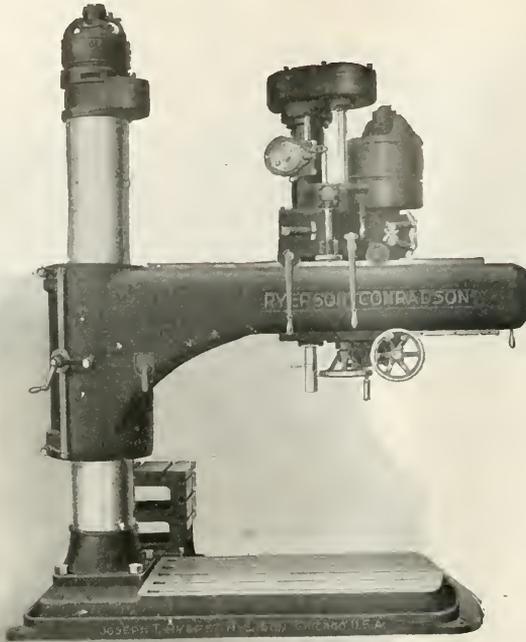
MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
L. M. SANDWICK  
J. G. LYNE  
I. H. DUNN  
D. A. STEEL

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in placed after than New York, payable in advance and postage free: United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00 £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 9,050 copies were printed, that of these 9,050 copies, 8,163 were mailed to regular paid subscribers, 69 were provided for counter and news company sales, 347 were mailed to advertisers, 82 were mailed to employees and correspondents, and 389 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 293,306, an average of 9,777 copies a week.

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)



Ryerson-Conradson Railroad Radials satisfactorily handle any work the railroad shop offers.

## A 5 ft. Radial on 8 ft. Work

In a rush—two heavy gruelling jobs just alike—jobs for a heavy duty 8 ft. radial drill.

They had tried before—nothing smaller would pull it.

Time was vital—a recently installed 5 ft. Ryerson-Conradson Radial was tried—it pulled the work with ease.

With the Ryerson-Conradson Railroad Radial you are ready for any drilling job.

*For new departures in design*

*Ask for Bulletin 4,001*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The two articles entitled respectively, "Expenditures of the Railways for Labor and Material" and "Operating Revenue and How It Was Expended," which appear in this issue will be read with more than ordinary interest. To be sure, they point out facts and results which are already known, but it is to

### Interesting Statistical Material

be doubted if the available data as to the developments in recent years in railway earnings, expenses and net have ever been put together in a more striking and useful manner than is done in these two articles. As pointed out in the second article in question, the difficulty in analyzing the figures relating to railway operation is that of visualization. The data which are presented and the manner in which the colored charts in particular are gotten together will permit the visualization in a way that will not be readily forgotten. The Bureau of Railway Economics, to which the *Railway Age* is indebted for the data which are used and for the colored charts which are reproduced, has, in working up this material, performed a service for which it is indeed entitled to congratulation.

Unconfirmed press reports from Chile indicate that a large American electrical concern has been awarded the contract for the electrification of the State Railway's main line from Valparaiso to Santiago, a distance of 125 miles. The press reports state further that the contract has been awarded with some stipulations which have not as yet been accepted by the American concern in question. The cost of the installation is said to be in the neighborhood of \$10,000,000. Obviously this is a contract of no small importance and is one which those interested in our foreign trade will be glad to see come to one of our own concerns, but the monetary consideration involved gives no adequate measure of the real importance of the work. Chile is a mountainous country and the consequent heavy grades naturally suggest the advisability of electrification. An installation like this will undoubtedly, if satisfactory, result in more and more electrification. In such a case the natural tendency would be, matters of price and finance being equal, to turn to the country which makes the first installation. The situation is one of vast opportunities and the confirmation of these press reports will be awaited with considerable interest.

### The Chilean Electrification

When profits in manufactures, agriculture and other lines of business were large before the war, and railway traffic would easily have borne higher rates, the railways were not allowed to advance the rates. They were told by regulating bodies that the railways had no moral or legal right to advance the rates being paid by a particular class of industry because that industry was prosperous and easily could afford to pay higher rates. Consequently, railway rates constantly declined in proportion to the prices of the commodities on which they were

### When Do Railways Get Their Profits?

applied, and railway profits stood still or declined, while profits in other lines of business increased. Under government control when other industries were making enormous profits, the railways were rigorously restricted to the same return they had made in the three years before the war. At present neither the railway nor any other important branch of industry is prospering. Prices recently have declined until the freight rates charged for transporting many commodities are much higher in proportion to their prices than before the war. And now the railways are told by numerous persons and publications that they should reduce their rates to enable certain kinds of business to be done at a profit, even though the operating costs of the railways themselves are so high that reductions of rates would make it impossible for an indefinite time for the railways to earn a reasonable return. In other words, the railways were not allowed to advance their rates in order to share in the profits of industry when large profits were being made, and now it is demanded that they shall reduce their rates so that they will share to a disproportionate degree in the losses of industry when the losses of industry are large. Could any surer way to ruin an industry be conceived than to deny it opportunity to share in the increased profits of business when profits are increasing and compel it to participate fully in the losses of business when losses are being taken? When railways are regulated with business sense—if they ever are—they will be allowed to make large profits when large profits are the rule, and thereby be enabled to take losses when losses are the rule. Unless they get their share of the profits, with what are they to pay their share of the losses?

### Knowing What It Costs

If the railways may be justly criticized for one thing more than another, it is for their lack of knowledge of many of their operating costs. Their activities are so complex and are performed under such a variety of conditions that the collection of this information is difficult. At the same time, these very conditions make information of this character all the more valuable. No manufacturer can succeed today without a knowledge of the cost of production of each of his products, for it is only with data of this character that he can determine which of his several products to push. Likewise, while the railways must handle all of the business offered to them, they can still select that for which they shall compete most actively and that road prospers most which exercises the best judgment in the selection of the traffic it goes after. It is equally true that the success attending any plan for conducting railway operations must be measured by its effect upon the net revenues, as was pointed out by J. E. Hutchison, general manager of the St. Louis-San Francisco, in his article describing the development of unit cost data on the operation of freight trains in the *Railway Age* of July 23, page 161. The system which has been devised on the Frisco enables each operating officer to know at the beginning of each day the cost of operating the freight trains on the road for the day before. He is thus enabled to detect any unfavorable influences affecting operating costs adversely and to adopt such measures as may be necessary to correct them.

What has been done with reference to these items can be done elsewhere in railway service. When such data are available and only then will railway officers be able to reduce their operating costs to the lowest limit for so long as they are in the dark as to the nature of any of these costs they are unable to know where to look for opportunities to make further reductions.

A British contemporary recently reviewed English practice in the use of concrete by the railroads, pointing out that whereas this material is applied extensively for overhead bridges, posts, poles, etc., only limited use is being made of it for bridges carrying railway trains. Reluctance to apply this material to railway structures is ascribed primarily to a doubt in the minds of English railway engineers concerning the ability of concrete to resist the vibration set up by the rapidly moving loads. A question is also raised as to the permanence of the bond between concrete and steel under these conditions. A discussion in another issue of the same journal with respect to the relative merits of concrete and stone arches which clearly favors the latter places further emphasis on this seeming lack of confidence in the use of the newer construction material. This attitude of the English engineers is in sharp contrast to that of the officers in charge of structures on American roads where stone is now used for bridges only in cases of special architectural treatment, for salt water construction or bridges of unusual magnitude. Reinforced concrete has been used for so many years in railway bridges in this country that it has come to be accepted almost universally as a standard material of construction. Such instances of failure or unsatisfactory service life as have been brought to light are ascribed in most cases to the use of improper materials or poor workmanship. Consequently, scientific investigation in this country with respect to concrete is directed almost entirely to the elimination of these causes of failure and a higher degree of refinement in workmanship.

Under the circumstances prevailing during the last year or so it has been necessary for railway officers to deviate at times from their customary methods.

#### **Make Use of What Others Have Done**

Further than that there has been a tendency toward the speedier adoption of the newer methods as already tried out successfully by other roads. Even with more normal conditions and more nearly normal traffic, the railways will find themselves working under circumstances that will often call for the use of what would have been unorthodox methods a few years ago. This condition may be hastened and thus the roads benefited sooner by the realization of railway officers in general that they can no longer work entirely by rule and that in the future they must be even more broadminded than they are today. An instance indicative of this realization was shown recently by an advertisement in a metropolitan paper in which a large industrial firm stated frankly that while it wanted a high calibre man already holding an important position, it did not want a man who worked by rule but rather one who was open minded enough to do the unconventional. The railroads have many men of this calibre but too often their hands are tied. A condition which should not exist is well illustrated by the remarks of an engineer maintenance of way who said in effect that it often took him months and even years to secure a small authorization for something new to his superior officers, even though it was of proved resultant economy on other roads and readily adaptable to his. On

the other hand and at the same time he could easily secure an authorization for from two to five times the amount in money for something well known to his officers but not particularly needed.

An important characteristic of railroad transportation in recent months which those who are clamoring for reductions in freight rates have apparently ignored is the greatly improved service which many of the roads are offering. An example of what is being done in this direction is the speeding up of the fast freight schedules. Commodities moving in refrigerator cars and other perishable goods are now being delivered in New York on the fourth day after leaving Kansas City, the third day after leaving Chicago and St. Louis and the second after leaving Toledo or Detroit. Similar improved schedules are in effect between other cities. In other words, while the charge to the shipper is the same, the service rendered him is much greater and consequently what is, in effect, a reduction in charges has been brought about. And in addition, with these improved services shippers can now in many cases avail themselves of freight transportation instead of the more costly express service. Where this is possible the actual cost to the shipper has, of course, been reduced. In any event the shipper of these commodities is getting more for his money than he formerly did and this fact should be given the consideration it merits by those who are attacking the prevailing scales of rates.

Few persons realize the extent to which specialization is necessary in the efficient operation of a large railroad. Not only is the organization divided into a number of primary branches such as the operating, accounting, engineering, mechanical and traffic departments, each with its specific duties, but these

#### **An Age of Specialization**

are again subdivided. Take the engineering department, for example. In the early days of American railways, all engineers in railway and other private employ were known as civil engineers to distinguish them from the military engineers. Later engineers dealing with motive power and machinery came to be known as mechanical engineers, while, with the development of electricity as a source of power, mechanical engineers specializing in the construction and operation of electrical machinery came to be known as electrical engineers. Even those remaining in the classification of civil engineers have been further divided until today the staffs of the chief engineers of large railroads include men with titles such as engineer maintenance of way, engineer of construction, bridge engineer, engineer of buildings, engineer of water service and more recently such titles as engineer of grade separation, terminal engineer, engineer of track, landscape engineer, etc. As their titles indicate, each of these men concentrates his attention on the handling of a particular class of engineering problems, to the solution of which he brings highly specialized knowledge. Obviously, such a highly diversified organization is warranted only on the larger roads where specialized problems are of sufficient frequency to justify the employment of men to concentrate their attention on these various branches of engineering work. To meet the need for such services on the smaller roads where the creation of a specialized staff is not justified, numerous consulting engineers have established themselves, each specializing on a particular class of problems. More recently large engineering organizations have been created which are prepared to design and also to erect engineering structures. These organizations likewise specialize

in certain limited fields and thereby bring to the assistance of the railways, large and small, the best practices of all of the roads, assembled through their specialized organizations. This is, indeed, the day of specialization on the railways as well as in other industries. That management will profit which realizes the value of such service either regularly or occasionally as conditions warrant.

The approval by the stockholders a week ago Thursday of the plan of the Delaware, Lackawanna & Western to issue

### One of the Few Exceptions

a one hundred per cent stock dividend again brings into the lime light this interesting and unusual carrier. The occurrence seems to have come at a rather opportune time, for the Lackawanna, judging by its record so far this year, is out to prove itself a marked exception from its fellow railroads in this time of stress. The Lackawanna was one of the three or four roads shown in the operating statistics in last week's *Railway Age* as having carried more net ton miles in May this year than it did last year, in fact the net ton miles in the first five months this year have equaled those of the first five months of 1920. This is due to the manner in which anthracite coal traffic has held up and insofar as other traffic is concerned, it is largely the result of the work of an able traffic department and of a service on which the traffic department can count at all times. It, in turn, has resulted in a gross so far this year of \$42,279,985 as compared with a gross in the first six months of 1920 of \$34,767,373 and in a net railway operating income up to June 30, 1921, of \$4,662,496 as compared with a net of but \$612,543 in the same period last year. The net in June, 1921, was \$1,395,173; in June, 1920, there was a net of \$520,552. Most of the roads of the country which are showing increases in net this year as compared with last year have produced that result through savings in maintenance charges. This is not the case with the Lackawanna; its maintenance charges in June this year and in the first six months of 1921 as a whole have actually been considerably greater than in June or the first six months of 1920, respectively.

History does not record when the book agent first made his appearance on this planet. Possibly it was in the days of ancient Rome, for the Latin proverb

### Use the Service Representatives

"Let the buyer beware" proves that at that time people looked with suspicion upon the man who had something to sell. The relations between buyer and

seller have improved in recent years. The vast majority of companies selling to railroads realize that the only satisfactory basis for a permanent business is to give service and keep costs down. The best example of the results obtained by co-operation between railroads and manufacturers are the service contracts which certain makers of supplies have with the roads. These companies are able to guarantee low costs because their experts observe practices on the road and see that materials are properly used. Some companies making appliances have tried to introduce a similar practice by having representatives check up the performance of their products and instruct the men in the proper methods of operation and maintenance, but in many cases the purpose of these men has been misunderstood and their work hampered by the in-born prejudice against the man who has something to sell. There is no reason for looking askance at the service representative. He is not an order taker; his sole function is to see that the railroad gets the most for its money, which should also be the object of every railroad officer and employee. If, because of a mistaken viewpoint, the local

officers do not co-operate with the representatives of the supply companies, the railroad is the principal loser. Probably the best way to get the full benefit from service organizations is that adopted by the superintendent of motive power of a prominent road who has given these men a definite standing by issuing instructions to his subordinates pointing out that their experience with their particular specialty gives them an opportunity to offer valuable suggestions which should receive proper consideration.

## "What the Traffic Will Bear"

WE HAVE RECENTLY BEGUN to hear much of the good old principle of basing railway rates on "what the traffic will bear."

Basing rates on "what the traffic will bear" formerly was advocated by railway officials as the soundest and fairest principle of rate making. The critics of railway management, and those who were seeking to prevent advances or secure reductions of rates, loudly decried this principle. Rates, they said, should be based not on what the traffic will bear—not on what the shipper could afford to pay—but on the expense incurred by the railroad in handling the traffic—on what the railroad could afford to take. If the traffic could bear certain rates, but the railroad by charging these rates could make more than a so-called "fair return," then the rates must not be charged. Railway officials contended that if the traffic could easily bear particular rates, or schedules of rates, this was proof of their reasonableness and fairness regardless of the profit the railroad made by charging them. This theory was made so odious to the public by attacks on it that railway officials almost ceased to advocate it.

Times have changed. Professional railway attackers, like Clifford Thorne and S. H. Cowan, after having for years denounced charging "what the traffic will bear" and contending that rates should be based on the "cost of the service," are now appearing before the Interstate Commerce Commission to contend that certain rates are too high solely because they are "more than the traffic will bear."

The question of the correct principles on which to make rates is presented with striking clearness and directness in the case before the Interstate Commerce Commission for reductions in the rates on live stock. Those who are seeking reductions in these rates are doing so entirely on the ground that if they are maintained the farmer cannot raise and ship live stock at a profit, and that therefore the rates should be reduced practically regardless of what it costs the railroads to transport live stock. This argument, unfortunately, is not entirely without foundation. The only reason why the railroads do not voluntarily reduce rates on live stock is that railway costs of operation are now so high. What makes them so high? Two-thirds of the present operating expenses consist of an excessive payroll; and the working conditions and wages which produce this payroll were first established by the Railroad Administration, one government body, and have since been continued by the Railroad Labor Board, another government body.

In other words, when the "cost of service" was mainly determined by railway officers and was low, Mr. Thorne, Mr. Cowan and other professional attackers of the railways contended rates should be based on the "cost of the service"—on what the railways could afford to haul the traffic for—and not on what the traffic would bear—on what the shipper could afford to pay. Now, however, when most of the cost of railway operation is fixed by government bodies and is high, Thorne, Cowan, et al., come in and contend that the rates should be based, not on the cost of the service—on what the railways can afford to handle traffic for—but on what the traffic will bear—on what the shipper can afford to pay.

When it was to the advantage of the railways to base rates on what the traffic would bear, Thorne, Cowan, et al., got the Interstate Commerce Commission and other regulating bodies to recognize and act on the principle that rates should be based mainly on the cost of the service. Now, when the cost of the service is high and the railways need to have rates based on this high cost, these same men appear before the regulating bodies and demand that rates shall be based not on the cost of the service but on what the traffic will bear!

The principle of basing rates mainly on what the traffic will bear always was the correct principle, and is the correct principle now. To refuse, however, to apply it when its application would increase the profits of the railways and then apply it when the railways are making practically no profits and its application would further reduce their already ruinously small net return, would be the height of imbecility and injustice. Besides, how could any government body base rates, as the Interstate Commerce Commission has in the past, mainly on the cost of rendering railway service when that cost was low owing to the good management of the railway companies themselves, and then refuse to recognize the cost of service when it was high mainly owing to the policies of government bodies deriving their authority from exactly the same source as the Interstate Commerce Commission?

It is exceedingly refreshing to hear people who in every rate hearing for years have denounced the railway managements as brigands because they advocated the principle of basing rates on "what the traffic will bear," now asking the Interstate Commerce Commission to ignore and forget all they have said upon the same point in the past and denouncing rates made by the Commission itself because they are not based on "what the traffic will bear." Meantime, we call the attention of these people and the Interstate Commerce Commission to two pertinent points. First, the Transportation Act directs the Interstate Commerce Commission to so fix rates as to yield the railways an average of  $5\frac{1}{2}$  per cent and the rates have not yet yielded this return—the law has not been carried out. Second, the Constitution of the United States is interpreted to prohibit confiscatory regulation, and the confiscatoriness of any general reduction of rates at present would be as palpable as the Washington Monument.

## Locomotive Resistance Formulas

**L**OCOMOTIVE RESISTANCE is an important factor influencing the performance of motive power. It is necessary to determine the amount of this resistance in designing locomotives to haul a definite tonnage, in determining the maximum allowable grades, or in calculating the performance that can be expected from existing engines. Both mechanical engineers and civil engineers have given the matter attention and many formulas have been evolved to express the amount of resistance under varying conditions. The values for the resistance given by the several formulas vary widely, which is not altogether surprising, because the resistance is influenced by several variable factors. A graphic chart of the resistance as determined in numerous locomotive tests shows that there is a considerable variation in the resistance when expressed in terms of the weight on drivers which should, of course, be considered in evolving a general formula. On the other hand, a chart of the numerous formulas shows that some give values which are consistently lower than the experimental results, while others are much higher. As the maximum resistance is several times as great as the minimum, a mean value is not satisfactory.

The problem of determining the resistance of a locomotive with a fair degree of accuracy under all conditions is discussed in an article by Kiichi Asakura, mechanical engineer of the Japanese Government Railways, published else-

where in this issue. By plotting a large number of experimental results, Mr. Asakura shows that the resistance apparently is not a function of either speed, cut-off, or mean effective pressure in the cylinders. It is only when the resistance is expressed in terms of mechanical efficiency at various speeds and at various cut-offs that consistent results are secured.

When the resistance is expressed in terms of mechanical efficiency, the available tractive effort can not be obtained as readily as when the resistance is given in pounds per ton of weight on drivers. To apply the mechanical efficiency, it is necessary to compute the output on a horsepower basis by using charts showing the steam consumption per drawbar horsepower hour. This method, however, has certain advantages because it brings out the fundamental relations between steam consumption, power and locomotive resistance under the condition being investigated. For instance, it is interesting to note that the lowest steam consumption per indicated horsepower hour occurs at the shortest cut-off of 20 per cent and the highest speed, 320 r.p.m., but on the basis of drawbar horsepower hour, the maximum economy occurs at 35, 40 or 45 per cent cut-off and at 160 to 200 r.p.m. In making an analysis of locomotive tractive effort, it is useful to have these factors brought out as a step in the final process.

The method suggested by Mr. Asakura complicates the calculations involved in finding the tractive effort and also introduces variables due to differing degrees of superheat and variations in boiler pressure. Basing the tractive effort on horsepower output and mechanical efficiency is more logical in the light of the data presented. Its advantages in actual practice over the method in common use can only be determined by a careful comparison of the results obtained by the two methods under varying conditions.

## El Paso & Southwestern

**T**HE EL PASO & SOUTHWESTERN is a comparatively small road, but withal a rather important one. It is controlled by the Phelps-Dodge interests, the products of whose mines it carries. It has strong financial backing, has a position of great strategic value as the connection between the lines of the Southern Pacific and those of the Chicago, Rock Island & Pacific and is noted for its efficiency of operation. The lines of the El Paso & Southwestern total 1,028 miles. They extend from Tucson, Ariz., eastward above the Mexican border south of and parallel to the line of the Southern Pacific as far as El Paso, Tex., and thence north into New Mexico as far as Dawson, connection being made with the Rock Island at Tucumcari.

The traffic of the El Paso & Southwestern is predominantly ores. Of the total tonnage of 4,692,401 carried in 1920, 1,477,145 tons were ores; 698,989 tons, bituminous coal and 614,693 tons, products of agriculture.

The El Paso & Southwestern is more properly regarded as a system rather than as a single railroad. The parent company is known as the El Paso & Southwestern Company. The lines east of El Paso are known as the eastern division. They are composed of a number of railroads, all the stock of which is in the hands of the El Paso & North-eastern Company, a holding company only, control of which is held by the El Paso & Southwestern Company through entire stock ownership. The lines of the several railroads are also leased by the El Paso & Southwestern Company. The lines west of El Paso, comprising the western division, are owned by still another company, the El Paso & Southwestern Railroad Company. This company controls two smaller companies through stock ownership and all of its own stock is held by the El Paso & Southwestern Company. In addition

to this somewhat complex organization, the El Paso & Southwestern Company also owns all the stock of the Morenci Southern and the Nacozari Railroad and 50 per cent of the stock of the Tucson, Cornelia & Gila Bend. None of these three companies, however, is included in the El Paso & Southwestern System.

The El Paso & Southwestern in 1920 did an extremely heavy business. Its net railway operating income, however, for the year was \$2,910,006 as compared with \$2,993,415 in 1919. The figure for both years was about \$1,000,000 under the average earnings for the test period. In 1918, the system earned over \$1,000,000 more than its government rental. The corporate income for 1920, taking into consideration the standard return for January and February and the guaranty for the guaranty period showed a net income available for dividends of \$1,097,314 as compared with \$3,128,710 in 1919 or \$3,551,700 in 1918. Dividends are paid at the rate of 8 per cent annually and total \$2,000,000. To pay these dividends in 1920 the company had to call upon its surplus account.

The extreme dullness in the metal markets at the present time has been sharply reflected in the El Paso & Southwestern traffic and earnings, at least up to April or May,



The El Paso & Southwestern

1921, the figures for which months are the latest at present available. The gross earnings for the first five months of 1921 were \$4,977,296 as compared with \$5,801,581 in the first five months of 1920. The net railway operating income of \$178,948 in the first five months of 1921 compares with \$1,218,809 in the same period of 1920. The traffic has been running at about 75 or 80 per cent of the 1920 average. With this falling off in traffic, the company has naturally not been able to keep up its train loading, car loading, etc., at the 1920 average. The average net tons per train in the first four months of 1921 were 528; in the first four months of 1920, 555; in 1920 as a whole, 585. The net ton miles per car day, which figure takes into consideration, car load, car miles per day and per cent of loaded to total car movement, were in the first four months of 1921, 555; in the first four months of 1920, 706; in 1920 as a whole, 740. A new figure in the operating statistics which is being given increasing importance is that of net ton miles per train hour, which takes into consideration not only train load but train speed. In the first four months of 1921 the El Paso & Southwestern's average of net ton miles per train hour has been 7,969 as against an average for the central western region of 7,011 or an average for the entire country of

7,056. Bad order cars in April were but 5.0 per cent, or considerably below the average.

The El Paso & Southwestern will likely show improvement in its earnings in the June and July figures. It has been carrying a large portion of the cantaloupe traffic from southern California to Chicago and eastern points, profiting thereby from its being the connection between the Southern Pacific and Rock Island.

The operating results for 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,028	1,028
Freight revenue	\$11,212,405	\$9,983,206
Passenger revenue	2,705,268	2,196,839
Total operating revenue	14,877,614	12,761,391
Maintenance of way expenses	2,835,948	2,290,443
Maintenance of equipment	2,843,958	2,528,666
Traffic expenses	241,017	120,726
Transportation expenses	4,219,057	3,542,638
General expenses	543,957	309,643
Total operating expenses	10,806,319	8,886,443
Net revenue from operation	4,066,295	3,874,948
Taxes	1,252,954	724,181
Railway operating income	2,812,601	3,149,989
Net railway operating income	2,910,006	2,993,415

The corporate income account is as follows:

Compensation for lease of road	\$689,186	\$4,135,114
Gross income	3,524,814	5,599,094
Deduct—Rent for leased roads	1,948,859	1,927,032
Total deductions from gross income	2,474,550	2,470,381
Net income	1,097,314	3,128,710
Dividend appropriations of income	1,097,314	2,000,000

## St. Louis-San Francisco

THE ST. LOUIS-SAN FRANCISCO is at present handling about 25 per cent less traffic than it handled over its lines in the early part of 1920. In no month up to and including May this year have the net ton miles even equaled the total for April, 1920, in which month the road had to contend with the outlaw strike. The gross revenues of the St. Louis-San Francisco itself (4,760 miles of the system's total of 5,253) in the first five months of 1921 were \$33,544,308 as compared with \$34,974,331 in the same months of 1920. Through reductions in operating expenses, chiefly in decreased expenses for maintenance of way and structures and for equipment, the company has been able to increase its net nearly 50 per cent over the net in the first part of last year. The net railway operating income for the first five months of 1921 was \$6,514,797; for the same period in 1920, it was \$4,350,552.

The St. Louis-San Francisco is being looked upon with increasing favor in financial circles, for which various reasons may be assigned. Probably the most interesting feature is the outlook for the cumulative adjustment mortgage bonds due in 1955 and the income bonds due in 1960. The former issue totals \$39,219,643; the latter \$35,192,000; both pay interest of 6 per cent if earned, the total interest charges for the two issues being \$4,464,699. This interest has been paid regularly since the reorganization in November, 1915. The total funded debt of the St. Louis-San Francisco is \$282,940,676, on which interest charges total \$13,999,286. It appears that even with the decline in traffic with which the system is at present confronted, it should be able in 1921 to meet these charges.

Except as concerns the present depression in business and the falling off in railway traffic resulting therefrom, the St. Louis-San Francisco has been characterized in recent years by a steady growth in traffic and by increased operating efficiency which this larger business has permitted. The increase in traffic has been reflected in progressively higher figures of revenue tons carried as well as of revenue ton mileage. The road has been able to secure a longer haul, an increasing car load and an increasing train load. Its passenger business has similarly improved, with a larger number of passengers carried, a greater passenger mileage, a larger average journey, a greater number of passengers per car and

per train. The year 1920 was the busiest in the company's history. It carried 24,718,345 revenue tons of freight; the ton mileage was 4,621,380,827. The average haul was 187 miles; the revenue car load 23.44 tons and the revenue train load 398 tons. For purposes of comparison it might be noted that the average car load in 1916 was but 19.24 tons and the average train load, but 337 tons.

Naturally the revenues have shown an increase in greater ratio than that of increase in traffic handled. The St. Louis-San Francisco did fairly well for the government during the period of federal control although it was unable to keep up this record during the guaranty period. It earned close to its standard return in 1918; in 1919 its net railway operating income exceeded the government's rental. In 1920, however, the net railway operating income ran nearer one-half the average for the test period. As far as 1920 was concerned, the St. Louis-San Francisco, despite its record traffic, higher rates and increased gross, was no exception from most of the railroads of the country. Except as far as 1920 is concerned, therefore, the road seems to have been making good in a rather decent manner. The way in which so far this year it is earning its fixed charges despite the small amount

products, which made up 12.44 per cent of the total traffic carried by the system. As compared with the 1919 totals, the increase in coal and petroleum products is especially noteworthy.

The decreased traffic so far this year has prevented the St. Louis-San Francisco from realizing the operating efficiency which characterized it during 1920. The savings which have permitted a greater net in the first five months of 1921 than in the first five months of 1920 have been in maintenance rather than in transportation expenses, which is, of course, the normal condition to be expected in the early part of a period of decreasing traffic. In May, the road—we refer to the St. Louis-San Francisco as a road of 4,761 miles rather than as the system of 5,253—secured a figure of net tons per train of 425 as compared with 448 in 1920 as a whole. It is to be noted that this figure is increasing each month; in January, the net tons per train were 387. The car load in May, 1921, averaging 24.5, compared with an average for all of 1920 of 26.1; the net ton miles per car day in May was 314; in 1920, 371. Despite the savings in maintenance of equipment, the Frisco has kept its hands on the bad order car situation in good shape. The percentage of bad order cars in May was 6.3, a decrease from preceding months. This average of 6.3 per cent compares quite favorably with the bad order car situation on the country's railroads as an average.

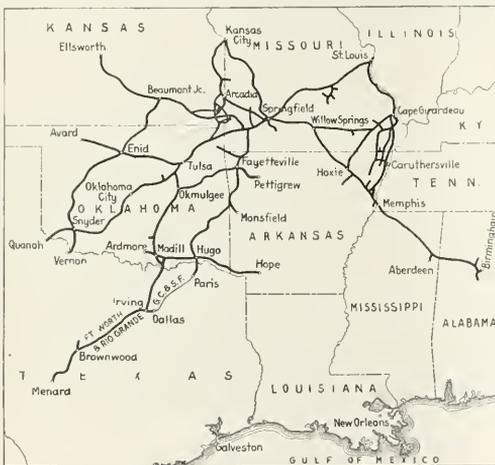
The St. Louis-San Francisco received from the government 33 of the standard light Mikado and 7 light switching locomotives and 3,500 double-sheathed, 40-ton box and 1,000 50-ton gondola cars. During 1920, the company also purchased from the War Department at a price of \$25,000 each, 10 of the Decapod locomotives originally built for the Russian government, making a total of 20 such locomotives in service at the end of the year. On the whole it would appear that the system has improved its situation as to equipment rather materially through these acquisitions.

The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated .....	5,253	5,252
Freight revenue .....	\$66,338,922	\$53,558,494
Passenger revenue .....	26,341,511	23,599,251
Total operating revenue .....	98,723,040	82,202,919
Maintenance of way expenses .....	18,389,537	13,051,814
Maintenance of equipment .....	23,501,539	16,085,236
Traffic expenses .....	995,110	709,440
Transportation expenses .....	44,116,333	31,852,973
General expenses .....	3,148,968	2,524,107
Total operating expenses .....	89,886,545	64,069,624
Net operating revenue .....	8,836,495	18,133,295
Taxes .....	3,533,514	2,789,445
Operating income .....	2,899,565	14,176,271

The corporate income account which follows shows that the company was able in 1920 to meet the interest charges on its cumulative adjustment bonds and on its income bonds and still have a balance of \$1,743,231 to be credited to profit and loss account:

	1920	1919
Standard return, January and February, 1920; full year 1919 .....	\$2,270,838	\$13,415,510
Guaranty period, March 1 to Aug. 31 .....	6,812,514	
Increased compensation on account of additions and betterments .....	705,685	
Difference between tentative standard return taking into account and standard return as finally certified January 1, 1918-December 31, 1919 .....	419,034	
Net operating income September 1 to December 1, 1920. (Less corporate expenses for months of January and February, 1920 .....	5,336,517	
Total other income .....	\$15,744,588	\$524,251
Gross income .....	\$16,342,086	\$13,939,762
Total deductions from income .....	515,650	758,574
Balance available for interest, etc. ....	\$15,826,406	\$13,181,188
Interest on fixed charge obligations .....	9,630,761	8,894,825
Interest on cumulative adjustment bonds .....	2,340,894	2,326,825
Interest on income bonds .....	2,111,520	2,111,520
Balance .....	1,743,231	152,052



The St. Louis-San Francisco

of traffic handled, seems to augur well for the future when business conditions are restored to a more normal level.

The St. Louis-San Francisco is a system of 5,253 miles, of which the St. Louis-San Francisco itself constitutes 3,545 miles; the Kansas City, Fort Scott & Memphis, 926; the Kansas City, Memphis & Birmingham, 290; the Fort Worth & Rio Grande, 235; the St. Louis-San Francisco & Texas, 134, etc. In the monthly operating statistics referred to above, the first three roads are regarded as one line; in the annual report the figures given are for the entire system. This total mileage of 5,253 miles, as will be seen from the map, is contained in eight states, the two having predominantly the greater part of the mileage being Missouri and Oklahoma. Considering the extent of the area traversed by the Frisco lines, it is natural that its traffic should be greatly diversified. In 1920, products of agriculture made up 13.44 per cent of the total tonnage; products of animals, 2.12 per cent; products of mines, 39.42 per cent; products of forests, 12.39 per cent and manufactures, 28.47 per cent. Of the products of mines, considerably over half was bituminous coal which constituted 24.24 per cent of the road's total tonnage. Of manufactures nearly half was refined petroleum and its

# Railroad Settlement Plan Announced by President

Railroad Indebtedness to Government to Be Funded and Roads  
Surrender Part of Claims to Expedite Adjustment of  
Some \$500,000,000 Due to Them

WASHINGTON, D. C.

THE PLAN FOR FUNDING the indebtedness of the railroads to the Railroad Administration for additions and betterments, and for expediting the settlement of the Railroad Administration's indebtedness to the railroads on a compromise basis by which the roads waive their claims on account of the inefficiency of labor, as outlined briefly in last week's issue of the *Railway Age*, was informally announced by President Harding on July 22 and on July 26 he sent a message to Congress proposing a method for providing the funds needed to pay the railroads without an additional appropriation for the Railroad Administration. Congress was asked to extend the authority of the War

Finance Corporation so that it may purchase the 10-year secured and negotiable promissory notes to be given by the railroads to the Railroad Administration and use them as the basis of credit by which to raise the additional funds which the Railroad Administration will need in order to settle its obligations to the roads, estimated at some \$500,000,000. Part of that amount it has available from its former appropriations.

President Harding in his message also suggested "the very promising possibilities of broadening the powers of the War Finance Corporation for the further relief of agriculture and live stock production."

## The President's Message to Congress

The President's message, in which he described the agreement reached with the railroad executives, was as follows: To the Senate and House of Representatives:

It is necessary to call the attention of Congress to the obligations of the government to the railroads, and ask your co-operation in order to enable the government to discharge these obligations. There is nothing new about them, but only recently has there come an understanding which seems well to justify a sincere endeavor to effect an early settlement. These obligations already have been recognized by the Congress, in the passage of the Transportation Act restoring the railroads to their owners, but previous recognition was made in the contract under which the railroads were operated by the government for the period of the World War.

The contract covering operation provided that the railways should be returned to their owners in as good condition as when taken over by the government, and the Transportation Act, recognizing that betterments and additions belong to capital account, provided that such sums as the railway companies owed the government for betterments and new equipment, added during the period of government operation, might be funded. There has been, at no time, any question about the justice of funding such indebtedness to the government. Indeed, it has been in progress to a measurable degree ever since the return of the railroads to their owners. It has been limited, however, to such cases as those in which final settlements with the railway administration have been effected. The process is admittedly too slow to meet the difficult situation which the owners of the railroads have been facing, and I believe it essential to restore railway activities and essential to the country's good fortune to hasten both funding and settlement.

Quite apart from the large sums owing to the government, which we are morally and legally bound to fund, the government admittedly owes the railway companies large sums on various accounts such as compensation, depreciation and maintenance. There has been a wide difference of opinion relating to the amount the government owes, due in the main to the claim of the owners that in spite of materials and hours of labor being estimated in proper relations to similar expenditure in the pre-war test period, the "inefficiency of labor" still left a wide difference between actual net-keep and the expenditure made during the government operation.

### A Moral and Contractual Obligation

In order to expedite settlement and funding an informal understanding, which is all that is possible or practical, has been reached, under which the railway claims based on the "inefficiency of labor" are to be waived to hasten complete and final settlements, without surrender of any rights in court in case there is failure to settle. I have no doubt that early, final and satisfactory settlements will be reached, since the policy of the railway administration already has been effective in finally settling the accounts of roads filing claims amounting to \$225,568,764, resulting in the payment to them of \$68,141,222.

The way now would seem to be clear to very early adjustment and relief, except for the fact that the railway administration, though possessing assets, does not command the funds necessary to meet what will be its admitted obligations.

There is no thought to ask Congress for additional funds. Perhaps \$500,000,000 will be necessary. The Railroad Administration has, or will have in the progress of funding, ample securities to meet all requirements if Congress only will grant the authority to negotiate these securities and provide the agency for their negotiation.

### Congress Asked to Extend Authority of War Finance Corporation

With this end in view you are asked to extend the authority of the War Finance Corporation so that it may purchase these railway funding securities accepted by the director general of railroads. No added expense, no added investment is required on the part of the government, there is no added liability, no added tax burden. It is merely the grant of authority necessary to enable a most useful and efficient government agency to use its available funds to purchase securities for which Congress already has authorized the issue, and turn them into the channels of finance ready to float them.

I can readily believe that so simple a remedy will have your prompt sanction. The question of our obligation can not be raised, the wisdom affording early relief is not to be doubted, and the avoidance of added appropriation or liability will appeal to Congress and the public alike.

The after-war distresses of two great and fundamental activities have been riveting the anxious attention of the country. One is the readjustment and restoration of agriculture, the other is the distress of our railway transportation system.

Pending proposals for relief and their discussion have already brought to the attention of Congress the very promising possibilities of broadening the powers of the War Finance Corporation for the further relief of agriculture and live stock production. This corporation has proven itself so helpful in the relief thus far undertaken, that I can not help but believe that its broadened powers, as have been proposed, to meet agricultural needs, will enable it wholly to meet the nation-wide emergency. This is an impelling moral obligation to American farming in all its larger aspects, and it will be most gratifying to have your early sanction.

### A Moral and Contractual Obligation

In the case of the railroads there is a moral and a contractual obligation, and your favorable action is no less urgent, and will no less appeal to public approval. Railway solvency and efficiency are essential to our healthful industrial, commercial and agricultural life. Everything hinges on transportation.

After necessary and drastic curtailments, after harrowing straits in meeting their financial difficulties, the railways need only this financial aid which the fulfillment of our obligations will bestow, to inaugurate their far-reaching revival. Its effects will be

felt in varied industries, and will banish to a large degree the depression which, though inevitable in war's aftermath, we are all so anxious to see ended.

I am appending herewith memoranda concerning the progress

### Plan Accepted by Railroads Last Week

The compromise proposed by the President, who was represented in the negotiations principally by Secretary Hoover, was accepted at a meeting of the member roads of the Association of Railway Executives in New York on July 20 by the adoption of a short resolution. The result was not announced by the executives but was reported to Mr. Hoover on the following day by Alfred P. Thom, general counsel for the association, and then communicated to the President.

Before undertaking to fund the indebtedness of the roads to the government on capital account, which the President was authorized to do in his discretion under the Transportation Act, he thought the railroads ought to facilitate the final settlement of the other accounts by removing the principal cause of controversy. In the settlements which the Railroad Administration has been making so far it has steadfastly refused, with the full approval of the President, to allow anything on account of inefficiency, but the controversy has delayed the negotiations and many roads have not yet filed their claims because of the length of time required to make up their case on that basis. The administration is anxious to close up the Railroad Administration, which is a rather expensive organization, at the earliest possible date, and it has also been anxious to pay to the railroads as promptly as possible the sums which it considers fairly due them, partly for the influence which it is believed such payments will have on the general business situation. In asking the roads to waive this feature of their claims the President

of railroad liquidation and revealing existing conditions which Congress will be interested to note, while considering the simple remedy proposed for the relief of the situation. The information is submitted by the director general of the railroads.

promised on his part to do everything possible to expedite the settlements. The President is convinced that there is some ground for the contention of the railroads that it was not sufficient to measure the government's maintenance obligation on the expenditures made without reference to the fact that even an equation for the increased rate of wages did not cover the same amount of work that was performed for the wage in the test period, but he has also taken the position that the government cannot go into a fine analysis of a question that is so difficult to prove quantitatively. He also recognizes that the railroads have not been fairly treated as a result of federal control in that the government drew very heavily on the service life of their rolling stock and other property, although he has been convinced as a result of his conferences on the subject in the last few weeks that the railroads have filed some rather extravagant claims. The President is now rather pleased with the whole situation.

Any railroad that is not willing to negotiate on the compromise basis will not receive the benefit of having its capital expenditures funded, but it is understood that the roads that have already settled will receive the same treatment that the others receive as to funding. Although it will require time to negotiate the individual settlements the funding operation will make it possible for the Railroad Administration to pay out undisputed items on account which will release some ready cash to some of the roads very soon.

The memorandum from Director General Davis regarding the progress of railway liquidation, which also describes the reasons for the adoption of the new plan, was as follows:

## Director General Outlines Progress of Railway Liquidation

The total number of federal controlled carriers, including subsidiary companies, was 425. The mileage of the federal controlled roads was 239,009.

The number of claims on final settlement filed with the director general up to July 15, 1921, was 184, the aggregate amount claimed being \$758,032,235. The mileage of the roads that have filed their claims aggregates 167,070.

The amount of claims settled by the director general up to and including July 15, 1921, aggregated \$225,568,764. These settlements represent some 43 per cent in number of the claims actually filed. The total amount paid in settlement was \$68,141,227.

The largest single disputed item in final settlement is the claim for undermaintenance of way and structures and equipment. The undermaintenance claims represent more than 50 per cent of the total amount of claims filed. Included in these claims for undermaintenance is the much discussed claim variously described as "inefficiency of labor," "ineffectiveness of labor," or "the difference in the cost of applied material as between the test and federal control periods," this item representing some 70 per cent or 75 per cent of the total undermaintenance claims.

Claims for inefficiency of labor have not been allowed by the Railroad Administration, not only, as contended by the Railroad Administration, because such claims are not contemplated by the standard contract, but they are of a too highly indefinite, speculative and contingent character to warrant consideration.

In addition to the claims on final settlement, covering the various items of dispute between the carriers and the administration, there are innumerable claims for loss and damage in the transportation of freight, fire and personal injury cases, and reparation claims growing out of freight rate controversies. These claims are being rapidly disposed of, and within a reasonable time the adjustment of same should be completed.

During the period of federal control there was expended by the Railroad Administration, on behalf of the carriers, some \$1,144,000,000 in additions and betterments, properly chargeable to capital account. Of this sum in excess of \$381,000,000 was used in the purchase of additional equipment, consisting of 100,000 box cars and 2,000 locomotives, and the expenditure for this equipment has been taken care of in equipment trust certificates now held by the Railroad Administration. This leaves about \$763,000,000 of additions and betterments which, if not funded, must be deducted from the amount due from the Railroad

Administration to the carriers in final settlement. An extension of the time in which these addition and betterment obligations could be paid, to such carriers as could give reasonable and satisfactory security, would enable the carriers recovering this extension to expend this amount of money in the much needed rehabilitation of their cars and locomotives, and apply the usual and necessary maintenance upon their way and structures, so that the national system of transportation could be equipped during the coming fall and winter to promptly and effectively perform its duty to the public in the way of prompt and efficient transportation.

### Bad Order Freight Cars and Locomotives

The percentage of bad order freight cars has not been below 5 per cent at any time during the past five years. During the year 1917, it ranged between 5.2 and 6 per cent. While there is no general agreement as to what the normal percentage should be, it seems to be generally accepted at from 5 to 6 per cent. The percentage of bad-order cars on July 1, 1921, was 15.6 per cent, or about 10 per cent above normal. The total number of freight cars in service at the present time is about 2,400,000, and 10 per cent of that number would be 240,000, which represents the excess or abnormal, bad-order condition of freight cars today.

The normal percentage of bad-order locomotives is understood to be 10 per cent. The percentage of bad-order locomotives on July 1 was 23.9 per cent, or 14 per cent above normal. The total number of freight and passenger locomotives (exclusive of switching) is about 50,000, and 14 per cent of this would be 7,000 locomotives, which represents the abnormal bad-order condition of locomotives at the present time.

### Deferred Maintenance

The amount of deferred maintenance at the present time has been conservatively estimated at \$400,000,000, of which \$200,000,000 represents maintenance of way and \$200,000,000 maintenance of equipment. That is, these are the amounts which should be expended on the railway properties to bring them up from their present physical condition to normal.

### Shortage in Number of Railway Employees

The total number of railway employees in the first quarter of 1921 was 1,691,471. This was less by 340,456 than the average

number in 1920, and less by 302,053 than in the first quarter of 1920.

This manifestly means an enormous increase of unemployment. If the railroads were in a position to resume their normal maintenance of ways and structures and equipment it is conservatively estimated that it would mean immediate employment of at least 200,000 workmen.

### Delayed Payments of Vouchers

Delayed payments of the current liabilities of the railroads, representing principally payments due for fuel and materials used in operation, have been conservatively estimated at not less than \$300,000,000.

The failure to pay these has involved great industrial distress and depression. It has meant the shutting down of many industries. If the railroads are paid what is due them by the government, they in turn can pay these debts, and the starting up of industry will be enormously assisted and promoted.

It is evident, if the products of our farms, of our forests, of our mines and of our other industries are to find a way to market, that our railroads must be adequately equipped to move them. Manifestly, from the foregoing statistics, they are not now so equipped. If there is to be a return, as we devoutly hope there soon will be, of normal business activity and prosperity, it must not be halted and obstructed by insufficient transportation, which is a fundamental condition of all commerce.

### Funding

By the terms of Section 6 of the Federal Control Act, the President was authorized to incur, on behalf of the carriers, indebtedness for additions and betterments. To create an indebtedness to be paid by others without limit in amount is, it must be admitted, a most unusual power and was justified only by the exigencies of war.

As a result of the exercise of this power, a large amount of indebtedness was created by the director general, and imposed upon these carriers, for additions and betterments, some of it assented to by them, and some of it not concurred in. This class of indebtedness, although on capital account, was made by the government immediately payable, instead of being arranged as long-time obligations.

If the carriers had been dealing with their own affairs in respect to additions and betterments, it is reasonable to suppose that they would not have undertaken to provide for these large capital requirements out of their current income, but would have followed their usual course, which would have been not to incur indebtedness, as to a large part of this amount, until they had succeeded in financing the capital required on long-term obligations. They could not do this under the conditions of federal control and of the war, for the two reasons: First, because

### Plan Is a Compromise

The plan as adopted is a victory for the Railroad Administration in that it practically recognizes its position on the interpretation of the provisions of the standard contract governing the government's obligation to maintain the railroad properties, but it does not foreclose any legal rights of the railroads if they desire to or can afford to delay a settlement while seeking to enforce their contentions in the courts. As a practical matter, however, the concession that they are making represents the surrender merely of a claim on which they have been given full notice that they would have the greatest difficulty in collecting. It is said in some quarters that the railroads have been led to prepare claims on what the administration terms an extravagant basis by the fact that Director General Hines publicly insisted on several occasions that any undermaintenance on some roads would be, if anything, more than offset by overmaintenance on other roads and there was a general impression that the administration intended to make some heavy counter-claims against the roads for overmaintenance. In view of such a position on the part of the Railroad Administration it would not be surprising if many of the railroads had prepared their claims on a "fighting basis."

All sorts of figures have been given as estimates of the amounts of money involved in the various phases of the proposed settlement but they cannot be stated exactly for several reasons. The Railroad Administration has made no

the matter was not legally within their control, and, second, because the entire investment market was necessarily absorbed by the government in securing war loans.

The question, therefore, arises what it is equitable and just to do now in regard to the adjustment of this indebtedness? The carriers insist that it should be funded by the government for a term of at least ten years.

This, they claim, is just, not only because of the circumstances above narrated under which the indebtedness was created, but for an additional reason in which the public, as well as the carriers themselves, have an interest. The carriers at the end of federal control had been out of the possession of their properties for more than two years. They were called upon at that time to resume the responsibility of furnishing transportation adequate to the needs of commerce. It must be admitted that they undertook the performance of this duty under adverse conditions. Their organizations had been broken up; much of the normal traffic of the various lines had been diverted to others; their rolling stock had been widely scattered by government management throughout the country, and their labor expenses had been enormously increased during federal control. This situation, they claim, put upon them the necessity of providing for abnormal expenses of operation at the very outset.

It is in the public interest that they should be able to perform successfully the duty of transportation. This will necessitate not only an adequate supply of cash for their abnormal expenses, due to the special conditions which have surrounded their properties, and for their current purposes, but also will necessitate the borrowing of large amounts of new capital, so as to keep their roads up to the requirements of the public, and for other capital purposes, such as the payment of maturing obligations. This they will have to do in a market disturbed by war conditions, and where there is a tremendous competition, as between themselves and with other industries, for the funds available for investment.

It is even more vital to the public than to the carriers, that the carriers should succeed in securing the money necessary to the successful performance of their transportation duties.

If the government refuses to fund this indebtedness which it created for the carriers, and for which the Transportation Act expressly provided, and if, in addition to their large capital requirements for other purposes, it is necessary for them to borrow also the amount they owe the government for additions and betterments, their problem and the public's problem in respect to transportation will be enormously embarrassed.

The indebtedness of the carriers to the government for additions and betterments incurred under the circumstances above mentioned, ought not to be allowed to constitute an additional complication and embarrassment in this situation. To avoid this, the government ought not to hesitate to carry this indebtedness for ten years, as provided in the Transportation Act, in view of the fact that the reason it was made immediately due grew out of the war and the public needs.

formal report since the expiration of federal control and the accounts between it and the roads are greatly complicated by many items as to which there are claims on both sides and as to which the conflicting figures cannot be checked in a short time. A large percentage of the claims have not been filed and those which have not been made will probably now be made on a more conservative basis than those filed heretofore, while presumably some roads have already been more conservative than others. Claims to the amount of \$758,000,000 have already been presented and on the basis of these Director General Davis has estimated that the aggregate would be about \$1,250,000,000, of which approximately \$700,000,000 to \$800,000,000 would be for undermaintenance and a large percentage of which would be based on the inefficiency of labor, although the claims do not state any definite item of that kind. If this factor is eliminated the claims might be reduced by \$400,000,000 to \$600,000,000, which would still leave a considerable margin of difference between the Railroad Administration's idea of what it fairly owes the roads and their idea of what they should receive. The amount which the government expects to pay has been variously stated at \$300,000,000 to \$500,000,000. Up to date it has settled with about 75 roads, on a basis which includes in some cases an allowance on account of undermaintenance. The administration is not adhering to Mr. Hines' contention that the government does not owe anything for undermaintenance. As a large proportion of the roads that have settled are the smaller roads perhaps the settlements already made

are not exactly typical but they include half a dozen or so of the larger systems.

#### Amount Involved in Funding Arrangement

The amount to be involved in the funding operation is somewhat more definite but is by no means exact. The Railroad Administration expended for capital improvements on the railroads about \$1,144,000,000, of which nearly \$400,000,000 was for the standard equipment, of which some has been paid for in cash and \$310,000,000 was funded by car trust certificates during Mr. Hines' administration. That left approximately \$763,000,000 for additions and betterment, part of which have been paid for in cash or offset against other accounts, and part of which has already been funded. A part will not be funded because some roads will prefer to pay up and some roads will not be able to furnish adequate security. It is estimated therefore that the government will accept the railroads' negotiable 10-year promissory notes, secured by mortgage bonds, for about \$500,000,000 to \$600,000,000.

#### Great Northern as Concrete Example

A concrete example of how the funding operation is expected to work in the case of a road that has already settled with the Railroad Administration is described in an application filed with the Interstate Commerce Commission by the Great Northern for a loan of \$15,000,000 to repay a loan of like amount maturing on September 1. The company states that it has made a settlement with the Railroad Administration in which the director general set off against the amount due the company \$16,997,642 due the government for additions and betterments. The company asked to have this amount funded but its request was denied on the ground of the general policy of the Railroad Administration and the limitation of its funds. The company had hoped to use this money to repay the loan. It has now been assured by the director general, the application states, that in the event the general policy shall be changed and funds are put at the disposal of the director general to enable him to fund the additions and betterments for the roads generally the director general will refund in whole or in part the \$16,997,642 which was withheld at the time of the settlement and the company was informed that plans were under consideration whereby funds were to be placed at the disposal of the Railroad Administration for the purpose of refunding for the railway companies whose properties were under federal control the amounts due to the United States on account of additions and betterments. The company therefore proposed that the loan of \$15,000,000 be made for five years with a provision that not to exceed \$10,000,000 of it should become due and payable when funds are received from the director general.

#### Requests Short Line Claims Be Expedited

President Robinson of the American Short Line Railroad Association called on the President last week and urged that the settlement of the short line claims for some \$25,000,000 also be expedited.

How soon action may be had in Congress on the President's recommendation appears somewhat uncertain. It bumped into politics at the start. A bill had been drafted by Secretaries Mellon and Hoover and Managing Director Meyer of the War Finance Corporation to extend the powers of the corporation with reference to railroads, agriculture and exports all at the same time but opposition developed promptly in the so-called "agricultural bloc" in the Senate and Senator Curtis of Kansas called at the White House on Monday to protest vigorously against coupling the relief for the farmers with the plan for financing the railroad settlements. Apparently the agricultural interests that have been complaining bitterly about high freight rates would rather have the railroad matter treated in a separate bill where they

could point to the railroads as attempting to "raid the Treasury." Probably the plan for combining the three plans in one bill was inspired in part by a desire to conciliate the various interests, but at any rate when the bill was introduced in the Senate on Tuesday by Senator Kellogg, as a substitute for the Norris bill to create a separate \$100,000,000 corporation to finance agricultural exports, the railroad part of it was left out, and it was stated that it would be put into a separate bill. The President's message was then referred to the Senate committee on interstate commerce which is expected to formulate a bill. Chairman Cummins of the Senate committee is out of the city. The Kellogg bill would authorize the War Finance Corporation to extend credits to promote agricultural exports. The War Finance Corporation has announced that it has on hand a cash credit with the Treasurer of the United States of \$403,827,771.

## Missouri & North Arkansas

### Discontinues Operation

OPERATION of the Missouri & North Arkansas will be discontinued on July 31, following a long series of difficulties which culminated recently in a strike of the employees. The company has been operating 364 miles of line between Joplin, Mo., and Helena, Ark., of which it owned 335 miles, and leased 29 miles. In addition, the company has an equal joint ownership in the Joplin Union Depot Company. The Missouri & North Arkansas was chartered in August, 1906, for 50 years, and was a reorganization of the St. Louis & North Arkansas, a line which had been constructed originally to tap a lumber region in southern Missouri and northern Arkansas. The reorganized company, however, was forced into a receivership in April, 1912, and has not been out of the jurisdiction of the courts since that time. Up to December 31, 1919, the property had incurred a deficit of \$956,482.

In March, 1920, C. A. Phelan, general manager of the road, was appointed receiver. Recognizing the need for drastic economy, the receiver ordered wage reductions effective February 1, 1921. The reductions were immediately contested by the employees of the company, who took the controversy before the Labor Board, and when the board remanded the dispute to conference between the management and representatives of the men the latter immediately notified officers of the road that the employees would walk out unless the wage reduction order was rescinded. This threat materialized on February 27, when the enginemen, trainmen, telegraphers and station agents left their work. The strike has been attended with considerable violence and has never been settled, although traffic was resumed on March 24, after a tieup due to destruction of the road's property by strikers. C. A. Phelan resigned as receiver on July 14 and J. G. Murray, traffic manager, was appointed in his place. The new receiver immediately encountered difficulty in raising the July payroll of \$28,000, and announced on July 22 that operation of the road would be discontinued. The abandonment of the Missouri & North Arkansas will leave five counties in northern Arkansas entirely without railroad facilities.

While the plan of the receiver for discontinuing operation has been definitely approved by the federal court for the eastern district of Arkansas, business men in the region served by the road are making a final effort to prevent suspension. A meeting was held at Harrison, Ark., on July 26, to launch a campaign to raise \$150,000 in order to guarantee the road's expenses for three months after July 31 in the belief that the crops and other products which will be moving at that time will enable the road to meet future expenses it will incur.

# New Cornwall Railroad Shop Has Walls of Glass

Small Line Gives Unusual Attention to Light and to  
Layout of Unusually Complete Plant

By J. C. Childs

The Austin Company, Cleveland, Ohio

THE CORNWALL RAILROAD recently placed in operation a new locomotive repair and machine shop at Lebanon, Pa., which is of special interest as indicating the tendency of small industrial railroads to reduce their labor costs of locomotive repair or do away with the expensive methods of contracting for repairs. The Cornwall Railroad operates 13 miles of line out of Lebanon, Pa. Its chief business is the transportation of iron ore from the Cornwall ore banks to the furnaces of the Bethlehem Steel Company at Lebanon. The very nature of its business makes this line practically an industrial road and it is in fact a subsidiary of the Bethlehem Steel Company's local Lebanon interests.

The road's motive power consists of 13 locomotives vary-

ing in weight and size from the old 50-ton locomotive now used in passenger service to the modern 2-8-0 type locomotive weighing 165 tons. In addition to maintaining its own motive power the Cornwall Railroad also repairs all of the industrial locomotives used at the furnaces around Lebanon.

The road's engine terminal consists of a 10-stall square engine house and the locomotive repairs were formerly handled in a small back shop of frame construction, adjoining two stalls of the engine house. All of the work was done by hand with the use of small jacks so that a de-wheeling operation loomed up formidably as a day's job for the entire crew. Repairs to the road's heavy steel ore cars of 50 tons capacity are also made at the terminal so that in selecting the site for the new locomotive repair shop consideration was also given to improved conditions for the repair of cars.

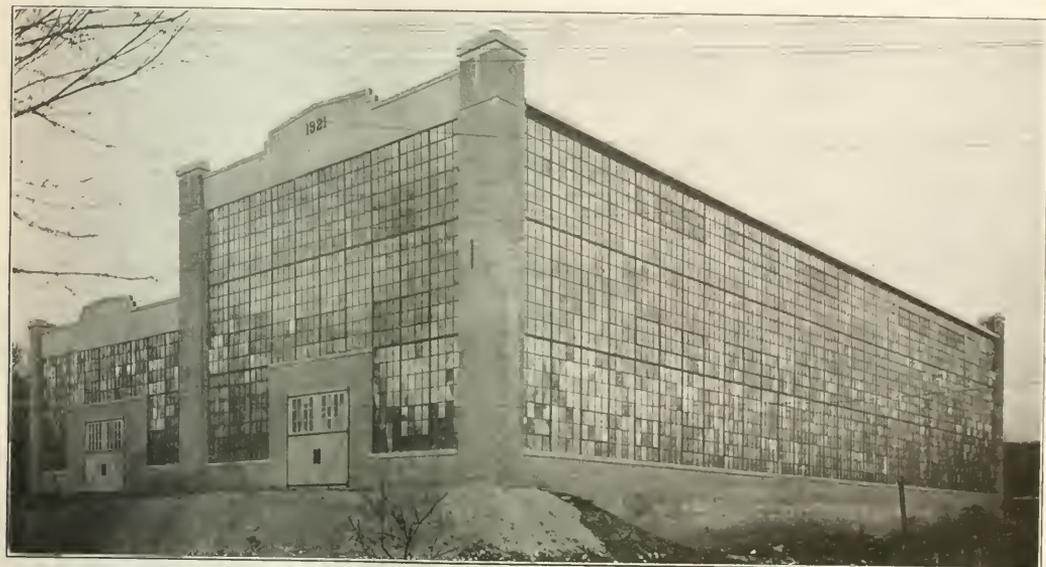
The site finally selected is just back of and to one side of the present engine house so that when a two-stall addition

is made to the engine house the outside stall track will become a through track leading into the new locomotive repair shop. The old locomotive repair shop becomes the car repair shop, and, with the blacksmith and forge shop located midway between the two departments, the whole becomes a compact and efficient arrangement for the work to be done.

The repair shop is 110 ft. wide by 162 ft. long and consists of a 60-ft. erecting aisle and a 50-ft. machine shop aisle. Owing to the many classes and the number of locomotives handled a longitudinal shop seemed the only logical one. The erecting aisle has two tracks on 25 ft. center, each with a pit and gives a track capacity for four of the largest locomotives at one time. The present tendency is for in-

creasingly heavy locomotives, so that instead of the old style burdensome and expensive drop pits one track is fitted with a four jack, 200-ton, Whiting hoist, which, with the use of shop tracks, allows the full use of pit capacity. The erecting aisle is also served by a 35-ton crane operating the full length of the building.

Due to the limited amount of money available it was decided to use one end of the erecting aisle for the heavy machine work so that it could all be handled by the crane, which accounts for stubbing the two pit tracks instead of running them clear through the shop. The wheel press, drill and lathe are all located in this end, leaving the machine aisle free for lighter operations not necessitating the use of a crane.

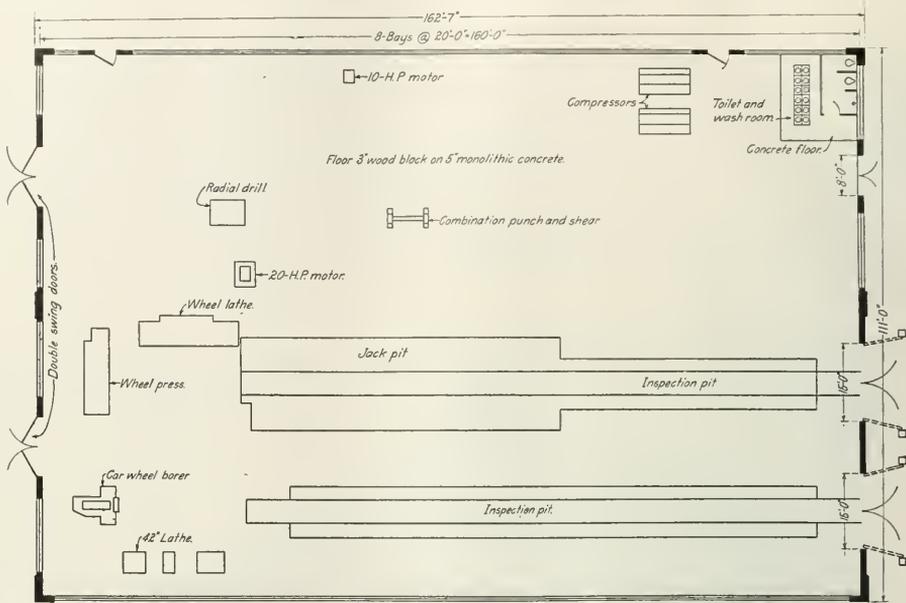


The Walls of the Shop Building Are Almost Entirely of Glass

ican Railway Shop Systems recommended about 2,500 sq. ft. per pit. The Cornwall shop was not designed for complete rebuilding operations so the area of machine shop space of 3,000 sq. ft. per working pit seems unusually ample for the work contemplated, and in fact the railway officers have found that the unobstructed floor greatly facilitates the work.

shop of the Pennsylvania recently built at Logansport, Ind. The heating is with a hot blast system conducted by conduits from a central boiler plant adjoining the shop and is so arranged that recirculating air can be used if desired.

The plant has now been in operation about three months but has already proved its fitness for the work of reducing



Plan of the Cornwall Shop

The Cornwall shop contains 13,000 sq. ft. of sash area, or nearly one sq. ft. of sash to every sq. ft. of floor area. This gives practically daylight working conditions in all parts of the building.

The shop is lighted artificially by high power nitrogen lamps, following in general the layout used in the erecting

de-wheeling operations from five to six hours to less than a quarter of that time. It was designed, built and equipped by The Austin Company, Cleveland, Ohio, under the direct supervision of its Philadelphia office, and under the general supervision of John Wintersteen, master mechanic of the Cornwall Railroad.



The Interior of the Shop Is Almost as Light as Outdoors

# Expenditures of the Railways for Labor and Material

Over a Billion Dollars' Worth of Material Used to Maintain and Operate Class I Roads in 1920

THE FIRST COMPLETE segregation of all expenditures for labor, fuel and other materials, irrespective of the primary accounts, has recently been prepared by the Bureau of Railway Economics from information in the files of the Interstate Commerce Commission for the fiscal years from 1912 to 1920, inclusive.

These data show that from less than \$40,000,000 in 1912 and less than \$500,000,000 in 1917, the expenditures of the Class I railroads of the United States for materials required for the maintenance and operation of the properties increased until they exceeded \$1,000,000,000 in 1920. In addition to these expenditures, the railroads normally have spent about \$500,000,000 annually at pre-war prices on additions and betterments chargeable to capital account, of which probably considerably more than half was accounted for by material purchases.

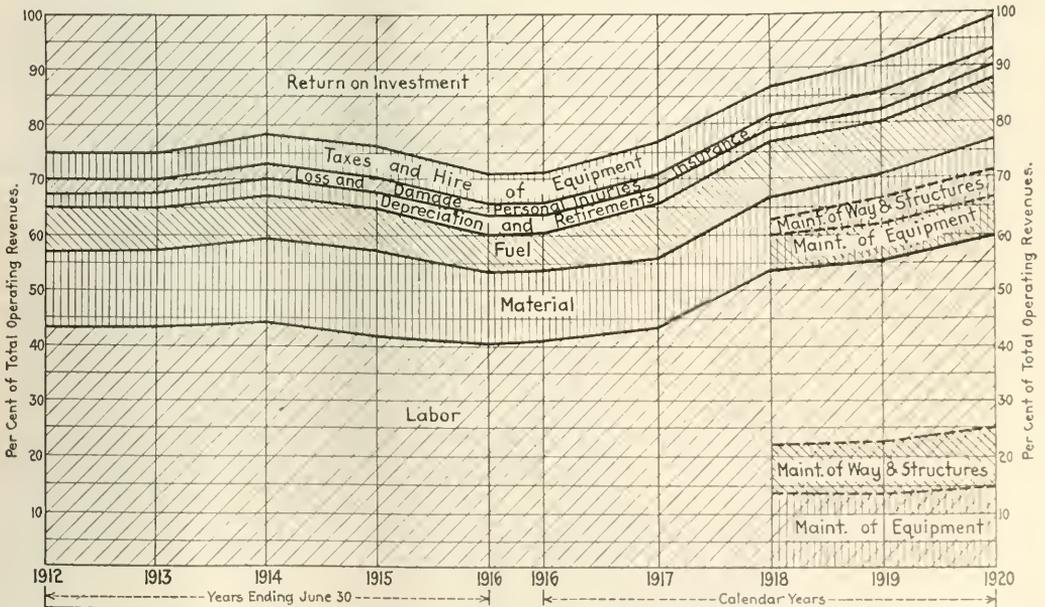
From a low point in 1915 the total expenditure for labor by the Class I railroads has increased from \$1,190,000,000 to \$3,698,000,000 in 1920 and the locomotive fuel bill has increased from a low point of approximately \$209,000,000 in 1915 to \$673,000,000 in 1920.

The total amounts of these three major classes of operating expenses of the Class I roads are given for each fiscal year during the period in Table I, which also shows the operating expenses incurred through loss and damage, injuries to persons, and insurance, as well as the deductions from net operating revenues for taxes, hire of equipment and joint facility rentals.

The table also shows the proportion of total operating

revenues which went to meet each class of expenditure during each of the fiscal years in the period. This information is shown graphically in Fig. 1, which presents a striking picture of the rapid decline in the proportion of operating revenues available for interest and dividends since 1916, due largely to the correspondingly rapid increase in the proportion of revenues required to meet the payroll. From 20.8 per cent in the fiscal year ending December 31, 1916, the total cost of labor has increased until 59.9 per cent of the operation revenues were required to meet the payroll in 1920. Of only less importance than the increased payrolls are the increases in the expenditures for material and supplies and locomotive fuel. From 12.5 per cent in 1916, the expenditures for materials and supplies increased until they amounted to 17.3 per cent of the total operating revenues in 1920, while expenditures for locomotive fuel increased from 7 per cent to 10.9 per cent of the total operating revenues during the same period. The result of these large proportionate increases in the principal items of operating expense, together with a similar though relatively less important increase in loss and damage, is that the return on the investment, which was 28.9 per cent of total operating revenues in 1916 has steadily declined until but one per cent of the total operating revenue was available for interest and dividends in 1920.

While the increase in loss and damage has not played a leading part in wiping out the proportion of total operating revenues available for interest and dividends, an inspection of the table shows that there has been an exceedingly large increase in the amount paid out on this account. Rising



NOTE.—The proportion of labor and material shown for maintenance of way and structures and maintenance of equipment are approximately but not strictly correct.

Fig. 1.—Proportionate Distribution of Railway Operating Revenues

TABLE I—DISTRIBUTION OF RAILWAY OPERATING REVENUES—CLASS I ROADS, 1912 TO 1920  
(Excludes the Returns of Switching and Terminal Companies)

Item	Fiscal year ended June 30					Calendar year ended December 31				
	1912	1913	1914	1915	1916	1917	1918	1919	1920	
Total operating revenues.....	\$2,805,006,544	\$3,108,361,215	\$3,031,326,963	\$2,871,563,047	\$3,381,397,866	\$3,596,865,766	\$4,014,142,748	\$4,880,953,480	\$5,144,795,154	\$6,171,493,301
Labor.....	1,209,716,686	1,337,644,135	1,190,228,785	1,366,000,518	1,468,576,394	1,739,482,142	2,613,813,351	2,843,128,432	3,608,216,351	
Fuel (locomotive).....	224,516,628	241,599,314	235,231,481	208,968,991	226,880,084	250,544,862	474,174,792	500,225,905	672,891,964	
Loss and damage.....	33,576,332	38,821,570	42,001,909	37,533,656	30,669,002	44,155,962	46,683,270	122,032,696	122,032,696	
Injuries to persons.....	27,068,802	29,765,431	31,954,890	26,425,854	26,889,717	39,988,221	33,440,032	37,314,145	50,682,684	
Insurance.....	7,048,666	7,164,176	7,495,097	7,495,097	10,365,180	13,948,700	11,518,205	15,884,079	15,884,079	
Depreciation and retirements.....	71,123,327	84,783,585	91,284,870	101,036,360	117,411,683	119,263,705	119,263,705	126,292,105	145,232,339	
Material, supplies and miscellaneous.....	336,045,450	432,700,102	458,111,430	447,199,349	442,672,635	447,316,153	489,112,049	501,712,094	1,053,769,900	
Uncollectible railway revenues.....	.....	.....	.....	649,917	806,747	791,486	700,091	613,821	916,889	
Taxes.....	109,445,407	118,386,839	135,572,979	133,276,330	145,571,034	157,113,372	212,920,095	223,175,379	278,868,668	
Hire of equipment and joint facilities rents.....	27,993,943	31,312,425	33,371,353	39,308,340	41,471,979	30,128,668	30,128,668	36,597,480	56,751,014	
Return on investment.....	708,484,383	787,610,435	661,018,147	683,104,833	984,872,959	1,040,084,517	934,068,770	638,568,603	458,984,953	
Distribution Expressed in Cents per Dollar										
Labor.....	43.1	44.1	41.5	48.4	43.3	40.8	43.3	53.6	59.9	
Fuel (locomotive).....	8.0	7.8	7.8	7.3	6.7	7.0	9.8	10.2	10.9	
Loss and damage.....	1.2	1.3	1.4	1.3	0.9	1.1	1.3	2.3	2.0	
Injuries to persons.....	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.8	
Insurance.....	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	
Depreciation and retirements.....	2.5	2.7	3.0	3.5	3.5	3.3	2.9	2.4	2.4	
Material, supplies and miscellaneous.....	13.8	13.9	15.1	15.6	12.8	12.5	12.2	13.1	17.3	
Taxes.....	3.9	3.8	4.5	4.6	4.2	4.4	5.3	4.6	4.5	
Hire of equipment and joint facilities rents.....	1.0	1.0	1.0	1.2	1.1	1.1	0.9	1.1	1.0	
Return on investment.....	25.2	23.3	23.8	29.1	28.9	23.3	23.3	31.1	31.6	

\*Includes uncollectible railway revenues.

from about \$33,600,000 in 1912 to \$42,000,000 in 1914, and then decreasing to less than \$31,000,000 in 1916, the cost of loss and damage increased to over \$122,000,000 in 1920, an amount almost four times as great as that in 1916. Proportionately this is by far the largest increase shown in any of the classes under which railway expenditures are grouped in the table.

Maintenance of Way and Structures

A similar classification of the expenditures for maintenance of way and structures and maintenance of equipment will be found in Tables II and III. In Table II it will be noted that from an average annual expenditure of over \$209,900,000 for the test period, the expenditure for labor employed on maintenance of way and structures has increased to practically \$577,700,000 and that whereas the cost of labor accounted for 54.71 per cent of the total charges to maintenance of way and structures during the test period, last year it amounted to 60.09 per cent.

As might be expected, this proportionate increase in the

TABLE II—COMPARISON OF SELECTED PHYSICAL UNITS APPLIED AND TOTAL CHARGES TO MAINTENANCE OF WAY AND STRUCTURES ACCOUNT  
For All Class I Roads of the United States Answering Bureau of Railway Economics' Questionnaire, Form 1, Issued March 21, 1921 (93 per cent of Total)

Item	Average per annum test period	Calendar year	
		1918	1920
Ties:			
1 Switch ties, board measure—feet ..	172,689,571	160,024,789	176,079,389
2 Bridge ties, board measure—feet ..	55,625,964	45,400,555	49,644,851
3 All other ties, number .....	83,885,109	69,327,243	73,398,922
4 Total cost of ties.....	58,135,355	62,886,865	84,156,035
Rails:			
5 Total tons new and second hand rails charged to M. of W. & S.....	2,041,676	1,615,963	2,027,159
6 Total cost of rail.....	\$54,166,631	\$50,836,964	\$69,961,049
Ballast:			
7 Total yards applied ..	17,065,599	14,796,252	17,518,791
8 Total cost .....	\$5,506,061	\$6,472,151	\$9,481,545
9 Average cost per yard .....	\$0.323	\$0.437	\$0.541
Total Charges to Maint. of Way and Struct.:			
10 Cost of labor.....	\$209,906,144	\$401,331,400	\$439,140,731
11 Cost of material.....	133,498,901	155,700,294	225,449,765
12 Retirements .....	16,856,749	17,338,549	26,612,381
13 Miscellaneous .....	23,437,613	42,352,374	36,502,426
14 Total cost M. of W. and struct.....	383,699,407	616,742,617	727,705,311
Ratios:			
15 Cost of labor.....	54.71%	65.07%	60.35%
16 Cost of material.....	34.79	25.25	30.98
17 Retirements .....	4.39	2.81	3.66
18 Miscellaneous .....	6.11	6.87	5.01
19 Total cost maint. of way and struct.....	100.00%	100.00%	100.00%
20 Aver. miles of road operated .....	216,365.42	218,396.01	218,470.67
21 Aver. miles of all tracks operated .....	334,802.64	347,893.44	350,080.19
22 Total train miles (excl. work trains) .....	1,111,318,695	1,093,777,083	1,043,965,272

expenditure for labor has been accompanied by a proportionate decrease in the expenditure for material. While the actual expenditure for material has increased from an average of \$133,500,000 annually during the test period to \$285,193,000 in 1920, this increase has been considerably less rapid than that in the payroll and the proportion of the amount paid out for material to the total charges to maintenance of way and structures has decreased from 34.79 per cent during the test period to 29.67 per cent in 1920. The notable fact in this connection is the high proportion of labor and the low proportion of materials during 1918, when labor accounted for 65.07 per cent of all charges for maintenance of way and structures and material for 25.25 per cent, al-

though the actual expenditures for material during this year was considerably larger than the average for the test period.

It will be noted that the expenditure for rail, ties and ballast, which amounted to \$202,038,000 in 1920, was 71 per cent of the total expenditures for materials used in the maintenance of way department and that during the test period the average yearly expenditure for these materials

Maintenance of Equipment

The outstanding feature of Table III is the large increase in the total expenditures for maintenance of equipment during 1918, 1919 and 1920 as compared with the average annual expenditure during the test period. From an average of creased to over \$1,000,000,000 in 1918. In 1919 there was a further increase to \$1,145,000,000, or about 11 per cent over

TABLE III—COMPARISON OF COST OF REPAIRS TO LOCOMOTIVES, FREIGHT CARS, PASSENGER CARS AND TOTAL MAINTENANCE OF EQUIPMENT CHARGES, DIVIDED BETWEEN LABOR, MATERIAL, DEPRECIATION, RETIREMENTS AND MISCELLANEOUS

For All Class 1 Roads of United States Answering Bureau of Railway Economics' Questionnaire, Form 2, Issued March 21, 1921—(93 Per Cent of Total)

Item	Average per annum test period	Calendar year			Ratios—Per cent			
		1918	1919	1920	Average per annum test period	1918	1919	1920
<b>Cost of Maintenance:</b>								
<b>Locomotives</b>								
1 Repairs, labor	\$115,711,712	\$298,395,276	\$299,560,321	\$395,786,062	57.05	67.86	63.53	64.95
2 Repairs, material	56,352,053	100,076,355	120,948,457	150,396,981	27.78	22.76	25.65	24.68
3 Depreciation	22,704,837	27,359,869	32,969,154	35,648,556	11.19	6.22	6.99	5.82
4 Retirements	3,639,190	Cr. 127,204	1,417,713	475,749	1.80	Cr. 0.03	0.30	0.08
5 Miscellaneous	4,439,995	13,992,111	16,644,139	27,043,328	2.18	3.19	3.53	4.44
6 Total maintenance, locomotives	202,837,787	439,696,907	471,559,784	609,360,716	100.00	100.00	100.00	100.00
<b>Freight Cars</b>								
7 Repairs, labor	92,837,992	231,074,835	249,701,127	316,591,538	40.25	54.73	51.87	50.51
8 Repairs, Material	70,816,665	120,927,034	147,903,625	185,084,225	30.71	28.64	30.73	29.53
9 Depreciation	49,303,553	58,497,974	64,231,657	74,033,791	21.38	13.86	13.35	11.82
10 Retirements	11,613,589	5,837,164	4,268,467	1,159,116	5.04	1.38	0.89	0.19
11 Miscellaneous	6,060,542	5,849,693	15,253,192	49,477,956	.62	1.35	3.16	7.36
12 Total maintenance, freight cars	230,634,341	422,186,700	481,378,068	626,746,636	100.00	100.00	100.00	100.00
<b>Passenger Cars</b>								
13 Repairs, labor	21,123,286	39,068,922	46,595,714	57,908,224	44.99	55.11	53.78	54.39
14 Repairs, material	13,121,344	17,633,461	23,844,666	29,318,936	27.93	24.88	27.52	27.54
15 Depreciation	9,192,090	9,690,125	10,553,430	10,753,718	19.58	13.66	12.18	10.10
16 Retirements	1,073,355	531,699	166,877	592,083	.99	0.74	0.19	0.56
17 Miscellaneous	2,449,451	3,970,247	5,476,752	7,884,667	5.19	5.60	6.33	7.41
18 Total maintenance, passenger cars	46,950,326	70,884,454	86,637,739	106,462,628	100.00	100.00	100.00	100.00
<b>Maintenance of Equipment</b>								
19 Labor	252,781,140	621,002,474	651,439,800	950,055,733	47.66	60.29	56.90	57.16
20 Material	150,680,017	258,071,229	314,274,845	391,924,437	28.41	25.05	27.45	26.35
21 Depreciation	84,940,739	100,747,158	112,728,081	124,039,059	16.02	9.78	9.85	8.34
22 Retirements	17,888,435	6,629,697	6,675,434	4,858,588	3.37	0.64	0.58	0.33
23 Miscellaneous	24,078,621	43,647,286	59,753,922	116,251,864	4.54	4.24	5.22	7.82
24 Total maintenance of equipment	530,368,952	1,030,097,844	1,144,872,082	1,487,129,681	100.00	100.00	100.00	100.00
<b>Operating Statistics:</b>								
41 No. of locomotives owned or leased	58,059	59,414	60,500	61,129	.....	.....	.....	.....
42 No. of passenger cars owned or leased	2,140,373	2,202,921	2,209,093	2,219,673	.....	.....	.....	.....
43 No. of passenger cars owned or leased	49,526	50,952	50,515	50,750	.....	.....	.....	.....
44 Locomotive-miles (incl. switching)	1,561,027,831	1,602,602,416	1,482,439,956	1,623,600,543	.....	.....	.....	.....
45 Freight car-miles (incl. caboose)	20,763,335,304	21,372,205,721	20,115,471,803	21,725,229,623	.....	.....	.....	.....
46 Passenger car-miles	3,156,414,488	3,032,100,087	3,246,067,926	3,414,352,123	.....	.....	.....	.....

amounted to over 77 per cent of the total material expenditures.

In this connection the fact should not be overlooked that these figures deal only with maintenance expenditures, and that normally the amount spent on additions and betterments

\$530,370,000 during the test period these expenditures increased to over \$1,000,000,000 in 1918. In 1919 there was a further increase to \$1,145,000,000, or about 11 per cent over 1918, while in 1920 the total cost of equipment maintenance amounted to \$1,487,000,000 or practically 30 per cent more than in the preceding year.

A similar comparison of the cost of maintaining locomotives, freight cars and passenger cars, each considered separately, shows that the total increase in the expenditure for

TABLE IV—PROPORTIONATE EXPENDITURES FOR LABOR AND MATERIALS ON MAINTENANCE OF EQUIPMENT

Item	Locomotives		
	Average per annum, test period	1918	1919
Labor	67.2	74.9	71.2
Material	32.8	25.1	28.5
<b>Freight Cars</b>			
Labor	56.7	65.6	62.8
Material	43.3	34.4	37.2
<b>Passenger Cars</b>			
Labor	61.6	68.8	66.2
Material	38.4	31.2	33.8
<b>All Equipment</b>			
Labor	62.7	70.6	67.4
Material	37.3	29.4	32.6

to permanent way and structures, chargeable to capital account, is equal to if not greater than the expenditures chargeable to operating expenses. Approximately the same division between labor and material as exists in the case of the maintenance accounts also applies in the case of the capital expenditures; hence it is evident that the amount of materials shown in Table II represents only about one-half of the average annual purchases for use in track and other permanent railway structures.

TABLE V—AVERAGE UNIT COST OF EQUIPMENT MAINTENANCE

Item	Locomotives							
	Average per annum, test period		1918		1919		1920	
	Per loco.	Per loco. mile	Per loco.	Per loco. mile	Per loco.	Per loco. mile	Per loco.	Per loco. mile
Labor and material	\$2.964	\$0.101	\$6.707	\$0.249	\$6.951	\$0.284	\$8.935	\$0.336
Total	3.494	.139	7.401	.274	7.794	.318	9.968	.375
<b>Freight Cars</b>								
Labor and material	Per frt. car	Per car mile	Per frt. car	Per car mile	Per frt. car	Per car mile	Per frt. car	Per car mile
Labor and material	\$76.50	\$0.608	\$159.80	\$0.716	\$180.00	\$0.822	\$376.00	\$3.033
Total	\$107.80	.611	\$191.70	.720	\$217.90	.824	\$382.40	3.029
<b>Passenger Cars</b>								
Labor and material	Per pass. car mile	Per car mile	Per pass. car mile	Per car mile	Per pass. car mile	Per car mile	Per pass. car mile	Per car mile
Labor and material	\$691	\$0.011	\$1,113	\$0.019	\$1,389	\$0.022	\$1,711	\$0.026
Total	943	.015	1,991	.023	1,798	.027	2,098	.031

locomotive maintenance has been proportionately considerably greater than that for either freight or passenger cars and that the increase in the expenditure for the maintenance of freight cars has been proportionately much greater than that for pas-

senger cars. Comparing these expenditures in 1920 with the average during the test period, the increase in locomotive maintenance has been 200 per cent while the increases in freight and passenger car maintenance have been 172 per cent and 127 per cent, respectively.

Table III also shows the ratios of the expenditures for labor, material, depreciation, retirements and miscellaneous expenditures, to the total maintenance expenditures for locomotives, freight cars and passenger cars and for all classes of equipment combined. A study of these ratios discloses the fact that in 1918 there was a large proportionate increase in the amount paid out for labor by the mechanical department, which was accompanied by a considerable reduction in the proportionate expenditure for material. It will be seen that the proportion of labor to total expenditures still remains considerably higher than during the test period, while the proportion of material is still low.

A clearer conception of the changes in the relationship of these two great classes of direct expenditures may be obtained by considering them separately from the other items,

which have little direct relation to the actual condition of the equipment in service. These relationships for each class of equipment and for the department as a whole are shown in Table IV.

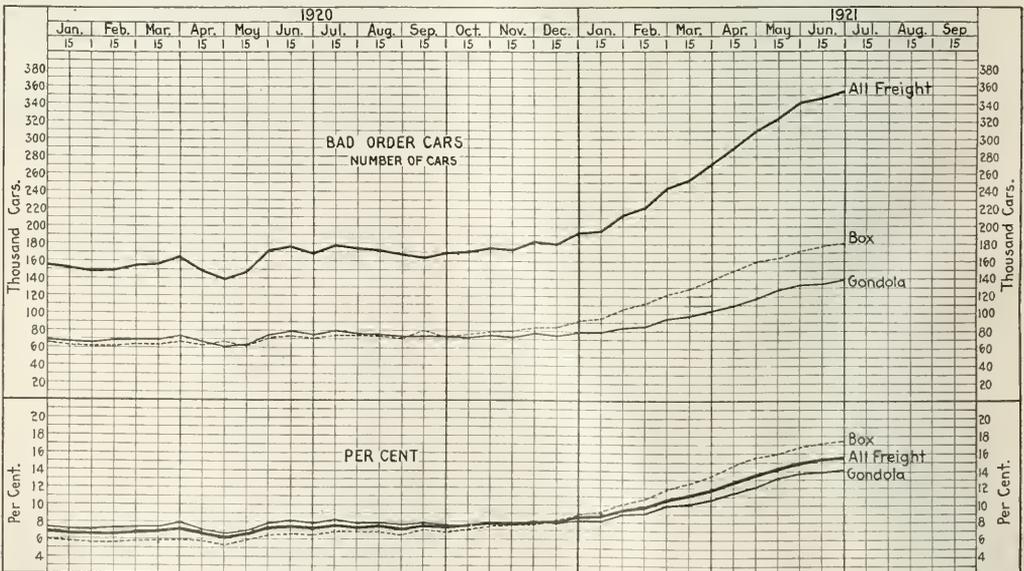
The direct and total annual expenditures per unit of equipment and per locomotive and car mile are shown in Table V. The direct cost of maintenance (labor and material) has increased from an average of \$2,964 per locomotive per year during the test period to \$8,935 per locomotive in 1920, while the total cost of maintenance increased from an average of \$3,494 per locomotive per year during the test period to \$9,968 in 1920. For the same period the direct cost of maintenance per locomotive mile has increased from 10.1 cents to 33.6 cents and the total cost from 12.9 cents to 37.5 cents. Freight car maintenance has increased from an average of \$76.50 per car per year to \$226.00 for labor and material and from \$107.80 total charges to \$282.40, while the average expenditure per passenger car has increased from \$691 for material and labor to \$1,719 and from \$948 total charge to \$2,098 during the same period.

### Bad Order Cars

Considerable space has been given in the columns of the *Railway Age* recently to the bad order car situation. The figures which follow give the details as to bad order box,

gondola and all cars from January 1 to July 1, the latest figure reported. On the chart the number and per cent of bad order cars are plotted from January 1, 1920, to date.

Date	BAD ORDER CARS									
	Box Cars		Gondola Cars		All Cars			Total On Line	Bad Order	Per Cent
	Bad Order	Per Cent	Bad Order	Per Cent						
January 1	91,450	8.9	78,273	8.3	2,231,173	191,234	8.5			
January 15	94,325	9.2	78,635	8.3	2,252,432	194,113	8.6			
February 1	105,056	10.1	84,065	8.9	2,265,502	213,180	9.4			
February 15	111,134	10.7	85,694	9.0	2,267,238	220,420	9.7			
March 1	122,595	11.9	94,863	9.9	2,273,033	243,586	10.7			
March 15	128,183	12.5	97,514	10.1	2,268,585	252,824	11.1			
April 1	138,218	13.4	103,176	10.7	2,281,986	270,319	11.8			
April 15	149,810	14.6	109,391	11.4	2,275,484	289,771	12.7			
May 1	159,856	15.5	117,791	12.1	2,289,282	309,971	13.5			
May 15	164,429	15.9	127,046	13.1	2,288,242	324,969	14.2			
June 1	172,593	16.7	133,500	13.6	2,301,749	341,337	14.8			
June 15	177,123	17.1	134,637	13.7	2,302,724	346,861	15.1			
July 1	180,544	17.4	138,144	14.1	2,300,155	354,611	15.4			



Bad Order Cars as Reported Semi-Monthly, January 1, 1920 to July 1, 1921

# Operating Revenue and How It Was Expended

A Review in Colored Charts of the Figures and Changed  
Conditions from 1912 to 1920

**I**N 1912, of each dollar of operating revenue of the Class I railroads, those earning over \$1,000,000 gross annually, 43.1 cents went to labor; 8 cents for fuel; 13.8 cents for material, supplies, etc., and 25.2 cents for return on the investment. In 1920, under the new order of things, labor received 59.9 cents of each dollar of operating revenue; there was 10.9 cents spent for fuel; 17.3 cents for materials, supplies, etc., and but one cent for return on investment. The gross revenues in 1912 were \$2,805,006,544; in 1920, \$6,171,493,301. The payments to labor in 1912 were \$1,209,716,686; in 1920, \$3,698,216,351. On the other hand the return on investment which in 1912 was \$708,484,383; in 1920 was but \$61,928,626. Interest charges in 1920 approximated \$450,000,000, to which must also be added a sum, not yet determined, representing dividend payments. The difference between the return on the investment, as previously noted, \$61,928,626, and the amount paid in interest and dividends, represents what the government had to make up in the form of standard return or guaranty or else was paid from surplus earned by the railroads in former years.

## Shown in Colored Charts

These facts and considerable additional data of like importance are presented on the two following pages in the form of colored charts which have been reproduced from similar charts issued by the Bureau of Railway Economics. The difficulty of analyzing the railway situation and in arriving at proper conclusions in the matter lies in no small measure in the inability to visualize the many imposing figures which have been compiled and presented. It is sufficiently difficult to visualize the relationships as between the various classes

of expenditures in a single year; it is still more difficult to see the relationships as between a series of years. These charts will assist in permitting that visualization not only for 1920 but for the period from 1912 to 1920.

## Railway Operating Revenue and How It Was Expended

There are two charts given. One is entitled, Railway Operating Revenue and How It Was Expended, 1912-1920. This chart shows in dollars the gross revenues for each year; the operating expenses, taxes and rents; and the amounts spent respectively for: Labor; fuel; materials, supplies, etc.; loss and damage, injuries to persons and insurance; depreciation and retirements; taxes; hire of equipment and joint facility rents, and finally the diminishing figure representing return on investment.

## Distribution of Each Dollar of Railway Operating Revenues

The other chart shows the same relationships in terms of the distribution of the dollar. It is entitled, Distribution of Each Dollar of Railway Operating Revenues, 1912-1920.

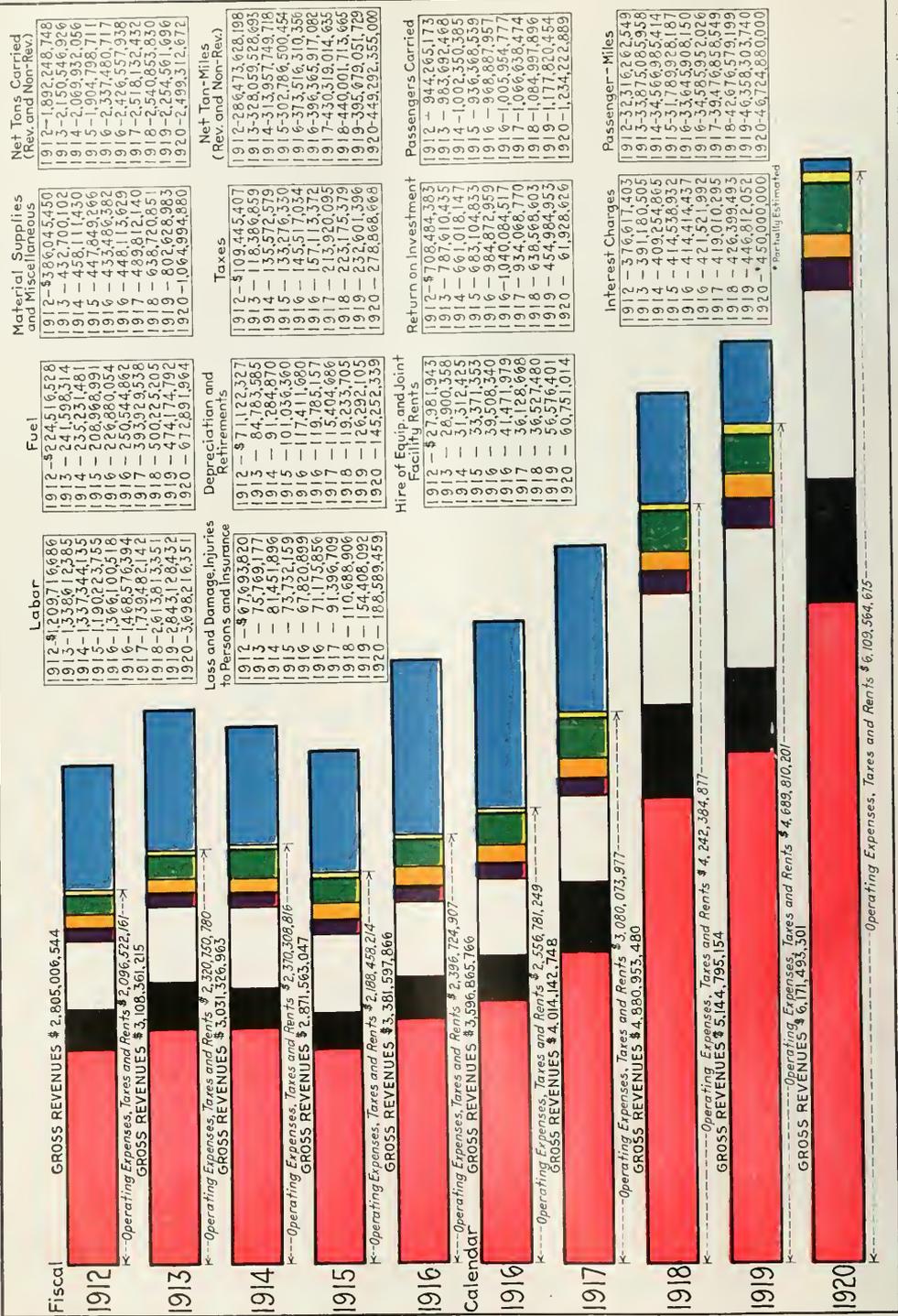
To assist the reader to follow the situation as between the several years there are also shown the actual figures covering each class of expenditures in addition to which the essential traffic statistics are shown, such as: Net tons carried; net ton miles; passengers carried and passenger miles.

These charts should be of great assistance to all those interested in the welfare of the American railroads, not only because of the figures which they give in convenient and readily available form, but because of the striking manner in which the data is used to point out the essential facts of the situation.

Railway Age

July 30, 1921.

Railway Operating Revenue and How It Was Expended. Class I Railroads, 1912-1920



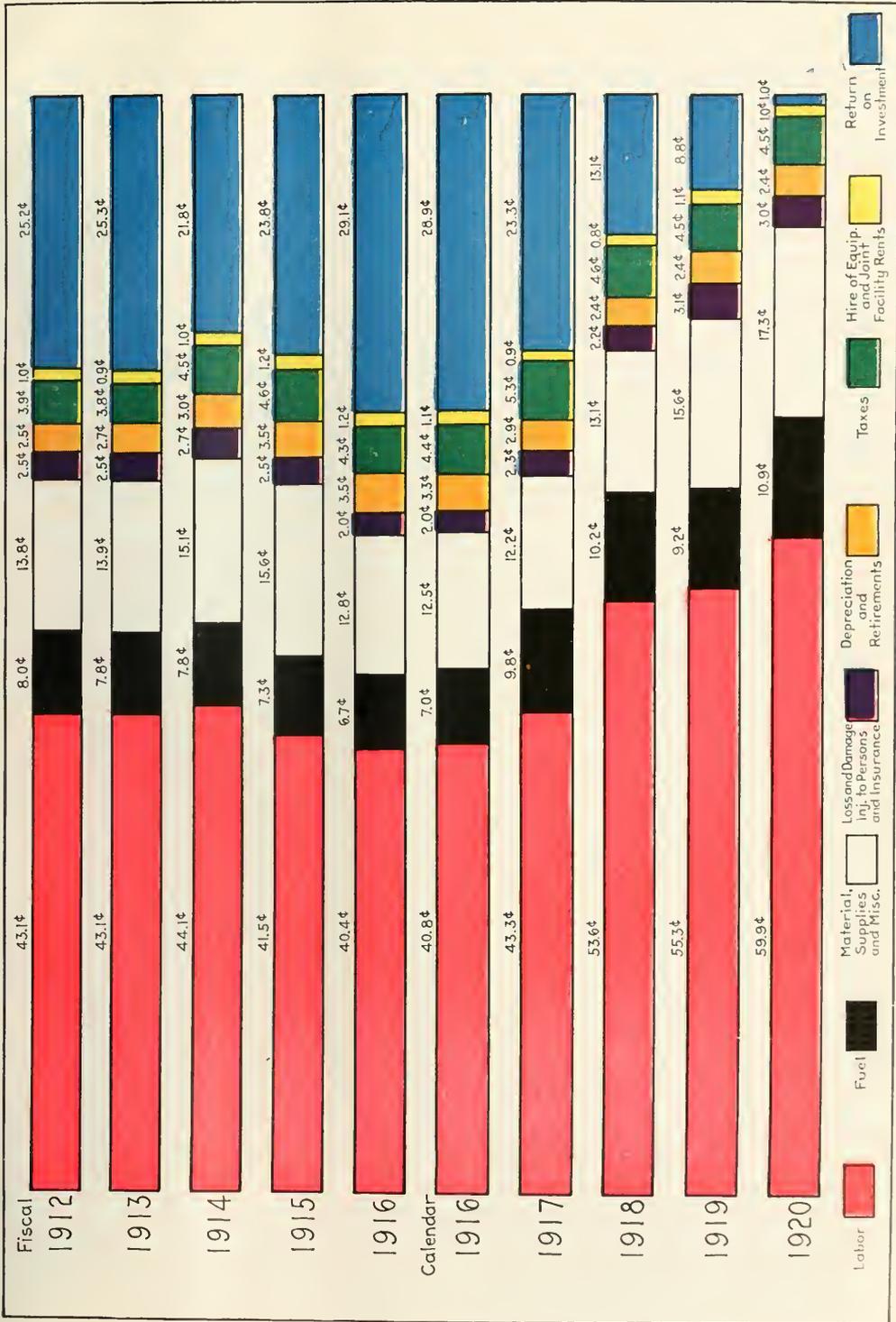


Chart and Figures from Bureau of Railway Economics

Distribution of Each Dollar of Railway Operating Revenue, Class I Railroads, 1912-1920

## Revenue Car Loading

The business world is beginning to realize in greater degree the duties which the railways perform in assisting the industry of the country. The result has been an entirely new interest in the figures of railway operation and a closer observation of transportation conditions. This is shown by the manner in which such figures as those relating to revenue, car loading, car surpluses and shortages, bad order cars, etc., are being watched in business circles.

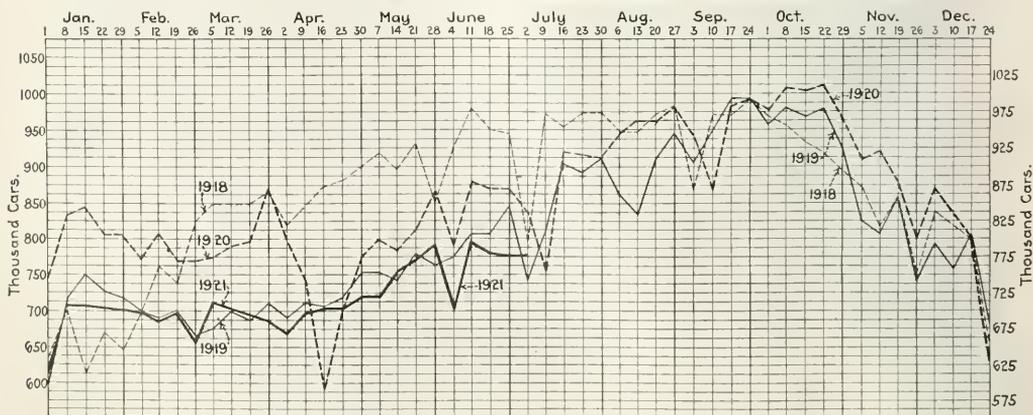
Outside of the figures of railway earnings and expenses, there is probably no information relative to railway operation which is being watched at present with greater interest than that of revenue car loading.

The following table is a compilation of the weekly car loading reports covering a period of three years and to assist in making the data

of greater use, a chart is given. It will be noted that for the years 1919 and 1920 there are two columns, one headed "As originally reported" and one "As revised." The revised figures are those issued with the 1921 figures for purposes of comparison. The figures "as originally reported" cover the week ending Saturday. The revised figures cover the week ending not necessarily Saturday but instead on the same date. Thus the figure of 774,808 for July 2, 1921, when issued a week or so ago was compared not with the figure originally issued last year, 839,629, representing the loadings for the week ending Saturday, July 3, 1920, but with a revised figure of 891,621, representing the loading for the week ending July 2, 1920. In addition the revised figures also include some corrections of the previously reported figures.

REVENUE CAR LOADING

		1920			1919			1918		
		As originally reported	As revised							
Week ending	1921									
January	1	598,905	744,969	745,446	612,741	612,741	641,057			
	8	706,413	860,227	830,673	723,801	723,801	696,907			
	15	709,888	865,992	840,524	758,609	758,609	612,576			
	22	703,115	821,738	804,866	734,293	734,293	668,941			
	29	699,936	816,967	803,332	726,555	718,297	642,016			
February	5	696,977	780,455	762,680	699,659	692,614	686,621			
	12	681,627	802,322	786,633	700,163	689,128	763,394			
	19	695,506	868,673	772,102	785,742	700,913	737,442			
	26	658,222	765,239	783,295	665,478	666,708	824,729			
March	5	712,823	774,297	811,106	676,964	675,276	850,690			
	12	702,068	806,839	819,329	675,933	701,266	850,701			
	19	691,707	796,366	855,060	684,264	699,920	850,417			
	26	687,852	866,709	900,386	709,471	713,275	862,833			
April	2	666,642	801,388	858,827	688,279	701,559	815,138			
	7	693,719	748,898	801,559	710,033	711,282	838,184			
	16	703,896	584,089	601,695	702,894	706,012	873,395			
	23	704,537	691,980	717,272	713,599	715,042	880,163			
	30	721,597	772,908	800,960	747,064	752,362	898,927			
May	7	718,025	799,711	843,184	753,287		918,350			
	14	750,158	784,044	843,145	739,945		893,724			
	21	768,330	809,431	862,074	777,324	777,324	929,106			
	28	787,237	861,316	898,207	763,761	763,761	845,860			
June	4	706,508	768,374	828,907	876,354	776,610	918,911			
	11	788,907	878,041	920,676	863,068	807,205	974,840			
	18	780,741	869,142	916,736	850,226	807,907	952,905			
	25	775,061	869,350	911,503	867,124	845,684	947,841			



Revenue Car Loading, 1918 to 1921

# A Striking Diagram for Railroad Stockholders

Statement Prepared for Southern Pacific Shareholders—  
Fallacious Views About Freight Rates

By Julius Kruttschnitt

Chairman of the Executive Committee, Southern Pacific Company

THE EXECUTIVE COMMITTEE of the board of directors submits this brief of important facts developed in the inquiry conducted by the Senate Committee of Interstate Commerce, and requests your careful attention. *The main trouble with the railroads is that their revenues have not kept up with their expenses.*

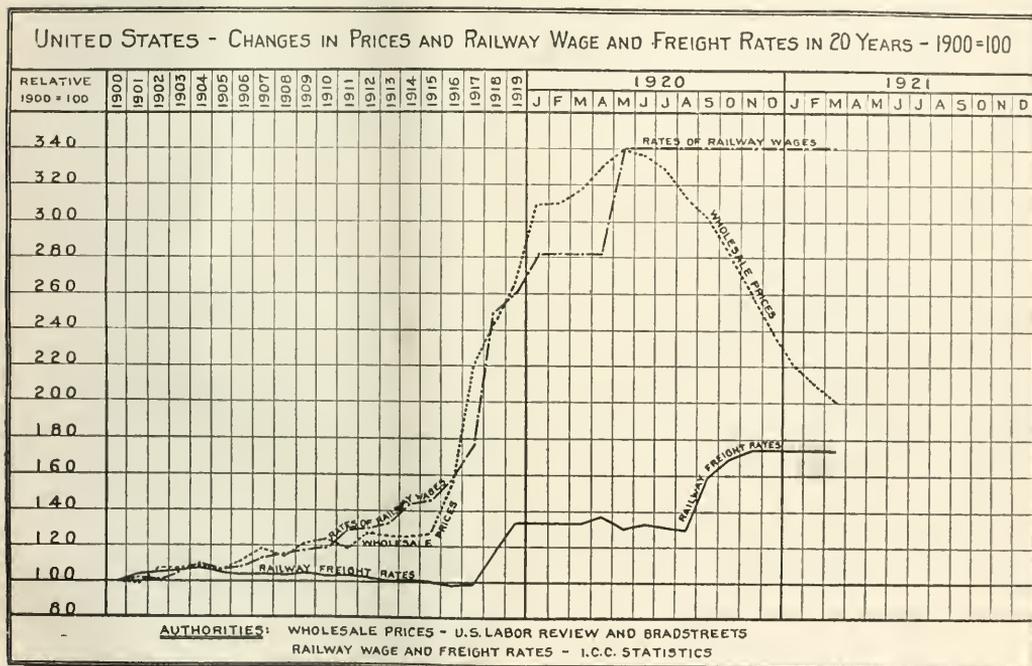
About 1905 wholesale prices of commodities and the rates of railway wages began climbing. A summit never before dreamed of was reached in May, 1920. In the same year, 1905, railway freight rates began falling, and, continuing un-

less on the owners after the return of their properties on March 1, 1920.

## Wages Increased Much More Than Freight Rates

The Federal Labor Board, by a decision made effective in May, 1920, increased wages an average of 21 per cent, raising them to a level 240 per cent above those of 1900; wholesale prices were also 240 per cent higher than in 1900, while freight rates were but 30 per cent higher.

The rate increase finally authorized by the Interstate Com-



interruptedly, reached the lowest level in seventeen years in 1916 and 1917.

Decisions rendered in 1914, 1915 and 1917, in three appeals to Interstate Commerce Commission for better rates, afforded but slight relief, so that at the beginning of Federal control in 1918 freight rates were slightly less than in 1900; while wholesale prices were 120 per cent higher than those in 1900.

The Federal Railroad Administration made a substantial rate increase in June, 1918, which, however, fell far short of establishing any proper relation between freight rates and costs of commodities; and notwithstanding the continued and rapid rise of prices and insistent demands of labor for higher pay the Railroad Administration refused to act either as to rates or wages, and forced the solution of these difficult prob-

merce Commission about the first of September, 1920, raised freight rates to a level only 59 per cent higher than in 1900; wholesale prices then had fallen, but were still 203 per cent higher than in 1900, while railway wages remained 240 per cent higher.

All industries except railroads (which under strict regulation were restrained from doing so), raised prices currently as costs went up, so that when at last the 1920 rate increase was granted, further increased expenses and the cost of disorganization under Federal control more than wiped out the amount of the increase.

Publication by the Interstate Commerce Commission in February, 1921, of revenues, expenses and net railway operating income of large (or Class 1) roads for the years 1920 and 1919, coming as it did at a time of great industrial dis-

turbance and readjustment, when prices were falling and the purchasing power or the purchasing inclination of the consuming public was substantially reduced, caused great anxiety, and a thorough study of the situation was instituted to determine what bearing, if any, the present level of transportation charges has upon the existing business depression.

These data showed:

Operating revenues were for—	
1920 .....	\$6,225,402,762
1919 .....	5,184,064,223
Increase 1920 over 1919.....	\$1,041,338,541
Railway Operating Expenses, Taxes and Rents—	
1920 .....	\$6,163,138,341
1919 .....	4,667,774,131
Increase 1920 over 1919.....	\$1,495,364,210
Net Railway Operating Income was in—	
1920 .....	\$ 62,264,421
1919 .....	516,290,090
Decrease 1920 from 1919.....	\$454,025,669
And this notwithstanding the gross revenues were larger in 1920 than in 1919.	\$1,041,338,541

### Costs Over Which Railroads Had No Control

To properly allocate responsibility for this difference, which was caused by the disproportion of operating expenses, it must be understood that except as either year is affected by bad management, the operating revenues and more than 64 per cent of the operating expenses—being labor costs—and in 1920, in addition, a very substantial part of the cost of materials and supplies which were purchased by the Federal Railroad Administration, but used by the railroads at the prices paid, or contracted by the Government to be paid—are fixed by the Government.

In other words, that the Government prescribed the rates from which the operating revenues of the carriers are derived and likewise fixed the wages, which constituted more than 64 per cent of the operating expenses; and that the prices of the materials and supplies which the carriers must have, are fixed either by Government, as above stated, or by economic forces beyond the control of the carriers.

Out of every dollar of operating expenses 64 cents were paid for labor at prices fixed by the Government, 15 cents for materials and supplies at prices fixed by the Government, and 3½ cents were paid for other expenses incurred by the Government in the first two months of 1920, or a total of 82½ cents out of every dollar of expenses for the year 1920 was paid out at prices directly fixed by the Government itself.

The remaining materials and supplies used during 1920 were purchased by the carriers at prices fixed by general market conditions beyond their power to control, costing 15 cents out of every dollar. In other words, prices fixed by the Government or by market conditions cover 97½ cents out of every dollar of operating expenses.

The labor costs to the carriers of Class I were 115 per cent higher in 1920 than in 1917, and if the increased wage scale had been in effect during twelve instead of eight months in 1920 the increase would have been about 128 per cent. During the same period the gross revenues of the carriers (fixed by Government) increased less than 54 per cent.

Since the Government under the Adamson law in 1916 took charge of labor costs, these have increased from \$1,468,576,000 to \$3,698,216,000, the total amount paid to labor during 1920 being very nearly sixty times the \$62,264,000 of income yielded by the railroads to their owners for the purpose of meeting fixed charges and dividends.

### The Record of Railroad Efficiency in 1921

As to efficiency, the best evidence is that in 1920 the railroads performed the greatest transportation task in their history. They moved more freight and passengers, loaded their cars more heavily and moved them farther per day. That

it cost too much to do this was due, as shown beyond all doubt, almost entirely to causes beyond the railroad managers' control.

A widespread propaganda is being carried on in favor of a general reduction of freight rates; whereas the fact is that even since the rates have been advanced the cost of transporting a great many commodities which it is asserted cannot move at the increased rates is far less than the toll taken by commission merchants and retailers for buying and selling them. People are misled into believing that high rates have stopped the movement of a large amount of freight, and that the railroads would make more money if they would reduce rates and thereby revive traffic.

There is the strongest reason to believe that the great stagnation in business is due almost entirely to world-wide conditions which must inevitably have come if there had been no advance in freight rates.

With the decline in ocean freight rates some commodities can reach the markets of Europe for a less transportation charge—water and rail combined—than before rail rates were raised in September, 1920. Moreover, attention might well be called to the fact that the volume of freight traffic increased substantially for some time after the increased rates became effective (August 26).

### The Demand for a Reduction of Freight Rates

We have shown that the policy of the Government for many years was not to raise rates in normal or good times sufficiently to yield adequate revenues, and if rates are now to be lowered on account of bad times, where will this leave the railroads? As seen on the diagram, other industries in good times, as shown by the rise in wholesale prices, reaped large profits out of which surpluses could be accumulated for use in bad times; it is shown just as clearly how the railroads were denied the enjoyment of this right; yet there is a country-wide demand before they have enjoyed the too long delayed relief contemplated by the Transportation Act, 1920, that there should be a general reduction of rates.

The Transportation Act imposes on the Interstate Commerce Commission the duty of providing revenues and on the Federal Labor Board the duty of fixing wages, which is by far the largest single item of operating expenses. If wages are reduced to the general level of peace-time wages in other pursuits, such reduction, in connection with the constantly increasing efficiency of operation, to which we have already called attention, should control one factor determining net income; while the operations of the Transportation Act, if allowed to function without interference, will control the other.

Irresponsible statements as to fabulous sums that can be saved by common use of train and terminal facilities, unification of management and by the expenditure of still more fabulous sums in capital—that could not be obtained at all—to make wholesale improvements, must not be accepted without most careful investigation.

It must be remembered that during two years, 1918-1919, the Federal Railroad Administration, with autocratic control of revenues, expenses and character of service, accomplished little in these directions, although the public, from patriotic motives, cheerfully submitted to many inconveniences and inferior service. Economies in the indicated directions have long been the subject of study by the carriers; some of them have for many years been in use by all of the roads, and all of them by some of the roads.

Railroad executives have established agencies to give all questions of economic and efficient management thorough study by the highest talent obtainable, and they may be trusted in every respect to furnish the "honest, efficient and economic management" required by the Transportation Act, 1920.

### Car Surpluses and Shortages

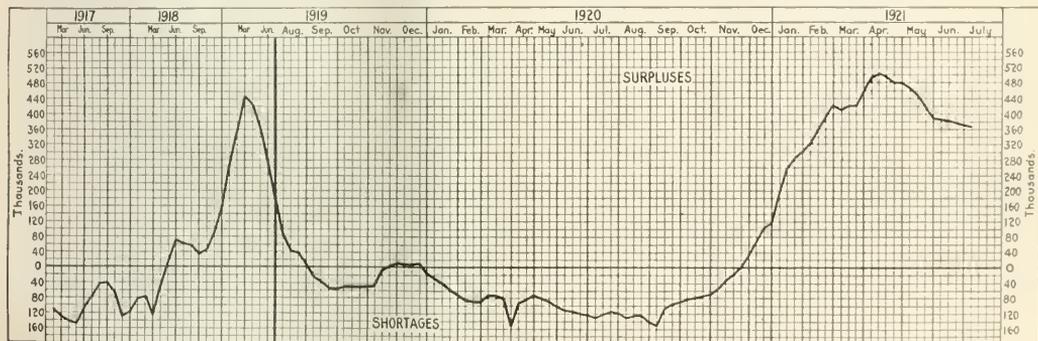
THE DATA which are given on preceding pages relative to revenue freight car loading and bad order freight cars would not be complete without the figures of car surpluses and shortages. There are given herewith, therefore, the figures from the beginning of 1917 to date. It will be seen that the peak of net car surplus was reached in April but that since that time the surplus has been gradually decreasing.

Month	Surplus	Shortage	Total
April 15	81,488	.....	.....
" 23	69,782	.....	.....
May 8	81,277	.....	.....
" 15	88,517	.....	.....
" 23	101,470	.....	.....
June 1	110,687	.....	.....
" 8	113,975	.....	.....
" 15	119,926	.....	.....
" 23	123,932	.....	.....
July 1	129,193	.....	.....
" 8	120,548	.....	.....
" 15	113,829	.....	.....
" 23	116,298	.....	.....
August 8	123,109	.....	.....
" 15	123,993	.....	.....
" 23	140,504	.....	.....
September 1	151,223	.....	.....
" 8	109,408	.....	.....
" 15	95,723	.....	.....
" 23	90,543	.....	.....
October 1	83,508	.....	.....
" 8	79,194	.....	.....
" 15	72,551	.....	.....
" 23	68,120	.....	.....
November 1	55,856	.....	.....
" 8	31,847	.....	.....
" 15	19,068	.....	.....
" 23	2,488	.....	.....
December 8	34,395	.....	.....
" 15	69,073	.....	.....
" 22	105,646	.....	.....
" 29	118,667	.....	.....

SUMMARY OF NET SHORTAGES AND SURPLUSES OF FREIGHT EQUIPMENT\*

Year	Shortages	Surpluses	Total Surplus	Total Unfilled Car Reqs.	Excess of Idle Cars
1917	.....	.....	.....	.....	.....
January 1	109,988	.....	197,733	3,808	193,925
February 1	130,082	.....	258,678	1,929	256,749
March 1	144,797	.....	288,115	1,653	286,462
April 1	148,627	.....	301,997	1,328	300,669
May 1	106,649	.....	324,886	810	323,076
June 1	77,144	.....	358,065	692	357,373
July 1	42,682	.....	392,550	388	392,162
August 1	40,122	.....	423,193	441	422,752
September 1	64,994	.....	413,450	650	412,800
October 1	130,478	.....	422,207	459	421,748
November 1	117,267	.....	424,409	594	423,815
December 1	118,267	.....	459,411	476	458,935
1918	.....	.....	495,904	123	495,781
January 1	79,738	.....	507,427	153	507,274
February 1	83,183	.....	499,479	231	499,248
March 1	127,117	.....	483,067	202	482,865
April 1	50,584	.....	482,352	276	482,076
May 1	13,835	.....	471,922	264	471,658
June 1	71,234	.....	450,453	289	450,164
July 1	62,806	.....	422,823	255	422,568
August 1	58,434	.....	394,040	339	393,701
September 1	35,922	.....	389,576	449	389,127
October 1	45,740	.....	381,746	220	381,526
November 1	91,691	.....	377,850	270	377,580
December 1	156,827	.....	373,791	398	373,393
1919	.....	.....	369,925	398	369,527
January 1	269,344	.....	.....	.....	.....
February 1	351,432	.....	.....	.....	.....
March 1	448,864	.....	.....	.....	.....
April 1	426,424	.....	.....	.....	.....
May 1	365,560	.....	.....	.....	.....
June 1	284,838	.....	.....	.....	.....
July 1	182,206	.....	.....	.....	.....

\*As reported by Am. RR. Assn., Car Service Div.—February 1 to June 1, 1917. U. S. Railroad Administration—July 1, 1917, to December 31, 1919. Am. RR. Assn., Car Service Div.—January 1 to December 15, 1920.



Net Freight Car Surpluses and Shortages, January 1, 1917, to Date. Plotted by Months to July, 1919. Since Then by Weeks

### Freight Car Loading

WASHINGTON, D. C.

LOADING of revenue freight totaled 776,252 cars during the week ended July 16, according to the reports of the Car Service Division of the American Railway Association. This was an increase of 136,554 cars over the preceding week when, however, the observance of Fourth of July resulted in a drop in the total.

The total for the week of July 16 was 166,599 cars less than were loaded during the corresponding week in 1920 and 126,044 less than were loaded during the corresponding week in 1919, but it was approximately 1,400 cars more than were loaded during the week which ended on July 2 last and which consisted of six full working days.

With the exception of coke, increases were reported in the loading of all commodities during the week of July 16,

compared with the previous week. The largest increase was in the loading of merchandise and miscellaneous freight which includes manufactured products. This totaled 463,085 cars or an increase of 73,298 cars over the week before but 65,000 less than during the corresponding week last year.

Coal loadings totaled 152,116, which was an increase of 25,785 cars over the previous week. It was, however, approximately 55,000 cars under the total for the corresponding week in 1920 and 36,600 cars below the total for the corresponding week in 1919.

A gain of 18,976 cars in the number loaded with grain and grain products over the previous week was shown by reports, bringing the total for the week to 56,991 cars.

Loading of forest products during the week reached 44,037 cars, or an increase of 9,681 cars over the preceding week, while there was a gain of 5,172 in the number of cars loaded with ore, thus bringing the total for the week to 31,484. Re-

ports showed 24,802 cars loaded with live stock, which was an increase of 3,735 cars over the week before, while coke loadings totaled 3,737 cars or a decrease of 93 cars compared with the week of July 9.

With the exception of grain and grain products the total loading for each class of commodities during the week of July 16 was less than during the corresponding week in 1920.

Increases were reported in all districts over the week before.

Due principally to a reduction in the demand for coal cars in the Eastern district, an increase of 2,525 in the number of surplus cars during the week ended on July 15 was shown by reports received by the Car Service Division of the American Railway Association. The average for the week was 372,050 as compared with 369,525 for the preceding week. Surplus coal cars numbered 173,617, an increase of 12,011, while surplus box cars totaled 135,633, a decrease of 9,479. This increase was due largely to the increased demand for grain cars in the wheat sections.

In addition to the 372,050 surplus cars, reports just received by the Car Service Division show that on July 1 there were also 354,611 freight cars out of repair or 15.4 per cent of the cars on line. On June 15, there were 346,861 bad order cars or 15.1 per cent of the cars on line.

Movement of grain and grain products has recently been

heavier than for the corresponding period of the past three years. From June 4 to July 16 inclusive, 297,881 cars were loaded with grain and grain products. This was 67,403 cars more than were loaded during the corresponding period in 1920 and 70,043 cars in excess of the total for the corresponding period in 1919. During the week which ended on July 16, according to reports received by the Car Service Division, 56,991 cars were loaded with grain and grain products which was an increase of approximately 19,000 over the preceding week. During the corresponding week in 1920, the total was only 33,967, and in 1919, 45,466 cars.

The big increase in the movement of grain over the preceding years has resulted in some difficulty being experienced at such points as Galveston and Chicago in the handling by the elevators of the increased volume but through the co-operation of the grain concerns and the railroads, which were represented by the Car Service Division, the situation is being cleared. At Galveston, it was necessary to place embargoes against certain elevators but these have since been lifted except by one road. Reports on Monday showed 3,061 cars of grain standing at Galveston and 8,000 cars at Chicago. Reports received by the Car Service Division show that 75 per cent of the Texas crop, which will move through Galveston for export, has already been loaded.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, JULY 9, 1921

Table with columns: Districts, Year, Grain and grain products, Live stock, Coal, Coke, Forest products, Ore, L.C.L., Miscellaneous, Total revenue freight loaded (This year, Corresponding year), Received from connections (This year, Corresponding year). Rows include Eastern, Allegheny, Pocahontas, Southern, Northwestern, Central Western, Southwestern, Total all roads, and Increase/Decrease compared.

L. C. L. Merchandise loading figures for 1921 and 1920 are not comparable, as some roads are not able to separate their L. C. L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

Summary table for L.C.L. Merchandise loading figures for 1921 and 1920, including rows for July 2, June 25, June 18, and June 11.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, JULY 16, 1921

Table with columns: Districts, Year, Grain and grain products, Live stock, Coal, Coke, Forest products, Ore, Mer- chandise, Miscellaneous, Total revenue freight loaded (This year, Corresponding year), Received from connections (This year, Corresponding year). Rows include Eastern, Allegheny, Pocahontas, Southern, Northwestern, Central Western, Southwestern, Total all roads, and Increase/Decrease compared.

L.C.L. Merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

Summary table for L.C.L. Merchandise loading figures for 1921 and 1920, including rows for July 9, July 2, June 25, June 18, and June 11.

# Locomotive Resistance and Mechanical Efficiency

Investigation Shows Resistance Can Best Be Expressed  
in Terms of Mechanical Efficiency

By Kiichi Asakura

Mechanical Engineer, Japanese Government Railways, Tokio, Japan

WHEN A LOCOMOTIVE runs with a uniform speed on a level tangent track, it requires some force to maintain its motion. This force is used to overcome the locomotive resistance which is the sum of the following resistances:

(a) Resistance of the driving gear, i.e., that of the piston, piston rod, valve gear, crosshead, crank pin, etc., and re-

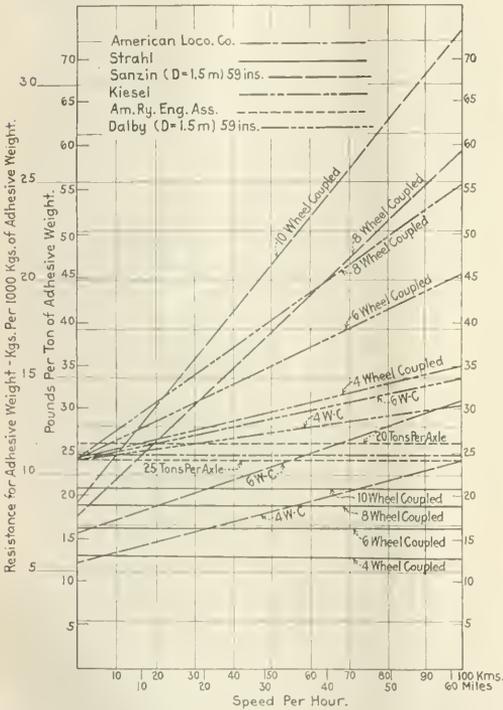


Fig. 1.—Several Locomotive Resistance Formulae Plotted for Comparison

sistance caused by the impact of the reciprocating parts. This resistance combined with that of (b), explained below, corresponds to the machine friction of the usual steam engine.

(b) Resistance at the journal of the axle due to friction.

(c) Resistance between the wheel and the rail, i.e., rolling friction of the wheel upon the rail, that caused by the slipping of the wheel tread and flange on the rail, and that due to the deformation of the rail.

(d) Air resistance.

(e) Miscellaneous resistances, i.e., resistances at buffers couplings, those due to vibration, etc.

Among the above mentioned resistances that of (a) exists

only in the locomotive, while the others exist both in the locomotive and in the cars, and for this reason the locomotive resistance is greater than the car resistance (for a given weight). The fact that the locomotive resistance is greater to a considerable extent than the car resistance shows that the resistance (a) constitutes an important part of the locomotive resistance, and therefore the locomotive resistance becomes the greater as the driving gear becomes more complicated and bigger. In the resistance formulae recently published by several authors, the above idea was taken into consideration and the formulae include generally the three following terms:

1. Resistance caused by the weight on truck wheels and tender.
2. Resistance caused by the adhesive weight.
3. Air resistance.

The old resistance formulae do not differentiate the above terms.

Resistance caused by the weight on truck wheels and tender is independent of the driving gear and therefore this resistance may be treated as that of a car of the same weight per axle. Air resistance is independent of the locomotive weight and may be considered separately from other parts of the locomotive resistance.

Resistance caused by the adhesive weight is the resistance

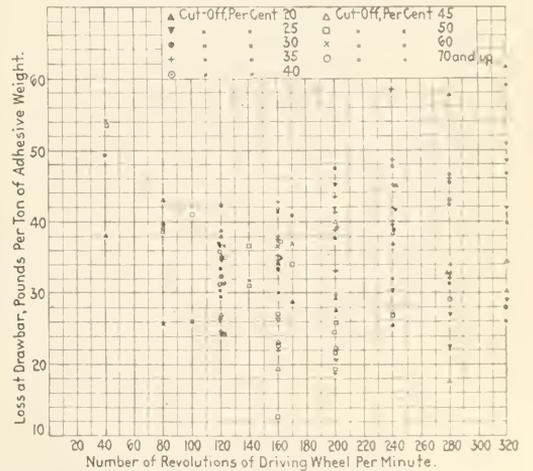


Fig. 2.—Locomotive Resistance Plotted with Speed as a Base

mentioned under items (b), (c), (e), and the resistance of the total driving gear (a). This resistance is very complicated and is calculated by several empirical formulae. But the results of the calculation by several formulae differ from each other in very great amounts and often do not coincide with the experimental data. The object of this work is to determine how to calculate the resistance caused by the ad-

hesive weight, to make the calculated results coincide with experimental results closer than the usual formulæ.

**Experimental Data**

If the locomotive resistance is measured by a test on an actual road, it is almost impossible to separate therefrom the resistance caused by the adhesive weight alone. Moreover, the experimental data usually contain several irregular factors resulting from lack of such long straight track, of level or uniform gradient, as to enable the running conditions to be kept uniform. If, on the contrary, the locomotive resistance is measured in the testing plant, the resistance caused by the adhesive weight alone is measured and moreover in such a test the tractive force, speed, throttle opening, cut off duration of test, etc., may be regulated as is demanded. For this reason, the experimental data obtained in the testing plant are more exact and reliable and should be taken as the basis for the investigation of the locomotive resistance caused by the adhesive weight. The experimental data obtained in Purdue University, at the St. Louis Exposition, at the Altoona Testing Plant of the Pennsylvania Railroad, in Illinois University, at our Oi Testing Plant, etc., are applicable for that purpose.

The resistance measured in the testing plant will be different from that obtained by road test in the amount of the resistances between wheels and rails and miscellaneous re-

tion of the steam consumption, the experimental data of the superheater locomotives at Altoona Testing Plant alone are adopted.

TABLE I

Name of railroad	Testing plant	Type of locomotive	No. of tests
Pennsylvania	Altoona	4-4-2 Sup. (No. 51)	30
Pennsylvania	Altoona	4-4-2 Sup. (No. 89)	27
Pennsylvania	Altoona	4-6-2 Sup. (No. 377)	29
Pennsylvania	Altoona	2-8-2 Sup. (No. 1752)	29
Illinois Central	Univ of Ill.	2-8-0 Sat.	17
Pennsylvania	St. Louis Exp.	2-8-0 Sat. (No. 1499)	17
L. S. & M. S.	St. Louis Exp.	2-8-0 Sat. (No. 734)	21

**Formulæ Usually Used**

The resistance formula usually used expresses the resistance in the form of so many pounds per ton of the adhesive

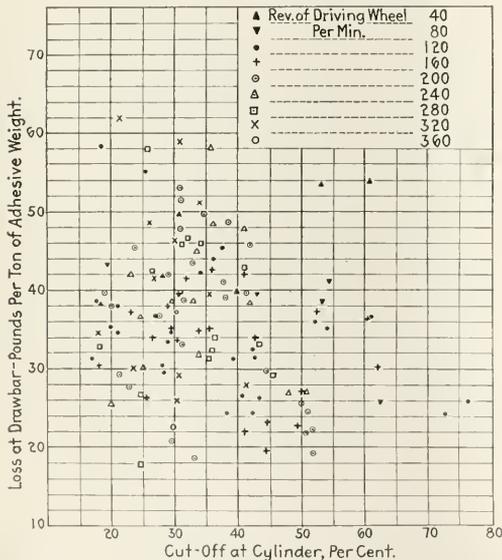


Fig. 3.—Locomotive Resistance Plotted on the Basis of Cut-off

sistances. But since these resistances constitute only a small part of the total resistance, excepting the case of a very bad road, this difference has no great effect upon the determination of the locomotive resistance. Moreover, since the resistances of several locomotives differ from each other to a considerable extent and it is almost impossible to establish a formula exactly applicable to every locomotive, as will be shown hereafter, the experimental data in the testing plants may be adopted, without a serious error, as the basis of the determination of the locomotive resistance. Thus in this investigation the data of the following simple locomotives in the above mentioned tests are adopted and for the estima-

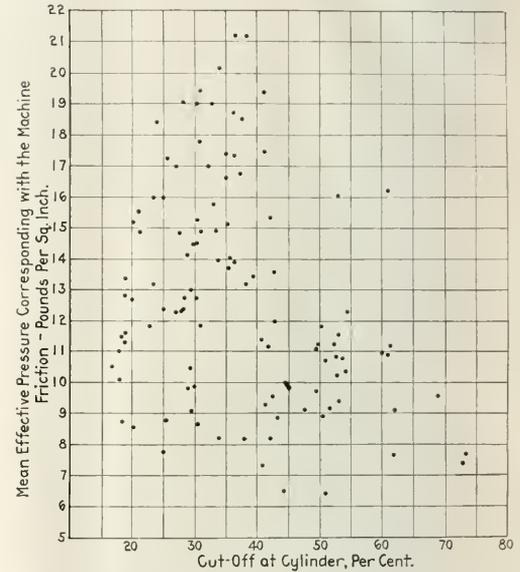


Fig. 4.—Resistance Expressed as Mean Effective Pressure and Plotted with Cut-off as a Base

weight; that is to say, the resistance is considered to be proportional to the weight. As the internal friction of the engine constitutes the essential part of the resistance, several authors made their formulæ in such form that the construction of the locomotive and the number of revolutions of the driving wheels have some effect upon the amount of the resistance. But other authorities considered the resistance to be independent of such factors. The following are well known formulæ usually used.

(1) Formula of the American Locomotive Company.

The resistance is stated to be 22.2 lb. per short ton (25 lb. per long ton or 11 kg. per 1,000 kg.) or the resistance is independent of locomotive construction and speed (for the Mallet type, greater resistance is adopted). This formula is very simple, but it is not certain whether the resistance may be expressed so simply.

(2) Strahl's formula.

Type of locomotive	Resistance in lb. per ton	Resistance in kgs. per 1,000 kgs.
4-Wheel-coupled, 2 cyls.....	13.0	5.8
6 Wheel-coupled, 2 cyls.....	16.4	7.3
8 Wheel-coupled, 2 cyls.....	18.8	8.4
10 Wheel-coupled, 2 cyls.....	20.8	9.3

The resistance is considered to be independent of the speed but to increase as the number of coupled axes increases.

As the number of coupled axles increases the construction becomes so much more complicated and therefore the total resistance will increase. But as the adhesive weight increases at the same time, it is not certain that the specific resistance increases as the number of coupled axles. In our Oi Testing Plant, we have found that the specific resistance increased to a considerable amount when we made a test of a 4-wheel-coupled locomotive which was made temporarily a 4-wheel-coupled by taking off a pair of coupling rods of the 6-wheel-coupled engine. The resistance of such a 4-wheel-coupled locomotive may differ from that of a well proportioned

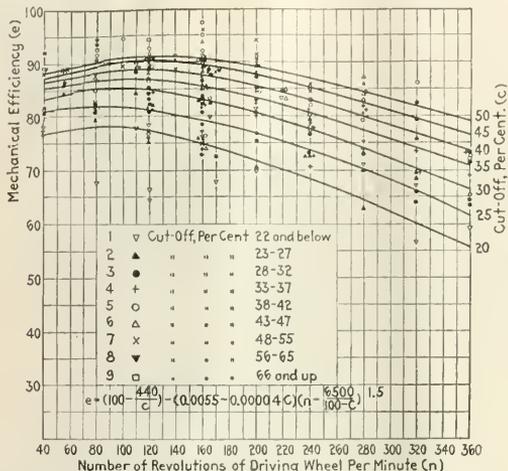


Fig. 5.—Mechanical Efficiency Bears a Definite Relation to Speed and Cut-off

4-wheel-coupled locomotive, but this test may serve to indicate the fact that the specific resistance does not increase as the number of axles.

(3) Sanzin's formula:

$$\text{Resistance in lb., per ton} = \frac{a' + \frac{b'}{v'}}{D' \cdot 10}$$

$$\text{Resistance in kg., per 1,000 kg.} = \frac{a + \frac{b}{v}}{D \cdot 10}$$

$D'$  = dia. of the driving wheel in feet.  
 $D$  = dia. of the driving wheels in meters.  
 $v'$  = speed in miles per hour.  
 $v$  = speed in km. per hour.

$a', b', a, b,$  = constants as follows:

	$a'$	$b'$	$a$	$b$
4 Wheel coupled.....	12.3	9.5	5.5	0.8
6 Wheel coupled.....	15.7	11.8	7.6	1.0
8 Wheel coupled.....	18.0	33.1	8.0	2.3
10 Wheel coupled.....	19.8	42.5	8.8	3.6

This formula indicates that the greater the number of coupled axles the greater is the resistance, and therefore may not represent a true resistance as was shown in the case of Strahl's formula. In fact several resistance formulae were made as the results of experiments on German and Austrian railways. The run off test, the throttle being shut, was usually applied for the determination of the frictional loss. However, since, as is shown hereafter, the frictional loss is much dependent upon the power developed, the run off test result ought not to be as well suited for the determination of the frictional loss as the results obtained in a testing plant.

The second term of this formula contains  $\frac{v}{D}$  which represents the number of revolutions of the driving wheel. Sanzin assumes simply that the resistance will be increased if the number of revolutions increases. This assumption seems to be right as is shown hereafter.

(4) Kiesel's formula:

$$22 + 0.15 (n-1) v', \text{ lb. per short ton.}$$

$$24.6 + 0.168 (n-1) v' \text{ lb. per long ton.}$$

$$10.9 + 0.0467 (n-1) v, \text{ kg. per 1,000 kg.}$$

$v'$  = speed in miles per hour.  
 $v$  = speed in km. per hour.  
 $n$  = number of coupled axles.

This formula also shows that the resistance increases with the number of coupled axles but the rate of increase is small. When the axles are coupled together each is dependent upon the motion of the other, and so resistance due to slip between wheels and rails may increase. This formula also shows that the resistance increases with the speed. Since, however, only the second term of the formula is dependent upon speed, the increase of specific resistance with the speed is only little. That the second term, which is comparatively a small part of the resistance, is dependent upon the speed and the number of coupled axles, may prove that the second term represents essentially the resistance between wheels and rails. Then this formula shows that the essential part of the resistance is constant and is nearly equal to that given by the formula of the American Locomotive Co.

(5) Formula of the American Railway Engineering Association:

$$18.7 + \frac{80n}{W'} \text{ lb. per short ton}$$

$$21. + \frac{80n}{W''} \text{ lb. per long ton}$$

$$9.4 + \frac{36n}{W} \text{ kg. per 1,000 kg.}$$

$W'$  = Adhesive weight in short tons  
 $W''$  = Adhesive weight in long tons  
 $W$  = Adhesive weight in metric tons  
 $n$  = No. of coupled axles

This formula shows that the greater part of the resistance is constant and the remaining part increases in inverse pro-

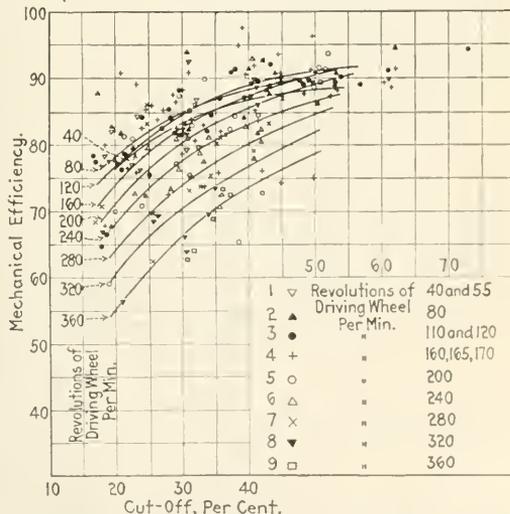


Fig. 6.—Mechanical Efficiency at Various Speeds on the Basis of Cut-off

portion to the axle load. In America the resistance of 22.2 lb. per short ton is adopted very often and it is usually said that about 80 per cent of the above value corresponds to the internal resistance. Then the first term of the formula may represent the internal resistance, and the second term may represent the resistance between wheels and rails. That the

resistance decreases when the axle load increases is coincident with the experimental results of cars in America.

(6) Dalby's formula:

$$\frac{120}{D'} + 0.05 n v', \text{ lb./ton} \quad \frac{16.3}{D} + 0.0138 n v, \text{ kg. per 1,000 kg.}$$

- D' — dia. of driving wheel in feet
- D — dia. of driving wheel in meters
- v' — speed in miles per hour
- v — speed in kilometers per hour
- n — number of coupled axles

In Dalby's formula the resistance is given in the form of so many pounds per ton of the total weight. But when we consider only the part of the resistance caused by the adhesive weight the formula takes the above form.

The first term of this formula shows the internal resistance and was determined from some special case of Prof. Goss's experiments. The second term represents the resistance be-

Table II shows the mean resistance by the adhesive weight obtained by experiments of locomotives given in Table I and also of other locomotives tested at the St. Louis Exposition:

Name of railway	Locomotive type	Adhesive weight	Resistance by adhesive weight	
			lb. per ton	Kg. per 1,000 kg.
Pennsylvania	4-4-2 Sup.	63.0	43.3	19.3
Pennsylvania	4-4-2 Sup.	59.5	31.7	14.1
Pennsylvania	4-4-2 Glehn Comp.	39.2	26.3	11.7
Pennsylvania	4-4-2 Baldwin Comp.	44.2	44.5	19.9
Pennsylvania	4-4-2 Homover Comp.	29.2	26.1	11.6
Pennsylvania	4-4-2 Cple Comp.	49.2	30.4	13.6
Pennsylvania	4-6-2 Sup.	80.3	31.0	13.8
Pennsylvania	2-8-2 Sup.	105.0	36.7	16.4
Illinois Central	2-8-0	89.7	28.3	12.6
Pennsylvania	2-8-0	77.4	45.5	20.3
Pennsylvania	2-8-0	72.6	23.5	10.5
Michigan Central	2-8-0	73.5	24.8	11.1
Michigan Central	2-10-6 Tandem Comp.	104.0	36.0	16.1

As is observed from the table the resistance of the locomotive with more coupled axles is not greater than that of the

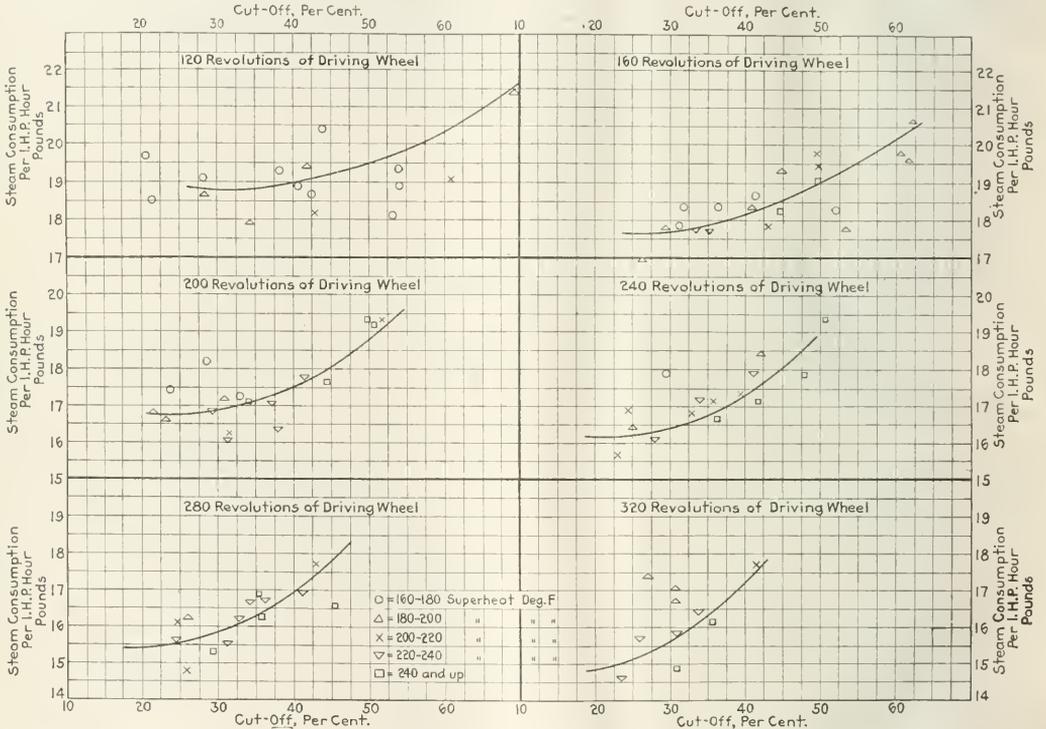


Fig. 7.—Steam Consumption Per Indicated Horsepower Hour at Various Speeds and Cut-offs

tween wheels and rails and was estimated from the experimental data of a 4-4-0 type locomotive.

Beside the formulae above mentioned there are still many other formulae. Since, however, these formulae usually express the resistance per ton of total weight, and it is impossible to separate the resistance only due to the adhesive weight, neither comparison nor discussion was made about these formulae.

As was explained already, all the above formulae have some defect in their forms, when we consider them theoretically. The above formulae are plotted in a diagram, Fig. 1, which shows how great a deviation exists among them. In fact each formula may represent the experimental result of one locomotive, but it is not applicable to another locomotive and perhaps to any other case.

locomotive with less coupled axles. Moreover, the resistance of locomotives with the same number of coupled axles differs to a very great extent. Thus the above experimental results do not justify the correctness of expressing the resistance in terms of the number of coupled axles.

To find out if there is some relation between the resistance per ton weight and the number of revolutions of the driving wheels or cut off in the cylinders, the experimental results of the locomotives in Table I are plotted in Figs. 2 and 3. From these diagrams we cannot observe any regular relation, except that the resistance may be dependent upon the number of revolutions. The spots representing the resistance are distributed irregularly between 13 lb. and 63 lb. Even if we eliminate the specially high and low values, they are scattered between 20 and 50 lb. These figures may serve to

prove that the resistance ought not to be expressed in the form of so many pounds per ton weight, although such form is usually adopted.

**Resistance and Mean Effective**

**Pressure in the Cylinder**

Since the internal resistance is to be dependent upon the size of the driving gear, and the steam pressure in the cylinder ought to have some effect upon the resistance, there is some hope that the resistance may be expressed as a func-

whether the locomotive resistance may be expressed in the form of the efficiency. The mechanical efficiency of the locomotives of Table I is plotted in connection with the number of revolutions of the driving wheel and the cut off in the cylinder, as shown in Figs. 5 and 6. Though we find from these figures that the relation between these factors is not regular enough, it is still by far more regular than the case in which the resistance is expressed in terms of unit weight or of mean effective pressure. As the design, workmanship, lubrication, etc., differ in each locomotive, it will be impos-

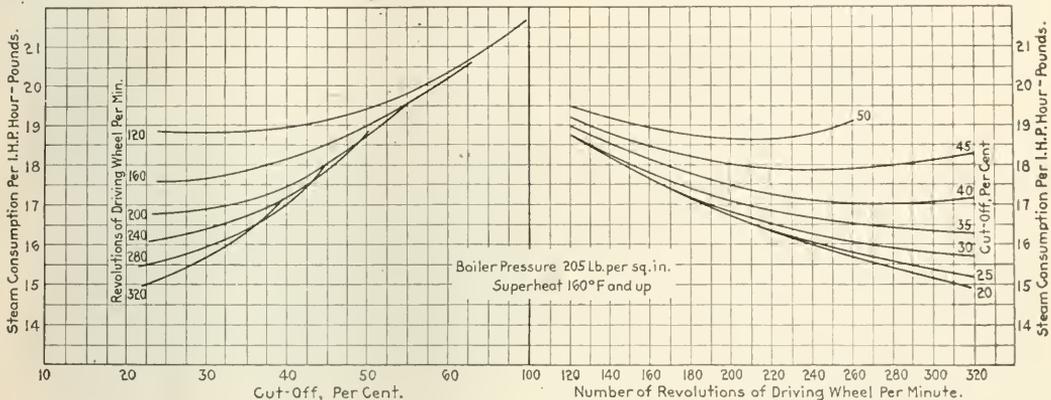


Fig. 8.—Steam Consumption of Superheated Locomotives Per Indicated Horsepower Hour at Various Cut-offs and Speeds

tion of the mean effective pressure in the cylinder. Prof. Goss gives in his work the following values of the mean effective pressure, which corresponds to the resistance, stating that it is almost independent of the speed, and decreases with the later cut off.

Cut off, per cent.....	TABLE III			
M. E. P. corresponding to the resistance.....	25	35	45	80
lb. per sq. in.	5.29	4.18	3.57	1.69
kg. per sq. c.m.	0.372	0.294	0.251	0.119

sible to expect the experimental results of several locomotives to coincide and to give sufficiently regular relations between the mechanical efficiency and number of revolutions or mean effective pressure. We can acknowledge from Fig. 5 that the efficiency increases slightly as the number of revolutions of the driving wheel increases, so long as the number of revolutions is small, and then the efficiency decreases as the number of revolutions increases. The loss due to im-

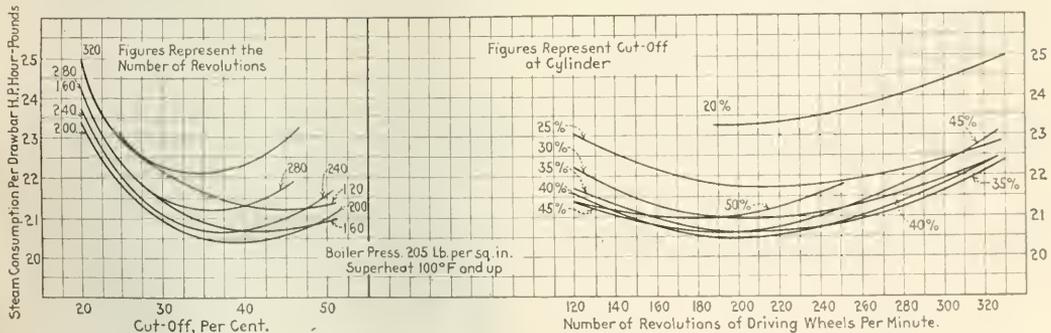


Fig. 9.—Steam Consumption Per Drawbar Horsepower Hour with Varying Speed and Cut-off

If this statement may be applicable to any locomotive, the resistance will be calculated from the above data. When, however, the mean effective pressure corresponding to the resistance of the locomotives of the Pennsylvania Railroad before mentioned, is plotted in connection with the cut off, as is shown in Fig. 4, it is found that the resistance is not expressed as a function of the mean effective pressure.

**Resistance and Mechanical Efficiency**

As the internal friction loss of steam engines is expressed in the form of the efficiency, it is quite natural to investigate

part of the reciprocating parts will be greater at a high number of revolutions, and this may be the cause of the decline in the efficiency at high speed. Fig. 6 shows that the efficiency increases with the later cut off. The rate of change of force acting in every part of the driving gear decreases with the later cut off and this may be the cause of rise in the efficiency at the later cut off. Figs. 5 and 6 each represent the relation of the efficiency, number of revolutions and cut off. Though in each figure the points are distributed in a rather too irregular order to trace curves representing the relation, the other figure serves to aid in the curve tracing,

because the relation given by the two figures must be the same. Thus the curves in Figs. 5 and 6 were drawn and are represented by the following equations:

$$e = \left( 100 - \frac{440}{c} \right) - (0.0055 - 0.00004 c) \left[ n - \frac{6500}{100 - c} \right] 1.5$$

$e$  = mechanical efficiency.

$c$  = cut off in per cent.

$n$  = number of revolutions of driving wheels per min.

The maximum efficiency is given by the following equations:

$$e \text{ max} = 100 - \frac{440}{c}$$

The number of revolutions with which the efficiency should be maximum is given by the following equation:

$$n' = \frac{6500}{100 - c}$$

#### Application of the Efficiency Formula for the Determination of the Tractive Force

The most usual application of the resistance formula is to find out the effective tractive force from the indicated tractive force. The efficiency formula may also be applied for the same purpose, though the calculation in this case is not so simple, as the case in which resistance is expressed in terms of unit weight. In such calculation the steam evaporation of the boiler and the steam consumption per indicated horse power hour are estimated and thus the indicated horse power developed by the locomotive is calculated, from which the indicated tractive force is calculated. By deducting the locomotive resistance from the indicated tractive force, the available tractive force is calculated.

Now, by using the above efficiency formula, we can calculate the steam consumption per drawbar horsepower hour corresponding to several numbers of revolutions and cut offs. Then the drawbar horsepower which can be developed by the locomotive, can be calculated. Thus the effective drawbar pull can be obtained if the proper care be taken in determining the resistance due to the weight on truck wheels and tender and the air resistance. The calculation of the drawbar pull as above explained is to be applied to the case in which the drawbar pull is limited by the boiler capacity or the speed is not very low. If the speed is low the drawbar pull is limited either by the adhesive weight or by the cylinder effort. The drawbar pull calculated from the adhesive weight is the effective drawbar pull, so that there is no need of considering the internal resistance.

Now to consider the cylinder tractive effort, we take the mechanical efficiency from Fig. 5 at 90 per cent, since the speed is low. The steam pressure drop from the boiler up to the cylinder may be taken from the experimental data of the locomotives previously mentioned being at most 5 per cent, at low speeds. Then the total loss is 15 per cent, or, as is usually adopted in America, the tractive effort can be expressed as follows:

$$T = \frac{0.85 P d^2 l}{D}$$

$T$  = Tractive effort.

$P$  = Boiler pressure.

$d, l$  = Dia. and stroke of cylinder.

$D$  = Dia. of driving wheel.

When the locomotive runs without steam the resistance will be different, but this case is not treated here.

#### Steam Consumption

Steam consumption is considered only in the case of the superheater locomotive. The steam consumption depends upon the number of revolutions, cut off and steam tempera-

ture. Thus the steam consumption per indicated horse power hour is plotted in connection with the cut off, for 120, 160, 200, 260, 280 and 320 r. p. m., as shown in Fig. 7. There is some tendency for the steam consumption to decrease when the steam temperature increases. Since, however, the difference is small, when the superheat is more than 160 deg. F. (89 deg. C.) the steam consumption is assumed to be independent of the superheat, provided that the superheat is considerably high. Then the steam consumption per indicated horse power hour is represented in connection with the number of revolutions and cut off as shown in Fig. 8. By dividing the steam consumption thus obtained by the corresponding mechanical efficiency, we get the steam consumption per draw bar horse power as shown in Fig. 9. The value of this figure is to be applied to the calculation of the tractive force.

#### Conclusion

It was explained that it was more rational to consider the locomotive resistance in terms of mechanical efficiency than in terms of unit weight as was usually done. The formula for the mechanical efficiency was established. Also the steam consumption was investigated in connection with the number of the revolutions and cut off, and thus the more rational method of calculation of draw bar pull was introduced.

Since for the experimental data for the steam consumption, those of the superheater locomotives of Pennsylvania Railroad were adopted, the result obtained should be applied strictly speaking only to superheater locomotives having a boiler pressure of 205 lb. per sq. in. But the result will be applicable to all the superheater locomotives commonly used without serious error.

#### Canadian Pacific Uses Heavy Slabs for Bridge Spans

WHILE NOT THE FIRST to use reinforced concrete slabs for bridge or trestle spans, the Canadian Pacific has probably carried this development as far as any railroad in North America as regards the use of long spans. Thus, in 1918 slabs in 36 ft. and 34 ft. lengths were used for the decks of an unusual reinforced concrete trestle carry-



Street Subway in Montreal Involving the Use of 36 Ft. Slabs for the Roadway Spans

ing a double-track main line over a gorge 100 ft. deep and nearly 400 ft. wide just east of North Toronto. This structure was described in the *Railway Age* of August 16, 1918, page 289. Another application is illustrated in the photograph showing the use of 36-ft. slabs for a grade separation subway in Montreal. Slabs of this kind have now been standardized in various lengths up to 35 ft. 4 in. and feature in the renewal of pile trestles and steel girder spans. In this connection they are sometimes hauled distances of as much

as 300 miles from the casting yard to the bridge site. The 34-ft. 4-in. slabs weigh 101,000 lb. each.

The design of the slab follows the generally accepted practice. Rectangular section slabs are used for lengths under 20 ft. while the slabs 20 ft. long and over are of the T-section illustrated in the drawing. All slabs are made 6 ft. 6 in. wide, thus requiring two for each track and as the parapet is cast separately all the slabs are alike except those having ends carried on abutments without backwalls which must be

the top of the slabs, a special sling is used which is carried by lifting rods passing through four 2¼-in. diameter holes (two near each end of slab) placed at such distance from the end as to be well clear of the bearing in order that tackle may be released when the slab is landed.

We are indebted for the above information to J. M. R. Fairbairn, chief engineer, Canadian Pacific, Montreal, Que. P. B. Motley, engineer of bridges, was responsible for design.

## Shall the Crossing Alarm Whistle Be Modified?

By E. H. Hemus

Assistant Claim Agent, Atchison, Topeka & Santa Fe

TO MEET the increased danger incident to the enormous number of high-speed automobiles now in use on our highways, it has been proposed to improve the whistle signal, to be given from the locomotive, with a view to more effectively safeguarding traffic at highway crossings. It has been suggested that it might be well to sound the whistle continuously from the whistling post to the crossing; but no practical operating officer sees any merit in that proposal. One thing certainly ought to be done and that is to comply strictly with the laws in every state; and engineers should be required to familiarize themselves with the statutes in each state in which they may have to run. Sounding the crossing signal twice, instead of once—that is to say, eight blasts instead of four—also would be but a partial remedy for the difficulty. The most direct and rational course would be to enforce with greater care the rules now in effect.

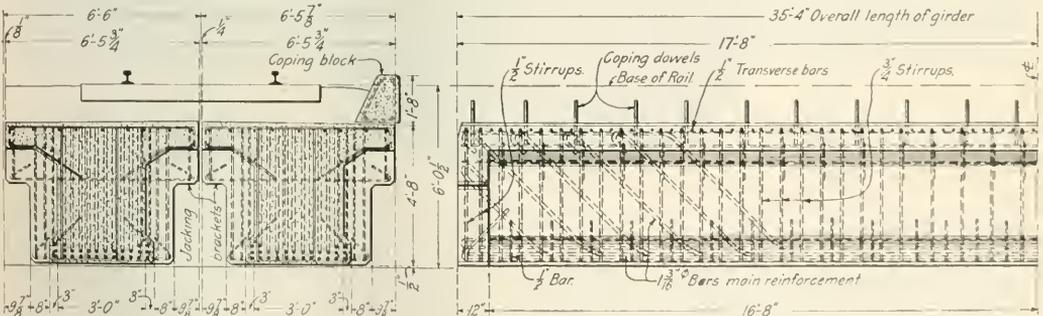
The claim department should show the management just how many crossing accidents have occurred in each state traversed by the company's lines, and this should be followed by checking up the engineers to see how careful they are. Probably there are engineers who are satisfied to do the minimum of duty; having blown the whistle to relax their vigilance. A fireman always tells you that he was putting in a fire at the time the accident occurred, so that he did not see anything; but firemen can be educated to take a more



View Underneath, Showing the T-Beam Construction

provided with diaphragms to fill in the open space under the flanges of the T-slabs.

The concrete is composed of 1-1½-3 mixture, using sand and broken stone for the aggregate. About 300 lb. of reinforcing material is required per cubic yard of concrete and this is of medium open-hearth steel. The bars are usually ordered of the manufacturer to be delivered cut to required lengths and bent according to a detailed bending diagram, the bars being tagged with an identifying mark.



Longitudinal Elevation and Cross Section of the Standard 35 ft. 4 in. Slabs Showing the Reinforcement

Special attention is given to the bearings of the slabs on the substructures, these bearings being provided with steel bearing plates held in place on the cap or bridge seat by means of dowels. No connection is provided between the slabs and the bearing plates.

For waterproofing, the top surface, ends, inside of the flanges and the underside and inside of coping blocks are covered with two coats of hot asphalt. The joints between slabs are caulked with oakum or other suitable fabric saturated with the asphalt. The usual practice is to erect the slabs by means of wrecking cranes. For all except the lighter slabs, which are fitted with lifting stirrups projecting from

lively and human interest. Are your whistles properly tuned to give the best signal; and are you sure that the engineers do not re-tune them, for reasons of their own? Locomotives might be equipped so that the fireman would have a whistle cord on his side of the cab; and then, in case of emergency, he could sound the whistle instantly.

Finally, the claim department, knowing the causes of accidents at crossings should take care to see that all the lessons from such knowledge are thoroughly impressed on the minds of the officers who are in authority.

\*Abstract of a paper read before the Association of Railway Claim Agents at St. Louis, on May 19, 1921

## Edgar E. Clark Resigns from Interstate Commerce Commission

WASHINGTON, D. C.

PRESIDENT HARDING announced on July 22 that he had received the resignation of Chairman Edgar E. Clark as a member of the Interstate Commerce Commission and had appointed to succeed him, Frederick I. Cox, of New Jersey, as a representative of the interests of the commercial travellers. Mr. Clark's letter of resignation was dated July 14 and seems to have been entirely unexpected. It gave as his reason that he had devoted as many years of his life to public service as he felt he could afford. Mr. Clark is to be associated with Wilbur La Roe, Jr., formerly chief examiner of the commission, in practice before the commission, and courts in interstate commerce matters, with office in Washington.

Mr. Clark was the senior member of the commission, having been appointed by President Roosevelt in 1906, had served as chairman during the past year and had recently been re-elected chairman for the new fiscal year ending June 30, 1922, on the motion of Commissioner McChord, who stood next in seniority. Mr. Clark has not been in the best of health for a long time and the duty of representing the commission as chairman has placed upon him an unusual strain during a period when the commission has had before it a task of tremendous magnitude and has been under great pressure of many kinds.

Mr. Clark enjoys the distinction of being the only man, in recent years, at least, to resign from the work of the commission to engage in private enterprise. Usually the commissioners have been reappointed upon the expiration of their terms, but some have not been reappointed. Commissioner Lane resigned to become Secretary of the Interior, Commissioner Knapp left it to become a judge of the Commerce Court and Commissioner Prouty resigned to become director of the commission's valuation work. Commissioner Clark's term would not have expired until December 31, 1926.

In the five months since his inauguration, President Harding has now appointed five of the eleven members of the Interstate Commerce Commission. At the end of this year the terms of Commissioners Aitchison and Hall expire so that by that time he will have appointed a majority of the commission. The terms of Commissioners McChord and Eastman expire in 1922.

Mr. Clark was originally appointed as a representative of the labor interests on the commission. He was then president of the Order of Railway Conductors and during the first few years of his connection with the commission he was on several occasions chosen as the representative of labor organizations in wage arbitration proceedings. During recent years, however, he has not been regarded as in any sense a representative of labor and in fact the organizations have made several efforts to obtain direct representation upon

the commission. As a practical railroad man and the most experienced in the work of the commission Mr. Clark has been identified with practically all sides of the commission's work and because of his fairness and ability has been generally recognized as its strongest member.

For the past two or three years particularly he has been the chief spokesman of the commission in public. As chairman of its legislative committee Mr. Clark represented the commission in the various hearings before congressional committees while the work of formulating the Transportation Act was in progress and his influence in favor of some of the principal provisions of that act had much to do with commanding an adequate support for them in both houses of Congress.

As chairman of the commission since it was charged with the administration of the new law he has had a tremendous task in trying to translate into a working program the principles laid down in the law, in the face both of wide differences of opinion among some

of the commissioners and of the most persistent sort of pressure from interests that were violently opposed to the principle of the act that gave the commission responsibility for the adequacy of the revenues of the carriers as well as for their reasonableness from the point of view of the shipper. He has stood out strongly against a policy of general rate reductions at a time when the President and several members of his cabinet as well as many influential members of Congress were openly urging such a policy. Remembering that the shippers generally a year ago told the commission that they wanted better railroad service and were willing to pay for it he apparently has tried to take them at their word and he has been writing numerous letters to shippers, congressmen and others pointing out that the causes for the business depression lay far deeper than any question of freight rates. His strong stand that rate reductions generally, as distinguished from readjustments

in special cases, could not be considered until the railroads had had an opportunity to reduce their cost of operation, has undoubtedly had a potent effect in preventing the administration from being influenced more than it has by the clamor of several large groups of shippers for an immediate reduction of rates.

Chairman Clark has taken an active part in the recent conferences of the government officials on the plan for expediting a settlement of the accounts between the railroads and the government for the period of federal control.

His resignation is to become effective on August 31, or as soon as the appointment of his successor is confirmed.

Mr. Clark was born February 18, 1856, at Lima, New York, and was in railroad service from 1874 to 1889 as a brakeman and conductor. From 1889 to 1890 he was vice-president of the Order of Railway Conductors and from 1890 to 1906 he was president of the order. While in this position he was appointed by President Roosevelt as a member of the Anthracite Coal Strike Commission in 1902. He was ap-



E. E. Clark

pointed to the Commission, July 7, 1906, to fill one of the two new vacancies created by the Hepburn Act, which increased the membership from five to seven. He was reappointed at the expiration of his term on December 31, 1912, by President Taft, but his confirmation was delayed by the Senate along with other appointments, until after March 4, when he was reappointed by President Wilson. He was then elected chairman of the commission. He was again reappointed in 1919 by President Wilson and on March 8, 1920, he was elected chairman again for the term ending June 30, 1921.

## The "DeWitt Clinton" Moves Under Its Own Power

THE LOCOMOTIVE DeWitt Clinton, and its three coaches, the historic New York Central passenger train, which for the past year has been on exhibition in the Grand Central Terminal, New York City, has been taken to Chicago to be exhibited at the "Pageant of Progress" on the Municipal Pier, from July 30 to August 14.

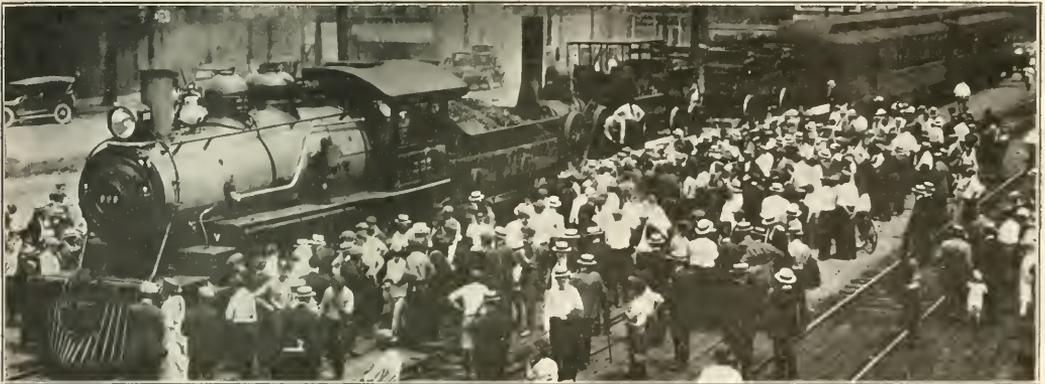
For a short section of this journey the old locomotive was

years. It made a maximum speed of 30 miles an hour on its first trip; but as fired up for the present exhibition it has been moved at only about eight miles an hour.

COLONEL B. W. DUNN, chief inspector of the Bureau of Explosives, in commenting on the suggestions for stopping leaks in tank cars, recently made by the Committee on Freight Claim Prevention, Freight Claim Division, A. R. A., stated:

"The proper action in the case of any leakage of inflammable liquid from a tank car is to transfer the contents, unless the leakage can be stopped by manipulation of the outlet valve or tightening of the outlet valve cap. When leaks cannot be stopped in this manner, plugging with oatmeal or other material may be advisable to undertake a short movement of the car, but such measures should not be adopted as a permanent repair, and any approval of the same should be handled in such a way as not to encourage this action except when absolutely necessary.

"The use of oatmeal might be effective where there is a leakage of gasoline through a narrow crack or around the valve seat. Oatmeal may be considered a reasonably good substance, due to the fact that the material is rolled or crushed and not ground into a fine powder. The effectiveness of the method will depend upon the size and shape of the opening. It has also been sug-



The "999" with the "DeWitt Clinton" at Erie, Pennsylvania

gested that plaster of Paris, mixed to a plastic mass, with water, might be rammed down over the point of leakage from inside or outside as may be most convenient. This will set hard in a few minutes."

moved under its own power. For the rest of the trip the ancient train was carried on platform cars in a special train drawn by locomotive No. 999, which was one of the notable engines built for the New York Central by William Buchanan, 20 years ago, when the Empire State Express and the Twentieth Century Limited express were first making their reputations. The illustration of this special train on this page is from a photograph taken at Erie, Pa. The 999 has been remodeled, since it was in service on the main line, and during recent years it has hauled passenger trains on the Pennsylvania division. For this special trip the tender was again painted and decorated in the style which was familiar to passengers in 1893.

The first trip made by the DeWitt Clinton with a passenger train was from Albany to Schenectady on August 9, 1831, so that the exhibition at Chicago will mark the ninety-ninth anniversary of the life of the locomotive. In its present condition the locomotive weighs 9,420 lb. and the tender 5,340 lb. A standard New York Central Pacific type passenger locomotive, now in use, such as that shown in the illustration, weighs 276,000 lb., or about 11 times the weight of the entire train of 1831; though the gage of the track is the same now that it was then.

The DeWitt Clinton continued in active service for 14

gested that plaster of Paris, mixed to a plastic mass, with water, might be rammed down over the point of leakage from inside or outside as may be most convenient. This will set hard in a few minutes."



A Baldwin Decapod Leaving Manchuria, China, for Chita, Siberia

# General News Department

An average on-time record of 92 per cent was made by the fast freight service of the Chicago, Indianapolis & Louisville, between Indianapolis, Louisville and Chicago, during the months of May and June.

The number of applications for employment has permitted the Chicago & Alton to restore its age restriction for new employees. No one over 45 years of age or under 21 will be employed hereafter, although during the labor shortage occasioned by the war this rule was waived.

The Railroad Division of the American Society of Mechanical Engineers has elected the following Nominating Committee to present nominations for next year: G. M. Basford, G. M. Basford Company, chairman; W. L. Bean, N. Y., N. H. & H., and Kenneth Rushton, Baldwin Locomotive Works

The Texas Association of Claim Agents held a three-day session at El Paso, Tex., from July 14 to 17. Approximately 200 members of the association were in attendance at the session, which concentrated on means of relieving heavy claims resulting from live stock losses on railroad right of ways in Texas, Oklahoma, Louisiana and Arkansas.

## I. C. C. Decision in New England Divisions Case

The Interstate Commerce Commission in a decision made public Thursday says that it can find no basis afforded for a valid prescription of divisions by it. It decides, however, that fair divisions cannot in many instances flow from the existing arrangements. It expects the roads to work out readjustments and report.

## A Correction

In the *Railway Age* of July 2 (page 40), it was incorrectly reported that on the Illinois Central during the month of May, 92.2 per cent of the trains operated were on time, but as shown by the figures given, the percentage of trains on time should have been 99.2 per cent, or 13,451 trains maintaining a scheduled time out of 13,567 operated.

## Train Robbery on the Missouri Pacific

Train No. 205 on the Missouri Pacific, running between Memphis, Tenn., and St. Louis, Mo., was held up near Van Dale, Ark., on the night of July 23, and the mail and express cars were looted but it is reported that the robbers made away with but little money. The robbers are said to have been six in number and all armed with rifles. The loot was loaded into an automobile in which the robbers made their escape.

## Employers' Associations Ask

### Permission to Testify Before Labor Board

Telegrams were received by the Railroad Labor Board from the National Association of Manufacturers, the National Erectors' Association and the National Founders' Association on July 26, and the Employers Association of Chicago put in its request on July 27, petitioning the body and seeking to intervene in the Pennsylvania controversy with the shop craft labor union now before the Board. The associations seek to appear for a hearing on behalf of the public and in support of the open shop policy.

## Good Work in Freight Offices

J. J. Hooper, general claim agent of the Southern Railway, publishes, in the Southern News Bulletin for July, a list of the names of agents who have 100 per cent records in revising inbound freight billing for some period of time which is not given. Mr. Hooper says that the agents, whose names appear—two columns of small type—have made such progress in the work of

revising all inbound way bills that they now require only general supervision. Great progress is being made in reducing the number of costly overcharges and undercharges by correct billing and proper care of tariff files.

## Unauthorized Strike on the Cincinnati,

### Indianapolis & Western

Three hundred and two employees of the federated shop crafts of the Cincinnati, Indianapolis & Western shops at Indianapolis walked out on an unauthorized strike on Friday night, July 22. The shop laborers refused to join the strikers and all the foremen remained in service, taking the places of the mechanics. The road began hiring new men Saturday and on the following Wednesday morning had 320 men at work, with applications more than ample to fill all vacancies. A traffic of over 25 per cent above normal has been handled without delay during the strike.

## New Grade Crossing Law in Michigan

Representatives of all steam and electric railroads and of county road commissions of the state of Michigan will meet in Lansing, Mich., this week, with the State Public Utilities Commission, to work out the application of the new law, which gives the utilities commission jurisdiction over grade crossings. The new law requires that signs at least 24 in. in diameter be placed 500 to 600 ft. from every crossing, the highway department furnishing the posts and the railroads the signs. This work must be completed by May 18, 1922. The law further requires that all crossings shall be smooth and even and 16 ft. wide for 25 ft. on each side of the crossing.

## District Court Issues Decision in Stoker Suit

The suit brought by the Mechanical Construction Company against the Locomotive Stoker Company for infringement of Patent No. 979,849 to William T. Hanna, was tried before Judge Thomson in the District Court of the United States for the Western District of Pennsylvania in February and March, 1921. The defendant denied infringement, alleged the invalidity of the patent, and by way of counterclaim alleged infringement by the plaintiff of Patent No. 1,130,443. The plaintiff in reply denied the validity of this patent or infringement thereof and asked that the counterclaim be dismissed.

The claims of the Hanna patent covered the use of diverging channels in the distributor plates for the distribution of coal in the firebox. In this suit the decision states, "The claims in suit I find valid and infringed." The counterclaim was based on a fuel receptacle below the firing floor, in regard to which the decision states, "I find that for the reason set forth in this opinion, defendant's counter-claim should be dismissed."

The case has been appealed by the Locomotive Stoker Company and it is expected that it will be heard by the Upper Court early in the October term.

## Wood Preservers' Association Has

### Established Service Bureau

The American Wood Preservers' Association is establishing a service bureau to promote the use of treated timber and thereby conserve the forest resources of the country. This bureau will be prepared to furnish information concerning the uses to which treated timber may be applied economically, to answer inquiries regarding the relative durability of treated and untreated woods, and to supply other data concerning the use of timber treated with the standard preservatives, such as zinc chloride and creosote. Headquarters have been established at 10 S. La Salle street, Chicago, and P. R. Hicks, engineer in forest products of the United States Forest Products Laboratory at Madison, Wis., has been appointed secretary-manager.

**Tentative Valuations Issued**

The Interstate Commerce Commission has issued tentative valuations giving the following figures for the final value:

Kentwood, Greensburg & Southwestern, 1916.....	\$138,834
Gulf Terminal, 1915.....	565,148
Pine Bluff & Northern, 1916.....	39,758
Fordyce & Princeton, 1916.....	174,071
Shreveport Bridge & Terminal, 1915.....	424,067
Dallas Terminal Railway & Union Depot Co., 1915.....	1,187,810
Grafton & Upton, 1916.....	436,785
Conway Electric Street Railway, 1914.....	151,163
Hoosac Tunnel & Wilmington, 1916.....	641,864
Pine Bluff & Arkansas River, 1915.....	153,840
Green Bay & Western, 1916.....	5,298,582
Kewaunee, Green Bay & Western, 1916.....	1,289,193
Ahnapee & Western, 1916.....	676,408
St. Johnsburg & Lake Champlain, 1916.....	2,924,120
Thorntoa & Alexandria, 1916.....	243,542

**Wage Reductions in Canada**

By a tentative agreement between the Railway Association of Canada and Division 4, Railway Employees Department, American Federation of Labor, the railway employees in the locomotive and car departments, as specified in wage agreement No. 4, will receive a decrease of 8 cents per hour, effective on July 16, 1921. It has also been agreed that promptly upon notice from either the Railway Association of Canada or Division No. 4, Railway Employees Department, American Federation of Labor, to the other, representatives of both will confer further and that except as may be otherwise mutually arranged, any rates and conditions finally agreed upon will be effective as of July 16, 1921. At that time any necessary adjustments will be made accordingly, provided, however, that any such adjustments will not operate to bring about any reclaim from employees of any amount which may have been paid to them pursuant to the terms of the above tentative agreement.

A similar agreement with United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers has resulted in tentative reductions, effective the same date, as follows: all maintenance of way foremen and signal construction foremen, 80 cents per day; carpenters and other skilled workmen, 10 cents per hour; track laborers, crossing watchmen, bridge tenders and others laborers, 8½ cents; signal maintainers, 8 cents; signal helpers and helpers of maintenance mechanics, 7 cents; roundhouse laborers and ash pit men, 10 cents; pumpmen, \$17.34 per month; signal men at interlocked crossings, \$12.24.

**Program for the Roadmasters' Convention**

The tentative program for the convention of the Roadmasters' and Maintenance of Way Association, which will be held at the Auditorium Hotel in Chicago on September 20-22 inclusive, has been definitely arranged as follows:

**TUESDAY MORNING, SEPTEMBER 20**

- 10:00 a. m. Convention called to order.  
Opening business, president's address, etc.
- 11:00 a. m. Committee report: "The Construction and Maintenance of Railroad Crossings"; D. O. Hearn, roadmaster, Elgin, Joliet & Eastern, Joliet, Ill., chairman.

**TUESDAY AFTERNOON**

- 2:00 p. m. Paper: "Results Obtained from the Use of Treated Ties"; J. H. Waterman, superintendent, timber preservation, Chicago, Burlington & Quincy, Galesburg, Ill.
- 3:00 p. m. Committee report: "The Most Economical Method of Handling and Renewing Cross and Switch Ties"; E. P. Hawkins, division engineer, Missouri Pacific, Wichita, Kan., chairman.

**WEDNESDAY MORNING, SEPTEMBER 21**

- 9:30 a. m. Committee report: "Methods of Stimulating Rivalry Among Track Forces"; George T. Kooztz, roadmaster, Delaware & Hudson, Carbondale, Pa., chairman.
- 11:00 a. m. Paper: "The Budget System as Applied to Track Work"; C. A. Morse, chief engineer, Chicago, Rock Island & Pacific, Chicago.

**WEDNESDAY AFTERNOON**

- 2:00 p. m. Committee report: "The Classification and Distribution of Second Hand Rail"; L. E. Dale, supervisor, Pennsylvania, Philadelphia, Pa., chairman.
- 3:00 p. m. Committee report: "The Records and Accounts of a Roadmaster's Office"; F. J. Meyer, assistant engineer, New York, Ontario & Western, Middletown, N. Y., chairman.
- 6:30 p. m. Annual dinner of the Roadmasters' & Maintenance of Way Association and the Track Supply Association.

**THURSDAY MORNING, SEPTEMBER 22**

- 9:30 a. m. Paper: "The String Lining of Curves—Methods and Results"; H. L. Pierce, supervisor, Pennsylvania, Cresson, Pa.
- 10:15 a. m. Business session, including election of officers, etc.

**THURSDAY AFTERNOON**

Arrangements are being made for a visit to some interesting operations of value to maintenance men.

**Chamber of Commerce Appoints Transportation Committees**

The Chamber of Commerce of the United States has appointed two committees to deal with transportation questions during the ensuing year. One is a committee to act for the Chamber's department of transportation and commerce and the other is a special railroad committee.

The members of the regular departmental committee are: Howard Elliott, chairman of the board of directors of the Northern Pacific, chairman; L. B. Stillwell, consulting engineer, New York; E. O. Edgerton, San Francisco; George A. Post, president of the Hudson River Bridge Corporation, New York; W. W. Salmon, president of the General Railway Signal Company, Rochester, New York; H. H. Raymond, New York; J. M. Whitsitt, Charleston, S. C.; A. J. Brosseau, New York; P. H. Gadsen, Philadelphia; D. Fiske, Minneapolis; B. F. Cresson, Jr., New York; J. J. Carty, vice-president of the American Telephone & Telegraph Company, New York; and L. Teter, Chicago.

The members of the special railroad committee are: George A. Post, chairman; T. C. Powell, vice-president of the Erie; H. A. Wheeler, vice-president of the Union Trust Company, Chicago; G. W. Simmons, St. Louis; W. W. Salmon, Rochester; A. W. Smith, general counsel of the Railroad Administration; Emory R. Johnson, Dean of the Wharton School, University of Pennsylvania, Philadelphia; C. E. Lee, East Orange, N. J.; F. C. Dillard, Sherman, Tex.; W. S. Dickey, president of the Kansas City & Missouri River Navigation Company.

The Chamber's transportation department was organized recently with J. R. Bibbins as its manager. The committee will deal with transportation in all its forms and will take up the following subjects:

1. Railroads—Further study of financial resources, consolidation and efficiency, with the object of making them self-sustaining, with adequate service to the public.
2. Marine Transportation, both lake and ocean—The problems of the American merchant marine and proper relation to foreign competition.
3. Terminals and Ports—Intensive study of operating unification to secure a more efficient trans-shipment machine.
4. Electric Railways—The fare situation and ways and means for securing a self-supporting agency of essential public service.
5. Highways—Economic analysis of the problem of highway transport in relation to other agencies, and the proper public subsidy therefor.
6. Waterways—Economic analysis showing the true position of waterways as a natural resource, as yet largely undeveloped.
7. Communications—Encouragement of adequate development for needs of business, especially in connection with foreign countries.
8. Postal and Express—The problem of transportation of the mails upon an economic basis.
9. Air Transport—The codification of laws and regulations to promote safety and encourage aeronautical development with the maximum rapidity.

## Traffic News

Freight rates on export grain from points in Illinois to New Orleans, La., were reduced 3 cents per 100 lb. by the Illinois Central on August 11.

New facilities that will permit the icing of two 55-car trains at one time have just been placed in operation at Sparks, Nev., by the Pacific Fruit Express Company. Similar improvements have been made recently at Carlin, Nev., and Ogden, Utah.

The Mississippi section of the government barge line has carried or hooked for delivery on downstream barges, this month, 50,000 tons of freight, more than three times the tonnage handled in July, 1920. Over half of the total is grain, which is principally wheat.

The Interstate Commerce Commission has authorized the roads carrying lake coal to extend the 28 cent reduction in the rates on coal transhipped from lower to upper lake ports to apply to Chicago and certain other points not covered in the original tariff.

The Baltimore & Ohio has restored the stop-over privileges on through tickets which were discontinued when the government took control of the railroads in 1919. The list of 31 points at which the stop-over is allowed (ten days) includes the principal cities and summer resorts on the company's lines.

The Chicago, Rock Island & Pacific, the Missouri Pacific, the St. Louis-San Francisco and the Kansas City Southern have agreed to give American Legionnaires attending the third annual convention at Kansas City, Mo., from October 31 to November 2, a special rate of 1 cent a mile.

Representatives of the utilities commissions of 14 states west of the Mississippi river met in Chicago on July 20, to perfect a petition to the Interstate Commerce Commission to reduce rates on hay, grain and grain products 35 per cent, or to the basis in effect prior to August 26, 1920. The commission has set August 15 as the date for hearing arguments for rate readjustments and this case will come up at that time.

### Farm Bureau Asks Lower Freight Rates

The American Farm Bureau Federation has prepared a memorial to be sent to the President, members of Congress and the Interstate Commerce Commission asking for a reduction of freight rates on the "basic necessities of life." The memorial criticizes Section 15-a of the Transportation act as the cause for the high rates and urges its repeal, apparently on the theory that such a step would in some way affect the rate situation.

### Georgia Peaches and Melons

Shipments of peaches and watermelons from Georgia this season have surpassed all previous records, disproving the predictions that the crops would rot in the fields because of high freight rates. The Fruit Growers' Express reports that up to July 23, 10,264 cars of peaches had been shipped from Georgia. The total movement for 1920, according to the United States Department of Agriculture, was 5,663 cars. Up to July 17, 10,110 cars of watermelons had been shipped from Georgia, as compared with 5,258 for the same period last year, and 11,103 for the total 1920 movement. Prices received for both peaches and watermelons have yielded the growers good returns.

Favorable weather conditions, improved transportation and icing facilities, and better marketing methods have all contributed to the satisfactory results obtained. The yields of both peaches and watermelons went far ahead of the railways' estimates, but there was an ample supply of refrigerator cars for the peaches and of ventilators for the watermelons. The Atlantic Coal and Ice Corporation was called on to furnish 100,000 tons of ice for the peaches.

The Georgia peach growers, for years, and now the watermelon growers, have co-operative marketing associations which have had a great part in securing the good prices which have been received.

## Commission and Court News

### Interstate Commerce Commission

The Interstate Commerce Commission, on petition of the Illinois railroads, has ordered an investigation to determine whether the intrastate rates on railroad cross ties in Illinois are discriminatory against interstate commerce.

The commission has issued a decision holding that proposed class rates between points in Kansas and points in Oklahoma; between points in Kansas and Oklahoma and points in Texas; between points in Texas, on the one hand and points in Arkansas and in Louisiana, and Memphis, Vicksburg and Natchez, on the other; and between points in Oklahoma on interstate traffic, filed by the railroads in extension of the Memphis-Southwestern scale, are not justified. The tariffs under suspension were ordered cancelled without prejudice to the filing of tariffs in conformity with the findings of the report.

The Interstate Commerce Commission has rendered a decision on a complaint filed by the Railroad Commissioners of Florida, attacking the line-haul rates and refrigeration charges on citrus fruits and vegetables from Florida producing points to various interstate destinations, in which it is held that the aggregate charges are not unreasonable, except (1) that the line-haul charges on vegetables, except celery, under refrigeration, are unreasonable in that they do not provide in those instances where a lower minimum and higher rate apply than under ventilation for the alternative application of the same rate and minimum as under ventilation, and (2) that the refrigeration charges on fruits and vegetables are unreasonable in that they are based on an excessive quantity of ice. Carriers are directed to revise their tariffs in accordance with the conclusions of the Commission. The rates considered were those in effect prior to the general advance last year.

The Interstate Commerce Commission has rendered its decision on the complaints filed by the National Wholesale Grocers' Association and the Southern Wholesale Grocers' Association in which it finds that the practice of the railroads in permitting the meat packers to load certain articles of groceries in their peddler and branch-house cars is not shown to result in undue prejudice to complainants or unduly to prefer the packers. The various peddler car rates and rules are not shown to be unreasonable or unduly prejudicial, except that the mileage scale of rates applicable on packing house products in peddler cars in southwestern territory are found to be unduly prejudicial to complainants and unduly preferential of the meat packers insofar as it applies on lard substitutes, cottonseed cooking oil, peanut cooking oil, corn cooking oil, soya-bean cooking oil, canned meats, canned soups, chicken tamale, chili con carne, spaghetti-meat chili, and canned meats with vegetable ingredients. Various rules applicable on mixed carloads of fresh meats and packing-house products are found unjust, unreasonable and unduly prejudicial, and reasonable, and uniform mixing rules are prescribed for the future.

### Mail Pay Petition Denied

The commission has denied a petition of the railroads for an interpretation of Section 9 of the mail pay order so as to make application of separate compensation for side, terminal and transfer service retroactively to the period November 1, 1916, to March 1, 1920, and for a ruling making application of the minimum annual payment provided in the proviso to Paragraph 2 of Section 3 of the order to the routes as shown in the statement and comprehensive plan of the postmaster general submitted to the commission.

The commission orders, however, that the 25 per cent increase in rates from January 1, 1918, specified in Section 3 of the order be made applicable to the minimum payment of \$50 per mile per annum named in the proviso to Section 3 of the order.

## State Commissions

### The Louisiana Public Service Commission

By the adoption of a new constitution the state of Louisiana has abolished the state railroad commission; and the commissioners, Shelby Taylor, John T. Michel and H. P. Long now constitute the Public Service Commission; and they have authority over all common carriers, street railroads, public utilities, boats and canals, except irrigation canals.

The new commission has issued an order continuing in effect all of the rates and regulations of the former commission until further orders. Street railroads and other concerns now being brought under commission regulation for the first time are ordered to publish tariffs and file copies by July 31. The same order gives in brief form the requirements of the law in relation to rates, undue discrimination, etc. The provision allowing free transportation of property for state or municipal governments indicates that this applies only where the said government is "the direct beneficiary" of the reduced rate. No authority for reductions in transportation rates will be granted on account of merely potential water competition.

## Personnel of Commissions

Frederick I. Cox, of New Jersey, was on July 22 nominated by the President as a member of the Interstate Commerce Commission in place of Edgar E. Clark, whose resignation takes effect on August 31. Mr. Cox is a silk salesman, for many years connected with Belding Brothers and Company, manufacturers, of New York City, and his appointment is made on the recommendation of the National Council of Traveling Men's Association, endorsed by Senator Frelinghuysen, of New Jersey. This association conducted a campaign in behalf of Mr. Cox last April, when the President made the appointments called for under the law enlarging the Commission. Mr. Cox was born on May 25, 1870, at Rockaway, N. J., and now resides at East Orange, N. J. He has been in mercantile pursuits throughout his business life. His appointment is for a term expiring on December 31, 1926.



F. I. Cox

## Court News

### U. S. Approves Reduction of Wages Below

#### Scale Fixed by Labor Board

The federal district court for the Eastern District of Arkansas holds that, in view of the Fifth Amendment to the federal Constitution, a receiver of a railroad, operated before and after his appointment at a continuous loss, the gross earnings being insufficient to pay operating expenses, and where money can no longer be borrowed on the receiver's certificates, may be authorized to reduce the wages of the employees below the scale fixed by the United States Railroad Labor Board in its decision No. 2, which became effective May 1, 1920, without being subject to punishment under section 312 of the Transportation Act. The court holds that to require the railroads to continue in business at a loss is beyond the power of Congress or a state, citing *Brooks-Scanlon Co. v. Railroad Commission of Louisiana*, 251 U. S. 396, 40 Sup. Ct. 183, 64 L. Ed. 323, reaffirmed in *Bullock v. State of Florida*, 254 U. S.—*St. Louis Union Trust Co. v. Missouri & N. A.*, 270 Fed. 796.

## Foreign Railway News

### New Line to Connect French and Italian Railways

The French parliament has just voted \$12,400,000, according to the Times (London) Engineering Supplement, to unite the railways of France and Italy by a line from Nice to Cuneo. The Italian part of the line has been in operation for a number of years but of the 36 miles of line in France little has been done but the construction of two important tunnels, one 3¾ miles in length and the other 2½ miles. It is not expected that the line will be completed until some time in 1925.

### Tientsin-Pukow Railway Developments

The increase in traffic at the Pukow terminal of the Tientsin-Pukow Railway necessitates the addition of further floating wharves (on the Yangtze river across from Nanking) and the repair of those put in use 10 years ago. About \$50,114 will be spent for the entire work, according to Consul John K. Davis. A new power plant is to be erected at Pukow, to be completed in two years. It will supply the city and port with light and power for the Puchen shops, the current to be transmitted to Puchen at 6,600 volts. The maximum power of the plant is stated at 3,000 kilowatts. The cost is estimated to be \$237,384.

### Belgian Operating and Construction

#### Company Changes Name

The General Light Railway Company of Belgium (Compagnie Générale de Chemins de Fer Secondaires) has announced that henceforth it will be known as the Belgian Railway and Enterprise Company (Compagnie Belge de Chemins de Fer et d'Enterprises). The reason given for the change is that the company in departing more and more from the construction of narrow gage lines and tramways and is devoting itself to standard gage lines and to various construction projects. The old name it was felt was misleading and prejudicial to the best interests of the company.

### Spectacular Train Robbery in France

A night express train from Paris bound for Marseilles was, according to a Paris dispatch to the New York *Herald*, held up by bandits on the night of June 24 and the passengers robbed of money and goods valued at approximately \$20,000. The robbers, all heavily armed, who boarded the train at a regular stop, began relieving the passengers of their valuables while the train was in motion in the neighborhood of Dijon. When they had finished their work they pulled the bell cord and when the train slowed down left the train for a waiting automobile and made their escape. One passenger was killed and another wounded when they made a show of resistance.

### Contract for Chilean Electrification

A newspaper report dated July 20 stated that the directors of the Chilean State Railways had decided to accept the bid of the Westinghouse Electric & Manufacturing Company for the electrification of a section of the state railways.

A later report, issued by the Wall Street Journal, states that the contract which was awarded to the Westinghouse Electric & Manufacturing Company is contingent upon certain financial reservations which have not yet been accepted by that company. The report further states it is understood that the Chilean government has not yet found a means of financing the project, and the inference is that it is a condition of the contract that the company shall assist the government in arranging the financing, or shall accept bonds in payment and thereby be obliged to find a syndicate here or elsewhere to buy those bonds.

The contract involves the electrification of the line between Santiago and Valparaiso and the connection with the Trans-Andine line, from the junction with the Santiago-Valparaiso line, to Los Andes. The work will involve 200 route miles and the contract will amount to between \$10,000,000 and \$12,000,000.

## Equipment and Supplies

### Car Orders and Deliveries in June

In presenting in these columns the figures of deliveries of freight cars for domestic service in May, attention was called to the fact that deliveries were "returning to the low level which characterized the first half of 1920." The deliveries in June declined to 2,245—a figure lower than that of any month in 1920 excepting April (when the total was 2,127) and lower than that of any previous month in the current year.

The deliveries of freight cars for foreign service totaled 413, lower than any such total for any month of 1920 or thus far in 1921. Passenger car deliveries for domestic service, on the other hand, increased to 159 for June over the May figure of 138. Indeed the June total is greater than that of any month in 1920 or thus far in 1921.

Freight cars on order and undelivered at the end of June totaled 12,149 for domestic and 3,711 for foreign service—comparing with similar figures of 13,890 and 3,559 for May. Domestic freight cars repaired during June totaled 2,939 as against 3,250 in May. The cars for repair on order and undelivered, however, rose from 12,308 at the end of May to 13,752 at the end of June.

The summary for June, as prepared by the Railway Car Manufacturers Association from the reports of 26 car building companies, follows:

	New Cars Delivered		Total
	Domestic	Foreign	
Freight .....	2,245	413	15,860
Passenger .....	159	4	
	On Order and Undelivered		
Freight .....	12,149	3,711	343
Passenger .....	291	52	
	Car Repairs		
Delivered—June .....			2,939
On order and undelivered June 30 .....			13,752

### Locomotives

THE NEW YORK CENTRAL and subsidiary lines will receive bids on August 2, for the general repairs of 50 locomotives.

### Freight Cars

THE KATANGA RAILWAY (Africa) has placed orders with Belgium car builders for 60 gondola cars.

THE LEHIGH & NEW ENGLAND is having repairs made to 300 box cars at the shops of the Middletown Car Company, Middletown, Pa.

THE RUSSIAN SOVIET GOVERNMENT, according to a dispatch from Montreal, Que., July 19, has given the Canadian Car & Foundry Company, Ltd., a \$2,000,000 order for 500, 50-ton tank cars.

THE DELAWARE, LACKAWANNA & WESTERN has given contracts for the repair of box cars to the Magor Car Company for 500, to the Buffalo Steel Car Company 500, and the American Car & Foundry Company 500.

BUFFALO, ROCHESTER & PITTSBURGH reported in the *Railway Age* of July 23, as asking for prices on the repair of from 500 to 1,000 freight cars, will make repairs to a total of 2,000 30-ton wooden box cars. The company has given a contract to the Buffalo Steel Car Company for repairs to 500, 50-ton hopper cars.

THE NEW YORK CENTRAL, reported in the *Railway Age* of July 1, as asking for prices on the repair of 1,000 steel hopper, or gondola cars of 50 tons capacity has given contracts for the repair of freight cars as follows: For the New York Central, 500 box cars to the Ryan Car Company; 500 box cars to Streater Car Company; 500 box cars to Standard Steel Car Company; 500 hopper cars to American Car & Foundry Company, and 500 hopper cars to Buffalo Steel Car Company. For the Pittsburgh & Lake Erie, 500 box cars to Pressed Steel Car Company and 1,000 hopper cars to Standard Steel Car Company. For

the Cleveland, Cincinnati, Chicago & St. Louis, 500 general service cars and 500 hopper cars to American Car & Foundry Company. For the Michigan Central, 500 box cars to the Illinois Car & Manufacturing Company, and for the Lake Erie & Western, 500 box cars to Haskell & Barker Car Company.

### Iron and Steel

THE MISSOURI PACIFIC is inquiring for two 100-ft. deck turntables weighing 175 tons each.

THE MISSOURI PACIFIC has placed an order with the Lincoln Steel & Forge Company, St. Louis, Mo., for 500 steel underframes.

THE MISSISSIPPI CENTRAL is in the market for two 100 ft. second-hand steel bridge spans, designed for Cooper E-40 loading.

THE U. S. GOVERNMENT RIVER TERMINAL at St. Louis, Mo., has let 150 tons of structural material to the St. Louis Structural Steel Company.

MITSUI & COMPANY, New York, has ordered from the United States Steel Products Company, 700 tons of 80-lb. rail and accessories for use on the South Manchuria Railway.

THE CHICAGO & NORTH WESTERN has ordered 1,225 tons of steel from the Morava Construction Company, for use in the reconstruction of the elevator at Irondale, Ill., recently injured in an explosion.

### Machinery and Tools

THE CENTRAL OF GEORGIA has ordered a driving wheel lathe and some smaller lathes from the Niles-Bement-Pond Company. The company has also placed an order for car wheel lathes and boring mills.

THE CHICAGO, BURLINGTON & QUINCY will receive bids until 12 o'clock noon, August 5, for machinery for the electrical operation, including the end lift reduction gearing, for the Burlington, Ia., drawbridge.

### Miscellaneous

THE CENTRAL OF NEW JERSEY will receive bids until 12 o'clock noon, August 2, for the work of repairing, rebuilding, etc., of its marine equipment, for the period of one year from August 2, 1921, to August 2, 1922.

THE CHICAGO, BURLINGTON & QUINCY will receive bids until 12 o'clock noon, August 5, for 400,000 standard, double punched steel tie plates. The company received bids July 29, for 800 spools of galvanized barbed wire fencing, 350 kegs 7-D, 100 kegs 8-D, 49 kegs 16-D, and 85 kegs 20-D cement-coated heavy barbed car nails.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, August 10, at Roanoke, Va., for: Parts for electrical apparatus; repairs to electrical apparatus; 75 billets of welding steel; 12,000 lb. spring steel; 110,000 lb. soft steel bars; 80,000 lb. steel shapes and for its requirements of locomotive driving wheel and truck tires for the months of July to September, 1921, both inclusive.

### Signaling

THE CHICAGO, BURLINGTON & QUINCY will receive bids until 12 o'clock noon, August 1, at Chicago, Ill., for two 3-track signal bridges.

### Trade Publications

STEAM JET ASH CONVEYORS.—The Conveyors Corporation of America, Chicago, has recently issued a booklet entitled "The Proof of the Pudding," which contains reproductions of 70 letters regarding the service obtained with American steam ash conveyors. The list of users who commend this device includes several prominent railroads.

## Supply Trade News

M. J. O'Connor has been appointed general sales manager of the Gary Industrial Paint Company, with headquarters at 20 East Jackson Boulevard, Chicago.

The Oxweld Acetylene Company, Newark, N. J., has removed the offices of its foreign sales department from Newark to 30 East Forty-second street, New York City.

The Webster & Perks Tool Company, Springfield, Ohio, has sold the grinding and polishing stand and accessory department, of its business, to the Hill-Curtis Co., Kalamazoo, Mich.

The Schaffer Engineering & Equipment Company announces the combining of its administrative, sales and manufacturing departments in its new general offices at 2828 Smallman street, Pittsburgh, Pa.

The Sullivan Machinery Company has moved its Cleveland, Ohio, offices from the Park building to Room 824, Kirby building. The company has also established a new supply depot and service station at Seventh avenue and Thirteenth street, Terre Haute, Ind.

The Allied Machinery Company of America, 51 Chambers street, New York City, with offices in all the large countries of the world has been appointed foreign representative in all countries except the United States and Canada for the Universal Crane Company, Cleveland, O.

A. M. Castle & Co., Chicago, has started work on the construction of a new steel warehouse at Blackhawk and North Branch streets, Chicago. The building will be 211 ft. by 232 ft. of fireproof construction. The west end of the building for 75 feet is to be two stories in height and the second floor will provide office space 75 ft. by 211 ft. for the general offices of the company.

Charles S. Pfisterer has resigned as assistant manager, railroad sales department of the National Carbon Company, Inc., Cleveland, Ohio, to become railroad sales manager of

the Twin Dry Cell Battery Company, with office at Cleveland. Mr. Pfisterer was born in Allegheny, Pa., in 1875. After spending two years in the steel mills at Braddock, Pa., he became connected with the Union Switch & Signal Company, Swissvale, Pa., in 1891 as a laborer. In 1893 he entered the employ of the Johnson Railroad Signal Company, Chicago, and from 1894 to 1901 was connected successively with various signal companies, the Chicago & Eastern Illinois, the Cleveland, Cincinnati, Chicago &

St. Louis, the Chicago Elevated Railways and the Chicago Great Western. In 1901, he was appointed interlocking foreman on the Union Pacific at Omaha, Neb. From 1901 to 1908, he was successively signal foreman, general signal foreman, superintendent of construction, general signal inspector and assistant signal engineer, and in 1909, was appointed assistant signal engineer of the Oregon Short Line, with headquarters at Ogden, Utah. In 1911, he became connected with the National Carbon Company, Inc., in charge of the caustic soda primary battery department. In October, 1919,

he was appointed eastern manager of the railroad sales department at Cleveland and now resigns as assistant manager of the railroad sales department of the National Carbon Company, Inc., to become railroad sales manager of the Twin Dry Cell Battery Company, as above noted.

A slack adjuster constructed along new lines applicable to both freight and passenger cars has recently been developed by a Swedish inventor, A. R. Djurson. The Djurson adjuster, which is built for the European market by Actiefbolaget Bromsregulator, Stockholm, Sweden, has found extended use on the continent. It is now being introduced in this country and will be handled by the firm of Hamilton & Hansell, Inc., Park Row building, New York.

Sidney G. Johnson, formerly vice-president and director of the General Railway Signal Company, has been made assistant to president of the Chicago Railway Signal & Supply

Company, Chicago. Mr. Johnson's headquarters are at 30 Church Street, New York City, and he will continue also as sales representative of the Signal Accessories Corporation, Utica, N. Y., and for the Hazard Manufacturing Company, Wilkesbarre, Pa. Mr. Johnson was born in 1874, in Eccles, Lancashire, England. At the age of 12 he came to America and went to Swissvale, where his father, Henry Johnson, was works manager of the Union Switch & Signal Company. About a year later he went to Rahway, N. J., where



S. G. Johnson

the Johnson Railroad Signal Company had been established, and during vacations he worked in the shops and drawing office. He attended a preparatory school and for two years after leaving school he worked in the construction gang of the Johnson Railroad Signal Company. He later served with the construction forces of the Union Switch & Signal Company for a year. In 1896, when the Standard Railway Signal Company was organized, with his father as president, he was made signal engineer and had charge of the locking and dog sheets, making estimates, etc. When the company went to Troy he went with it; but, after the Trojan Car Coupler Company's interests took hold, his father left the Standard and he followed him after a few months and went with the Union Switch & Signal Company in 1899, in the New York office. Shortly afterward he was appointed engineer of construction for the eastern district and later was for two years at Swissvale as signal engineer in charge of the estimating department. He then went to New York and had charge of installing the signal system on the Interborough and of other large installations put in at that time. When the Interborough work was finished he was made eastern manager, in charge of sales and construction. About 1910 he was appointed general sales manager, and in March, 1914, became vice-president in charge of sales and engineering. The following July he left the service of the Union Switch & Signal Company to go to the General Railway Signal Company as assistant to the president, and in August 1914, became a vice-president and director of the latter company, from which position he resigned in July, 1920.

E. W. Crellin, president of the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., has retired, effective July 15, and W. H. Jackson, secretary and treasurer, has been elected to succeed him at the same time; P. E. Guibert and W. W. Hendrix have been elected vice-presidents, and George A. Smith, secretary and treasurer. A. C. Pearsall has been appointed general manager of the Des Moines, Ia., branch, succeeding Mr. Smith, who has gone to Pittsburgh, Pa.



C. S. Pfisterer

## Railway Construction

**AMERICAN RAILWAY EXPRESS.**—This company has awarded a contract to the St. John Company, Miami, Fla., for the erection of a concrete block express office at Miami, Fla., to cost approximately \$15,000. The building will be 50 ft. by 150 ft. and one story in height.

**AHUKINI TERMINAL & RAILWAY COMPANY.**—The Interstate Commerce Commission has issued a certificate authorizing this company to construct a line in the district of Puna, Island of Kauai, Territory of Hawaii, extending from a point near Anahola Bay to Ahukini Landing on Hanamaulu Bay, approximately 16 miles.

**ATCHISON, TOPEKA & SANTA FE.**—This company is receiving bids for the construction of an addition to its power plant at Albuquerque, N. M., to cost about \$150,000.

**CHICAGO, BURLINGTON & QUINCY.**—This company has awarded a contract to B. J. Martin, Billings, Mont., for the construction of an addition to its power plant at Sheridan, Wyo.

**CHICAGO & NORTH WESTERN.**—This company contemplates the construction of a new icing plant at Clinton, Ia., to cost about \$50,000.

**CHICAGO UNION STATION.**—This company, which was noted in the *Railway Age* of July 2 (page 42), as accepting bids for grading the new station site between Madison and Adams streets, has awarded the contract for this work to W. J. Newman & Company, Chicago.

**CHICAGO UNION STATION.**—This company will shortly accept bids for the construction of the substructure of the Madison street viaduct, Chicago. The company will also shortly accept bids for widening the second link of Canal street, between Jackson and Van Buren streets.

**ILLINOIS CENTRAL.**—This company has awarded the contract for a new brick passenger station at Speedway, Ill., with dimensions of 22 ft. by 60 ft., to Ellington-Miller, Chicago.

**ILLINOIS CENTRAL.**—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a switchmen's office and general yard office at Clinton, Ill., to cost about \$25,000.

**MISSOURI PACIFIC.**—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for improvements to the terminal facilities at Hoisington, Kan., including the installation of a new 100 ft. turntable and an extension to its yards.

**SEABOARD AIR LINE.**—This company has awarded a contract to the Elliott Building Company, Hickory, N. C., for the erection of a brick station with necessary sheds, platforms, etc., at Chester, S. C.

**ST. LOUIS-SAN FRANCISCO.**—This company contemplates the construction of a new freight and passenger station at Fayetteville, Ark., to cost about \$70,000.

### A Paid Technical Course Offered To High School Graduates

**TECHNICAL TRAINING**, six hours a week, is offered by the Western Electric Company, in a special free course, to a limited number of its employees who are this year's high school graduates. These young men will be developed for positions of responsibility in the laboratories and drafting divisions of the company's engineering department. The new course is divided into three units, each requiring a year for completion. It covers the fundamental principles of physics and mathematics and their use in the field of telephony. The instruction will be given on company time within the regular hours of employment, but the students will be required to do considerable study and preparation at home. The salaries of the young men will be readjusted twice a year and will be based upon their records in the classroom and their proficiency in their duties. The only expense will be that for the purchase of standard textbooks.

## Railway Financial News

**AMERICUS & ATLANTIC.**—*Asks Authority to Issue Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue \$150,000 of capital stock and \$120,000 or 50-year 6 per cent bonds. It is proposed to use \$115,750 of the proceeds of the stock to purchase a railroad, extending for 15 miles from Mata, Ga., which it is proposed later to extend to Americus, Ga.

**BOSTON & MAINE.**—*Authorized to Abandon Branch Line.*—The Interstate Commerce Commission has issued certificates authorizing the abandonment of a branch line from Bethlehem Junction to Profile House, Grafton county, New Hampshire, about 9 miles, and another branch from Cherry Mountain to Jefferson, N. H., 3.5 miles. The certificate was asked on the ground that the competition of automobiles had reduced the traffic to practically nothing.

**CHESAPEAKE & OHIO.**—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to nominally issue \$8,539,238 of first lien and improvement 20-year bonds in respect of expenditures made for refunding and construction and to pledge \$6,674,000 of the bonds as collateral for a loan from the United States.

**CHICAGO, ROCK ISLAND & PACIFIC.**—*Asks Authority to Pledge Bonds.*—Application has been filed with the Interstate Commerce Commission for authority to pledge \$8,364,000 of first and refunding mortgage gold bonds as security for short term loans.

**DELAWARE, LACKAWANNA & WESTERN.**—*Stock Increase and Segregation of Coal Properties Approved.*—The stockholders on July 21 approved the increase of \$45,000,000 in the company's capital stock, as was authorized by the Interstate Commerce Commission in its decision outlined in the *Railway Age*, issue of April 22, 1921, page 995. Approval was also given to the plan for segregating the coal properties by their sale to the Glen Alden Company, for \$60,000,000 of the latter's 4 per cent bonds and notes. See *Railway Age*, issue of May 20, 1921, page 1192.

The contract for the sale of the coal properties calls on the Glen Alden Company to establish a sinking fund of \$1,500,000 annually, beginning September 1, 1926, to be continued until the \$60,000,000 shall have been paid. It is provided further that should the Glen Alden Company mine more than 12,000,000 tons of coal in any year, the sinking fund must be increased to \$2,000,000.

The Glen Alden stock will be offered to the Lackawanna shareholders at \$5 per share, on a share for share basis. This privilege goes to stockholders on record June 15. Payment of the shares must be made on or before August 20.

The Delaware, Lackawanna & Western Coal Sales Company will not be disposed of, but will act as the sales agent for the Glen Alden, which will confine its work to mining.

**DENVER & RIO GRANDE.**—*Formal Transfer Authorized.*—The formal transfer of this road, sold at foreclosure November 20 to the Western Pacific, was authorized by Federal Judges Lewis and Sanborn on July 27 in an order approving and affirming the final report of William A. Jackson, special master. An appeal from the decision of Judge Lewis against the stockholders in their fraud suit is still pending, but Judge Lewis has announced that this will not interfere with the transfer.

F. C. Schramm, president of the Salt Lake Commercial Club, has sent a letter to Senator Reed Smoot of Utah, urging him to see the Interstate Commerce Commission in an effort to get an immediate decision on the Denver & Rio Grande situation. The letter states that the delay is having an adverse effect on business interests in Utah and other western states.

**EL PASO & SOUTHWESTERN.**—*Authorized to Issue Stock of No Par Value.*—This company has been authorized by the Interstate Commerce Commission to issue 750,000 shares of capital stock without par value in exchange for and in retirement of all its capital stock now outstanding, which consists of 250,000 shares of an aggregate par value of \$25,000,000. Commissioner Eastman dissented.

**GREAT NORTHERN.**—*Asks Loan from Revolving Fund.*—This company has applied to the Interstate Commerce Commission for a loan of \$15,000,000 for five years from the revolving fund with which to repay a loan for a like amount which matures on

September 1. The application explains that the company has made a final settlement with the director general of railroads and has received partial payments on account of its six months' guaranty, amounting to \$12,500,000. In making its settlement the director general set off \$16,997,642, due to the government for additions and betterments, against the amounts due the company for the period of federal control, and denied the request that the additions and betterments be funded, but the company has been assured that if the policy be changed as proposed and funds are put at the disposal of the director general, he will refund, in whole or part, the amount of the additions and betterments, which would enable the company to repay the loan from the revolving fund. The loan is asked for five years, but it is proposed that not exceeding \$10,000,000 of the amount shall become due and payable when funds are received from the director general. The company offers to deposit as collateral security for this loan, and \$2,910,000 of other loans, \$22,500,000 of general mortgage 7 per cent bonds.

**HUNTINGDON & BROAD TOP MOUNTAIN.**—*Authorized to Assume Liability.*—The Interstate Commerce Commission has authorized this company to assume liability in respect of \$300,000 of equipment trust 6 per cent certificates in connection with the procurement of four locomotives and 10 passenger cars.

**KENTWOOD, GREENSBURG & SOUTHWESTERN.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its line, extending from Kent's Mill to Freiler, La., 13.21 miles.

**KINDER & NORTHWESTERN.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a portion of its line from Kinder to Bullard, La., 16 miles.

**LEHIGH VALLEY.**—*Another Extension Granted.*—Judge Learned Hand in the United States District Court at New York has granted this company another extension of time for 30 days, or until August 23, to present a plan for segregating its properties.

**LITTLE ROCK, MAUMELLE & WESTERN.**—*Dismantled.*—The right-of-way, ties, rails and equipment of this company, which runs between Becker, Ark., and Cold Springs, 25 miles, and was originally planned to be extended to Hot Springs, will be sold and junked.

**LONG FORK.**—*Asks Authority to Issue Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue \$485,000 of capital stock and \$1,347,500 first mortgage 6 per cent bonds to be disposed of to the Baltimore & Ohio in settlement of advances.

**LOUISVILLE & NASHVILLE.**—*To Increase Capital Stock.*—The stockholders at a special meeting in Louisville, Ky., on July 23, authorized an increase of \$53,000,000 in the company's capital stock and authorized the board to apply to the Interstate Commerce Commission for permission to distribute proceeds of the new issue as a stock dividend. See *Railway Age*, issue of June 24, 1921, page 1472.

Steps also were taken to execute a blanket mortgage upon the company's property as security for first mortgage and refunding gold bonds to fund as much as may be deemed necessary of the debt of the road, which on December 31 last was \$166,300,825.

**MISSOURI & NORTH ARKANSAS.**—*New Receiver.—Road to Discontinue Operation.*—J. C. Murray, who has been appointed receiver and general manager to succeed C. A. Phelan, resigned, has announced that passenger service will be stopped July 31. Mr. Murray says that interference by strikers is the main cause. The citizens of Eureka Springs, Ark., are organizing a company to lease the track and equipment of the Missouri & North Arkansas and have applied to the court for permission to operate the line.

The Missouri & North Arkansas operates between Joplin, Mo., and Helena, Ark., 368 miles. The road has stocks and bonds outstanding of \$16,680,000, all of which are pledged under \$6,000,000 notes of the Allegheny Improvement Company. There are also approximately \$2,000,000 receivers' certificates outstanding.

See also article on another page of this issue entitled "Missouri & North Arkansas Discontinues Operation."

**MISSOURI PACIFIC.**—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to

issue from time to time \$5,501,500 of first and refunding mortgage bonds to be sold at not less than 90 or pledged as collateral for short term notes.

**READING COMPANY.**—*Supersedes Bond Filed.*—The \$750,000 supersedeas bond of the Continental Insurance Company and the Fidelity-Phoenix Fire Insurance Company of New York, required for an appeal to the United States Supreme Court from the decision of the United States District Court in the Reading segregation plan, that common and preferred stockholders shall share equally in the distribution of the stock of the new company, was filed in the District Court at Philadelphia on July 21. The bond was required to protect the preferred stockholders and others from any financial loss through the appeal.

**ST. LOUIS-SAN FRANCISCO.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**ST. LOUIS SOUTHWESTERN.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Tentative standard return* (January 1 to February 29, 1920; full year 1919)	\$651,819	\$3,910,914
Ten months, March 1 to December 31*		
Railway operating revenues	25,994,911	
Railway operating expenses	20,974,095	
Net revenue from railway operations	5,020,816	
Railway tax accruals	1,041,355	
Railway operating income	3,979,461	
Total non-operating income	1,534,298	659,740
Gross income	6,105,478	4,570,653
Interest on funded debt	2,236,888	2,250,490
Total deductions from gross income	3,145,642	3,223,744
Net income	2,959,837	1,345,909
Income appropriated for investment in physical property	2,959,837	
Income balance transferred to profit and loss		1,345,909

\*The St. Louis Southwestern did not accept the U. S. Government guaranty.

The annual report of the St. Louis Southwestern will be reviewed editorially in an early issue.

**SOUTHERN.**—*Question of Eligibility to Guaranty to Be Considered.*—The Interstate Commerce Commission has announced a hearing at Washington on August 3 before Director Colston of the Bureau of Finance on a question as to the construction of section 209 of the Transportation act, providing for the six months guaranty, in its application to carriers under common control and management, and particularly regarding the right of subsidiary or controlled companies of the Southern Railway to claim benefits under the guaranty section. The Southern did not file with the commission a written statement accepting the provisions of the guaranty section but its various subsidiaries did. The commission's notice says that evidence may be presented bearing upon the corporate, financial and operating relationships between the Southern and the various subsidiaries.

### Guaranty Certificates Issued

The Interstate Commerce Commission has issued certificates for partial payments on account of the six months' guaranty to the following roads: Terminal Railroad Association of St. Louis, \$30,000; Arizona & New Mexico, \$150,000.

### Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts: Missouri Pacific, \$9,000,000; Alton & Southern, \$385,000; Trans-Mississippi Terminal, \$55,000; Chattanooga Station Company, \$19,623.81; Gulf Terminal, \$9,426.33. The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the Administration during the 26 months of federal control.

### Dividends Declared

Delaware & Hudson.—2 1/2 per cent, quarterly, payable September 2 to holders of record August 27.  
 Pennsylvania.—\$0.50, quarterly, payable August 31 to holders of record August 1.  
 Pullman Company.—\$2, quarterly, payable August 15 to holders of record July 30.

# Annual Report

## Report of St. Louis-San Francisco Railway Company

### TO THE STOCKHOLDERS:

Your Directors submit report for the year ended December 31, 1920. During the two months ended February 29, 1920, the property of the Company was within the control and operated by the United States Railroad Administration. At midnight, February 29, 1920, corporate operation of the property was resumed and in due season the Company accepted the guaranty provisions of Section 209 of the Transportation Act.

The primary basis of the guaranty provided by the Transportation Act is one-half of the average annual railway operating income (Standard Return) of the Company's lines (including affiliated companies) for the three years ended June 30, 1917, as finally certified by the Interstate Commerce Commission and compensation to be paid the Company for the use of its property during Federal Control.

In your Directors' report for the year ended December 31, 1919, you were advised of the amount of such compensation which at that time had been tentatively certified by the Commission and that final certification was being deferred pending the decision of certain questions of accounting. These questions have since been decided with the result that the Commission has finally certified as due the Company and its affiliated companies, annual compensation in the amount of \$13,632,917.19, in lieu of the amount of \$13,423,409.27, allowed in its tentative certificates, an increase of \$209,516.92 in the annual basis of compensation for both the Federal Control and Guaranty periods.

The Company's gross income for the year ended December 31, 1920, as set forth in the statement of Income Account submitted herewith, includes, for the months of January and February, 1920, a proper proportion of the annual Standard Return as finally certified by the Interstate Commerce Commission; a six-months' proportion of similar annual Standard Return guaranteed under the Transportation Act for the six months ended August 31, 1920; the difference covering the period from January 1, 1918, to December 31, 1919, between the tentatively certified Standard Return previously taken into account and the Standard Return as finally certified; increased compensation on account of equipment acquired, addition and betterments made to the Company's properties during Federal Control and the Guaranty period; and the net operating income from corporate operation of the properties for the four months ended December 31, 1920.

No settlement has as yet been made with the Director General of Railroads for maintenance of the property during Federal Control, nor for any other matters growing out of the operation of the property by the United States Railroad Administration. Settlement has not yet been effected with the Interstate Commerce Commission under the terms of the guaranty provisions of the Transportation Act. On January 13, 1921, an advance of \$1,000,000 was received from the United States Railroad Administration, and on March 24, 1921, an advance of \$1,353,000 was received on account of the guaranty period on certificates issued by the Interstate Commerce Commission. The President is actively engaged in endeavoring to secure final settlement and cash reimbursement from the United States Government on account of the claims filed by the Company, including its affiliated and subsidiary companies for both the Federal Control and Guaranty periods. Negotiations to that end are proceeding currently.

### SECURITIES ISSUED, SOLD OR PLEDGED

During the year the Company issued to the Director General, as stated in its last annual report, \$14,029,500, principal amount, equipment notes, dated January 15, 1920, bearing interest at the rate of six per cent per annum, payable semi-annually, and maturing serially from January 15, 1921, to January 15, 1935, inclusive. These notes were issued at par in payment

of the cost, as tentatively certified at the time of such issue, of the following equipment purchased from the United States Railroad Administration:

- 33 Light Mikado Locomotives.
- 7 Light Switcher locomotives.
- 3500 Double Sheathed 40 ton box cars.
- 1000 Composite 50 ton gondola cars.

No stocks, bonds or other securities of the Company or of any controlled or subsidiary company of the system have, during the period covered by this report, been sold or pledged by the Company or by any of its respective controlled or subsidiary companies.

### EQUIPMENT

In addition to the purchase of equipment set forth in the last Annual Report, the Company has also purchased from the War Department ten (10) additional decapod type locomotives (originally built for the Russian Government) at a total cost of \$250,000—\$25,000 payable in cash and the balance in nine annual installments of \$25,000 each, beginning November 1, 1921; the deferred payments to bear interest at the rate of six per cent per annum.

### DOUBLE TRACK

During the year the Company has had under construction a considerable amount of additional main track in order to provide stretches of double track for more economical operation in heavy traffic territory, having completed and placed in service during the period covered by this report 6.67 miles, and had under construction 24.2 miles additional, of which 16.5 miles were completed and placed in service during the early part of 1921 and the remaining 7.7 miles it is expected will be completed and placed in service shortly. When all of the new construction has been placed in service the Company will have 89.72 miles of double track in main line service.

At the time of Reorganization, and the preparation of the Adjustment Mortgage, and the Income Mortgage of the Company, the fiscal year for the making of the Annual reports to the Interstate Commerce Commission ended June 30. The same fiscal year was adopted in both the Adjustment Mortgage and the Income Mortgage.

This has since been changed by the Interstate Commerce Commission so that the period for making the Annual Reports is now the calendar year instead of the year ending June 30, and as a consequence the Annual Report filed with the Commission does not show income for the fiscal year ending June 30.

### INCOME ACCOUNT FOR YEAR ENDED JUNE 30, 1920

The following statement shows the corporate income for the fiscal year ended June 30, 1920, as certified by Messrs. Deloitte, Plender, Griffiths & Company, Certified Public Accountants.			
Eight Months' proportion of Tentative Annual Standard Return, as certified by the Interstate Commerce Commission .....		\$8,993,143.16	
Increased Compensation on account of allocated Equipment, January 15 to March 1, 1920 .....	109,391.60	\$9,102,534.76	
Four months' proportion of Guaranty under Transportation Act 1920, based on Tentative Standard Return .....		\$4,471,836.77	
Increased Compensation on account of Equipment allocated and purchased and Additions and Betterments (net) completed at March 1, 1920 .....	367,188.50	4,839,025.27	
			\$13,941,560.03

### STATEMENT OF INCOME ACCOUNT

	SIX MONTHS ENDED JUNE 30, 1920	SIX MONTHS ENDED DEC. 30, 1920	TWELVE MONTHS ENDED DECEMBER 31, 1920	
Two months (Jan. 1st—Feb. 29th), proportion of Annual Standard Return as finally certified by the Interstate Commerce Commission .....	\$2,235,918.44	\$34,919.45	\$2,270,837.89	
Six months (March 1st—Aug. 31st), Guarantee under the Transportation Act, 1920, based on Standard Return as finally certified by the Interstate Commerce Commission .....	4,471,836.77	2,340,676.90	6,812,513.67	
Increased Compensation on account of equipment allocated and purchased and additions and betterments (Net) completed at March 1st, 1920, and during Guaranty Period .....	476,586.10	229,104.61	705,684.71	
Difference between Tentative Standard Return taken into account and Standard Return as finally certified January 1st, 1918—December 31st, 1919 .....		419,033.84	419,033.84	
Net Operating Income September 1st—December 31st, 1920. (Less corporate expenses for months of January and February, 1920, Column 1.) For detail see page 15 .....	51,719.14	5,588,236.57	5,536,517.43	
	\$7,132,616.17	\$8,611,971.37	\$15,744,587.54	
<i>Other Income:</i>				
Rentals .....				
Interest .....	558,371.75	1,183,463.91	\$241,835.66	
Miscellaneous income .....	175,091.75	7,426.77	182,518.52	
	12,596.18	160,637.86	173,144.04	
Total Other Income .....	\$245,969.68	\$351,528.54	\$597,498.22	
Gross Income .....	\$7,378,585.85	\$8,963,499.91	\$16,342,085.76	
<i>Deductions from Income:</i>				
Rentals .....	\$109,722.14	\$109,897.12	\$219,619.26	
Taxes .....	99,741.70	80,882.63	180,624.33	
Miscellaneous Income Charges .....	6,093.33	9,665.38	15,758.71	
Deficit of Frisco Refrigerator Line .....	48,990.16		48,990.16	
Sinking Funds .....	26,652.42	24,005.32	50,657.74	
Total Deductions from Income .....	\$291,199.75	\$224,480.45	\$515,680.20	
Balance Available for Interest, etc. ....	\$7,087,386.10	\$8,739,019.46	\$15,826,405.56	
Interest on Fixed Charge Obligations .....	4,804,737.73	4,825,973.44	9,630,761.17	
Balance .....	\$2,282,598.37	\$3,913,046.02	\$6,195,644.39	
Interest on Cumulative Adjustment Bonds .....	1,164,278.03	1,176,615.55	2,340,893.58	
Balance .....	\$1,118,320.34	\$2,736,430.47	\$3,854,750.81	
Interest on Income Bonds .....	1,055,760.00	1,055,760.00	2,111,520.00	
Balance .....	\$62,560.34	\$1,680,670.47	\$1,743,230.81	

Figures in italics denote debit.

Note—The transactions of the Kansas City, Clinton & Springfield Railway above, but the amounts advanced by the Kansas City, Fort Scott & Memphis Railway Company, which Company is operated separately, are not included in the Railway Company to meet the interest of the Kansas City, Clinton & Springfield Railway Company Bonds have been charged against Income.

Other Income:			Interest on Fixed Charge Obligations.....	9,268,326.12
Rentals.....	\$93,228.08		Balance available for Interest on Cumulative Adjustment Bonds.....	\$4,512,893.19
Interest.....	131,404.75		Interest on Cumulative Adjustment Bonds.....	2,328,007.82
Interest (estimated) due by Director General on Net Current Balance from January 1, 1918, to June 30, 1920.....	364,123.30		Balance available for Interest on Income Bonds.....	\$2,184,885.37
Miscellaneous Income.....	25,443.83	614,199.96	Interest on Income Bonds.....	2,111,520.00
		\$14,555,759.99	Surplus transferred to Profit and Loss Account.....	\$73,365.37
Deductions from Income:			Insofar as the statements embraced in the report cover the period of Federal ownership, the data therefor were taken from the Federal Manager's records and included with the similar data with respect to Corporate operation during the year, for purposes of comparison and continuity of record.	
Expenses of Corporate Organization.....	\$174,808.63		By order of the Board of Directors,	
Taxes.....	204,085.73		E. N. BROWN, Chairman.	
Rentals.....	232,854.84		J. M. KURN, President.	
Miscellaneous Income Charges.....	18,020.95		May 5, 19.1.	
Sinking Funds.....	53,528.74			
Deficit of Frisco Refrigerator Line.....	91,511.79	774,540.68		
		\$13,781,219.31		
Balance available for Interest, etc.....				

STATEMENT OF COMBINED GENERAL PROFIT AND LOSS ACCOUNT AND ADJUSTMENTS THEREIN  
YEAR ENDED DECEMBER 31ST, 1920

	CREDIT.	\$1,272,475.18	Surplus appropriated for investment in physical property (see contra).....	\$300,245.88
Balance at credit, January 1st, 1920.....			Debt discount extinguished through surplus....	\$28,141.81
Balance of income account for year to date.....	\$1,743,230.81			\$228,387.69
Donations, account industrial tracks (see contra).....	200,245.88			
Miscellaneous adjustments (net).....	35,987.01	1,979,463.70		
		\$3,251,938.88	BALANCE AT CREDIT, DECEMBER 31ST, 1920.....	\$3,023,551.19

STATEMENT OF CONDENSED GENERAL BALANCE SHEET AS AT DECEMBER 31ST, 1920.

ASSETS		LIABILITIES	
Investments—		Stock—	
Investment in road and equipment:		Capital stock:	
Road.....	\$294,658,770.82	(a) Common stock.....	\$50,447,026.00
Equipment.....	65,652,518.49	(b) Preferred stock.....	7,500,000.00
	\$360,311,289.31	Total capital stock.....	\$57,947,026.00
Sinking funds:		Long term debt:	
Total book assets.....	\$783,578.80	Funded debt unmatured:	
Issues of the railway at par.....	780,000.00	(a) Equipment trust obligations.....	\$15,373,500.00
Cash.....	3,578.80	(b) Mortgage bonds:	
Deposits in lieu of mortgaged property sold	34,440.44	Book liability.....	\$186,982,240.00
Miscellaneous physical property.....	1,126,136.88	Held by or for the	
Investments in affiliated companies:		railway.....	5,322,195.00
(a) Stock (pledged).....	\$202,334.33	Actually outstanding.....	181,660,045.00
(c) Notes.....	96,411.43	(c) Collateral trust bonds and certificates	5,384,790.00
(d) Advances.....	10,189.00	(d) Income bonds.....	80,135,923.00
	308,934.76	(e) Miscellaneous.....	386,507.96
Other investments:		Total long term debt.....	282,940,675.96
(a) Stock.....	\$1.00	Current liabilities—	
(b) Bonds—Liberty Bonds at par.....	402,850.00	Loans and bills payable.....	\$10,006.00
(c) Notes.....	79,844.39	Traffic and car service balances payable.....	1,148,438.92
(d) Advances.....	29,508.18	Audited accounts and wages payable.....	13,565,693.68
	512,203.57	Miscellaneous accounts payable.....	817,906.77
Total investments.....	\$362,296,583.76	Interest matured unpaid.....	4,054,756.41
Current assets—		Funded debt matured unpaid.....	35,675.00
Cash.....	\$6,962,536.35	Unmatured interest accrued.....	3,394,857.72
Special deposits.....	688,675.79	Unmatured rents accrued.....	14,020.84
Loans and bills receivable.....	143,416.07	Total current liabilities.....	22,951,349.34
Traffic and car service balances receivable	1,398,242.59	Deferred liabilities—	
Net balance receivable from agents and		Other deferred liabilities.....	205,967.91
conductors.....	991,585.06	Unadjusted credits—	
Miscellaneous accounts receivable.....	3,739,833.17	Tax liability.....	\$1,516,493.93
Material and supplies.....	10,208,290.95	Insurance reserve.....	227,513.43
Interest and dividends receivable.....	5,371.42	Operating reserve.....	541,355.17
Rents receivable.....	2,513.74	Operating reserve—Guaranty Period.....	2,036,499.01
Other current assets.....	240,305.93	Accrued depreciation—road.....	407,086.20
Net balance due from United States Gov-		Accrued depreciation—equipment.....	20,064,281.12
ernment.....	6,691,299.61	Other unadjusted credits.....	3,836,960.95
Total current assets.....	\$1,072,070.73	Total unadjusted credits.....	28,630,189.81
Deferred assets		Corporate surplus—	
Working fund advances.....	\$64,101.56	Additions to property through income and	
Insurance fund:		surplus.....	591,189.89
Total book assets.....	\$227,513.43	Funded debt retired through income and	
Issues of the railway at par.....	140,000.00	surplus.....	541,000.00
Cash.....	87,513.43	Sinking fund reserve.....	783,578.80
Other deferred assets.....	91,347.08	Profit and loss—balance.....	3,023,551.19
Total deferred assets.....	242,962.07	Total corporate surplus.....	4,939,319.88
Unadjusted debits—			
Rents and insurance paid in advance.....	\$74,989.73		
Other unadjusted debits.....	3,927,922.61		
Securities issued or assumed			
—Unpledged.....	\$4,402,195.00		
Total unadjusted debits.....	4,002,912.34		
	\$397,614,528.90		\$397,614,528.90

Note—The transactions of the Kansas City, Clinton & Springfield Railway Company, which Company is operated separately, are not included in the above, but the amounts advanced by the Kansas City, Fort Scott & Memphis Railway Company to meet the interest on the Kansas City, Clinton & Springfield Railway Company Bonds have been charged against Income.

SUMMARY OF FREIGHT TRAFFIC, FOR THE TEN YEARS ENDED JUNE 30, 1916, AND THE FIVE YEARS ENDED DECEMBER 31, 1920

Years ended	Average mileage	Tons carried			Average per ton		Average load in tons	
		Number	Mileage	Revenue	Miles carried	Rate per mile cents	Per train	Per loaded car
June 30								
1907.....	5,061.72	16,154,154	2,658,150,453	\$26,848,664.91	164.55	1.00	2.24	16.99
1908.....	5,064.16	15,275,619	2,465,448,293	23,976,296.87	161.40	0.97	2.12	17.10
1909.....	5,072.67	15,952,144	2,518,944,746	25,262,515.93	157.91	1.00	2.20	16.93
1910.....	5,071.79	17,829,713	2,829,482,795	27,645,863.48	158.69	0.98	2.22	17.14
1911.....	5,187.93	17,128,446	2,675,695,200	28,071,781.86	156.21	1.05	2.20	16.93
1912.....	5,241.39	16,985,882	2,714,876,424	27,505,797.98	159.83	1.01	2.55	19.18
1913.....	5,254.98	19,739,790	3,126,717,306	31,271,806.96	158.40	1.00	2.81	17.13
1914.....	5,259.09	19,906,151	3,027,900,826	30,202,499.08	152.11	1.00	2.97	17.80
1915.....	5,252.07	18,762,319	3,100,939,639	29,485,596.48	165.27	0.95	3.00	19.26
1916.....	5,254.97	20,459,901	3,452,384,669	33,547,466.45	168.73	0.97	3.33	19.31
Years ended								
Dec. 31								
1916.....	5,256.09	21,270,024	3,697,396,315	36,555,443.72	173.83	0.99	3.37	19.24
1917.....	5,207.03	23,011,162	3,963,259,492	39,421,537.80	172.23	0.99	3.55	21.58
1918.....	5,216.50	22,998,790	4,133,542,672	41,153,817.72	182.69	1.13	3.91	23.45
1919.....	5,252.37	21,439,266	4,036,818,931	35,558,494.45	188.29	1.33	3.79	21.77
1920.....	5,252.68	24,718,345	4,621,380,827	66,338,921.56	186.96	1.44	3.98	23.44

# Railway Officers

## Executive

**Robert J. Marony**, assistant secretary and assistant treasurer of the Chicago, Milwaukee & St. Paul, with headquarters at New York, has been elected vice-president, succeeding G. G. Mason, who has resigned. Mr. Marony was born in 1881, at Philadelphia, Pa. He was educated at the public schools of New York City and the College of the City of New York, which institution he attended two years. In 1905 he entered the employ of the Chicago, Milwaukee & St. Paul, as a clerk in the company's financial offices at New York and subsequently served in various positions in the company's financial and executive offices in New York. In 1912, he was elected assistant secretary and assistant treasurer, in which position he was serving at the time of his recent election. Mr. Marony will continue to serve as assistant secretary and assistant treasurer in addition to his new duties.



R. J. Marony

## Financial, Legal and Accounting

**C. Leber** has been elected secretary of the Peoria & Pekin Union, succeeding R. H. Hardin, resigned, effective July 15. Mr. Leber has also been appointed auditor succeeding Mr. Hardin.

## Operating

**L. R. Taylor**, superintendent of telegraph and signals of the Virginian having resigned, effective July 1, the position has been abolished and employees formerly reporting to Mr. Taylor will henceforth report to the general manager.

**W. A. Gore**, superintendent of the New River division of the Virginian with headquarters at Princeton, W. Va., has been appointed general manager, with jurisdiction over the transportation and maintenance of way departments, with headquarters at Norfolk, Va., effective July 1. **J. W. White** succeeds Mr. Gore as superintendent at Princeton.

## General

### Appointments on the Los Angeles & Salt Lake

Coincident with the purchase of the Los Angeles & Salt Lake by the Union Pacific the officers of the latter company will also serve the Los Angeles & Salt Lake as follows:

Name	Position	Headquarters
Robert S. Lovett	Chairman executive committee	New York.
Carl R. Gray	President	Omaha.
E. E. Adams	First vice-president	Omaha.
H. M. Adams	Second vice-president	Omaha.
Thomas Price	Secretary	New York.
E. M. Kindler	Assistant secretary	New York.
C. B. Matthai	Assistant secretary	Omaha.
E. G. Smith	Treasurer	New York.
T. C. Richards	Assistant treasurer	New York.
H. W. Clark	General counsel	New York.
F. W. Charske	Comptroller	New York.
H. S. Bradt	Assistant comptroller	New York.
G. E. Bissonnet	General auditor	Omaha.
H. A. Scandrett	Valuation and commerce counsel	Omaha.

F. W. Robinson	Freight traffic manager	Omaha.
W. S. Bassinger	Passenger traffic manager	Omaha.
R. R. Mitchell	Assistant freight traffic manager	Omaha.
J. W. McLymmonds	General agent ref'r service	Omaha.
R. L. Huntley	Chief engineer	Omaha.
N. D. Ballantine	Superintendent of transportation	Omaha.
F. E. Lewis	Manager dining cars and hotels	Ogden.

The following officers of the Los Angeles & Salt Lake will serve in the positions indicated below:

Name	Former position	New position	Headquarters
C. P. Smith	Secretary	Asst. secretary	Los Angeles
W. H. Leete	Treasurer	Asst. treasurer	Los Angeles
W. H. Comstock	General manager	General manager	Los Angeles
A. S. Halstead	General counsel	General solicitor	Los Angeles
A. S. Edmunds	Gen'l traf. mgr.	Traffic manager	Los Angeles
M. D. Brahan	Asst. gen'l traf. mgr.	Asst. traffic mgr.	Los Angeles
T. M. Sloan	Gen'l frt. agt.	Gen'l frt. agt.	Los Angeles
T. C. Peck	Gen'l pass. agt.	Gen'l pass. agt.	Los Angeles
C. C. Barry	Auditor	Auditor	Los Angeles
A. Maguire	Chief engineer	Asst. chief engineer	Los Angeles
G. W. Thompson	Supt. dining cars and hotels.	Supt. dining cars and hotels.	Los Angeles

These changes were effective July 14.

## Traffic

**H. C. Dinkins** has been appointed general agent of the Missouri Pacific, with headquarters at Mexico City, Mex.

## Mechanical

**J. S. Allen** has been appointed master mechanic of the Brownville division of the Canadian Pacific, with headquarters at Brownville Junction, Me., succeeding E. Bowie, transferred, effective July 16.

## Obituary

**John F. Morris**, commercial agent of the Michigan Central, died at Buffalo, N. Y., on July 14.

**C. M. Agnew**, commercial agent of the Southern, with headquarters at Dallas, Texas, died at his home in Oak Cliff, Tex., on July 20.

**Edwin N. Armstrong**, president of the Toledo, Peoria & Western, died at Peoria, Ill., on July 26. Mr. Armstrong was born at Nashua, N. H., September 19, 1845, and entered railway service as a warehouseman for the Illinois Central in 1867. He then became a telegraph operator for the same company, and in 1869 became a train dispatcher for the Indianapolis, Bloomington & Western (now a part of the Cleveland, Cincinnati, Chicago & St. Louis). In 1872 he went with the Toledo, Peoria & Warsaw (now the Toledo, Peoria & Western) in a similar capacity. In 1880 he became superintendent of the Iowa division of the Wabash and subsequently served in a similar capacity on the Chicago, Middle and Northern divisions of the same road. In 1885 he was appointed general superintendent of the Toledo, Peoria & Western and in 1904 was elected to the presidency and continued in that position until the time of his death.

**Marcus A. Low**, formerly general attorney of the Chicago, Rock Island & Pacific, died at his home in Topeka, Kan., on July 19. He was born at Guilford, Me., on August 1, 1842, and was educated at the law school of the University of Michigan. After engaging in the private practice of law, Mr. Low entered railroad service in 1886, as president of the St. Joseph & Iowa railroad. From 1887 to 1892, he served as general solicitor of that road and of the Chicago, Kansas & Nebraska. In the latter year he was appointed general attorney of the Rock Island and at the same time was made general solicitor of the Chicago, Rock Island & Texas. In 1902 and 1903 he served as general solicitor of the Chicago, Rock Island & Gulf and the Chicago, Rock Island & Mexico, in addition to his other duties. Mr. Low, who retired from railroad service in 1912, was for a number of years prominent in national republican politics.

THE MISSOURI, KANSAS & TEXAS has reported that of 19,213 merchandise cars run on its lines during the period between January 1 and June 12, 17,793 or 92.6 per cent arrived on time. Only 118 cars, or 0.6 per cent, were 48 hours late.

# Railway Age

Vol. 71 August 6, 1921 No. 6



A Mixed Train in Tunis, Northern Africa. Photo by Ewing Galloway.

## Contents

### I. C. C. Declines to Fix New England Rate Divisions ..... Page 237

Four Commissioners Dissent from Majority Opinion Remanding Case to Litigants for Their Joint Conferences to Effect Settlements.

### E. P. & S. W. Rebuilds 141-Mile Wood Stave Pipe Line ..... 245

Conduit Supplying an Entire Engine District Rebuilt After 13 Years of Service to Provide Needed Increase in Capacity.

### Labor Board Orders New Election on Pennsylvania ..... 257

"Middle of the Road" Decision Finds Both Carrier and Employees Guilty of "Unfairness."

#### EDITORIALS

Safety Campaign Needed in the Shops .....	231
A Systematic Study of Yard Operation .....	231
Some Inconsistencies in Our Signaling .....	231
Curtailling of Authority .....	231
The Adoption of Store Door Delivery .....	231
Separate the Car Department .....	232
The Equipment Situation .....	232
Why Limit the Joint Committee Specifications to Buildings? .....	232
The Retirement of Chairman Clark .....	233
The Agitation for Reductions in Rates .....	233
Kansas City Southern .....	234

#### LETTERS TO THE EDITOR

Duties Should Not Be Delegated .....	236
Track Tanks for Freight Trains, by W. G. Landob .....	236
Assignment of Motive Power, by C. E. Fisher .....	236

#### GENERAL ARTICLES

I. C. C. Declines to Fix New England Rate Divisions .....	237
New Specifications for Concrete .....	243

#### GENERAL ARTICLES—Continued

Tentative Valuations .....	244
E. P. & S. W. Rebuilds 141-Mile Wood Stave Pipe Line, by J. L. Campbell .....	245
"Stop or Proceed" versus "Stop and Proceed," by A. H. Rudd .....	247
Suggested Remedy for the Freight Car Situation, by W. S. Moseley .....	249
Railroad Bill Introduced in House .....	250
Recent Designs of Twelve Wheel Locomotives .....	251
Reorganization of Car Service Division, A. R. A., Freight Car Loading .....	253
A Systematic Plan for the Movement of Freight Traffic .....	254
The Value of the Tracing Service, by P. W. Gates .....	255
A New Specification for Rails, by R. W. Hunt .....	255
Labor Board Orders New Election on Pennsylvania .....	257
Suggestions as to Economies in Railroad Operation, by G. R. Henderson .....	259
The Cash Register in a Ticket Office .....	260
Short-Turn Overhead Trolley Conveyor System .....	262

#### GENERAL NEWS DEPARTMENT ..... 263

Published every Saturday and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*.  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.  
CLEVELAND: 4300 Euclid Ave.  
WASHINGTON: Home Life Bldg.  
LONDON: England: 34, Victoria St., Westminster, S. W. 1.  
Cable address: Uraimgco, London  
NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON	A. F. STUBERNG	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LAWE	K. E. KELLENBERGER	J. E. COLE
R. E. THAYER	ALFRED G. OEHLER	L. M. SANDWICH
C. B. PECK	F. W. KRAEGER	J. G. LYNE
W. S. LACHER	HOLCOMBE PARKES	J. H. DUNN
J. G. LITTLE	C. N. WINTER	D. A. STEEL

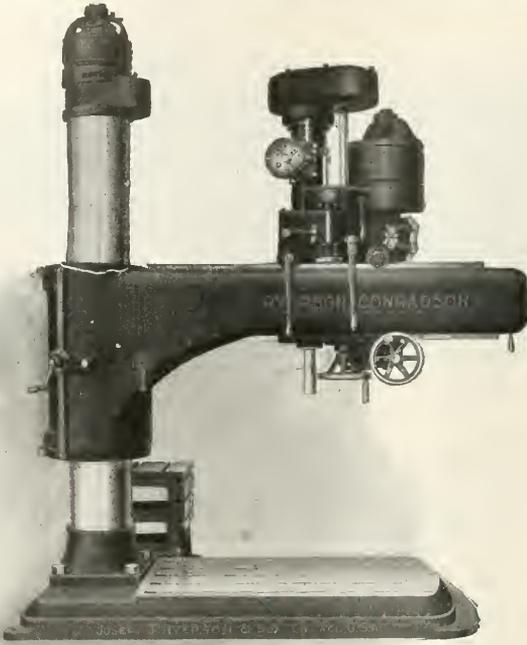
Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00. £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 9,000 copies were printed, that of these 9,000 copies 8,361 were mailed to regular paid subscribers, 69 were provided for counter and news company sales, 347 were mailed to advertisers, 82 were mailed to employees and correspondents and 341 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 302,300, an average of 9,753 copies a week.

(A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)



## For Railroads— Strength

Simplified—Strengthened by twin, reversible motors.

*Locomotive maintenance costs yield to new and improved machine tools, such as are provided by the Ryerson-Conradson line.*

Rugged reliability is essential in a tool for railroad shops, particularly in the Radial drill.

Take the tapping operation. Most drills have special tapping attachments. They are not made to stand the gaff of quick reversals that speedy work demands.

In the Ryerson-Conradson Railroad Radial the motor itself is reversible. Tapping is as simple as drilling.

Another difficulty overcome by modern design.

The shop man knows what this means—ask him.

*Send for Bulletin 4001*

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The general curtailment of maintenance expenditures during the past six months has in a large measure forced the breaking up and re-arranging of locomotive and car shop forces. Many of the railroads are now restoring these forces preparatory to catching up with deferred equipment maintenance and others will soon be doing so. In many cases this means a complete rebuilding of the organizations, the re-employment of men who have been away from the shops for several months and of new men to replace those who have found other employment or otherwise have drifted away from the service. Until these men have completely acquired their old personal habits of safety and have learned to work well together, the possibilities for personal injuries are greatly increased. Extraordinary precautions should be taken to prevent these possibilities from being realized.

Approximately one-eighth of all railway expenses or about one-fourth of all transportation expenditures are incurred in the operation of yards. Therefore, it is necessary that it be scrutinized most carefully. One of the most extensive studies of the subject which have ever been made was that which led to the complete systematization of switching work on the Baltimore & Ohio which is described on another page in this issue. This investigation, which extended over the entire system and was designed to co-ordinate this work on all of its lines, had for its objects the reduction of switching to the minimum consistent with the prompt movement of traffic to destination; the performance of this switching at points where it can be done to the best advantage, traffic conditions and physical facilities considered, and the distribution of this work so as to secure the maximum use from the existing facilities and thereby postpone or eliminate the necessity for additional expenditures. The results of this study were crystallized into a detailed plan for the conduct of all switching work over the system so that the forces at each local terminal can work in harmony with the system plan and contribute to its savings. This plan and the study which preceded it should be very helpful to operating officers on other roads who are confronted with similar problems.

The derailing switch, one of the time-honored institutions of American railroad practice, not only averts dangers, but sometimes is the cause of danger, and that of a costly character. The automatic block signal not only facilitates train movement, reducing delays, but in some circumstances may introduce a new and troublesome source of delays; delays which are so costly that the fact has been used as an argument for not installing automatics. These somewhat anomalous facts are brought out by A. H. Rudd, chief signal engineer of the Pennsylvania system, in his two articles printed in the *Railway Age* of July 16 (page 112) and in this issue. These articles are well worth the attention of all operating officers—including signal engineers and other engineers who realize the importance of their functions as counselors of the general

manager in operating questions—for Mr. Rudd is an idealist as well as a practical engineer, and his writings are calculated to induce readers to agitate his proposals in their own minds. The *Railway Age* will be only too glad to compile the facts of experience bearing on Mr. Rudd's questions, as suggested by him in the earlier article, so far as such facts can be made available; every reader is invited to send them; but in view of the elusive character of the great bulk of these data, it seems quite reasonable at this time to suggest that each officer who is interested in these problems shall begin at once to formulate his conclusions, on the basis of what he already knows. In what particular can you, Mr. Manager, dispute Mr. Rudd's assertions? If you do not accept his proposals, what are your reasons for your conservatism?

The important part played by the chief clerks in railroad offices is practically pretty generally realized. Whether or not the salary and official recognition accorded the position are adequate is another question and one which merits careful consideration. In the *Railway Age* of July 23 a chief clerk discussed the question from what presumably is the point of view of a great number of men filling that position. He contended that the chief clerk who was called upon to act for his superior belonged really in the "assistant to" officer category and should be so classified and paid. On another page of this issue will be found a letter to the editor by an operating officer in answer to the chief clerk's contentions. This officer, while suggesting that chief clerks are, perhaps, not adequately paid, takes the view that business of an official nature cannot in the interest of the property be entrusted to them to too great an extent because, he says, of their lack of outdoor experience. He calls attention to the practice of referring the recommendations of responsible subordinate officers to the chief clerks of superior officers for their decision and he urges that no recommendations should be vetoed or letters of criticism written except by the officer himself. In short, his remedy for the problem would be the curtailment of the chief clerk's authority. An impartial observer can see merit in the points of view of both our correspondents. Their views are, however, widely divergent. More discussion will be needed to harmonize them—and the subject merits discussion, for the chief clerk—by and large are a loyal band of men and the suggestion that they are being dealt with unjustly deserves the fullest investigation.

The adoption of store door delivery is now being urged vigorously for the cities of New York and Baltimore, Md., with a fair prospect of success in one or both places. Store door delivery is quite familiar to Baltimore since that city had nearly 45 years' experience with it up to 1911, when it was withdrawn because of certain features held to be discriminatory by the Interstate Commerce Commission. New York has had no direct experience with store door delivery, although as a result of the terminal congestion during the war period such a service might have been inaugurated under government control had not the signing of the armistice intervened. As

a means purely to lessen or relieve congestion at terminals, store door delivery has proved itself both in this country and others. Its practicability under the exceedingly complex terminal and business conditions now prevailing is not, however, entirely clear to a large number of railway and business men nor is it, as yet, recognized as being altogether desirable. The more advanced forms of this service have eliminated many of the features heretofore objectionable to the railroads, the trucking companies and the shippers. In their place newer methods are being advocated which apparently give the method a greater degree of flexibility. Baltimore, with its experience to look back to, is, in general, favorably inclined toward the adoption of a modified form of store door delivery and the results of the many meetings between representatives of railway companies, trucking concerns and shippers point toward an increasing possibility of its early adoption. New York is not so favorably inclined but the idea is being pushed strongly as a relief measure for the port of New York. While the interest manifested in store door delivery is, as yet, more or less local to the two cities involved, the developments at these two places should be watched closely. There is present the possibility that, should it be adopted at one or both places, public opinion would demand its inauguration at other important terminals.

It is significant to note that, out of a considerable number of prominent railroad men recently approached for suggestions as to how the mechanical department could function more effectively, several stressed the importance of maintaining separate motive power and car departments. The consensus of opinion seemed to be that for all large roads there should be one officer in charge of the entire mechanical department with two assistants in charge of locomotive and car maintenance work respectively. In this way there would be undivided responsibility and a more direct supervision of the work, thus saving time and eliminating a large amount of red tape. It is by no means true that all motive power men are incapable of assuming charge of car departments, but in far too many cases their experience has been confined to the locomotive side and they are unfamiliar with methods of handling car repair work. In these cases, there is a tendency to adopt the suggestions of minor car department officers regarding serious problems which have not been worked out with sufficient care. Another argument in favor of separating the motive power and car departments on the larger railroads is that the burden of responsibility for both departments is more than one man ought to bear. There is altogether too little appreciation of the importance of the car department by railroad men in general. True, the locomotive usually comes first in a train, and there is something almost of fascination about the word "motive-power," but the fact remains that more than twice as much money is tied up in freight cars alone as in locomotives. Responsibility for the maintenance of equipment representing this immense investment should not be placed on motive power officers who already have as much as they can do to keep locomotives in proper operating condition. The most experienced, high caliber men available should be secured to direct the policies of car departments and then made fully responsible for results. Experience has amply demonstrated that material economies can be effected on large railroads by maintaining separate locomotive and car departments under a joint mechanical department head. The claim that such an organization is top-heavy has never been established. In fact the tendency is to fix responsibility, get direct action, eliminate a large amount of red tape and increase car department efficiency.

#### Separate the Car Department

While there is some difference of opinion among railway supply men regarding purchases of equipment in the immediate future the general impression prevails that the railway companies will during the next few months carry out an extensive program of repairs. If the government refunding plan as outlined by President Harding is carried out it will make it possible for the railways to place orders for equipment, although large orders will likely be delayed until the number of idle cars and bad order cars is less than at the present time. The *Railway Age* showed in its equipment record for July that 6 locomotives were ordered for domestic roads and 61 for foreign account and that inquiries were made for prices on repairs to 130 locomotives. In July orders were placed for repairs to 9,500 cars and inquiries made for prices on repairs to 11,450 cars. Other contracts pending or about to be closed will greatly increase these figures. Orders were reported in July for but 775 freight and 10 passenger cars for domestic use and 960 freight cars for foreign account. The predominance of business in repair work as compared with new orders is too striking to pass without comment. It is further shown by the production figures reported by the Railway Car Manufacturers Association. In the first six months of 1921 the companies reporting to that organization delivered 29,347 new freight cars on domestic orders. In the same period there were delivered 23,639 repaired cars. The new cars delivered in June totaled 2,245; the repaired cars, 2,939.

#### Why Limit the Joint Committee Specifications to Buildings?

THE SPECIFICATIONS for concrete and reinforced concrete recently submitted in tentative form by the Joint Committee, which are reviewed elsewhere in this issue, are probably a source of disappointment to railway bridge engineers and others engaged in the design of railway structures.

Concrete and reinforced concrete are used by the railways primarily for the construction of bridge piers and abutments, arches, reinforced concrete trestles, retaining walls and culverts, whereas only a very limited number of railway buildings lend themselves to the use of these materials. The specifications prepared by the Joint Committee on the other hand are admittedly and clearly intended primarily for building construction.

This limitation applies only in minor degree to that portion of the specifications relating to workmanship and materials. This in a large measure constitutes an elaboration and improvement over the specifications adopted by the American Railway Engineering Association in 1920. The real shortcoming, insofar as railway structures is concerned, relates to the specifications for design. The Joint Committee's specifications present detailed requirements for the framing of columns, beams and slabs and for flat slab construction as used in multiple story reinforced concrete buildings. Retaining walls, it is true, receive some attention, but presumably this is because they form an important part in building basement construction. On the other hand, the requirements of such structural items as reinforced concrete trestle slabs, which must be adequate to carry heavy and rapidly moving trains, are covered only by the most general statements concerning simple reinforced concrete slabs. Arches also receive no attention in the specifications.

This tendency of the committee to favor building work to the exclusion of bridge work may be explained largely by the influence of the American Concrete Institute, an association which has been very active in developing concrete practice and with which few railway men have been prominently

identified. Whether or not it is the intention of the Joint Committee to supplement the work it has already done by a greater measure of detail concerning structures other than buildings, the fact remains that there is a very real need for standardization in the design of concrete bridges, arches, culverts, etc., such as would be accomplished by specifications dealing directly with these structures. If the Joint Committee cannot consistently fulfill this need then it must be met by some other organization, presumably the American Railway Engineering Association. That body has done excellent work during the past 20 years in the development of specifications for steel railway bridges which, during the course of gradual development in succeeding editions, have gradually come to cover a multitude of detail not considered in the original scope. Efforts to the same end with respect to concrete structures would ultimately lead to the same result and thereby be of great value in the promulgation of the best practices in the use of a most valuable structural material.

## The Retirement of Chairman Clark

THE RETIREMENT of Chairman E. E. Clark from the Interstate Commerce Commission at this time is a serious loss to the nation. Before Mr. Clark went upon the Commission fifteen years ago he was head of one of the railway labor organizations. Neither railway officers nor shippers highly approved of his appointment. However, while some members of the Commission may have commanded more respect and confidence from the shippers, and some more respect and confidence from the railways, it can be said with confidence that no member of the Commission ever commanded the respect and confidence of both shippers and railway officers at the same time to a greater degree than Mr. Clark did in the years immediately preceding his retirement.

By years of study and experience he acquired an almost unequalled knowledge of the general railroad situation. He manifested a desire and determination to be fair which won the regard even of those who differed from him. He proved himself the possessor in a very unusual measure of that common sense and good judgment which are the very foundation of all ability for handling practical affairs of large moment.

One way in which Mr. Clark showed to an increasing extent, as the years went by, his common sense and good judgment was by trying more and more to get shippers and railways to settle their differences regarding rates and service by conference and agreement with each other. Long experience taught him that protracted hearings and decisions by the Interstate Commerce Commission, or any other body, were not the best way to settle the highly practical business questions arising from time to time between the railways and their customers.

His course in this respect was statesmanlike. Small men in important positions like to show their power by deciding things themselves. He saw that too many of the relations between the railways and those from whom they buy labor and supplies, and to whom they sell transportation, are being settled by regulating bodies. More and more this tendency toward excessive regulation is destroying initiative and flexibility, and hindering progress in the railroad business—tending to make both railway costs and railway rates high, and to impair and curtail service. Mr. Clark evidently saw this. It is impossible to say to just what extent he expressed the views of his fellow members. It is to be hoped future developments will show that he expressed the views of a majority of them.

We understand Mr. Clark has retired because he can make a larger income by practicing before the Commission than he could by drawing a salary of \$12,000 a year as a member of

it. Thus we see illustrated in a striking way the effects of the government's policy of paying men in such important positions such inadequate compensation.

Nobody can justly criticize Mr. Clark for retiring. He served the public faithfully and capably at a personal sacrifice for years. The public had no moral right to claim any further sacrifices from him. What the public should have done was to have paid him what he was worth and kept him in its service.

Not infrequently men get into Congress who know much more about how to make a noise that their constituents will hear than about how much it costs to buy real brains. Recently one such member introduced a bill to fix \$15,000 as the maximum salary that could be paid to any railway officer. Many railway officers would then do what Chairman Clark has done. They would quit positions where they could never hope to get large incomes, and go into business or professional work where they could get them.

The welfare of the country demands that the railways shall be ably regulated and ably managed. Chairman Clark's retirement illustrates the fact that the government, like the railroads, must pay the market price for brains if it is to get and keep them.

## The Agitation for Reductions in Rates

THE AGITATION for reductions in railway rates is nationwide and relates to almost every important class of commodities. In a single day the *Railway Age* received literature advocating general reductions in rates on grain, live stock, petroleum, iron and steel, coal, ore and lumber. In each case those sending out the literature gave reasons why reductions were especially needed in the rates on the particular class of commodities in which they were most interested. It is easy to understand why shippers of all classes desire reductions of their rates. It is hard to understand why they do not realize that general reductions of rates under present conditions in the railroad business would be unjust and, in the long run, harmful to business of all kinds.

Most of the arguments set forth merely why producers and shippers of particular classes need lower rates, and say little about why the railways under present conditions need the present rates. None of them makes any reference to the fact that while rates are now high compared with the general level of prices, for many years rates did not increase while the general level of prices was advancing, and that the producers and shippers who were now complaining about the present rates were, during this long period of years, profiting by the fact that prices were advancing while railway rates were not.

The average railway freight rates was the same in 1917 as in 1913. Meantime the average wholesale prices of commodities had advanced 76 per cent. In 1920 the average railway freight rate was 46 per cent higher than in 1913, while the average wholesale prices of commodities were 143 per cent higher than in 1913. Since the present freight rates were fixed the average railway rate has been 70 per cent higher than in 1913. As recently as January, 1921, average wholesale prices of commodities were 77 per cent higher than in 1913. Only since then have freight rates been relatively lower as compared with 1913 than wholesale prices.

In other words, during the entire six years from 1915 to 1920, inclusive, average wholesale prices were from 1 to 143 per cent higher than in 1913, while railway rates during this time were never more than 46 per cent higher than in 1913. Yet now, when for less than six months railway rates have been relatively higher as compared with 1913 than wholesale prices, we have a loud and general demand for reductions in rates on the ground that producers and shippers "cannot stand" the present rates.

Do any of these producers and shippers remember what

spokesmen of the railways were constantly saying between 1913 and 1917, when railway rates were standing still and average prices were advancing 76 per cent? We shall refresh their memories by recalling that at that time every spokesman for the railways was saying that with wages and prices of all kinds advancing the railways "could not stand" the then existing railway rates and were entitled to advances in them, both because the cost of railway operation was rapidly increasing and because the increasing prices of commodities would enable the traffic to stand higher rates. Nevertheless, almost every class of the shippers who are now demanding reductions of rates then opposed, and successfully opposed, advances in rates.

Upon what principle of consistency, equity or sound business can these people, who opposed advances in rates when their own prices were advancing and the railways needed advances in rates and the traffic could stand it, now demand reductions in rates because prices have declined and they need reductions of rates which the railways cannot stand? They profited for six years by keeping railway rates relatively much lower than their own prices. Is it unfair to suggest that they should now be willing to take for a time such losses as may be caused them by the fact that railway rates are relatively higher than their prices?

It should be added, in this connection, that the present disparity between railway rates and average prices is small compared with what it was when prices were at their peak. When average wholesale prices were 143 per cent higher than in 1913, railway rates were only 46 per cent higher. Now, when the average railway freight rate is 70 per cent higher than in 1913, the average wholesale price of commodities is still 48 per cent higher than in 1913.

Furthermore, while railway rates are at present relatively higher than the prices of most commodities, they are not relatively higher than the things which the railways themselves have to buy, and which determine their costs of operation and the rates at which they can afford to sell their transportation. Without going back so far as 1913, let us compare the average increases since 1916 in the rates which the railways are receiving, and in the average costs they are obliged to meet. The average advance in passenger rates (including the surtax on sleeping car tickets) has been 53 per cent. The average increase in the rate per ton per mile in this five years has been 74 per cent. The average increase in both passenger and freight rates has been less than 65 per cent.

Now take a look at the operating costs. Over 94 per cent of all railway expenses are wages, cost of fuel and cost of materials and supplies. About 90 per cent of all railway employees are paid by the hour, and even since the recent reduction in wages the average cost per hour of railway labor is 123 per cent more than in 1916. There have been substantial reductions since last year in the prices of materials and supplies, but the prices at which the railways are now buying materials and supplies average 65 per cent higher than in 1916. The average price paid for coal in 1916 was \$1.76 per ton. Coal prices have been slowly declining since last December but the average price paid by the railways in May, the latest month for which figures are available, was \$4.29, or almost 144 per cent more than in 1916.

In the first five months of 1921 the total earnings of the railways were 58½ per cent more than in the same months of 1916. Their total operating expenses, in spite of the vast retrenchments made, were 109 per cent more than in the same months of 1916. Their taxes were 80½ per cent more than in the same months of 1916. Result: In the first five months of 1916 the railways earned \$286,400,000 net operating income, while in the same months of 1921 they earned only \$117,000,000 net operating income, a decline in net operating income for these months of over 66 per cent.

From the standpoint of the producer and shipper the

present railway rates are too high. From the standpoint of the railways they have not thus far been high enough. The reason why they are too high from the standpoint of the producer and shipper, and not high enough from the standpoint of the railways, is that the present operating costs of the railways are excessive. Who made these costs excessive? Not the managements of the railways. They did not fix the wages they are paying to labor, or the prices they are paying for materials and supplies, or the prices they are paying for coal. They did not increase their own taxes over 80 per cent. The managements are striving mightily to reduce their costs. Undoubtedly the rates should be reduced—when the costs of labor, materials and supplies and fuel have been reduced enough to enable the railways to pay their operating expenses and make a reasonable net return on lower rates.

We can draw only one of two conclusions from the widespread propaganda that is being carried on for general reductions in rates. One of these is that those who are carrying it on are ignorant of present railway conditions, which reflects no credit on any man who sets himself up as qualified to discuss railway rates. The other is that those who are carrying on this propaganda are willing to help complete the financial and physical ruin of the railways of the United States if, by carrying on agitation regarding rates, they can win the temporary approval and applause of the classes of producers and shippers on whose applause and approval they rely for the furtherance of their own selfish interest.

There is but one wise course for the managements of the railways, under the existing conditions, to follow. That is to fight to the last ditch, first, for reasonable reductions of their operating costs, and, secondly, against all general reductions in rates until operating costs have been reduced and traffic has increased enough to enable the railroads to earn a reasonable net return. Doubtless they will antagonize many classes of persons by doing this. They may arouse public sentiment against them. But such premature and unwarranted reductions in rates as are being advocated would wreck the railroads of the United States, financially and physically, and do the public far more harm than good. The present extremely bad railroad situation is largely due to the fact that the managers and owners of the railways have not in the past resisted vigorously enough unreasonable demands which have been made on them, and unreasonable regulation which has been forced on them. If public sentiment is antagonized, private ownership and management may fail, but it is sure to fail if the railways under private management cannot get fair and reasonable treatment.

## Kansas City Southern

THE TRAFFIC HANDLED by the Kansas City Southern in the first four months of 1921—April being the latest month for which figures are at present available—was approximately equal to that handled in the first four months of 1920. This comparison, it is true, is not an entirely fair one, inasmuch as the figures for 1920 include the month of April, in which month the road's operations were severely handicapped by the outlaw strikes. Nevertheless, the fact that the traffic up to April 30 this year was on a par with that in the same period last year makes the Kansas City Southern an exception from most of the other roads of the country. It further means that the road has been able to secure, because of the higher rates now in effect, considerably better gross earnings than were secured in the early part of last year. The figures as to earnings are available to the end of May. In the period from January 1 to May 31 the gross earnings of the Kansas City Southern, including the Texarkana & Fort Smith were \$9,305,726 as compared with \$8,057,053 in the first five months of 1920. The operating expenses to May 31 were slightly in excess of those in the same period last

year. The net railway operating income of \$1,903,828 in the first five months of this year compared with a figure for the first five months of 1920 of \$985,555. This would indicate that the Kansas City Southern apparently has the present situation well in hand. The fact that the increased net is not the result of savings in maintenance of equipment and way and structures is especially noteworthy.

The Kansas City Southern operates a total mileage of 842, its lines extending from Kansas City south to the Gulf of Mexico at Port Arthur. The traffic carried by the road is indicated by the following figures showing the percentage of the total tonnage carried in 1920: Grain, 8 per cent; bituminous coal, 14.1 per cent; lumber, 21.7 per cent and petroleum and other oils, 19.8 per cent. The road has but a small branch line mileage, a factor which has permitted its progressive management to carry out a somewhat more intensive development of the property than might otherwise have been possible. The revenue tons carried one mile per mile of road

totalled 6,135,187 tons of revenue freight as compared with 4,884,555 tons in 1919 or 5,632,481 tons in 1918. The revenue ton mileage in 1920 was 1,674,717,315. Although the total tons carried in 1920 were in excess of 1918, the revenue ton mileage was less, the reason being that the average haul in 1920 was but 273 miles as compared with 298 in the second year preceding. On this traffic the road secured an average revenue train load of 674 tons and an average revenue car load of 25.77 tons. These figures were considerably in excess of those for 1919, but they were below the figures of 677 revenue tons per train and 26.89 revenue tons per loaded car in 1918.

The interesting feature of the road's operations at present is the manner in which the figures relating to operating efficiency have held up so far this year. We have already noted that the traffic carried in the first four months of 1921 was about equal to that carried in the first four months of 1920 and that the gross and net earnings were considerably higher. For the first four months the road secured an average net tons per train, revenue and non-revenue freight combined, of 728 as compared with a figure of 716 in the first four months of 1920 or with a figure of 734 for all of 1920. The net tons per train so far this year, incidentally, have been over 100 tons higher than the figure for any other road in the southwestern region and nearly 200 tons more than the average for that region. The net ton miles per train hour—the figure which takes into consideration train speed as well as train load—was, in the first four months of this year, 7,613 as compared with an average for the region of 6,442. The Kansas City Southern's net tons per loaded car to April 30, 1921, were 28.8 and its miles per car per day 35.4. The net ton miles per car per day were 726. This latter figure compared with 648 in the first four months of 1920 and with an average for the whole of 1920 of 759. Another interesting figure is that of bad order cars. The latest figures reported—those for July 15—show that the percentage of bad order cars in the country on that date was 15.9. The Kansas City Southern is shown as having 7.8 per cent of its cars in bad order. Looking at these figures as a whole indicates that the Kansas City Southern is in an enviable position at present. It will be interesting to watch its operating figures in future months when its traffic increases with better business conditions.

The operating results in 1920 as compared with 1919 were as follows:

	1920	1919
Mileage operated .....		
Freight revenue .....	\$17,361,235	\$12,576,430
Passenger revenue .....	3,225,909	2,723,353
Total operating revenue .....	22,585,227	16,607,011
Maintenance of way expenses .....	3,004,632	2,527,250
Maintenance of equipment .....	4,322,926	3,680,203
Traffic expenses .....	469,949	229,545
Transportation expenses .....	9,231,599	6,477,872
General expenses .....	901,874	508,989
Total operating expenses .....	17,911,665	13,329,087
Net operating revenue .....	4,443,562	3,277,923
Taxes .....	957,905	846,439
Operating income .....	3,480,542	2,425,677

The corporate income account is as follows:

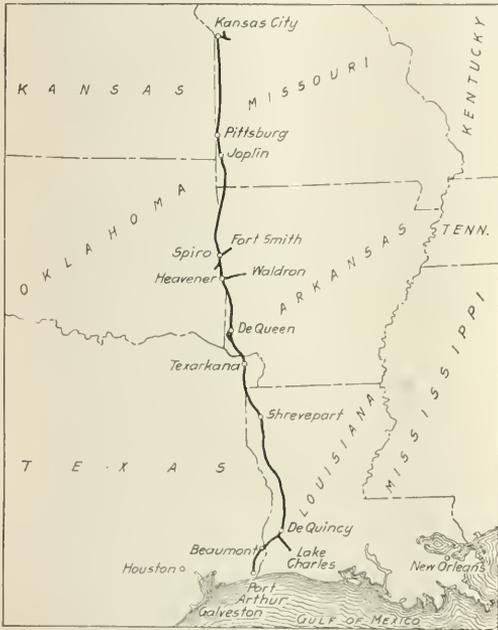
Total operating income .....	2,780,448	
Standard return (January and February, 1920, full year 1919) .....	485,919	3,536,428
Federal guaranty of income .....	1,120,332	3,636,428
Gross income .....	4,807,910	4,807,910
Interest on funded debt .....	1,884,277	1,884,272
Net income .....	1,924,054	1,342,678
Dividends:		
Preferred stock, 4 per cent .....	840,000	840,000
Balance .....	1,084,054	502,678

in 1920 were 1,989,826. The intensive development which is referred to is indicated chiefly by the average revenue train load in 1920 of 674 tons and by various other figures which are given below.

The Kansas City Southern did not earn its standard return in either of the two years of federal control. Its standard return was \$3,535,427; in 1918, it earned \$3,128,053; in 1919, \$2,189,359. In 1920 the net railway operating income was \$2,766,306. The improvement in net in 1920 as compared with 1919 was largely the result of operations during the last four months of the year. Operations during the guaranty period resulted in a deficiency under the guaranty of \$1,120,332. The corporate income account for the year, in which consideration is taken of the standard return for January and February and of the guaranty for the guaranty period showed a total net income of \$1,924,054. This compared with a net corporate income in 1919 of \$1,342,679.

The traffic carried by the Kansas City Southern in 1920,

AN ARTICLE printed in the Illinois Central Magazine for July describes the gardening activities of the department devoted to this work on that road. This department has been in operation for 20 years and there are 13 division gardeners in addition to the chief gardener, H. S. Moulder, who is stationed at Champaign, Ill. It is the aim to work not only to beautify the property of the company, but also the territory served by the railroad, the gardeners co-operating with town and city officials along the route.



The Kansas City Southern

## Letters to the Editor

### Duties Should Not Be Delegated

BOSTON, MASS.

TO THE EDITOR:

I have read with considerable interest the article by a Chief Clerk in the *Railway Age* of July 23. Granting the situation as it exists today I think his position is well founded. I do not wish to detract in any way from the efficiency and loyalty of the average chief clerk and I agree fully that, considering the work he is called upon to do, he is in most cases neither properly compensated nor recognized.

I believe, however, the wrong remedy is proposed. Do not give the chief clerk greater recognition (more compensation perhaps), but insist that the officers do more of their own work and not delegate authority which they should exercise. One of the chief causes of lower operating efficiency is the delegation of this authority to men who, regardless of their intelligence, efficiency and loyalty, are not, as a result of their limited outdoor experience, competent to pass upon subjects which are now left to their judgment.

We all know of numerous cases, starting in division superintendents' offices and going to the top of the railroad, where the chief clerk overrules the recommendations of responsible officers of lower grade when, in most cases, if the same facts were laid before his chief, the decision would be reversed. This tends to discouragement and lack of initiative on the part of the lower officers and decreases morale.

No recommendation over the personal signature of a responsible officer should be acted upon adversely by a chief clerk, and no letter of criticism written except after consideration by, and over the personal signature of, his superior officer.

To give the chief clerk greater recognition and a definite position in the organization would simply tend to perpetuate and increase what is already one of our greatest weaknesses.

OPERATING OFFICER.

### Track Tanks for Freight Trains

HEATH, MASS.

TO THE EDITOR:

The cost of train stops brings up the utility of track pans for freight trains. The track pan is usually considered as an adjunct to high speed passenger service but in view of modern conditions, would not the installation of track pans pay in certain cases purely for the purpose of eliminating freight train stops for water?

A few of the advantages may be cited. A water plug may often by necessity be located at the bottom of a grade or in a hollow. This may cause engines to cut off a mile or two from the plug to avoid stalling on the grade. Useful momentum is lost whichever way the train is bound. A track pan in this location obviates these inconveniences.

A water stop involves, besides the time lost for taking water, as much more for pumping up the train line on account of the rule on so many roads requiring engines to cut off from the trains. More air is lost than would be the case if the engine had remained coupled to the train for the reason that the brakes usually leak on so that auxiliary air is lost. As the stop is of considerable duration, the flagman probably goes back some distance. All these things make the cost of a water stop in excess of that for a stop for other purposes.

W. G. LANDON.

## Assignment of Motive Power

TAUNTON, MASS.

TO THE EDITOR:

The recent depression in business, with a prospect of resumption of traffic in the fall, should cause motive power officers to consider carefully the assignment of their power. The question might well be asked, "Is the power assigned where it will produce the best results?"

There are at least two methods used to assign the motive power on our railroads. With one method the authority rests in the office of the superintendent of motive power. He is the man who says what engine or class of engines shall be placed on the trains. With the other method, the authority rests with the division superintendent. Certain locomotives are assigned by the mechanical department to each division and the division superintendent then selects and assigns the power while the master mechanic keeps them going.

Of the two methods, the latter is much to be preferred on a large system, as it is logical that a man who devotes all his time to the operation of a particular section of a railroad is vastly more familiar with certain conditions that exist thereon than an officer whose time cannot be burdened with many of the minor details. On a small road, however, where the number of locomotive designs is not large and where uniform operating conditions exist, it is possible that the former method may have some advantages.

Having assigned the power, the next step is to keep it on its assignment. A few years ago the writer was greatly pleased to notice on a certain road that traverses New York state the regularity with which the locomotives appeared on the various trains. A remark made to the master mechanic on this subject brought forth the reply, "Well, why not? They are given to us to run, why not give them a job and keep them on it!"

On another road when inquiring about the performance of a certain type of locomotive, one of the inspectors replied, "They double the division every 24 hours and we seldom find anything the matter with them. Yes, we try to keep them on the same service as much as possible."

On a third road that during the year frequently issues an assignment of power bulletin, before that bulletin can be received by the proper officers, it is out of date.

One road has taken its locomotives by classes and assigned them to divisions closely related in order that the storekeeper can reduce the number of spare parts necessary to carry in stock. It is no unimportant sight for a large locomotive in passenger service to be handling three or four coaches, with the result that the cost of hauling that train over the road is certainly greater per car than had the engine been given her maximum load.

In these days when roads are applying devices which will result in economy and increase tractive effort, considerably more economy can be gained by the proper assignment of the power and the man closest to the existing conditions is certainly the ablest officer to direct the matter. Some officers think that the moment a locomotive is received from the shops she is in condition to go out on her regular run, but a wise master mechanic will warm up a freshly shopped engine gradually by placing it in local service. The old saying that oil is cheaper than crank pins and brasses still holds true.

Place as much individuality as possible in the service! A master mechanic will take more pride in his own engines and give them better care than he will a visitor, and if the number of visitors is large, the results won't be the best. It is human nature and you can't change it.

Now is the time to consider this matter before the predicted fall increase of traffic. Certainly this question is of enough importance to give it more than a passing thought.

CHAS. E. FISHER.

# I. C. C. Declines to Fix New England Rate Divisions

## Defendants and Complainants Expected to Appoint Committees to Work Out Readjustments

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on July 28 made public its decision in the New England rate division case, holding that the voluminous record in the case affords no basis for a valid prescription of divisions by the commission; but that it is shown that just, fair and equitable divisions cannot, in many instances, flow from existing arrangements. Because of these conditions the commission expects the defendant carriers outside of New England and the complainant New England lines to propose promptly adjustments that will remove the inconsistencies shown, and bring into conformity with the principles of law and equity expressed in the act the divisional arrangements, individually and as a whole, between complainants and defendants. The commission recommends the appointment of committees for this purpose, to report in 90 days, and thereafter each 60 days, until the issues shall have been disposed of.

Commissioners Eastman, Potter, Campbell and McChord dissented from the majority opinion on the ground that the commission should have taken definite action for the immediate relief of the New England roads, but the majority opinion by Chairman Clark says that the financial condition of the New England roads is not measurably worse than that of some of the defendants and that the record fails to show clearly that relatively the New England lines have had exceptional handicaps which their competitors have not encountered. The opinion contains a comprehensive review of the evidence introduced regarding the condition of the New England lines. The decision is based not only upon the insufficiency of the record as a basis for fixing divisions but also on the idea that the law does not contemplate taking revenue from one road for the primary purpose of equalizing the condition of a less prosperous road.

## Abstract of the Commission's Decision

On behalf of the Bangor & Aroostook, Boston & Maine, Central New England, Central Vermont, Maine Central, New York, New Haven & Hartford, Rutland, and their subsidiaries and operated lines, operating almost entirely within New England, it was alleged, in effect, that divisions accruing to them out of the joint freight rates increased pursuant to Ex Parte 74, between points in New England on their lines and all other points in the United States and adjacent foreign countries, particularly the Dominion of Canada, were and are in violation of paragraph (4), section 1, and paragraph (6), section 15, of the interstate commerce act.

The commission was asked (a) to prescribe just, reasonable, and equitable divisions for the future; (b) to require the cancellation of all joint rates and charges on traffic not moving entirely within the United States, or to authorize such other action as shall assure just, reasonable, and equitable compensation to the parties for their services in connection with such traffic; (c) to determine what would have been the just, reasonable, and equitable divisions of all joint rates and charges participated in by any of the parties hereto since the filing of the complaint; (d) to require adjustment to be made in accordance therewith; and (e) to determine a just and proper allocation among the complainants of such increased revenue as may be awarded to them.

### Complainants Urged Blanket Increases

Complainants urged that the divisions be treated "as a whole," not individually; that is, that blanket increases be applied to the divisions without regard to the specific divisions of individual joint rates. They suggested, among others, the following methods by which this might be done:

(1) Graded percentages that will reflect in the various divisions a definite additional amount which the complainants should receive in excess of what they now receive, apportioned in inverse ratio to the present divisions; in other words, the highest divisions to be increased the least percentage, and vice versa.

(2) Fifteen per cent of the total amount accruing to the lines west of the Hudson river from divisions on traffic interchanged with complainants to be transferred to the latter to afford them an additional annual amount of revenue approximating \$25,000,000. This plan, it was urged, has the advantages of simplicity, flexibility, and definiteness; would permit the pooling and redistribution of the total amount among the various complainants; the amounts paid to the complainants would be in absolute proportion to the amounts received by all the defendants jointly and severally; and while the plan remained in effect, divisions of particular rates could be examined and revised until all of the divisions were properly apportioned, when the plan could be discontinued.

(3) By the use of road-to-road per cents, combined into a road-to-New England per cent, a resumption of the method of dividing rates in vogue during the period of federal control, now applicable on some traffic to New England as to which divisions have not been re-established since the termination of federal

control, and on inter-line New England traffic between the Boston & Maine and the New Haven. Under this plan such road-to-New England per cents would be worked out for each defendant on the basis of normal traffic conditions, and then appropriate changes would be made in these per cents to increase the revenue received by complainants.

It was urged for defendants that the complainants were not in reality asking the fixation of just, reasonable, and equitable divisions of joint rates, but that they sought, in substance, the transfer to them of a fixed amount to be arbitrarily deducted solely from the revenues of the carriers operating in eastern trunk line and central territories, to be "allocated" among the complainants, not in relation to the traffic which they interchange with the carriers outside of New England, but according to their failure to receive, out of the joint rates established pursuant to Ex Parte 74, a return upon the value of their property held for and used in the service of transportation as large relatively as the return received in the aggregate by defendants. In other words, that the allegation of unjust divisions is only a means by which to secure the adjustment of an alleged claim flowing from the fact that the complainants were included with certain of the defendants in a group designated by us in accordance with the provisions of the interstate commerce act. It was insisted that the commission may not erect a subgroup in a divisional case, especially one composed of these complainants alone, and consider divisions "as a whole"; that the statute limits its power to prescribing divisions "as between the carriers' parties to the joint rates and that after considering, "among other things," all of the elements specified in the act, none of which is dominating, it must determine how much each carrier shall receive of each joint rate; that the application of a general principle would obviously produce divisions which would be unjust, unreasonable, and inequitable as between the individual carriers, and that the general principles governing the prescribing of divisions differ from those observed in authorizing rates under section 15a of the interstate commerce act, principally because the latter are made to produce a fair return for the carriers "as a whole," individual rates being subject to review in separate proceedings.

The divisions exhibited by complainants were of first and sixth class rates and of some few commodity rates on so-called merchandise traffic, the arrangements applying to class rates and to commodities which are classified. Coal and coke are not classified in the official classification, and as there was no evidence with respect to the divisions of the rates on these commodities, no finding is made with reference thereto. Nor is it understood that the division arrangements exhibited were applicable to fluid milk and the edible products thereof, high explosives, fresh meat in carloads, or to short-haul transportation of low-class commodities.

With respect to commodities moving in foreign commerce, we are not asked to determine whether or not the divisions of the

rates are just, reasonable, and equitable, but to require the cancellation of all joint rates and charges on such traffic or to authorize such other action as shall assure just, reasonable, and equitable compensation to the parties for their services in connection therewith. Nothing of record bears on the cancellation of the joint rates. With respect to the divisions which now accrue to the complainants out of the joint rates with their Canadian connections, it should be observed that our jurisdiction inheres only in so far as the transportation takes place within the United States.

The "importance to the public of the transportation services of" the complainants is conceded, and of it we take judicial notice, as well as of that of the principal defendants.

"The efficiency with which the carriers concerned are operated" is impossible of determination on the record, comprehending, as it does, all common carriers in the United States that are subject to our jurisdiction. Some general evidence was offered by complainants indicating that in the units of operating efficiency the degree of improvement in New England during the last few years has been as great as or greater than in the remainder of the eastern group. The specific evidence relates mainly to the operations of the New Haven.

### Special Conditions in New England

The elements which the complainants contend should or must be considered by us in determining whether their divisions accord with the provisions of the act are, their financial needs; their operating handicaps, some of the more important of which are said to flow from the terminal character of complainants' operations; the alleged disproportionate effect of recent wage increases upon their operating expenses; the increased cost of locomotive fuel and other railroad materials and supplies; per diem or freight-car hire; and the peculiar character of their traffic. It is said that complainants have very little traffic in the carriage of which they are intermediate carriers having no terminal expense; that their operations embrace large percentages of less-than-carload and passenger traffic; that they receive a larger percentage of raw materials than they forward of manufactured products; that they have little tonnage of low-grade commodities moving in volume; and that it is impossible for them to obtain as large a transportation product from a given amount of labor as is possible in other parts of the eastern group. The density of complainants' traffic is relatively low and the diversity of their routes, the diffusion of their traffic over New England, their numerous junction points, stations, branch lines, and switching yards permit only comparatively short hauls. In general, complainants endeavor to demonstrate that since the present divisions were established their costs of operation have increased relatively much more than have those of carriers in eastern trunk line and central territories.

It is asserted for complainants that they have demonstrated that the divisions they receive are inadequate "as a whole," even when tested by the standard of mileage. They urge, however, that "the amount of service rendered by the several carriers participating in a joint rate is no longer controlling," and that "mileage is no longer the yardstick by which divisions are to be measured." They urge that paragraph (6), section 15, of the interstate commerce act is revolutionary in that it subordinates the mileage haul and stresses certain other specified considerations which have no relation thereto, and that the provision that those factors shall be considered by us "without regard to the mileage haul" is, in a sense, the most important change in the law in respect of our power over divisions.

Locally, the needs of the New England carriers have had our consideration before. We have recognized the peculiar local transportation difficulties encountered by the New England lines.

It is insisted for defendants that if special difficulties exist in New England it must be that they flow, not from the traffic interchanged with the connections of complainants, but from local conditions. Complainants' principal statistical witness states that the high proportion of traffic local to New England may have an adverse effect on operating costs. Obviously, all interchange carload traffic originated by the complainants in New England destined to points throughout the remainder of the United States and in the Dominion of Canada must be distributed by the defendants; all interchange traffic from points outside of New England delivered by the complainants must have originated at some point on defendants' lines, and the expense of furnishing cars and other expenses incident to its origination must have been borne by one or more of them. Inasmuch as the volume of interchange tonnage into New England considerably exceeds the outbound movement, the defendants must have the expense incident to originating and furnishing cars for a larger proportion of the interchanged traffic, and it must follow that it is usually less difficult for the shippers on the complainants' lines to be supplied with empty cars. It also follows that complainants have the expense of returning many cars without load to defendants.

There is no break of bulk of carload shipments during the transportation, and therefore the type of the car, the commodity, the weight of the load, and many other incidents of the through joint haul must be the same within and without New England. Defendants assert that the only conditions peculiar to New England are (a) a high proportion of passenger-train mileage to total train mileage, which prevails only in the densely populated section of southern New England; (b) the high proportion of less-than-carload freight as compared with the total tonnage, which must be transferred and handled en route by the defendants with a constantly decreasing load as the haul increases; (c) the substantial volume of traffic moving by water from and to New England owing to the concentration of about 73 per cent of the population within 50 miles of the coast line, the remainder of the territory being more sparsely settled; (d) the fact that New England is contiguous only on the west to eastern trunk line territory; and (e) the character of the products of New England manufacturers. These peculiarities, in the view of the defendants, afford no warrant for increasing divisions of joint rates, and for them it is asserted that the conditions in New England are in other respects essentially like those in other territories.

The distinctive transportation characteristics of New England, complainants contend, should here be given controlling weight. However, it is their view that we must consider as the dominant factor "the amount of revenue required to pay their respective operating expenses, taxes, and a fair return on their railway property held for and used in the service of transportation."

### New England Roads and Other

#### Eastern Carriers Compared

Based on a property investment of \$838,274,769 of the seven complainant roads as of October 31, 1919, it is estimated that they obtained a net railway operating income for the year ended June 30, 1920, adjusted, of \$8,696,666, a return of approximately 1.04 per cent on the property investment. Their fixed charges, based on the same adjusted year, were \$34,783,380; their non-operating income, \$7,170,256; and their "net" fixed charges \$27,613,124. Thus, the complainants show that they failed to meet their fixed charges for the year ended June 30, 1920, by \$18,916,458. Taking the actual results of the first four months of a year ending August 31, 1921, and estimating the remainder of the year therefrom, complainants forecast that they may fail to meet their fixed charges for the year 1921 by \$27,386,975. This estimate attempts to make allowance for diminution in traffic. The results of operation for the months of September and October, 1920, indicate that traffic fell off and that the net income for those two months, after the payment of fixed charges, was a deficit of \$3,591,183.

The property investment shown by the complainants includes \$40,213,406, alleged to represent the value of the contract rights of the New Haven in the New York terminals of the New York Central, and about \$8,500,000 for the investment in the Portland Terminal Company, which is controlled by the Maine Central through ownership of the entire capital stock. The preliminary reports of our bureau of valuation indicate that the cost of reproduction new of the lines of complainants was \$760,195,671, and the present value of land \$161,229,938, a total of \$921,425,609.

The ratios of net railway operating income to property investment of five of the complainants and of the principal lines in the eastern group other than such New England lines for the years ended June 30, 1913, to 1917, inclusive, and the calendar year 1919, and the ratios of deficit to property investment for 10 months of 1920, are shown in the following statement:

	1913	1914	1915	1916	1917	1919	1920 (10 months)
New England .....	4.88	3.82	4.75	6.01	5.68	1.02	33.10
Eastern group less New England .....	5.10	3.79	4.20	6.43	5.63	1.84	1.92
* Ratio of deficit.							

The property investment upon which the ratios are based excludes materials and supplies. On the surface the statement does not indicate that in periods prior to the recent large increases in wages and rates these complainants were weak roads as compared with the defendants in the eastern group. Comparing individual roads, it may be observed that the Central of New Jersey, the Erie, including the Chicago & Erie, the Pennsylvania, lines east as well as lines west, the New York, Ontario & Western, the Delaware & Hudson, and many others outside of New England earned a less per cent of their standard return during the period of federal control than did the New Haven, and that in several instances the percentage of operating income to property investment for the first 10 months of 1920 for some of the direct connections of the complainants showed a deficit greater than the average for all the New England roads.

During the pendency of Ex Parte 74 our attention was directed to this contention of the lines in New England and to the fact that an average percentage increase for official classification territory as a whole would not meet the needs of the New England car-

riers. We found, however, with certain exceptions, that general percentage increases made to fit the needs of the groups of lines serving each of the four groups designated by us must be considered for the then present purposes the most practicable, without prejudice to any subsequent finding in individual situations, stating that—

While the New England carriers are included in the eastern group and are subject to the percentage for that group, the evidence as to the disproportionate needs of the New England lines makes it desirable that the carriers give careful consideration to the divisions of joint rates accruing to these lines.

A brief and necessarily general outline of the basis for the allegation of paragraph VIII of the complaint follows: New England, located in official classification territory, was included in the eastern group, the boundaries of which are practically coterminous with those of official classification territory. The complainants do not contend that New England was included therein without their consent, nor do they ask that it be separated therefrom. For rate-making purposes, official classification territory had been subdivided into New England, eastern trunk line, and central territories. The financial needs of the carriers, estimated in part, were based upon statistical data derived from questionnaires sent to the individual carriers, their original proposals not having made allowance for the wage award made by the United States Railroad Labor Board July 20, 1920, after the close of the hearings. Data for 51 Class I systems, 39 Class II, 30 Class III, and 24 switching and terminal companies were considered in the proposals for the eastern group.

After our decision in Ex Parte 74, the assertion of the New England carriers that they had lost and the other carriers in the eastern group had gained by the inclusion of New England in that group was considered by a conference of the executives of the eastern roads. For informal discussion data taken from the questionnaires for a constructive year ended October 31, 1919, were assembled separately for the complainants and the Boston & Albany; for Class I roads in eastern trunk line territory; and for Class I roads in central territory, the other classes of roads being excluded. From these data it was computed by an expert of one of the defendants that the eight New England carriers, the eastern trunk line carriers, and the central territory carriers, prior to the wage award of the labor board, required to produce a net return of 6 per cent on their property investment, increases in their freight and switching revenues amounting to 47,407, 29,767, and 24,431 per cent, respectively. All of the carriers in the eastern group, considered "as a whole," required an increase of 29,461 per cent, but if the carriers in eastern trunk line and central territories had been embraced in a separate group, they would have needed only 27,981 per cent increase. Accordingly, complainants contend that, due to their inclusion in the eastern group, they lost, and the other carriers in the group gained, 1.48 per cent of the total freight and switching revenues prospectively derivable from the increases allowed in Ex Parte 74. Stated more specifically, the freight and switching revenues of the eight New England carriers for the constructive year were \$136,298,531, and they needed 47,407 per cent of that amount in addition, or \$64,615,799. Mathematically they received, or will receive, only the average per cent for the group as a whole, 29,461 per cent, or \$40,150,939, a difference of \$24,464,860, or 17,946 per cent.

Of the above amount defendants' expert computed that about two-thirds was gained by the eastern trunk lines and about one-third by the central territory carriers. On this statistical basis the eastern trunk lines, considered as a separate group, also suffered by their inclusion in the eastern group to the extent of the difference between the per cent their freight and switching revenues needed to be increased, 29,767 per cent, and the per cent of the group as a whole, 29,461 per cent, and the central territory carriers benefited to the extent of the difference in the per cent of their needs, 24,434, and the per cent of the group as a whole. In other words, theoretically the eastern trunk lines, by their inclusion in the eastern group, lost \$3,374,276 and the central territory carriers gained \$27,811,393.

However, the so-called Pocahontas lines are also within the eastern group. Had these lines been excluded, the eastern group lines as a whole would have needed to have their freight and switching revenue increased 30,586 per cent to produce a net return of 6 per cent on their property investment and, statistically, as the Pocahontas lines needed their freight and switching revenues increased by 15,729 per cent, they gained \$18,598,904 by being in the eastern group. On the adjustment proposed by the complainants the Virginian Railway would contribute \$152,398, although, by its inclusion in the eastern group, it theoretically lost \$1,981,168. The statistics of the so-called Allegheny region lines, so presented in Ex Parte 74 indicated a need for increases in their freight and switching revenues of 36,126 per cent. The application to them of the common percentage of the eastern group resulted in a theoretical loss to the Allegheny region lines of \$36,244,058.

The data upon which the complainants contend they lost and

the defendant eastern trunk line and central territory carriers gained 1.48 per cent of the total freight and switching revenues were incomplete. The complete figures presented to us in Ex Parte 74 indicate that the revenue needs, excluding amounts to be raised from passenger-train service, passenger revenue, excess baggage, Pullman surcharge, and milk, were for all roads in the eastern group 39.75 per cent of the total freight and switching revenue, while the revenue needs, including the revenues from passenger-train service, for the defendants was then 38.55 per cent of their freight and switching revenue, a difference of 1.2 per cent of the total freight and switching revenues, or \$20,377,678, approximately \$4,000,000 less than the amount claimed by the complainants. If the Pocahontas lines had been excluded from the eastern group the remainder of the lines in the group would have needed their freight and switching revenues increased 40.95 per cent, or 1.2 per cent more than the group as a whole required. In other words, what the complainants lost theoretically the Pocahontas roads gained. The complainants are located in the north-eastern part of the eastern group and the Pocahontas lines in the western part. They do not directly connect, and the amount of tonnage participated in under joint rates to or from New England is negligible. This fact is significant only in that it suggests that there is not necessarily a relation between the prayer of the complainants for increased divisions and their claim for adjustment of earnings due to their inclusion in the eastern group. The amounts by which the lines west of the Hudson river are alleged to have benefited by the inclusion of the New England lines in the eastern group bear no relation to the traffic which they interchange with the complainants.

It is contended for defendants, however, even assuming that the theory of complainants has merit, that the total of \$24,464,860 should not be assigned to the interchange traffic alone, but should be apportioned among the various classes of traffic, as follows: Local, \$3,701,533, or 15.13 per cent; interline New England, \$2,358,413, or 9.64 per cent; interline Canadian, \$1,091,133, or 4.46 per cent; New England passenger, \$8,335,178, or 34.07 per cent; and interline trunk line, \$6,329,059, or 25.87 per cent; Boston & Albany, \$2,649,544, or 10.83 per cent. It is defendants' view that, if there is any merit in complainants' contention that their inclusion in the eastern group benefited the other carriers in that group, the extent of alleged benefit should be measured by the total per cent of the deficiency to total operating revenues and not by the per cent of the deficiency to freight revenues. Thus measured the inclusion of the complainants' lines increased the needs of the carriers in the eastern group from 32.71 per cent to 33.28 per cent of the total operating revenues, a difference of 0.57 per cent. The total operating revenues of the carriers in the eastern group for the constructive year ended October 31, 1919, were \$2,585,316,615, of which 0.57 per cent is \$13,488,748, and defendants assert that this amount represents the theoretical benefit rather than 1.48 per cent of the freight and switching revenues, or \$24,484,860, as stated by the complainants.

Based on their needs when application was made in Ex Parte 74, and disregarding the downward trend of traffic and revenues since that time, 21 carriers in the eastern group may earn more than 6 per cent on their property investment because the required percentage increases of their freight and switching revenues were less than the required percentage of the eastern group as a whole. The amount of their contribution to the 1.48 per cent would be \$11,337,717. However, under the provisions of paragraph (6) of section 15a of the interstate commerce act, if any carrier receives for any year a net railway operating income in excess of 6 per cent of the value of the railway property held for and used by it in the service of transportation, one-half of such excess is recoverable by the commission for the purpose of establishing and maintaining a general railroad contingent fund. Hence 50 per cent of the return in excess of 6 per cent, if earned, would not be available in any adjustment with the complainants covering the past, although it would be available for the future.

### Rate Increases Did Not Bring Estimated Return

In their original applications in Ex Parte 74 the carriers proposed general percentage increases in freight rates in the eastern group of 30 per cent. After the wage award they filed an amended application. We estimated, based on data furnished by the labor board, that the wage award would be equivalent to 12.2 per cent of the total railway operating revenues of the eastern group carriers. We approved increases in the eastern group of 40 per cent for freight service, including switching and special services; 20 per cent in passenger fares, excess-baggage charges, and rates on milk and cream; and authorized a surcharge upon passengers in sleeping and parlor cars of 50 per cent of the charge for space in such cars, such charge to accrue to the rail carriers. Joint or single line through rates between points in one group and points in other groups were permitted to be increased 3 1/2 per cent.

The increases on freight traffic for the roads in the eastern

group did not average 40 per cent. Complainants estimate that they actually received or will receive 37 per cent increase instead of 40 per cent. Principally because of the interterritorial percentage increase having been made 3 1/2 per cent, the refusal of certain states to permit increases in intrastate rates equal to those we authorized for interstate traffic, and the continuance of fixed differentials, it is estimated that the increases for roads in the eastern group other than the complainants will be freight, 36.06, and passenger, 18.08 per cent. The acquiescence of the New England lines in being treated as a part of the eastern group and in receiving no more than the uniform percentage increases for the group as a whole was undoubtedly due to the fear on their part and on the part of the shippers in New England that a larger increase of rates, corresponding to financial needs, in New England than in the remainder of the eastern group would injure industry and traffic. The complainants and the defendants may be said to have been joint participants in a common undertaking i. e., to have their rates increased uniformly. Prescribing rates as a whole in rate groups necessarily means that the return will not be the same for each carrier. Complainants admit that the eastern trunk line and central territory carriers can not be legally required to transfer directly to them an equalizing amount, but claim that this may be accomplished indirectly through a change in the divisions of joint rates.

### New England Roads Originate or Deliver Large Percentage of Traffic

Complainants particularly emphasize another of the statutory considerations for the determination of just, reasonable, and equitable divisions: They are either originating or delivering carriers in respect of the largest percentage of their traffic. For example, it is stated that 93 per cent of the traffic of the New Haven begins or ends on its line. Advance in transportation has been more marked in train service than in terminal services, or the latter has not kept pace with the former. Complainants contend that New England, particularly the dense manufacturing sections of Connecticut, Rhode Island, Massachusetts, and southern New Hampshire, containing 3,400,000 people, or 3.25 per cent of the population of the United States, is in effect a large terminal or railroad yard, and much of their evidence is directed to demonstrate the relatively high costs inherent in that condition.

Based on property investment figures submitted in Ex Parte 74 of \$833,583,558 for New England lines, other than the Canadian Pacific lines in Maine and the Boston & Albany, and of \$8,327,377,457 for the eastern trunk and central territory lines, it is shown that those investments are, respectively, \$109,480 and \$145,026 per mile of road. The investment per mile of road for the New England lines is 75.5 per cent of that for the eastern trunk and central territory lines. Based on a separation of operating expenses between freight and passenger train service, however, it is shown that the freight proportion of operating expenses was 63.03 per cent for these New England roads and 76.27 per cent for those in eastern trunk line and central territories, making the freight service proportion of the property investment, based on operating expenses per mile of road, \$69,006 for these New England roads and \$110,611 for the eastern trunk line and central territory roads. The revenue ton-miles of these New England carriers for the calendar year 1919 were 37.6 per cent per mile of road of the revenue ton-miles of the eastern trunk line and central territory carriers, and the property investment per 1,000,000 revenue ton-miles per year was, per mile of road; New England, \$38,005; eastern trunk line and central territory, \$34,958; the former being 165.9 per cent of the latter, the result, it is said, of the lower density of traffic, the greater density of terminals, and the shorter haul. On this basis, the net operating income must assume a 66 per cent greater carrying charge per ton-mile for these New England roads than for eastern trunk line and central territory carriers. This is a rough average and admittedly an indicative approximation only.

The major operating handicaps, interrelated and overlapping each other, of the complainants in comparison with operations in eastern trunk line and central territories, each of which is said to embrace factors largely beyond the control of complainants, may be summarized under four general headings: (a) diversity of routes and diffusion of traffic, (b) low freight traffic density, (c) terminal characteristics, and (d) short hauls.

### The Commission's Conclusions

After a discussion of these and other points the conclusions of the majority are stated as follows:

We think that there is merit in the allegations of defendants that the proceeding is, in substance, an effort on the part of complainants to augment their revenues from traffic which they interchange with their connections without regard to the question of whether the present divisions of the various joint rates are fair and reasonable or considerate of the probable effects upon the

revenues of the respective defendants. The proceeding is essentially an outgrowth of Ex Parte 74. It is contended for complainants that our decision in that proceeding operated to the relative disadvantage of the New England lines because their inclusion in the eastern group gave them less additional revenue and defendants more than might otherwise have been received and because of the difference in the percentage increases authorized for freight and passenger traffic, respectively, the lower percentage of increase having been authorized for passenger traffic, which is, generally speaking, relatively greater on complainants' lines than on the lines of defendants.

At the close of complainants' case defendants moved to dismiss the prayer for relief under paragraph VIII on the ground that we are without power to grant such relief. They moved also to dismiss other portions of the complaint, alleging that complainants had failed to make out a *prima facie* case and had not offered proof that would entitle them to the relief prayed. We shall, however, deal with the issues upon the record made.

In no proceeding heretofore brought under the provisions of the interstate commerce act have we been called upon to exercise powers so broad as those upon which complainants here rely. We may, therefore, fittingly advert to the controlling principles of law, illumined in the event of possible doubt by cardinal rules of statutory construction.

Under the substantive provision of section 1, paragraph 4, of the interstate commerce act, there rests upon every common carrier subject to the act the duty, in the case of joint rates, fares, or charges, to establish just, reasonable, and equitable divisions thereof as between the carriers participating therein which shall not unduly prefer or prejudice any of such participating carriers. A reasonable construction of the statute makes clear the intent of Congress that paragraph 4 of section 1 and paragraph 6 of section 15, taken together, should supersede former provisions of the statute and constructions placed thereon with respect to divisions of joint rates, whether established voluntarily or pursuant to our finding or order. It follows as a necessary corollary that we must be guided by the intent of Congress as expressed in the provisions of the present statute.

Under the provisions of paragraph 6, section 15, of the act we are authorized in appropriate cases, after full hearing, to prescribe by order the just, reasonable, and equitable divisions of joint rates, fares or charges to be received by the several carriers. Our jurisdiction attaches irrespective of the manner in which divisions theretofore prevailing were established. And our duty to prescribe divisions arises when, after full hearing, we are of opinion that the divisions brought in issue "are or will be unjust, unreasonable, inequitable, or unduly preferential or prejudicial as between the carriers parties thereto." In so prescribing and determining divisions of joint rates we are required to give due consideration, among other things, to the efficiency with which the carriers concerned are operated, the amount of revenue required to pay their respective operating expenses, taxes, and a fair return on their railway property held for and used in the service of transportation, and the importance to the public of the transportation services of such carriers and also whether any particular participating carrier is an originating, intermediate, or delivering line, and "any other fact or circumstance which would ordinarily without regard to the mileage haul, entitle one carrier to a greater or less proportion than another carrier of the joint rate, fare, or charge." Under the provisions of the section no one of the elements which we are required to consider is predominant; all are to be considered *per se* and relatively in the determination of just, reasonable, and equitable divisions "to be received by the several carriers." The words "without regard to the mileage haul" do not forbid consideration of the element of distance. They serve rather to emphasize the fact that other specified elements may outweigh the element of distance in which event we may properly disregard the mileage haul. The clause is inclusive rather than exclusive, and the general words "among other things" constitute a clear exposition of the intent of Congress that we should consider all the facts and circumstances. We are bound under the statute to determine whether divisions properly in issue justly, reasonably, and equitably compensate each carrier, relatively and *per se*, for the service it performs in the joint haul under joint rates, fares, and charges. Our determination must be predicated upon a consideration of all the various pertinent factors including the ability or disability of the several carriers to adequately, economically, and efficiently meet their common-carrier obligations. In the final analysis the just measure of divisions is the reasonable and equitable share of the revenue earned under the rates to be divided which each carrier should receive.

By evidence of costs reflected largely in units of miles, ton-miles, locomotive-miles, and switching-miles, complainants endeavor to show that the cost of transportation over their lines is relatively greater than that incurred by defendants. The voluminous record upon which the case is submitted is replete with evidence of peculiar local conditions in New England and the

consequent relatively higher cost of conducting services for which complainants allege they are not justly, reasonably, and equitably compensated, with the result that their financial needs are not met.

## Complainants as Strong

### Financially as Some Defendants

It may well be that complainants are operated as efficiently as are other carriers; the importance of their service to the public in the highly developed territory which they serve can not easily be exaggerated; but their financial condition is not measurably worse than that of some of the defendants. The public interest does not demand nor does the statute either expressly or by reasonable implication provide that we may prescribe increased divisions of joint rates, fares, and charges to be received by certain carriers merely because other carriers participating in the joint rates, fares, or charges considered as a whole, have not failed in so great a degree to earn a fair return upon the value of their property devoted to the public service, although this is one factor which may be taken into consideration. Nor are we vested with discretion by virtue of which the mandate of section 1, paragraph 4, that divisions of joint rates, fares, and charges as "between the carriers" participating in joint hauls shall be just, reasonable, and equitable might be made ineffective by administrative or judicial action. The remedial provisions of paragraph 6, section 15, of the act offer to the carrier a source of relief to which it may resort in the event of a failure to observe the substantive provision of section 1, paragraph 4, or in the event of a failure to agree upon divisions and indicate the facts and circumstances which the Congress intended should be considered in determining what is "just, reasonable, and equitable."

### No Equitable Measure of Division Offered

In the view of complainants, we have "ample power to readjust these divisions by adding to the divisions of the New England lines without in this proceeding attempting to readjust the division between lines west of the gateways." It is submitted for complainants that "the New England lines are entitled to divisions 33 $\frac{1}{3}$  per cent in excess of what they now receive" notwithstanding admissions that divisions of certain joint rates now received by complainants are reasonable and equitable and that the present blocking of divisions in New England is a "mess of inconsistencies" and must be almost entirely rebuilt. No evidence of the reasonable and equitable measure of divisions other than "as a whole" has been offered. No method by which the apparently incongruous plan of divisions now in force might be readjusted has been submitted and we are thus left to deal with the situation in the light of generalizations which can lead only to speculative ventures upon an unknown field. The various methods which have been suggested to alleviate the financial condition of the New England lines and to insure to them just, reasonable, and equitable divisions indicate in themselves the uncertainty of their application and it is apparent that if adopted they would not only perpetuate the inconsistencies to which complainants refer but would create new preferences and prejudices.

For defendants it is contended that the failure of complainants to submit any evidence of the divisions on coal traffic, irrespective of those on other commodities which have been heretofore enumerated, is fatal to complainants' request for blanket relief since we can not know whether the divisions on coal and the other traffic are more or less than those to which the complainants are entitled and if it might be assumed that the divisions on the merchandise traffic are "as a whole" unjust and unreasonable, we have no evidence upon which to base an opinion as to whether the deficiency is or is not met from the revenues on coal.

### Unfair to Treat Complainants as a Whole

To treat the complainants "as a whole" or as a group would disregard the differences which obtain between the complainants individually. Much of the evidence adduced was solely in behalf of the New Haven and manifestly has no application to conditions on the Bangor & Aroostook, the Central Vermont, or the Rutland. The conditions obtaining on the lines of complainants are so essentially dissimilar that general relief would not afford each of them reasonable and equitable divisions.

The terminal characteristics of the New England lines have long been recognized, and complainants show that constructive mileage and arbitraries have been allowed them in partial recognition of their terminal character. A witness for complainants testified that during the last 15 years there has been no substantial change in the characteristics of the New England roads, and, as has been seen, we permitted material increases in the class rates in New England which reflected the terminal characteristics of their roads. To what extent the constructive mileage and arbitraries recognize in the joint rates the terminal characteristics of the New England lines is not capable of accurate ascertainment from this record; whether or not they are reflected in such rates

is doubtful, since for many years, for example, transcontinental rates have been blanketed over wide areas, and, despite the additional haul to New York, westbound rates from Boston and points north thereof are on the same basis as those from New York. Eastbound, the rates to Boston and numerous points grouped therewith are differentially from 7 to 2 cents per 100 lbs., first and sixth classes, higher than to New York. None can question but that these rate adjustments among others are to the interest of New England. Whether they are reasonable or unreasonable is not in issue in this proceeding. Our power is limited to dividing the available rates; otherwise the additional costs of a particular carrier not reflected in the rate might leave no division for another carrier.

The age of the divisions affords no presumption that they are unreasonable; it may be that they were too liberal originally. The record fails to show clearly that relatively the New England lines have had exceptional handicaps which their competitors have not encountered. We are told that it cost the New England lines \$17,646,168 a year to have per diem substituted for mileage as the basis for car hire, but no complementary statement is offered with which this amount can be compared. It is shown that New England is remote from the coal fields and that the New England roads must pay for the transportation of coal and other materials and supplies more than their connections pay, but there is nothing in the record to indicate that relatively these costs have increased to a greater extent than have similar costs in other territories. The relatively high proportion of passenger traffic on the principal New England roads has been especially stressed, but how that high proportion should be translated into increased divisions of freight rates for the complainants is only vaguely and indefinitely indicated. The effect of the cost of labor in New England has been stated in gross amounts, and the alleged exceptional effect of such costs has been expressed in percentages for certain roads, but it may be that defendant roads operating in sparsely settled communities were also adversely affected by wage increases.

### Complainants' Evidence Not Complete

If it had been clearly and definitely shown that particular divisions assailed were but fair compensation for the service performed when they were established and that since the establishment complainants have been subjected to relatively exceptional operating expenses of permanent character, some basis for an adjustment by us of the divisions of joint rates as between the several carriers participating therein would have been indicated if those exceptional expenses were reflected in the rates. Mounting operating costs, with which revenues have not kept pace, have been general. The voluminous, but yet limited, character of the divisions submitted; the selection of the points between which the divisions apply; the dividing of the rates only at the gateways; the almost total lack of the reasons which impelled the making of divisions via one gateway lower than via another; the doubt cast upon the reasonableness of the allowances and the arbitraries; the varying amounts of constructive mileage received by the complainants; the extent of the groups; the inconsistency of the division blocking; the failure of the Bangor & Aroostook to show any of its divisions; the fact that the Maine Central receives terminal arbitraries and arbitrary proportionals on much of its traffic; the failure to submit divisions on coal, high explosives, fluid milk and its edible products, fresh meat, in carloads, and other commodities; the absence of concrete final cost figures and indispensable facts, and, generally, the submission of much unrelated data, have resulted in a record that affords no basis upon which we might predicate a valid prescription of divisions. We are authorized to prescribe only just, reasonable, and equitable divisions "to be received by the several carriers." Full hearing and competent and relevant evidence are prerequisite. Any attempt to prescribe a blanket increase of divisions as here sought in the face of admissions and uncontradicted evidence that certain divisions are now just, reasonable, and equitable to complainants would override the plain mandate of law.

### Some New England Roads Among Defendants

While we are urged to adjust the division "as a whole" on the presumption that the facts shown of record as to a part of the complainants are generally true as to all of them, and that they reflect the situation in New England, it is to be noted that some of the roads in New England have been excluded from the list of complainants and included in the list of defendants. To so deal with the situation would not be treating the New England roads as a group. It would be taking from one road and giving to a less prosperous road, thus doing by indirection what the Congress deliberately and specifically refused to authorize us to do. The statutory provision for recapture of excess earnings from individual carriers also clearly negatives the idea that the Congress contemplated or intended that all carriers in a group should

so share in the aggregate earnings of the roads in the group that all should be upon an equality. Such a plan would stifle all incentive to skill, efficiency, economy, and good management.

However, the record lays before us an existing condition of divisional arrangements which is the antithesis of equality, unity, system, or order. A plan of transportation practices so fraught with incongruities and from which, as indicated by one of counsel, anything might be proved by a judicious selection of items, is indefensible. While the record affords no foundation upon which might rest a valid prescription by us of divisions, we can not disregard the conditions portrayed. Our duty would not be fully performed if we did not require a readjustment under which the conditions shall be relieved and demonstrably fair treatment accorded to all parties with respect to individual divisions. We are convinced, upon consideration of all the facts, that just, fair, and equitable divisions can not in many instances flow from the chaotic divisional arrangements to which we have adverted. We shall expect defendants and complainants to promptly submit to us proposed readjustments that will remove the inconsistencies portrayed of record and bring into conformity with the principles of law and equity expressed in the act the divisional arrangements, individually and as a whole, between complainants and defendants. To this end designation by the parties of appropriate committees of qualified personnel is recommended, and we shall expect the appointment of such committees to work jointly in revision of the divisions and to report to us at the end of 90 days after the date hereof the results of their efforts, together with statements of divisions upon which agreement has been reached, as well as those upon which there may not be complete agreement. Such statements may be accompanied by statements of fact and argument upon which the respective committees rely. Hereafter reports should be made to us at the end of each period of 60 days until final and complete disposition of the issues shall have been accomplished. For these purposes the record will be held open.

### Commissioner Eastman Dissents

Commissioner Eastman said in part:

Throughout the majority report runs the criticism that complainants ask revision of their divisions "as a whole." If the New England carriers were to obtain relief in this proceeding which would be of avail against impending financial danger, it was necessary for them to move quickly and deal broadly with the situation. They merit no criticism for so doing, and in my opinion they have made out a case justifying temporary relief pending more detailed consideration of specific divisions. In this case I fear that the majority are construing certain vital provisions of the act in a way that will make it a less effective instrument than it was designed to be for the promotion of the general transportation good.

The critical financial condition of the New England roads, in which the United States has an investment of some \$125,000,000, is a matter of common knowledge. For some months they have been failing to earn fixed charges. It is at least possible that only some measure of success in this proceeding will save certain of these carriers from serious financial trouble. If the danger is not averted results will follow of direct and serious concern to the whole country. Not only will it be deemed proof of the failure and futility of the transportation act, 1920, but for years it will discourage investment in railroad securities in a part of the country which has been one of the great markets for such securities.

### Acute Conditions Call for Action

These results will be the more certain and severe because the financial trouble will be due to failure to earn upon legitimate investment. New England railroads have a reputation for financial mismanagement which is only in part well founded. The New Haven was the chief victim of this mismanagement, and it consisted in the waste of many millions of dollars in the purchase of securities of trolley, steamship, and other companies. But the investment of the New Haven in physical railroad property is sound, and if it earns a return on that investment it can at least pay its way. Its present difficulty is in earning even operating costs.

It is, I think, an inevitable conclusion that Congress intended to give us a wider jurisdiction and discretion in determining divisions than would have been proper if such determination were viewed merely as an isolated problem. In other words, divisions were regarded in connection with and as a phase of the larger problem of assuring a national transportation system sound and healthy in all its parts, and it was the definite intent to permit us, in fixing divisions, to take into consideration this larger end. In the hearings which preceded the transportation act, 1920, attention was continually directed to the problem of the weaker roads. It was realized that the rule of rate making in section 15a would produce uneven results and leave this problem unsolved. While Congress was unwilling to go so far as to authorize the

direct diversion of the excess earnings of the strong roads for the benefit of the weak, it did deem it wise and expedient to permit, and indeed require, the relative prosperity of carriers to be taken into consideration in determining the divisions of joint rates. Nor was this a means of doing indirectly what Congress was unwilling to do directly. It was, rather, a means of going part way along the path suggested without traveling the full distance.

### "Financial Needs" Should Be Given Consideration

I find no difficulty, therefore, in reaching the conclusion that in this case we have both the right and the duty to consider, not only the relative importance and cost of the service rendered by the respective carriers, but also the *financial needs* of the New England roads and the consequences to the entire country if they should meet with serious financial trouble.

A second vital question of law is whether we have authority to make a temporary adjustment of divisions pending a further and more detailed consideration of the problem which they present, consuming many months of time. It is good administration to act quickly when the public interest demands, upon the best evidence available, even if we know that readjustments may be necessary before the problem under consideration is finally put to rest.

I think it a logical conclusion, therefore, that we are not without power to prescribe a temporary adjustment of divisions where we know that further inquiry may be necessary before stability and permanence can be attained, if good administration of the national transportation interests calls for "prompt action" and the best measure of relief that can presently be afforded. It should here be noted that while interchange traffic with defendants is a very large factor in the revenue of complainants, the interchange traffic of any one of the defendants with complainants is but a minor factor in its revenue.

### Temporary Adjustment Recommended

My conclusion is that we may and should require a temporary adjustment of the divisions in favor of the New England lines, keep the case open, and direct the parties to reopen negotiations and be prepared to renew the trial of the case at or before the expiration of one year if they are unable to agree among themselves as to a permanent adjustment in the meantime. As I have tried to show, the record will support such temporary relief either upon the theory of financial needs or upon the theory of changed conditions, or upon a combination of the two. The evidence is insufficient to measure the effect of the changed conditions accurately in dollars and cents, but it is not insufficient for a conservative estimate, and partial reliance upon financial needs makes even this unnecessary.

Stated concretely, my judgment is that the least we should do is to require the carriers west of the Hudson for a period of 18 months, unless otherwise ordered, to shrink their divisions by 15 per cent on all interchange traffic, except coal, with complainants, this amount to be added to the divisions of the New England lines. Coal must be excepted for the present, because no evidence has been introduced in regard to the divisions on this traffic, and complainants have themselves asked that we allow the case to remain open for the submission of further evidence on this point.

The plan thus suggested would probably help certain New England carriers more than others, but they would have it within their power to correct such result by adjustment of their own interline divisions, and we could with propriety suggest that this be done.

### Commissioner Potter's Dissenting Opinion

Commissioner Potter said in part:

I can not concur in the majority report, which seems to me needlessly to concede the futility of the transportation act and the impotence of the commission to remove injustice. I concur generally in the views expressed by Commissioner Eastman.

The transportation act has settled the carriers upon the high plane of public service. The aspect of private business enterprises, entitled to all they can win from their position and strength, limited only by what the traffic will bear, is no longer dominant. Subject only to supreme decree on constitutional questions their revenues are to be limited to fair compensation for the services which they render. The Congress has expressly applied to them the rule which, in the present day, must be recognized with increasing application to all industries—that enterprises are justified primarily, not for individual gain, but because the public needs them and those who thus serve the public are entitled to receive as profits fair compensation for the service which they render.

As public servants carriers are to have public protection and fair compensation. Having regard to the essential function which they perform, the railways which are honestly, economically, and efficiently managed are entitled to a status and relation to indus-

try and to each other which assures them prosperity. To these ends the transportation act was framed. We have been given the power to work out the detail of rate adjustment to yield the compensation which the Congress has determined shall be provided. We are authorized to act in helpful ways in matters of operation. We are charged with the duty of enforcing correct adjustments between carriers in their joint relation and of requiring the application of the rule of right instead of power. We must see that through rates are fairly divided, and we must find a way to bring this about. We are not a court to dismiss for want of proof. We must ascertain the facts, and we have all necessary means. We must correct injustice when and where we find it and as we can. With one accord we have condemned the existing adjustment. We should now correct it. Commissioner Eastman has pointed a way, and we should follow it.

The effect of including the New England lines in ascertaining the values of the railways in the group and the earnings needed, to make up the deficit below a fair return, as a basis for determining the amount and percentage of rate advance was to increase the percentage which was accorded to the other lines beyond what it would have been if only the values of their own lines had been considered. The other lines are enjoying not merely the increases that their own values entitled them to, but something additional resulting from the value and deficit of the New England lines. Large sums which the public pays, in rates and charges, because of the value and deficit of the New England lines are going, not to them, but to the other lines in the group. The effect of this is to give to the other lines more than they are entitled to under the theory of the transportation act and to give to the New England lines correspondingly less than they should have. This wrongful diversion of earnings is represented by an ascertainable percentage of all earnings on through business, which are being withheld from the New England lines as a whole and given to the other lines in the group as a whole. This percentage should be taken away from the other lines and given to those in New England, and this can be done by a percentage readjustment of divisions within the group as between the lines east and west. The task involved is one of accounting, and if we would announce the principle the carriers could readily apply it. I have complete confidence in their ability and purpose to apply the rule that we announce.

Beyond the direct unmerited contribution which the New England carriers have made and are making to the other lines, as the result of our application of the rate-making provisions of the transportation act (and which the New England lines are entitled to have restored to them) the record shows that the New England lines are entitled to increased divisions.

### Value of New England Roads

#### Considered in Making Rates

The value of the New England lines was considered and included by us in Ex Parte 74 in determining the aggregate amount to be paid by shippers for the use of the group transportation machine. The low earnings of the New England lines were considered in determining the amount of additional income to be raised. The effect of this action by us was, because of the difference in traffic density, to transfer to the other lines a part of the compensation which, under the statute, was to be raised, and which we started out to raise, for the New England lines. It is now our duty to correct this unsound result and direct these earnings back to the New England lines, where they belong under the statute and by virtue of our action which created them. To do less is not only to perpetuate gross injustice but to sanction a result which, it seems to me, is not in harmony with the spirit of the law. As I see it we are not asked to give to the New England lines something that belongs to the others, but to end a misappropriation in violation of law, by the other lines, of funds that belong to the New England lines. In fairness and justice the burdens of all carriers participating in through traffic, including a fair return to their owners upon their respective investments, should be considered in making an equitable division of the returns from their joint activities. The transportation act embodies these rules of simple justice. This act, recognizing that in the last analysis all enterprises involve only dealings between individuals and their relations to one another, requires that the rules of common fairness as between man and man shall be applied by railway public service corporations. We are the nation's agency to enforce these rules. Acting in the nation's power, we should not say we can not. I have so valued the transportation act, and have had such high hopes that I can not adopt the majority conception of our power and duty.

If it be true that we can not do complete justice immediately, this is no reason why we should not do partial justice. We can immediately, by a percentage readjustment, see that the New England lines receive what is now being diverted from them to the lines west as a result of their inclusion in determining the value of the properties in the group for rate-making purposes.

We can require that the New England lines be given that part of the increased earnings of the group, which was authorized for them by us in Ex Parte 74, because of the lower earnings of these New England lines. We can correct the carriers' methods so that the scheme of the transportation act to raise moneys to compensate for the use of all parts of the group machine shall not be defeated, after the moneys have been raised, as a result of our action in fixing different percentage increases on freight and passenger traffic and of the different ratios as between freight and passenger traffic on the different lines.

The representatives of the complainants adopted sound procedure in seeking a readjustment of the relations as a whole. Conditions were serious and required a major operation. As efficient men charged with great responsibility they had no other course. Immediate justice, to which the New England lines were entitled, could not be obtained in any other way. A delay of justice in such a case is a denial of justice. The display by the defendants in this case of the traditional and not unnatural attitude of carriers to protect their revenues has been sufficient to justify the complainants in their view that a short-cut course to general directions by us was necessary. Similarly, we should be convinced that little will be accomplished promptly unless we announce the rules that are to guide the carriers.

### New Specifications for Concrete

THE JOINT COMMITTEE on Concrete and Reinforced Concrete, which was organized in February, 1920, has presented its first progress report in the form of tentative specifications for concrete and reinforced concrete. This committee is composed of five representatives each from five national societies, namely, the American Society of Civil Engineers, the American Society for Testing Materials, the American Railway Engineering Association, the American Concrete Institute, and the Portland Cement Association. Richard L. Humphrey, consulting engineer, Philadelphia, Pa., is chairman of the joint committee, and J. J. Yates, bridge engineer of the Central Railroad of New Jersey, is vice-chairman. Besides Mr. Yates, the American Railway Engineering Association is represented by George E. Boyd, until recently division engineer, Delaware, Lackawanna & Western; Frederick E. Schall, bridge engineer, Lehigh Valley; H. T. Welty, engineer of structures, New York Central, and C. C. Westfall, engineer of bridges, Illinois Central.

This committee is the successor of the Joint Committee which made its final report in July, 1916, but the work of the present committee differs from its predecessor's in that whereas the earlier committee formulated general principles of practice for concrete design and construction, the present committee has undertaken to prepare complete specifications for both design and construction. The specifications were submitted before the recent convention of the American Society for Testing Materials, and will subsequently be reviewed by the other associations represented, following which the specifications will be referred back to the committee for a final draft.

Owing to the fact that the work of the present committee is not directly comparable with that of its predecessor, the present specifications are best compared with the specifications for plain and reinforced concrete adopted by the American Railway Engineering Association at its convention in March, 1920. The newer specifications, however, are much broader in their scope in that they cover the general subject of design and stresses, whereas the A. R. E. A. specifications refer only to workmanship. Taken as a whole, the new specifications are primarily building specifications in that where special details and conditions are referred to, they are primarily such details as are encountered in reinforced concrete building construction rather than those met in the design and construction of reinforced concrete railway or highway bridges or culverts. In the case of the design specifications, in particular, large portions are related primarily to the details of columns, slabs, etc., which go to make up the reinforced concrete building.

The specifications for materials and workmanship, which

are the portions of primary interest to railway engineers, may be said to represent a distinct advance as considered in comparison with the A. R. E. A. specifications. There is, however, very little of direct conflict between the two specifications, such differences as occur being primarily due to the inclusion in the new specification of requirements based on the results of more recent investigations in the strength of concrete. Thus a number of the clauses in the specifications imply the making of 28-day field tests of the materials actually to be used on the job, this information to be used on a check of the strength of the concrete in the light of the working stresses used in the design and as a means of obtaining the desired proportions of the various ingredients. The section on proportioning, however, provides for alternate clauses which make such tests unnecessary.

The specifications for the fine and coarse aggregates contain requirements for certain gradings of sizes, and in the case of the coarse aggregate this is contingent upon certain sieve analyses. In the case of the sand also it is provided that "The decantation test shall be made in accordance with the standard method of test for quantity of clay and silt in sand for highway construction of the American Society for Testing Materials." A further clause, however, provides for some modification of this requirement.

The requirements for metal reinforcement differ from those of the A. R. E. A. specifications in that bars rolled from old rails are permitted, whereas the A. R. E. A. specification excludes them. A deformed bar is defined as "one that will develop a bond strength at least 25 per cent greater than that of a plain round bar of equivalent cross-sectional area." The portion of the Joint Committee specifications relating to metal reinforcement under "details of construction" would seem to contain some valuable features not usually covered. This section is as follows:

Metal reinforcement, before being positioned, shall be thoroughly cleaned of mill and rust scale, and of coatings of any character that will destroy or reduce the bond. Reinforcement appreciably reduced in section shall be rejected. Reinforcement shall be reinspected and when necessary cleaned where there is delay in depositing concrete.

Reinforcement shall be carefully formed to the dimensions indicated on the plans or called for in the specifications. The radius of bends shall be four or more times the least diameter of the reinforcement bar.

Metal reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or sharp bends shall not be used.

Metal reinforcement shall be accurately positioned and secured against displacement by using annealed iron wire of not less than No. 18 gage or suitable clips at intersections, and shall be supported by concrete or metal chairs, or spacers, or by metal hangers. Parallel bars shall not be placed closer in the clear than one and one-half times the diameter of round bars or one and half-times the diagonal of square bars; if the ends of bars are hooked as specified in Section 130 the clear spacing may be made equal to the diameter of round bars or to the diagonal of square bars, but in no case shall the spacing between bars be less than one inch nor less than one and one-fourth times the maximum size of the coarse aggregate.

Splices of tension reinforcement at points of maximum stress shall be avoided. Splices, where required, shall provide sufficient lap to transfer the stress between bars by bond and shear, or by a mechanical connection such as a screw coupling.

Vertical reinforcement shall be offset in a region where lateral support is afforded when changes in column cross-section occur and the vertical reinforcement bars are not sloped for the full length of the column.

Exposed reinforcement bars intended for bonding with future extensions shall be protected from corrosion.

The portion of the specifications relating to mixing and placing concrete is drawn much along the same lines as that of the A. R. E. A. specifications. A mixing period of 1½ min. as given in the A. R. E. A. specifications is amplified by the requirement that the mixer shall travel at a peripheral speed of about 200 ft. per min. No effort is made in these specifications to dodge the question of spouting, which is covered by the following clause.

When concrete is conveyed by spouting, the plant shall be of such size and design as to insure a practically continuous flow in the spout. The angle of the spout with the horizontal shall be such as to allow the concrete to flow without separation of the ingredients. The spout shall be thoroughly flushed with water before and after each run. The delivery from the spout shall be as close as possible to the point of deposit. When operation must be intermittent, the spout shall discharge into a hopper.

The specifications for forms were obviously drawn with the idea of meeting the requirements of building construction. One omission noted is the absence of any reference to steel forms, while the requirement that "wire ties will be permitted only on light and unimportant work" will no doubt seem a rather drastic restriction by those who build railway bridge structures and retaining walls and culverts.

Concrete in sea water is treated along the line of the report presented by the Committee on Masonry of the American Railway Engineering Association at the 1921 convention. A significant admission as to the limitations of concrete in this connection is found in the clause stating "Where unusually severe conditions of abrasion are anticipated, the face of the concrete from 2 ft. below low water to 2 ft. above high water, or from a plane below to a place above wave action, shall be protected by creosoted timber, dense vitrified shale brick, or stone of suitable quality, as designated on the plans."

Finishes are treated in somewhat more abstracted form than they were covered in the A. R. E. A. specifications.

## Tentative Valuations

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has served a tentative valuation report on the property of the St. Louis Southwestern in which it states the final value as of June 30, 1915, as \$29,072,479 for the property used, 988.54 miles of track, and \$26,792,424 for the property owned, 838.15 miles. The valuation includes the Gray's Point Terminal, the Paragould Southeastern and the Central Arkansas & Eastern. The total capitalization of the St. Louis Southwestern as of the valuation date was \$123,327,083 but this includes a considerable amount of bonds and stocks of other companies, some of which form a part of the St. Louis Southwestern system, including the St. Louis Southwestern of Texas. The total par value of these stocks and bonds was \$33,810,757. No dividends have ever been paid on the company's common stock. The investment in road and equipment, including land, is stated in the books of the carrier as \$67,430,327 as of the valuation date and the commission says that if certain readjustments were made and the items in the account taken at their recorded amounts, this figure would be reduced to \$62,853,401, of which \$46,881,248 is the par value of securities issued for the property of the St. Louis, Arkansas & Texas. The total maximum outlay in creating the property of the Arkansas company, the report says, could not have exceeded \$11,301,661. The original cost to date is not reported. The cost of reproduction new of the property used, excluding land, is given as \$31,099,584 and the cost less depreciation as \$23,757,820. The present value of the lands is given as \$2,462,159 and the excess cost as \$1,713,252. The commission has also issued other tentative valuations which report the final value as follows:

Montpelier & Wells River.....	1914	\$1,925,000
Manistique & Lake Superior.....	1915	686,444
Union Freight Railroad.....	1915	429,833
New Orleans, Natchitoches & Natchez.....	1916	381,619
Uaachita & Northwestern.....	1916	354,944
Wichita Union Terminal.....	1916	-2,070,911
Chicago & Wahash.....	1915	455,500
Milledgeville.....	1916	70,551
Mehroe.....	1916	119,928
Mohasuck Valley.....	1916	160,404
Sugar Land.....	1916	490,697



*A View of the Nocal Reservoir*

## E. P. & S. W. Rebuilds 141-Mile Wood Stave Pipe Line

Conduit Supplying Entire Engine District Rebuilt After 13 Years'  
Life to Provide Enlarged Capacity

By **J. L. Campbell**

Chief Engineer, El Paso & Southwestern, El Paso, Tex.

**O**RIGINALLY the entire water supply of the El Paso & Southwestern System was from wells. From Carrizozo to Santa Rosa (128 miles) the water carried more than 100 grains of incrusting solids per gallon, could not be made suitable for steam by treatment, and was so bad

level, from which the pipe line runs around the northeast base of the mountains 12 miles to Nocal storage reservoir, also situated on the crest of the divide 7,100 ft. high, from which the line drops into the Rio Grande basin to the railroad at Carrizozo and Coyote to elevations of 5,400 and 5,800 ft., respectively—a total of 46 miles of pipe from source of water to the railroad.

From Coyote to Corona (36 miles along the railroad) the water is pumped up to an elevation of 6,750 ft. (a 950-ft. lift), Corona also being on the crest of the divide between the Rio Grande and the Rio Pecos. From Corona to Pastura (the present terminus of the line), 59 miles along the road, the pipe drops back into the Pecos basin to an elevation of 5,300 ft. Eventually it will be extended 20 miles to Santa Rosa on the Pecos, the water of this stream being unsuitable for steam—a total distance of 150 miles from the source of water supply.

In the original line there were 117 miles of wood, 6 miles of steel and 18 miles of cast iron pipe. Diameters ran from 16 to 4 in. The maximum pressure is 130 lb. for wood and 300 lb. for iron pipe. This line has a capacity of 3½ million gallons daily from source of supply to Nocal reservoir and 1½ million from the reservoir to the railroad. The reservoir is a natural bowl-shaped basin in the summit of the water shed 1,700 ft. above the railroad. It has a capacity of 400,000,000 gal. up to the lowest place in the rim of the bowl. This can be increased to 1,000,000,000 gal. by three small embankments.

The pipe line was built 13 years ago. The annual peak demand on it now equals its original capacity. To provide for future requirements, a renewal and enlargement program to be completed in 1930 has been inaugurated by which the original capacity will be doubled. The lower line on the profile gives the diameters of the proposed enlarged line from the source to the Rio Pecos at Santa Rosa. This will include 137 miles of wood, 6 miles of steel and 36 miles of cast iron pipe. The wood pipe diameter will run from 21 to 5 and the iron from 15 to 12 in. The maximum pressures will be the same as above given for the original line. About 25 miles of the renewal program, including the 21-in. wood pipe, is completed and the capacity from source of supply to Nocal reservoir is now 7,000,000 gal. daily.

Weight and cost of cast iron pipe in isolated and moun-



**Two Views of the Eagle Pipe Line Crossing the Mountains**

that the growing traffic could not be successfully handled on that district.

A better water supply was imperative. This was found in Bonito and Eagle creeks, small streams on the east slope of White mountain situated 30 miles southeast of Carrizozo and fed by springs and snow, the mountain being 12,000 ft. high. This water is good, having less than 10 grains of incrusting solids per gallon. It is conducted to and along the railroad in a pipe line shown by the dotted line on the map on the following page.

White mountain is on the divide between the Rio Grande and the Rio Pecos. The point of water diversion lies in the Rio Pecos drainage on the east slope 7,750 ft. above sea

tainous country led to selection of wood pipe for original construction for all pressures not in excess of 130 lb., and the same considerations still impel adherence to original conclusions. The wood pipe is the kind known as machine-made spirally-wound pipe. In Vol. 70 of the Transactions of the American Society of Civil Engineers there is a full description of the original line.

The wood pipe is now made to E. P. & S. W. specifications. Cast iron collars, when required for the joints, are made in El Paso to the railroad's design and specifications. We believe the iron collar is best, especially for high pressure, but wood collars under 130 lb. are serving satisfactorily. All of this pipe so made is remarkably tight, the average leakage therefrom not being in excess of 25 gal. per mile per inch of diameter per day.

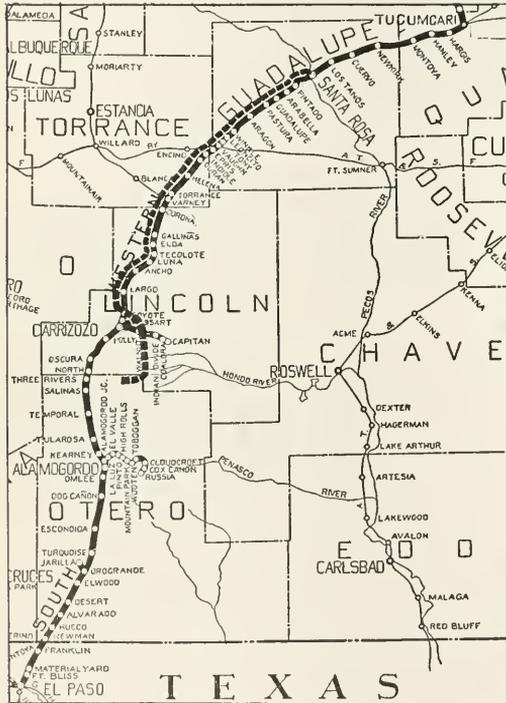
At Coyote and Luna (on the pumping section) the maximum pump pressure is 300 lb. and cast iron pipe is used

pumps are Nordberg, cross-compound, condensing, crank and fly wheel pumping engines having a contract duty of 135 million ft.-lb. per 1,000 lb. of dry steam at 150 lb. pressure. The boilers are Sterling water tube with superheaters. Each plant is lighted by a small electric light unit.

The renewal and enlargement program described was not put under way because of necessity for general renewal of the original line at this time. The original wood pipe could be maintained at reasonable expense for the next 10 years, perhaps longer, but such a program would finally require the renewal of more than 100 miles of pipe in limited time with attendant risk and concentration of expenditure.

About the only material limitation of the life of wood pipe properly designed, made and laid and kept saturated is the corrosion and consequent failure of the steel banding. The banding on the original pipe herein described is an ungalvanized flat steel band protected only by a heavy coat of asphalt. Failure of this band began in the fourth year, but has never been serious. During 1920, the twelfth year, the repair of banding so failing required an average of 15 individual 3/8-in. round bands of the kind used on continuous stave pipe per mile of pipe line. This was a quite nominal expense. A failure of the banding is indicated by a leak which is usually discovered and stopped by application of a few round bands without taking the pressure off the pipe. The round galvanized banding, also covered with asphalt, will last much longer and the pipe so made should be maintained at a reasonable expense for 50 years, other conditions being right.

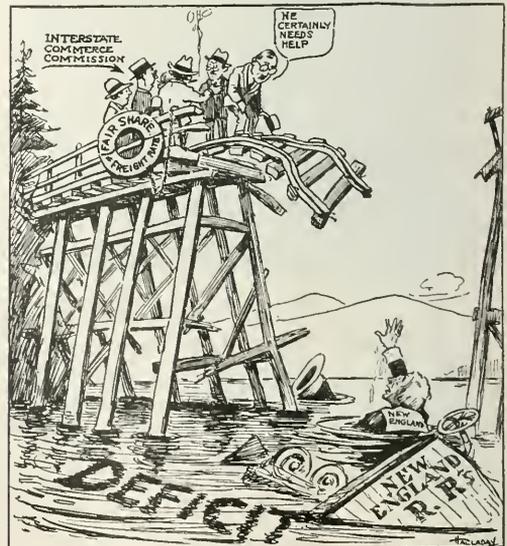
The investment in this water supply was necessarily large, but within two years the reduction of operating cost due to the better water was greater than the investment. Train tonnage increased 33 1/3 per cent within 30 days after the use of the new water supply began. One of the marked results was a psychological one. Under the disastrous conditions prevailing with the bad water everyone on the district was discouraged and esprit de corps was gone. In 30 days it was more than recovered, everybody developed a high batting average and the operating district was converted from a liability to an asset.



Map of the El Paso & Southwestern, Showing the Water Supply Line

from each pumping station up the line to the point where the pressure in the pipe is 130 lb., from and beyond which wood pipe is used. Water hammer on these pumping mains is eliminated by large air chambers in the form of a riveted steel cylinder 5 ft. diameter and 15 ft. long, mounted in horizontal position over and connected to the main by a 12-in. tee just outside of the pump house. These cylinders are kept charged with air by small automatic air charging devices attached to the water end of the pumps and actuated by the piston movement.

Each pumping station consists of two duplicate pumping units, one unit being in reserve. The units are operated alternately, usually in three-month periods. Additional units will be added as required by increasing pumpage. The



From the Providence Journal

Use the Life Preserver

# “Stop or Proceed” versus “Stop and Proceed”

Signaling for Economy and Progress, Not for Safety in Its  
Narrow Sense; Abolish Useless Stops

By A. H. Rudd

THE CAMPAIGN to eliminate the unnecessary stopping of trains is on. The campaign to automatically stop trains is on. The pendulum, as the German said, “Swings fro and to, fro and to.” At first glance it would seem that the two movements represent diametrically opposed forces, tending to bring the pendulum to rest. At first glance also it would seem that the vibration of a pendulum does not aptly illustrate rapid progress and advancement—yet this “swinging fro and to” has been frequently cited as the characteristically American method of arriving at its destination and, when it ceases, the works stop. Both campaigns should succeed; the forces back of both should work together; the result should be ideal.

Nothing is so easily overlooked as the obvious. Perhaps the presentation of a few scrambled axioms may lead some card-index mind to arrange them in logical sequence and help the solution of the problems. At all events, a review of the development of signaling and the changing ideas as to its value and its functions may be of interest:

1. Travel by railroad is safer, in spite of its dangers, than almost any other method of locomotion.

2. If no trains moved, no trains could collide; but there would be no travel.

3. The danger element is introduced as soon as a train starts.

4. Having necessarily introduced this danger it is obvious if all trains moved in the same direction at the same speed no collisions would result.

5. With a number of trains moving in the same direction each stop may endanger the movement. Therefore, unnecessary stops should be eliminated.

6. Signals were originally installed to indicate Stop, and for no other purpose.

7. Later, they were erected to give warning of danger ahead, or “Prepare to stop.”

8. For years they were regarded as a luxury or a necessary evil.

9. Later they admittedly “safeguarded traffic,” but it took years of work to convince “practical” old-school railroad operating officers that signals could be used for *expediting and facilitating traffic*.

10. Even yet education along these lines is apparently necessary, and the publicity departments of the signal companies are advocating the installation of interlockings at grade crossings and junctions, and the shortening of blocks by providing automatic signals for the purpose *not* of safeguarding traffic by *stopping* trains, but of *safeguarding, expediting and facilitating traffic by the elimination of unnecessary stops*.

11. A great many inventors, still clinging to the original conception as to the functions of signals, are attempting to develop devices whose sole function is to stop trains (in at least 50 per cent of their actions unnecessarily), while perhaps one-tenth of one per cent are working to *safeguard, expedite and facilitate traffic*.

Ideal operation is one of speed at termini, infrequent yarding and continuous movement between yards. It is, of course, impossible of attainment, but every stop, every delay, every moment cars or engines are idle, no matter from what cause, increases the cost.

Obviously, therefore, a device which will prevent excessive speed on curves, over crossovers and at other points where speed should be restricted, and which will, as a last resort, stop the train short of the danger point; a device which will only function when the engineman fails, leaving him free control while he does function, and permitting him to cut out the stop, but, in such event, to run only at slow speed, would theoretically at least not only safeguard but expedite traffic, and would supplement rather than nullify a signal system designed to keep trains moving.

Collisions resulting in fatalities rarely occur in terminals or in the congested districts; as a matter of fact, they rarely occur at all, considering the number of trains run; but they most frequently occur in the open where fast running for long distances is the rule.

This is the field for speed control, but not for automatic stops as such, which would not only cause collisions but which would force us to violate the Esch-Cummins law, which requires that railroads be economically and efficiently operated. Every real railroad man wants to so operate, not alone because it is the expressed wish of the Congress, but as a matter of pride in his work and the joy of accomplishing something worth while; and he knows the railroads must be so operated if they are to live.

The progress of signaling has been so rapid that every signal engineer in the country, worthy of the name, knows where he can earn a big percentage on his investment (much of it, unfortunately, intangible earnings and savings) if he could fully equip his busy lines with modern signals and interlockings, and replace a large part of what he has in service, just as manufacturers replace their machinery, with more efficient apparatus. He knows what he wants to do. He knows what he would do if he had unlimited funds, but he also knows the financial condition of the roads, and he is living from hand to mouth, hoping the day may come when he can again create and have others, as well as himself, look upon his work and say “behold it is good.” It is doubtful if, under the present conditions, he can do much to hasten the advent of this signal millennium; but, instead of waiting with his hands folded and his white robes on, he may be able to ameliorate existing conditions by assuming the well-known role of the reformer and telling others where to head in.

## Some Improvements Practicable, in Spite of Financial Restrictions

Several signal engineers, and even some “practical operating men,” firmly believe better and safer operation could and would be attained if the stop-and-proceed signal were eliminated and the signal provided in the A. R. A. standard code rule No. 501-G, which does not require the stop, substituted. This is an operating matter and the signal engineers have no jurisdiction; but they may express their opinion.

The A. R. A. standard code (automatic block signals) Rule 504, April 15, 1896, read: “When train is stopped by a block signal it may proceed when the signal is cleared or after waiting — minutes, and then running under caution or preceded by a flagman to the next clear signal.” This rule, revised April 25, 1920, reads: “\* \* \* it may proceed when the signal is cleared or: A: after waiting — minutes

and then running under caution; B: Preceded by a flagman to the next clear signal"—either being considered good practice; "B" being generally used on single track. Edition of February, 1911, Rule No. 504: "When a train is stopped by a block signal it may proceed when the signal is cleared; if not immediately cleared it may proceed—A: On single track preceded by a flagman to the next clear signal—B: On double track *at once with caution.*"

The standard code, Nov. 17, 1915, differentiates between the stop signal and the stop-and-proceed signal, and Rule 509 provides—"When a train is stopped by a stop-and-proceed signal it may proceed \* \* \* \*; On two or more tracks at once, at slow speed, expecting to find a train in the block, broken rail, obstruction or switch not properly set."

We started out with a time interval. Then we put in the absolute manual block system, spacing trains perhaps four or five miles apart. Then we installed automatic signals with shorter blocks and held trains — minutes (on one road originally, I believe, five minutes, then cut to two, then to one, and finally no time required, simply the stop), and the standard code, as noted above, now provides a signal, Rule 501-G, "Proceed at slow speed prepared to stop short of train or obstruction"—eliminating the stop—Name: Permissive Signal—Requisites of Installation: "Block is occupied, or switch is set to diverge." This indication is used on some roads to govern heavy tonnage trains on up grades, other trains being required to stop and proceed, although this aspect is different from the stop-and-proceed signal, and the anomalous condition exists of two aspects indicating stop-and-proceed for certain trains and one aspect indicating stop-and-proceed for some trains and proceed without stopping for other trains. On other roads, this signal permits all trains to proceed without stopping.

Many roads run freights "permissive with freight" in manual block territory, either by signal indication or by card or order, without stopping, and yet we cling to the antiquated stop-and-proceed signal with the idea that in some way it tends to safer operation.

Recently on a busy line, where all automatic signals are either stop or stop-and-proceed the proposition of an extension of automatic signals was discussed and objected to, because, while it would facilitate passenger traffic, the frequent additional stops required on account of the automatic signals (with shorter blocks) would tie up freight trains on up grades which were being safely moved under the manual permissive without stops. And the objection was good.

"Cutting off his tail an inch at a time doesn't really make it any easier or better for the dog." Why not cut out the stop everywhere?

There are two component parts of Rule 509 (Old rule 504):

1st—The stop.

2nd—The slow speed after stopping.

Advocates of the stop insist that the first part enforces the second and makes for better discipline. This may be the case on heavy up grades with heavy trains, which cannot get up speed for a long distance, if at all, after stopping, but this is just the condition under which, by the use of grade signals, the first requirement is eliminated. On level track a light train, and on descending grades any train, can attain considerable speed after stopping, while passing through blocks 4,000 ft. or 5,000 ft. long or longer. Therefore, the second requirement must for safe operation be enforced independently of the first.

Some of us believe that the automatic block signal governing following movements should give information as to the occupancy or non-occupancy of the block and, when three-position or home and distant signals are used, of the indication displayed by the next signal; the stop-and-proceed signals should be eliminated; and stop signals displayed *only where stops are required*, i. e., when protection is needed

against opposing movements and at grade crossings, junctions and crossovers where side collisions might otherwise occur.

### Argument for Eliminating "Stop and Proceed"

By eliminating stops which are unnecessary and are known by the enginemen to be unnecessary, we should strengthen the significance of the *stop signal as such.*

We now have signals which indicate in effect:

- (a) Proceed at slow speed, prepared to stop short of train or obstruction.
- (b) Stop and then proceed at slow speed, prepared to stop short of train or obstruction.
- (c) Stop and stay till signal clears or specific authority is given to pass.

The first and second of these indications (a and b) are identical in the action required of the engineman after passing the signal but *b* requires a stop before reaching it. The protection afforded a train ahead is in either case the requirement that the following train shall *proceed at slow speed prepared to stop short of train or obstruction.* If this requirement is obeyed the stop is absolutely useless, for the train is not required to stop and *stay* till the block is clear, but may proceed at once at slow speed!

Why, then, the stop? Because it is presupposed that without it the second requirement may be disregarded.

Is it not logical to assert, as some operating officials do, that the men, realizing the stop delays traffic, are more likely to run faster than they would if they had not (as they do in many cases) spent two or three minutes in starting?

Every effective signal system in use is based on the premise that the indications will be obeyed. Any attempt to design or enforce a system predicated on the violation of its indications would be worse than futile; it would be nonsensical.

Any statement that this one particular indication must require the stop, when we know that the indication *a* (Proceed at slow speed prepared to stop short of train or obstruction) is properly obeyed thousands of times a day all over the country, is an assumption of weak discipline and reckless and disobedient enginemen, which is not only humiliating but is not in accord with actual conditions.

It is a curious fact that the devices intended for speed control, as differentiated from the straight stop, eliminate the stop feature, or provide for its elimination if slow speed is maintained.

When we install train control, do we want each train to stop at or considerably before reaching a signal indicating block occupied or that a train is to diverge at slow speed, and have the engineman get off his engine and do some complicated releasing act? Or, do we want to get our trains over the road safely, with a minimum delay, and pull them down to slow speed only when necessary and when the engineman fails to function?

Let us clarify the situation.

Let us give the engineman the best information possible of conditions ahead, consistent with a system of signals whose indications he can instantly grasp. Let us tell him to stop only where necessary and when we say stop let us mean it.

Let us eliminate "b" or else let us add a few more variations, such as "You may stop," "You *should* stop," "You *must* stop," and then wind up with that effulgence of splendor, that exuberance of verbiage, so dear to many—"Trains *must come to a full stop!*"

Eggs, fresh eggs, strictly fresh eggs! Let's have less eggs and all fresh. Less variations in stops and all real stops. *Stop-and-Stay*; this because it is *necessary.*

A careful, unprejudiced study of the problem, undertaken with an open and active mind, will, we believe, by the unassailable logic of the situation, lead eventually to only one result. The change will be made some time, and it will be interesting to see which management has the "intestinal investiture" to issue the first Declaration of Independence.

# Suggested Remedy for the Freight Car Situation

## Inadequate Per Diem Rates Remove Incentive for Ownership; Holding Company Would Improve Conditions

By W. S. Moseley

Mechanical Engineer, Carolina, Clinchfield & Ohio

**A**N article in the *Railway Age* of June 10 forcibly brings to attention the need for better maintenance that will result in more permanent improvements to freight cars.

Notwithstanding the numerous rules governing the repairing of cars and the honest endeavors of the motive power officers, the problem bristles with complex and involved conditions over which the motive power department has no control. A condition, such as has prevailed in recent years, in which cars are off the owning line 50 per cent of the time and some cars are away four or five years, tends to prevent proper repairs or the carrying out of repair programs. Stringent rules are fine for the other fellow, but when it comes to applying them to ourselves and making repairs of a permanent nature to foreign cars, probably at a loss, and at the same time paying the owner a rental charge for each day the car is on the line, it is somewhat difficult to convince the management that the expense is justified, especially when home cars awaiting repairs are accumulating. We have yet to find a road that is complying with Rule I of the Code of Interchange. The rule is at variance with the primary motive of the railroad officers, whose interest is the welfare of their company.

The car service rules attempt to prevent the misuse of equipment, but in their application they do not prevent a railroad holding a modern car which is in good condition and getting rid of a weak and worn-out car which is likely to cause trouble and damage to both equipment and contents.

The per diem charges are not sufficient to justify owning enough equipment to meet the requirements, when repairs, fixed charges and return on the investment are considered in connection with the fact that probably 20 per cent of the time (during depressions) the car is idle and not earning its upkeep, or when consideration is given also to the investment in plants necessary to keep the cars in service. The present practice of charging a flat per diem rate for all cars and the distribution of cars without regard to condition, capacity or value is not sound and tends to perpetuate the use of equipment that should be taken out of service. This practice also encourages the purchase of cars on a price basis to the extent that a non-coal carrying road will buy light weight coal cars and the coal carrying roads buy light weight box and house cars.

### Present Accounting Rules Discourage

#### Ownership of Cars

The practice of charging all costs of repairs made to home cars on foreign lines to the maintenance of equipment account and not giving this account credit for any of the rentals, tends to discourage the purchase of freight equipment, both by the motive power and operating departments, for the reason that as the equipment rentals are not charged to operating expenses, a better showing can be made with an inadequate car supply than would otherwise be the case. This is illustrated by a case where one road had a debit of \$500,000 per month on account of equipment rental and a smaller adjoining line had a credit of \$200,000. Neither of these amounts affected the operating ratio, but the smaller line had a charge to maintenance of equipment each month on account of repairs to cars on foreign lines equal to the total amount expended on the home line on home cars, in addition to the depreciation

charges which were necessary for the surplus equipment.

Regulating expenditures on the basis of revenue may be necessary but it is uneconomical and results in work not being done at the most opportune time. The present is a good example of this unfortunate practice when the repair tracks are full of equipment needing overhauling with employees laid off on account of funds not being available to do the work.

### Standardizing Cars Through a Holding Company

Freight cars lend themselves to standardization more readily than any other equipment, and standard designs should be adopted, but under present conditions, as outlined above, the proposition seems hopeless until some central body is given the authority and held responsible for results. How can this be done?

One answer is to break away from the time honored, but inefficient methods of today and place all cars used in interchange traffic under central control, which would be held responsible for the repairs, renewals, retirements, depreciation and return on investment in freight cars. This central body should also have control of the Car Service Division. All would necessarily be subject to the Interstate Commerce Commission.

The central body should be a company with its entire stock owned by the railroads in proportion to their equipment requirements. The present equipment should be turned over to the company in payment for stock, and if not sufficient equipment is now owned, the balance should be in cash or approved obligations.

The company would probably subdivide the country into regions and would undertake to make all repairs to freight cars by means of centrally located car shops, the railroads doing only such repairs as may be necessary to make the equipment safe to run and light running repairs in yards. The railroads would bill against the owning company for this service.

The owning company would make a combination charge for the use of the equipment on a basis of car days, plus the total car miles per month. This charge should be sufficient to provide a surplus that would be used to make repairs when cars are not in demand. The charge should also be sufficient to insure a net profit which would be turned back to the railroads in the form of dividends and in this way penalize a company for not providing for its full requirements by stock subscription. A minimum charge per month based on normal requirements should also apply in order to equalize the carrying charges when there is a surplus of equipment.

### Advantages of Unified Control of Cars

The advantages of the above plan would be numerous, and should reduce the cost of maintenance as well as better the condition of the equipment. Cars of obsolete design could be segregated and either permanent improvements applied, or the cars retired. Groups of cars needing heavy repairs could be ordered into shops, systematically overhauled and placed back in service promptly. Repair shops could be segregated from railroad shops and handled on a piece work basis. These shops would be of sufficient size to specialize various operations and utilize complete shop equipment. The sepa-

ration of repairs due to wreck damage from those due to use would facilitate an analysis of the cost of maintenance of various types of cars and devices and lead to adoption of improved designs.

Standards could be promulgated with the knowledge that they would be applied and benefits derived immediately therefrom. The systematic handling of repairs at large shops would reduce the cost as well as keep the number of bad order cars to a minimum.

A company to handle this proposition should have a capital of about \$2,500,000,000, but this would not mean new capital as the present equipment would represent something near this amount.

The following table, compiled from bulletins of the Car Service Division, shows that the larger railroads are in better shape to keep their equipment in serviceable condition.

	Number of Railroads	Cars Owned		Cars Bad Order		
		Number	Per Cent of Total	Number	Per Cent of Total	Per Cent Owned
Group A, over 100,000 . . . . .	3	506,000	21.5	57,900	17.8	11.4
Group B, 50,000 to 100,000 . . . . .	10	620,000	26.4	83,100	25.6	13.4
Group C, 25,000 to 50,000 . . . . .	16	607,000	25.8	86,100	26.5	14.2
Group D, less than 25,000 . . . . .	108	613,000	26.3	97,900	30.1	16.
Total . . . . .	137	2,346,000	100	325,000	100	13.9

It will be noticed that 137 roads owning 2,346,000 cars can be divided into groups of those owning over 100,000 cars, those between 50,000 and 100,000, those between 25,000 and 50,000, and those under 25,000 cars. This division shows that each group owns approximately one-fourth of the total number of cars, although the first only consists of three roads, the second 10, the third 16 and the fourth 108 roads. The interesting feature is that the larger the number of cars owned per road, the smaller is the proportion of bad order cars, both to the total number of bad order cars and to the number of cars owned by the groups.

It is appreciated that an arrangement as outlined would include many details that would have to be worked out, but this should not be any more complicated than the present method.

## Railroad Bill Introduced in House

WASHINGTON, D. C.

**A** BILL TO CARRY OUT President Harding's recommendations for providing the Railroad Administration with funds to enable it to settle its obligations to the railroads was introduced in the House on July 28 by Chairman Winslow of the committee on interstate and foreign commerce. The bill would authorize the War Finance Corporation to purchase from the Railroad Administration railroad securities now held by it, or to be acquired by it, at an aggregate purchase price not exceeding \$500,000,000, at the prices and subject to the discounts, if any, at which they were acquired by the Railroad Administration. The bill also amends section 207 of the transportation act, which provides for the funding of expenditures for capital improvements, to provide that any bond, note or security acquired by the Railroad Administration, as the agent of the President, in connection with the funding, may, at the option of the President, bear interest at the rate of 6 per cent, and in such event shall be received at par less such discount as may, in the opinion of the President, represent the customary and reasonable expenses of marketing such bond, note or other security, or may bear interest at a rate less than 6 per cent, and in such event shall be received at a price to yield an average return, if held to maturity of 6 per cent, such price to be subject to such further discount as may in the opinion of the President represent the reasonable expense of marketing.

It is also provided that in the case of a carrier that has already made a settlement with the Railroad Administration,

the settlement may be readjusted for the purpose of funding any indebtedness of the carrier to the United States arising out of additions and betterments made during federal control.

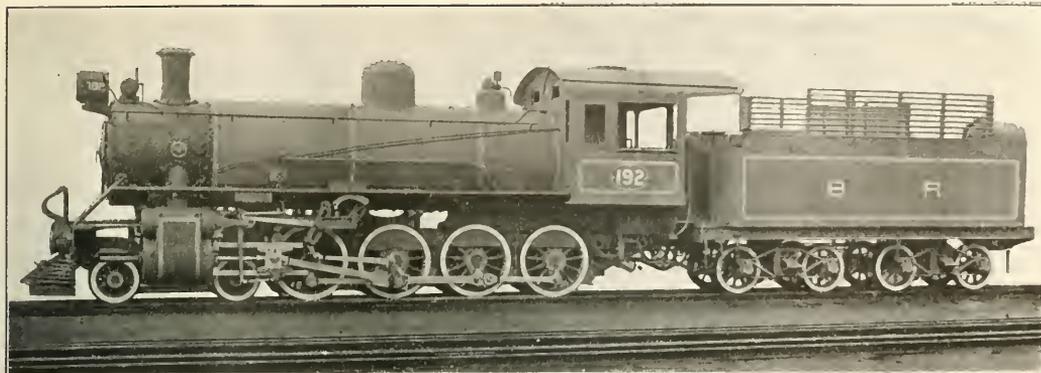
The part of the bill relating to the War Finance Corporation is made an amendment to the War Finance Corporation Act. It provides that whenever, in the opinion of the board of directors of the corporation, market conditions justify, the securities acquired by the corporation from the Railroad Administration may from time to time be sold at not less than the original cost to the corporation, and it is also authorized to sell at the request of the President railroad securities not purchased by the corporation. The proceeds of all bonds, notes or other securities so sold to the corporation, or sold by it as selling agent, are to be a fund to be used by the President for the purpose described in section 202 of the Transportation Act, which provides for the settlement of the obligations of the government to the roads arising from federal control.

Representative Winslow explained that the purpose of the bill was to put funds into the hands of the railroads so that they may be able to go into the market and purchase supplies, and he said that they apparently are ready to make such a move if their credit can be established so as to warrant them in so doing. The settlement of the accounts, he added, would make it possible to reduce the Railroad Administration force, which now numbers 1,200 and which is costing the government \$4,000,000 a year.

A bill to the same effect but with somewhat different language was introduced in the Senate on July 29 by Senator Townsend, a member of the committee on interstate commerce, and plans are being made for early consideration in the Senate. The Senate committee, after its extensive hearings on the railroad question, is not expected to hold hearings on the new bill, but the House committee will probably consider it necessary to hold hearings. It is expected that there will be a fight against the bill on the part of those who believe, or would like to make it appear, that the railroads are receiving some special favor, but the support of the administration is counted upon to put it through.

A statement was issued from the White House on July 29 outlining "the accomplishment of the past four months by various branches of the government in the direction of relieving financial conditions" which contained the following on the railroad situation:

"The financial necessities of the railroads have long been recognized as of imminent concern to the entire country, not only because efficient transportation is vitally necessary, but also because there is hope for a resumption of industrial activity when the railroads are put in funds and enabled to begin buying the vast quantities of material which they need. In order to make this possible the administration has put forth a program which contemplates the early and rapid settlement of the accounts between the railroads and the government, growing out of the period of federal control and operation. This settlement should enable the roads to become extensive purchasers of materials and thus greatly improve industrial conditions. In this connection the President has recommended to Congress that the War Finance Corporation should be given power to purchase railroad securities from the director general of railroads in order to finance the settlements by the Railroad Administration. This proposal is merely a revival of the war-time powers of the corporation, under which it made advances of about \$205,000,000 to the director general of railroads and the railroad companies. Of this amount, about \$160,000,000 has been repaid. In connection with the advances previously made the War Finance Corporation was able to give effective assistance to the general railroad credit situation by means of its intervention and the co-operation it was able to secure from bankers. It is expected that its intervention at this time will again have a beneficial effect on general railroad credit . . . ."



*Benguella Locomotives Are Equipped with Automatic Vacuum Brakes*

## Recent Designs of Twelve-Wheel Locomotives

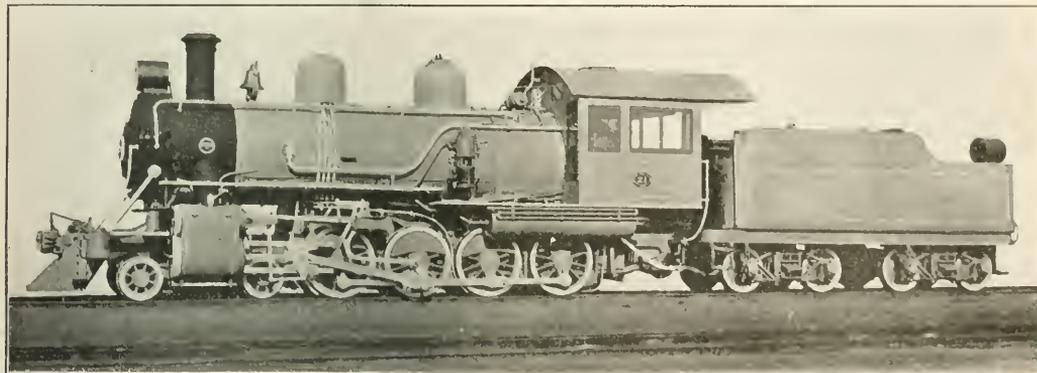
Not Extensively Used in America, Common in Other Countries—Baldwin Designs for Export

THE FIRST LOCOMOTIVE in which eight driving wheels were combined with a four-wheel leading truck and which is now known as the 12-wheel or 4-8-0 type was the "Centipede," which was placed in service on the Baltimore & Ohio in 1863. Although 12-wheel locomotives are commonly used for heavy freight mixed traffic on a number of European and Asiatic railways, comparatively few have been built for American railways. Probably the

Driving wheels .....	56 in. diameter
Boiler .....	80 in. diameter
Heating surface .....	4,041 sq. ft.
Grate area .....	44.7 sq. ft.
Boiler pressure .....	200 lb.
Maximum tractive effort .....	52,500 lb.

### Benguella Railway—Portuguese West Africa

The Benguella Railway of Portuguese West Africa extends eastward from Lobita Bay on the Atlantic coast into



Heavy Standard Gage Jamaican Locomotive

most extensive users of this type in the United States are the Norfolk & Western and the Lehigh Valley. During 1906 and 1907 the Norfolk & Western placed in service 100 4-8-0 type locomotives built by the Baldwin Locomotive Works. These were followed in 1910 by 50 heavier engines of the same type. These locomotives, as originally built, used saturated steam and were equipped with Walschaert valve motion and piston valves. They were of the following dimensions:

Weight of engine .....	261,100 lb.
Weight on driving wheels .....	213,200 lb.
Cylinders .....	24 in. by 30 in.

the interior to Colongo, and at present has 390 miles of 3 ft. 6 in. gage line in operation. When completed the road will be 1,155 miles in length, reaching from the coast to a point near Bakuma, where it will connect with the trunk line from Capetown. The rolling stock includes 23 locomotives, 4 rack locomotives, 15 passenger coaches and 198 freight cars and will be added to as the road is extended. Eventually the road will be an important one and furnish the shortest route to the interior of the country.

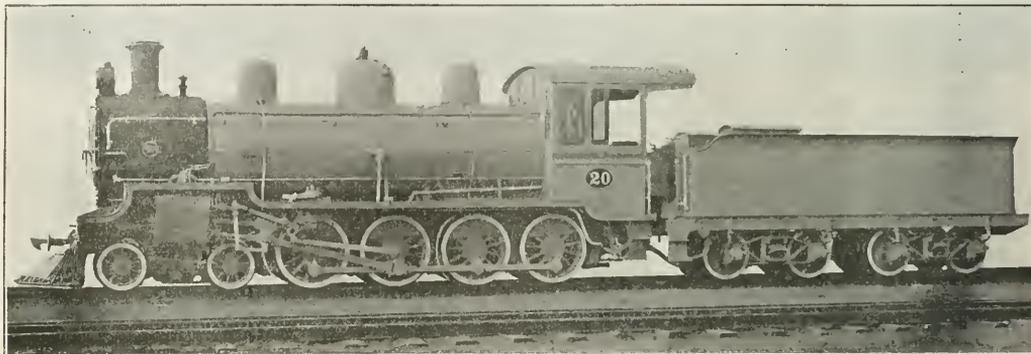
On May 29, 1920, an order was placed with the Baldwin Locomotive Works for two locomotives of the 12-wheel type,

which were shipped to Lobita Bay and are now used in construction work extending the railway. These locomotives are the first of this class ever purchased by the Benguela Railroad.

### Midland Railway—Western Australia

The Midland Railway runs south from Geraldton along the coast to Denison, then inland and connects with the Government Railways of Western Australia at Midland Junction, about 10 miles north of Perth, and at present operates 17 locomotives, 20 passenger cars, 11 brake vans and 342 freight cars over some 275 miles of 3 ft. 6 in. track. The Baldwin Locomotive Works also received an order from the Midland Railway for two 12-wheel locomotives. These

	Benguela Portuguese West Africa	Midland Western Australia	Jamaica Government
<b>Boiler:</b>			
Type	Straight Top	Straight Top	Straight Top
Diameter	64 in.	38 in.	62 in.
Working Pressure	160 lb.	160 lb.	190 lb.
Fuel	Wood	Soft Coal	Soft coal
<b>Firebox:</b>			
Material	Copper	Arsenical Copper	Steel
Staying	Radial	Radial	Radial
Length	96 in.	94 in.	102 in.
Width	28 in.	27½ in.	42¾ in.
Grate area	18.7 sq. ft.	18 sq. ft.	30 sq. ft.
Tubes	21—5¾ in.	19—5¼ in.	242—2 in.
	127—2 in.	128—1¼ in.	
<b>Heating surface:</b>			
Firebox	130 sq. ft.	123 sq. ft.	143 sq. ft.
Tubes	1,283 sq. ft.	947 sq. ft.	1,173 sq. ft.
Total	1,413 sq. ft.	1,070 sq. ft.	1,916 sq. ft.
Superheater	334 sq. ft.	253 sq. ft.	



Inclined Cylinders Are Used on Midland Locomotives

locomotives, as in the case of the two for the Benguela of Portuguese West Africa, were the first of this type to be purchased by the Midland Railway. They were ordered in September, 1919, and shipped in April, 1920, to the port of Fremantle. They are now being used for both passenger and freight service.

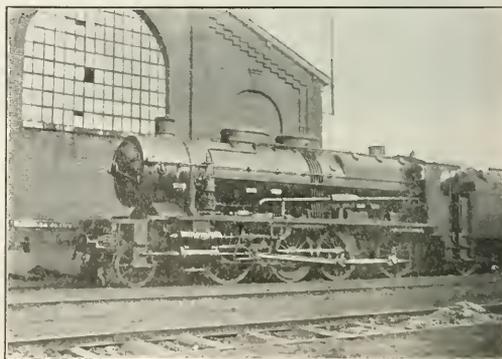
### Jamaica Government Railways

The Jamaica Government Railways run west from Kingston, forming two lines at Spanish Town; one runs north to Linstead, Ewarton and Port Antonio, while the other runs in a northwesterly direction to Montego. The railways operate 197 miles of standard gage track and possess 44 locomotives, 38 passenger cars and 589 freight cars. The Baldwin Locomotive Works have built various designs of the 12-wheel type of locomotive for the Jamaica Government Railways since 1907, in which year the first order was placed. In September, 1919, an order was given for two 12-wheel type locomotives, which were completed and shipped in January, 1920. While these locomotives were being built and erected additional orders were placed, one in the latter part of September, 1919; one in December, 1919, and one in January, 1920. These duplicate locomotives were respectively shipped in January and March, 1920, to Kingston, Jamaica. They are now being used for mixed passenger and freight service.

The weights and principal dimensions of the 12-wheel type locomotives supplied to the three railroads referred to are given in the accompanying tabulation:

	Benguela Portuguese West Africa	Midland Western Australia	Jamaica Government
Tractive Effort (85 per cent working pressure)	27,200 lb.	22,520 lb.	32,975 lb.
Gage	3 ft. 6 in.	3 ft. 6 in.	4 ft. 8½ in.
Cylinders	20 in. by 24 in.	18 in. by 23 in.	19 in. by 26 in.
Valves	Piston	Piston	Piston

<b>Wheels:</b>			
Driving, diameter outside	48 in.	45 in.	46 in.
Driving, diameter center	42 in.	39 in.	40½ in.
Journals, main	8½ in. by 9 in.	7 in. by 8 in.	7½ in. by 8½ in.
Journals, other	8 in. by 9 in.	7 in. by 8 in.	7½ in. by 8½ in.
<b>Wheel Base:</b>			
Base, driving	13 ft. 6 in.	12 ft. 9 in.	12 ft. 9 in.
Base, total engine	33 ft. 4 in.	22 ft. 0½ in.	23 ft. 0 in.
<b>Weights:</b>			
On driving wheels	106,900 lb.	80,000 lb.	108,300 lb.
On truck, front	30,100 lb.	28,000 lb.	28,600 lb.
Total engine	137,000 lb.	108,000 lb.	136,900 lb.
Total engine and tender	227,000 lb.	172,000 lb.	225,000 lb.
<b>Tender:</b>			
Water capacity	3,500 Imp. gals.	3,000 U. S. gals.	3,500 Imp. gals.
Fuel capacity	540 cu. ft.	5 tons	6¼ metric tons



A Compound Consolidation on the Northern Railway, France

# Reorganization of Car Service Division, A. R. A.

## M. J. Gormley New Chairman—Changed Methods of Reporting Car Surpluses—Freight Car Loading Increases

**T**HE CAR SERVICE DIVISION of the American Railway Association has been reorganized, effective August 1, and M. J. Gormley has been appointed chairman. The chairmanship will be the point of contact between the Car Service Division and the Interstate Commerce Commission on all details relating to car matters. Mr. Gormley will have general supervision over the activities of the division and will report to the president of the American Railway Association.

Car service managers are W. C. Kendall, A. G. Gutheim, W. J. McGarry, and L. M. Betts. J. J. Pelley is manager of the refrigerator department with headquarters at the Manhattan building, Chicago. C. F. Sewart is manager of the troop movement department and C. A. Buch is secretary. The manager of the refrigerator department will also act as district manager at Chicago. It is proposed to appoint district managers at other important centers if necessary.

The car service managers are assigned as follows: W. C. Kendall to the Railroad Relations Section; A. G. Gutheim to the Public Relations Section; L. M. Betts to the Closed Car Section; and W. J. McGarry to the Open Car Section. The Railroad Relations Section will handle all questions relating to car service and per diem rules, analyze statistics not in the field of other departments, supervise the work of local car service committees, district managers and inspection forces and supervise the placement and cancellation of embargoes. The Public Relations Section will co-operate with government and local authorities other than the Interstate Commerce Commission and make special studies of various classes of traffic from time to time. The sections dealing with closed, open and refrigerator cars will supervise the distribution of the classes of cars assigned to their jurisdiction. The secretary is responsible for the organization of the division's general office.

### Roads Expected to Keep Records

#### Showing Violations of Rules

In the interests of reducing unremunerative car mileage to the lowest possible minimum and in order to remedy conditions which permit inefficient handling of cars, the Car Service Division expects all railroads to maintain records which will bring to the attention of executives the extent to which:

1. Home cars are loaded to off line points contrary to car service rule 1.
2. Foreign cars are forwarded contrary to car service rules 2 and 3.
3. There are other violations of car service rules 1 to 5.
4. There is reason or necessity for violations mentioned under items 1, 2 and 3.

The following suggestion is outlined as a simple method of keeping a summarized record of rule violations, and may be augmented as advisable or necessary to suit local conditions. Separation of violations by types of cars is recommended where there is general loading by types. Weekly count of:

- (a) Total foreign cars loaded.
- (b) Foreign cars loaded locally contrary to car service rules.
- (c) Foreign cars loaded to connections contrary to car service rules.
- (d) Per cent violations to total foreign cars loaded.
- (e) Home cars loaded off line separated by types and by roads.

- (f) Foreign cars of similar types delivered empty to connections, separated by roads.

### A New Figure—Cars Out of Service

#### Due to Business Depression

In arriving at a fair total of surplus cars the Car Service Division has adopted a new category, "freight cars temporarily out of service due to business depression." This figure includes the total serviceable cars on hand in excess of current freight requirements and *in addition* includes bad order cars in excess of 7 per cent of the total number of freight cars. It is believed that this figure represents a better standard for present comparisons due to the difficult conditions respecting labor and materials of the past few years and to the fact that in a period of depression cars are allowed to remain in bad order for longer periods.

Freight cars temporarily out of service due to the business depression totaled 555,168 on July 23, according to reports just received from the railroads of the United States by the Car Service Division. This is a reduction of approximately 10,000 since July 15.

Reports show that surplus cars (not including those in bad order) on July 23 numbered 350,772, which was a reduction of 21,278 cars when compared with the total on July 15. This reduction was due principally to the increased demand in the Central Western region for grain cars. Surplus box cars totaled 119,442, which was a decrease of 16,191 compared with the July 15 figure, while surplus coal cars were reduced 5,049 to a total of 168,568. Surplus stock cars fell off 628 during that period, so that on July 23 they numbered 16,297.

Reports from the Central Western region show that the decrease in the number of surplus cars reported in that territory was not offset by any increase in the number of cars needing repairs but that the freight car situation in that part of the country has taken a turn for the better. Due to the demand for grain cars, a shortage of 2,768 freight cars was reported to the Car Service Division, of which 2,500 represented box cars. This was an increase of 1,500 over the total shortage reported on July 15.

Cars in need of repairs on July 15 totaled 365,092 or 15.9 per cent of the cars on line, compared with 354,611 or 15.4 per cent on July 1. Allowing for seven per cent being normal, cars in need of repairs above normal totaled 204,396, which added to the total surplus means 555,168 cars out of service because of business conditions.

### Freight Car Loading

Loading of revenue freight totaled 790,348 cars during the week ended July 23, according to the reports of the Car Service Division of the American Railway Association. This was an increase of 14,096 cars over the preceding week but was, however, a decrease of 138,070 cars when compared with the corresponding week of 1920, and a decrease of 119,334 when compared with the corresponding week in 1919.

The principal increase during the week of July 23 was in the loading of grain and grain products, which totaled 64,919 cars, or 7,928 cars more than during the preceding week. This total was 29,442 cars greater than that for the corresponding week in 1920 and 13,374 cars in excess of that for the corresponding week in 1919. It also was 7,804 cars above the peak loading of any week since January, 1919, which is as far back as the Car Service Division records go.

Tabulations also show that from June 1 to July 28, inclusive, 362,800 cars have been loaded with grain and grain products. This is 100,000 cars more than were loaded with that commodity during the same period last year. It also exceeded the loadings for the same period in 1919 by 83,400 cars. An increase of 4,804 cars in the number loaded during the week of July 23, compared with the week before, with merchandise and miscellaneous freight, which includes manufactured products, was also reported. The total for the week was 467,889 cars, which was, however, 48,796 cars under that for the corresponding week last year.

Coal loadings totaled 152,142 cars, or only 26 cars more than during the preceding week, but 49,448 cars under that for the same week last year. It was also 31,641 cars below the total for the corresponding week in 1919. Tabulations show that the loading of livestock totaled 24,689 cars for the week, which was a decrease of 113 cars compared with the week before, while coke loadings increased 191 cars to a total of 3,928 cars. Forest products fell off 911 cars, the total being 43,126, and ore loadings were 33,655 cars, or an increase of 2,171 cars over the preceding week. Except for grain and grain products, the loading of all commodities was less during the week than during the corresponding week in 1920.

Compared by districts, all reported increases in the number of cars loaded compared with the week before but there were reductions in all except the Southwestern district when compared with the corresponding week of last year.

## A Systematic Plan for the Movement of Freight Traffic

THE DISPATCHING and classifying of freight trains at all terminals on the Baltimore & Ohio is now conducted through the aid of a comprehensive system which constitutes a most excellent example of the manner in which scientific management may be applied to railway operation.

CHICAGO TO ST. LOUIS - WESTBOUND		FOR ROUTES - JUNCTIONS	
CLASSIFICATION		DIVISIONAL POINTS	
BUCHING and GROUPING		Refer to SYSTEM DISTANCE CHART	
		LAST SHEET	
SEYMOUR TO SHOPS			
Classification Symbol	Divisional Classification		
F A	Station order Seymour to Shops		
F Q	Bunch Shops proper with the locale between Shops and Cooe	For Shops Yard and Flora Yard to classify and dispatch on head end of through trains except No. 97	
P O	Bunch East St. Louis and beyond	For Shops and Flora to maintain and Cooe to classify and dispatch	Dispatch in either solid trains or grouped with
R T	For solid trains empty roof and tank cars for East St. Louis and beyond Bunch all refrigerators, stock, box and tank cars	For Shops and Flora to maintain and Cooe to classify and dispatch	Dispatch in either R T - solid trains or hind end
<p>Note 1: Foreign equipment enroute to home road via East St. Louis will be dispatched with Symbol - R T - Such cars at intermediate points east of East St. Louis will be forwarded on way freights and pickups.</p>			

Typical Sheet of Instructions for Handling Tonnage Trains and Local Freight

More directly it points to the solution of the perplexing problems of excessive terminal costs and delays to trains consequent on a lack of proper co-ordination in handling the work of the various yards on a given route. Briefly the system comprises an outline showing in minute detail where and how all trains shall be classified so as to move them over the line with a minimum of break-up between origin and destination,

while providing that this work shall be done at those points on the line where the facilities are most adequate for the particular requirements. The system is founded on a minute study of the physical characteristics of the property in the light of a detailed knowledge of the volume, source and nature of the traffic, and the operating limitations of the system, both as to yard and train movements.

The plan was applied to the eastern lines of the Baltimore & Ohio in 1919 and was extended to the entire system about six months ago. It is the natural consequence of a critical study of the traffic and facilities of the Baltimore & Ohio

ST. GEORGE - NEW YORK TO CHICAGO NO. 97		FOR ROUTES - JUNCTIONS DIVISIONAL POINTS Refer to SYSTEM DISTANCE CHART LAST SHEET	
BRUNSWICK TERMINAL BUCHING, GROUPING and DISPATCHMENT			
CHICAGO DIVISION 97			
BRUNSWICK TO WILLARD			
Classification Symbol			
Y-17	Bunch all loading for Willard and beyond	For Cumbo, Cumberland, Connelleville, New Castle Junction to maintain and Willard to classify and dispatch	
<p>Note 1: When short of regular 97 tonnage, Brunswick will fill out with slow loading of Symbol Y-17.</p>			
<p>Note 2: This train enroute between Brunswick and Willard may pick up Symbol Y-17, slow or fast and place in train regardless of standing for Willard Yard to classify and dispatch.</p>			
<p>Note 3: If insufficient tonnage, slow and fast, to run New Castle Division Section, it shall be consolidated with Chicago Division 97 and be so maintained through to New Castle Junction and backed off.</p>			

Specimen Page of Instructions for Handling Time Freight

which has been in progress for some time. The initial result of this was to improve the operation of the individual yards; further, it led to perfection in the handling of traffic on particular routes and ultimately the same degree of systematic direction in the movement and classification of trains has been extended to the entire system.

One fundamental idea carried out through all of this work has been to classify the trains completely as near the origin of the traffic as possible in such a way that they may be run through as many terminals as possible without breakup. For instance, Brunswick, Md., is the point where western movements are concentrated into solid trains for Pittsburgh, New Castle, Chicago and the St. Louis-Cincinnati lines. Similarly, Brunswick is the point where eastbound movements are re-classified for destination at the principal terminals on the seaboard. In like manner, Willard, Ohio, is the concentration terminal for freight eastbound from Chicago, the cars for the Atlantic seaboard being made up into trains that are not broken up until they reach Brunswick. The operation of this system as applied to time freight will be better understood by reference to the typical sheet taken from the volume of instructions from this classification. This shows the handling of time freight in the section of train No. 97 destined from New York to Chicago. Here it will be noted that this train is made up at Brunswick, Md., to run without breakup through Cumbo, Md., Cumberland, Connelleville, Pa., and Newcastle to Willard, Ohio, where the train is classified for destination so that it may be handled through Garrett, Ind., without change. As a consequence of this system, therefore, train No. 97 from New York to Chicago, suffers delays for classification only at two terminals in the entire distance.

The same system applies to tonnage trains, not only on through routes but on lines where much of the traffic is of

local origin and destination. The plan is to make up the train to run as great a distance as possible without breakup. This is illustrated in the specimen sheet No. 40 comprising instructions for the makeup of westbound trains at Seymour, Ind., the first engine terminal west of Cincinnati. This sheet shows four classifications. The first is EA, the local freight between Seymour and Shops, the next engine terminal to the west. The second classification, PQ local freight between Shops and Cone (East St. Louis) obviously must be reclassified at the other intermediate terminals. The other two classifications, however, cover freight destined for East St. Louis and beyond and the instructions specifically provide that this freight shall be made up in trains that are not to be broken up between Seymour and East St. Louis.

The responsibility for the observance of this classification rests primarily with the district and division officers of the system, with the assistance afforded by four district supervisors of terminals located at Cumberland, Md., Wheeling, W. Va., Willard, Ohio, and Cincinnati, under the direction of the general supervisor of terminals. The benefits derived from this system now accruing to the Baltimore & Ohio have been found to include: Increased engine miles; increased car miles; decreased per diem; decreased overtime; decreased terminal time and minimum switching in all yards; quick and dependable freight service; lessened liability to claims from delays in transit and lessened opportunity for thefts by delays in yards.

The system was developed and put into practice under the direction of E. T. Horn, general supervisor of terminals, Baltimore, Md.

## The Value of the Tracing Service\*

By P. W. Gates

Tracing and Reconsignment Bureau, Southern Pacific Company

**I**N DISCUSSING the value of tracing service it is well to make some distinction between the value of the service to shippers and consignees on the one hand, and to the railroad companies themselves, on the other. For many years the railroads have maintained a tracing and manifest system for recording the movements of their cars for the benefit of their patrons. In recent years, however, owing to the keen business competition, there has been a growing demand for the extension of this service with the result that today the carriers have perfected an elaborate automatic tracing system at considerable expense which enables them to keep shippers and consignees fully informed daily as to the location of their freight. This service enables merchants to: (1.) Divert, (2.) Re-consign, (3.) Make more favorable arrangements for handling, (4.) Create a better market for their freight, (5.) Carry on their business without being obliged to tie up considerable funds in goods which are in transit, (6.) Protect themselves from the rise and fall of the market. In addition, it enables smaller purchasers to secure passings on shipments contained in pooled or consolidated cars.

This valuable information is given out by the railroads to their patrons without solicitation, and materially assists them in building up undeveloped business. As an example of the extent to which patrons of the Southern Pacific make use of the information disseminated by our tracing system, it has developed that our traffic department sent out approximately 48,000 wire tracers, locating and expediting freight during 1920. This service, it must be borne in mind, was entirely apart from the individual wiring done by our respective superintendents over the system, and indicates the great value of the tracing service to the public.

\* Abstracted from an address before the Pacific Railway Club, Oakland, Cal., May 12.

## Tracing Improves the Carriers' Service

Undoubtedly one of the greatest values the carriers derived from their tracing service is increased tonnage. But in addition to more business, tracing also enables the carrier to improve the service which they are rendering by locating the delays occurring at terminals or junctions and by determining whether or not their schedules are being maintained. It also assists the traffic departments in tracing shortages, and in locating waybills for cars which are held up on account of lost revenue billing, an occurrence which causes delays all too frequently. The service also prevents delays to cars which may have been set out for repairs or to reduce engine rates. In short, it serves as a check by which the road may determine whether or not every link in its freight service is performing its function properly.

The tracing service is not without its evils and abuses, however. Experience has made it clear that many merchants have the impression that any shipment, whether carload or less, should be followed with a tracer immediately after being shipped, to insure its prompt movement. Other shippers make a practice of requesting the services of a tracer when their shipment has been in transit only a few days. This sort of tracing does not produce satisfactory results. On the contrary, it results in congestion of the wires, as well as freight jams at junction and terminal points, thus destroying the efficiency of legitimate tracing. The carriers should make every effort to discourage requests for this sort of tracing and should encourage their patrons to permit sufficient time to elapse for their freight to reach its destination before calling on the tracing service. Articles in various periodicals indicate that a large number of industrial associations are making an organized effort to eliminate this unnecessary tracing. For instance, the National Industrial Traffic League has appealed to its members to confine their requests for tracing to their actual needs. In addition, the American Railway Association, together with the Western Weighing and Inspection Bureau, has suggested to its members that the practice of tracing cars from shipping points to destination immediately after the freight has been offered for shipment be confined to cases of real necessity.

## A New Specification for Rails

By Robert W. Hunt,

Robert W. Hunt & Co., Chicago

**M**Y INTEREST in and connection with the manufacture of steel rails have extended over the entire period of their production; and the establishment of specifications governing their manufacture which, while resulting in the output of good rails should at the same time be of practical commercial application, has received my careful thought. At this time the subject of rail specifications is, as always, of importance, but, unfortunately, is in a somewhat unsatisfactory condition, owing to the difficulty of the rail manufacturers and rail consumers uniting on various phases of a specification aiming toward improved practice.

There is, I think, very little, if any, dissatisfaction with the actual wear of open-hearth steel rails. What the users desire, most of all, is a safe rail; meaning by that rails that, while generally affording good long life under usual traffic and roadbed conditions, are free from sudden failures. This the roads do not feel they are obtaining, and, in addition to the annoyance and expense caused by defective rails which have to be removed from track after comparatively little service, the anxiety and menace to life caused by actual broken rails is at the same time very great. Head failures in rails rolled from metal forming the tops of the ingots are apparently on the increase and internal fissures constitute a most dangerous defect deserving of the fullest study.

It is not my purpose now to go into any long discussion of the merits of various rail specifications, but it seems to me that the time is opportune to present a specification for consideration which I believe offers many advantages not found in others. Those portions of this specification which vary from other specifications in common use appear below.

I have been claiming for many years that each ingot cast on a heat is a unit unto itself and deserving of being tested and treated as such. It is nearly ten years since I recommended the nick and break test on every ingot, and the practicability of the method then proposed has been thoroughly demonstrated by the fact that practically all rails made in Canada for the last six years have been so tested. But, because of the loathness of American manufacturers to permit it, the system has not been given a thorough trial in the States; and I am now proposing that in lieu of this plan of testing, if the manufacturer desires, the top rails of each ingot can be rolled into tie plates to be hot punched, sheared and annealed, which the purchaser agrees to accept in place of the tonnage of "A" or top rails that he would ordinarily obtain under his contract. Tie plates made from such steel have given good satisfaction for several years and, no doubt, those manufacturers whose works are not now properly equipped will be glad to install the machinery for producing them to aid the railroads in obtaining better rails.

I have been convinced for a number of years, and actual experiences have proven that the cold straightening of rails can be minimized very much and in some cases eliminated without detriment to the track conditions, and with such obvious saving to the manufacturers as would more than cover the cost of milling the ends of the rails square and free from burrs. Better attention to the soaking pit practice and restricting the cold straightening, I believe, will ultimately afford relief from the development of internal fissures.

The attached specification is not offered as the best that can be proposed. It is presented with the thought that it may help to compose the difference existing between rail makers and users and to afford the groundwork for a common standard which will insure good safe rails at the base price.

## Specifications for Open-hearth Steel Rails

80 lb. to 110 lb., inclusive, per yard

### Chemical Requirements

4. Chemical Composition and Analyses. (a) The chemical composition of each heat of steel from which the rails are rolled shall comply with the following:

Carbon, not less than.....	.60 per cent
Manganese, not less than.....	.60 per cent
Phosphorus, not more than.....	.04 per cent
Silicon, not less than.....	.10 per cent

(b) Rails rolled from heats containing more than .75 per cent of carbon shall have the flanges near the ends painted yellow and be shipped separately, provided, however, that such heats do not have either the manganese content over .90 per cent or the phosphorus content over .03 per cent.

(c) A chemical analysis for each element above mentioned, including sulphur, shall be made on each heat of steel cast for rails. The analysis shall be made on approximately equal portions of carefully mixed drillings taken from two ladle test ingots, one representing the steel going into the second regular ingot cast, and the other that going into the next to the last regular ingot. The methods for making the analyses shall be those adopted by the American Society for Testing Materials.

(d) The ladle test ingots shall be of such shape and size as to induce quick sound setting of the steel and, if necessary, a few pellets of aluminum may be added to the dipper to insure soundness. The drilling for analyses shall be taken not less than one-eighth inch beneath the surface.

(e) The complete analyses of each heat cast for rails shall be available for the inspector as promptly as possible and he shall always be furnished with a copy of it before the rails are loaded.

(f) The inspector may witness the manner of obtaining the drillings for analyses and the methods employed for analyzing, and he may take a portion of the original drillings at any time for checking purposes.

10. Drop Tests. (a) If two of these test pieces do not break at the first blow, all of the rails of the heat shall be accepted, subject to the requirements of Section 11.

(b) If two of the test pieces break at the first blow, all of the top rails of that heat shall be rejected.

(c) Second tests shall then be made from three test pieces selected by the inspector from the bottom end of the top rails of the same heat and ingots. If two of these test pieces do not break at the first blow, all of the remainder of the rails of the heat shall be accepted, subject to the requirements of Section 11.

(d) If two of these test pieces break at the first blow, all of the second rails of the heat shall be rejected.

(e) Third tests shall then be made from three test pieces selected by the inspector from the bottom end of the second rails of the same heat and ingots. If two of these test pieces do not break at the first blow, all of the remainder of the rails of the heat shall be accepted.

(f) If two of these test pieces break at the first blow, all of the remainder of the rails of that heat shall be rejected.

11. Destruction Tests. (a) A test piece representing the top end of the top rail from each ingot of each heat rolled, which has passed the drop test requirements of Section 10, shall be nicked and broken to determine whether the interior metal is sound. If an interior defect shows on the fracture, the top rail of the ingot represented shall be rejected and a second test piece cut from its bottom end shall be nicked and broken to determine the character of the metal of the second rail. If an interior defect shows on the fracture, the second rail shall be rejected and a third piece cut from its bottom end for retesting. Thus the rails of each ingot shall be tested progressively from the top downward until the fracture shows sound metal, following which the rails of the ingot represented shall be accepted.

(b) An interior defect is interpreted to mean seams, laminations, cavities or interposed foreign matter, or a distinctly bright or fine grained structure in the center of the section evidencing segregation, made visible by the destruction tests, the saws or the drills.

(c) Rails represented by test pieces found to be segregated shall be accepted as No. 2 rails.

(d) If, under the drop test requirements of Section 10, the "A" and "B" rails of a heat have been rejected, but the "C," "D," "E," etc., rails accepted, the destruction tests herein specified will be waived on the accepted rails of that heat.

12. Optional Conditions. (a) In case the manufacturer elects after due notice, the purchaser agrees to accept hot sheared, punched and annealed tie plates rolled from the steel that would, in the ordinary course of the manufacturer's practice, be rolled into "A" or top rails from the ingots cast under this specification. It is understood that such tie plates shall be in accordance with purchaser's drawings and specifications.

(b) When a top discard of not less than twenty per cent is made on all ingots from which rails are offered for test and inspection, Section 11 shall be waived.

### Details of Manufacture

15. Quality of Manufacture. (a) The entire process of manufacture shall be in accordance with the best state of the art.

(b) The steel must be well deoxidized in the furnace or ladle before the ingots are teemed, and the use of aluminum in the molds to insure the quiet setting steel desired will not be permitted.

(c) Heats or ingots, the metal for which has been poured over the top of the ladle or cast with a full running stopper not under control of the operator, will not be rolled.

(d) Special care must be taken to insure the casting of good, clean, sound ingots, free from scabs and cracks and with reasonably flat tops. Bled ingots shall not be rolled.

(e) Treatment of the ingots in the soaking pits must be such as to insure thorough soaking with the subsequent increase of temperature necessary. Overheated or burned or white sided ingots shall not be rolled, neither shall ingots that have once been allowed to get cold.

22. Finishing. (a) All rails shall be smooth on the heads, without rough crescent-shaped marks, and the bases shall be free from guide marks and scratches. They shall be milled square on both ends, but a variation of one thirty-second inch in a vertical direction to make head-long rails will be permitted.

(b) All rails shall be free from twists, waves, kinks or short bends, but rails containing a uniform sweep, the middle ordinate of which does not exceed 1 in. in 33 ft., will be accepted without cold straightening.

23. Branding. (b) The number of the heat and of the ingot number in the heat and a letter indicating the portion of the ingot from which the rail was made shall be plainly stamped on the web of each rail where it will not be covered by the joint bars. The top rails shall be lettered "A" and the succeeding ones "B," "C," "D," etc., consecutively; but in case of a top discard of 20 per cent the letter "A" will be omitted, the top rail becoming "B."

# Labor Board Orders New Election on Pennsylvania

## "Middle of the Road" Decision Finds Both Carrier and Employees Guilty of "Unfairness"

THE RAILROAD LABOR BOARD in rendering a decision on August 1 in the controversy between the Pennsylvania and its shop employees, not only finds both the carrier and the employees' organization guilty of "illegal and unfair" action in the selection of representatives to negotiate new rules and working conditions, but definitely overrules the contention of railroad labor organizations that the representatives of a majority of a class have the sole right to negotiate for the entire craft and establishes a method for determining who properly represents both the majority and the minority of the employees. At the same time the decision upholds two positions of the employees, namely, that they shall be allowed to vote for either an organization or individuals as they wish; and, second, that they may vote for representatives who are not employees of the road.

The hearings in this dispute were outlined in the *Railway Age* of July 16 (page 115).

A new election of employees' representatives is ordered under conditions laid down in the decision; and a conference between the carrier and representatives of the employees is required before August 10 to arrange the details for the new election.

The Pennsylvania's contention that the Board has no jurisdiction over the question of National Agreements under the terms of the Transportation Act in that that subject has never been properly before the Board, is not passed upon, the Board stating it is of "secondary importance" since "the questions involved arise directly from the Transportation Act itself and are properly before this Board for disposition."

The Board said: "There is no question of the closed or open shop involved in this dispute and no other real matter of principle. The question involved is merely one of procedure. At a time when the nation is slowly and painfully progressing through the conditions of industrial depression, unemployment and unrest consequent upon the war, it is almost treasonable for any employer or employee to stubbornly haggle over non-essentials at the risk of social chaos."

### The Opinion of the Labor Board

The opinion of the Labor Board reads in part as follows:

It matters not whether the carrier, in its recent efforts to negotiate rules, was proceeding under the order of the Labor Board in Decision No. 119, or whether it was proceeding under the Transportation Act itself, as it claims. The fact remains that both the carrier and its employees were taking steps to hold conferences for the negotiation of rules, that a dispute arose at the very outset in the conference between the carrier and the representatives of the employees who constitute System Federation No. 90, and that this dispute is now before the Board.

The question involved is one necessarily incident to the negotiation of rules and within the unquestioned jurisdiction of the Board. It is quite obvious that no conference could ever be held and no rules ever agreed upon, if either party could block the proceedings by declining to deal with the other upon any ground or pretext.

For the purposes of this case, the arguments of the parties pro and con as to the regularity and validity of Decision No. 119 are of secondary importance. The questions involved arise directly from the Transportation Act itself and are properly before this Board for disposition.

In the case under consideration, the matter in dispute was the adoption of a schedule of rules and working conditions for the shop crafts on the Pennsylvania System. Both the carrier and the employees were taking steps to hold the conference required by the Transportation Act, and directed by Decision No. 119. Naturally, the question arising at the very threshold of the negotiations was: Who are the accredited representatives of this class of employees for the purposes of the proposed conference? The carrier had the right to know this fact, just as the employees had

the right to know that they were dealing with the properly authorized representatives of the carrier.

It is true that the federated shop crafts claim that the carrier knew that their organization constituted a majority of that class of employees, and that the carrier was not in good faith in refusing to deal with their representatives. This Board cannot enter into the motives of the parties. The carrier did not deny that said organization comprised a majority of that class of employees, but merely stated that no evidence of the fact had been furnished to the carrier.

It is evident that since the statute provides that the employees interested in the dispute be represented in such a conference by representatives "designated and authorized" by said employees, it necessarily follows, under our system of government, that a majority of such employees would have the right to designate their representatives.

The Transportation Act does not prescribe any method by which the employees shall elect their representatives for such conference. Both the carrier and the employees in this case correctly concluded that an election by ballot would be necessary. It was at the next step that both parties fell into error.

The carrier had no more right to undertake to assume control of the selection of the representatives of the employees than the employees would have had to supervise the naming of the representatives of the carrier, for the statute plainly provides that the employees shall "designate and authorize" their representatives. It is entirely proper, however, that the carrier should keep in close touch with said election, and should be given every facility for first-hand knowledge of the manner in which it is conducted and the correctness of the result reached and announced.

The carrier was not justified in refusing the request of the employees to place on the ticket the name of the organization. The granting of this one request would have avoided all trouble, and nobody would have suffered any injury, because the name of any other organization or the names of individuals could have appeared on the ticket, and all employees, union and non-union, would have had the right to vote. If a majority of the employees had not wanted to be represented by the organization, they would have had the unobstructed right to say so.

Representation by the organization is only representation by individuals after all. There is nothing in the statute to deny the employees the privilege of belonging to an organization and being represented by that organization through its accredited officers. In fact, this has been the established custom for many years and is recognized in the Transportation Act itself.

The Transportation Act says the "chief executive of any organization of employees" is authorized to submit to the Labor Board any dispute where disagreements have occurred in the conference between the carrier and employees. The existence of the organization of employees is thus recognized as it is elsewhere in the statute.

The Labor Board also holds that the employees may vote for representatives who are not employees of the carrier, if they so desire, just as the carrier may select a representative who is neither a director nor a stockholder. It seems, however, that the employees in this instance were not asking to have the name of any outsider placed on the ballot, but simply the name of their organization, which would have resulted, as the carrier well knew, in the employees being represented by the officers of the organization who are employees of the carrier.

### Carrier Had no Authority

#### To Divide System Into Regions

The carrier had no legal authority to divide its system into regions and require the employees to elect regional representatives. The Transportation Act contemplates that the employees of the class directly interested on an entire system shall select representatives. It is easy to see how an arbitrary regional division of the employees by the carrier might be as unjust as it is unlawful.

After having failed to reach a satisfactory agreement with the carrier as to the ballot, the shop crafts put out a ballot of their own with no provision for any representatives to be elected for, except organizations. This was not authorized by law and ignored the rights of the non-union men.

Neither election, as held, was fair and legal. As a consequence of the failure of the parties to agree upon a method of holding an election, the employees have so far been denied their legal

right to select their representatives for this important conference on rules. As evidence of the fact that no real test of the choice of the employees has been had, the carrier in its own presentation to this Board admits that, exclusive of the Altoona Shops, only 3,480 men voted, out of 33,104 entitled to vote, for the alleged representatives who are now negotiating rules. In other words, only 10.5 per cent of these employees are represented in these negotiations, and 89.5 per cent are virtually disfranchised. This is the big, outstanding, uncontroverted fact presented in this case, and undoubtedly the law provides a remedy for such a wrong.

It is the duty of the Labor Board to settle this dispute by providing a method that will protect the legal rights of every employee, union and non-union, to the end that the carrier and this class of employees may proceed to the orderly negotiation of rules.

Neither of the parties to this dispute can serve the country, or justify themselves in the eyes of the public by any amount of propaganda, if they permit a controversy over small technicalities to interrupt commerce and bring loss and suffering upon themselves and the public.

There is no question of the closed or open shop involved in this dispute and no other real matter of principle. The question involved is merely one of procedure.

At a time when the nation is slowly and painfully progressing through the conditions of industrial depression, unemployment and unrest consequent upon the war, it is almost treasonable for any employer or employee to stubbornly haggle over non-essentials at the risk of social chaos.

**The Board's Decision**

The actual decision of the Board in this case is as follows:

Under the authority of the Transportation Act, as hereinbefore cited, the Labor Board hereby declares that both of said elections on the Pennsylvania System were illegal and that rules negotiated by the alleged representatives selected by either ballot will be void and of no effect, and orders that a new election be held.

For the purpose of determining the choice of a majority of each of the respective crafts coming under the provisions of this decision the following shall govern:

- 1-a. All machinists, apprentices, and helpers, as defined in and coming under the provisions of Decision No. 2 (Dockets 1, 2 and 3), issued by the United States Railroad Labor Board under date of July 20, 1920, in the service of the carrier, including Altoona Works, and including all employees coming under the provisions of this decision who have been laid off or furloughed and are entitled to return to the service, under the seniority rules, when the force is restored to what is generally recognized as constituting a normal force, if accessible, shall be furnished a ballot and be permitted to vote.
- 1-b. All boiler-makers, apprentices, and helpers, same definition and conditions as set forth in preceding 1-a to apply.
- 1-c. All blacksmiths, apprentices, and helpers, same definition and conditions as set forth in preceding 1-a to apply.
- 1-d. All sheet metal workers, apprentices, and helpers, same definition and conditions as set forth in preceding 1-a to apply.
- 1-e. All electrical workers, apprentices, and helpers, same definition and conditions as set forth in preceding 1-a to apply.
- 1-f. All carmen, apprentices, and helpers, same definition and conditions as set forth in preceding 1-a to apply.

A conference shall be held on or before August 10, 1921, at such place as the carrier may designate (of which due notice shall be given to all parties interested), between the duly authorized representatives of the carrier and the duly authorized representatives of System Federation No. 90; the duly authorized representatives of any other organization (representing the classes of employees set out in preceding 1-a to 1-f inclusive) whose by-laws or constitution establishes the fact that the organization was established for the purpose of performing the functions of a labor organization as contemplated in Title III of the Transportation Act, 1920; and the duly authorized representatives of 100 or more unorganized employees, selected by the respective crafts set out in the preceding 1-a to 1-f inclusive, for the purpose of arriving at a clear understanding as to the distribution, casting, counting and tabulating of the ballots and announcing the results thereof.

NOTE.—Representatives of unorganized employees authorized and desiring to attend this conference must have the individual and personal signature and authorization of not less than 100 employees of a single craft, such authorization shall likewise name the place of employment and craft to which each belongs.

The employees shall, at their own expense, have ballots and envelopes printed in sufficient numbers to provide each employee an opportunity to vote.

Six sets of ballots and envelopes shall be printed, a separate and distinct ballot for each craft as per the following, and only the craft named thereon shall be permitted to use the ballot:

PENNSYLVANIA SYSTEM  
Machinists, Apprentices, and Helpers  
Official Ballot

A dispute exists between the carrier and System Federation No. 90 of the Railway Employees' Department of the A. F. of L., as to who the employees, in the craft above named, desire to be represented by in the conference to negotiate rules and working conditions.

The machinists, apprentices, and helpers, irrespective of membership or nonmembership in any organization, are therefore to be given an opportunity to designate, by a majority vote, the representation of their choice, as follows:

Those in favor of either of the following will designate their choice by marking an X in the square set out for that purpose.

Those who desire to be represented by System Federation No. 90, Railway Employees' Department of the A. F. of L. mark an X in this square

Those who desire to be represented by the American Federation of Railroad Workers, mark an X in this square.....

Those who desire to be represented by individuals or by any other organization, write the name of such individual or organization here: ..... and mark an X in this square.....

Place employed .....  
Craft .....  
Actually working .....  
Laid off or furloughed.....  
Name of voter.....

If, in any craft, no organization or individual receives a majority of the legal votes cast, a second vote shall be taken in the same manner and on the same kind of ballot, but the second ballot will contain only the names of the two organizations or individuals receiving the highest number of votes cast in the first election.

The vote shall be taken by crafts, each craft to include mechanics, apprentices and helpers, a majority of each of the respective crafts shall have the right to determine by whom they desire to be represented; this right shall not be construed to mean that employees shall be denied the right to name an organization as their representative, neither shall it be construed to prevent the employees from naming an individual who is not an employee of the carrier.

A general committee, composed of duly authorized representatives of the carrier, duly authorized representatives of System Federation No. 90, and the duly authorized representatives of any other organization or 100 or more unorganized employees participating in accordance with the provisions of this decision, will be located at designated places for the purpose of distributing, receiving, counting and tabulating the results of the ballot.

A local committee composed of the duly authorized representatives as above outlined will be established at each division point and at Altoona Works for the purpose of receiving, distributing, packing and forwarding the ballots by express or registered mail to the general committee. Local committees will see that each employee is given every opportunity to vote and that his ballot is placed in envelope and sealed; the local committee shall also keep a record of the ballots received.

Only the general committee is authorized to open envelopes and count the ballots. Where the force is limited and the local committee cannot be procured, arrangements shall be made to place ballots in the hands of such employees and they shall be properly instructed as to the manner of getting their ballot to the general committee.

The ballot should be completed at the earliest possible date. No one but the general committee is authorized to open, count and tabulate the returns of the ballot, and all parties to the dispute are entitled to be present when any ballots are opened and counted.

When the ballots have been canvassed, the result shall be reported to the Labor Board and the representatives of the carrier and the employees will proceed with the negotiation of rules.

If either party to this dispute believes that the spirit and intent of this decision is not being complied with, the complaint should be filed with the Board with all supporting data.

THE SUPREME COURT of the state of Minnesota, held on July 22, in affirming the Lake County District Court in the matter of application of the Duluth & Northern Minnesota to abandon this railroad, that the Minnesota Railroad and Warehouse Commission has no power to order the abandonment of a railroad on the plea the railroad can be operated only at a loss. The court held that the order of the State Commission authorizing the abandonment as of April 1, 1921, was made without authority. The Interstate Commerce Commission recently ordered the abandonment of the road.

# Suggestions as to Economies in Railroad Operation

An Amplification of the Article by F. J. Lisman on "Remedies for Wastes in Railway Operation"

By Geo. R. Henderson

AT FIRST SIGHT, many things in railway operation appear to be wastes that are good business propositions.

The abandonment of light locomotives, although in fair condition, for modern, powerful engines, while a seeming extravagance, results in decreased hauling costs well worth the additional investment, just as in the case a few years ago, when the Chicago Edison Company stepped out of a plant a few years old, into one where the generators had a much better water rate per kilowatt-hour.

The Pennsylvania Railroad has spent many dollars in reducing grades and curves, which would probably not be allowed as a capital betterment, but the operating results show the wisdom of such improvements. The expensive bridging of the Des Moines River Valley by the Chicago & North Western 20 years ago, eliminated heavy grades and bad curves which had been responsible for more than one accident. An expensive grade reduction on the same line brought about an *increased fuel consumption* per ton-mile, although the costs of operation as a whole were reduced.

At other times there are operating costs which seem to be abnormal, and yet if these were rectified, the public would suffer great inconvenience. A case in point would be the reduction in service as on branch lines, which are generally feeders for the main line. When we consider that it requires three times the power to haul people in sleeping cars that it does in day coaches, the waste is evident, yet sleeping cars will certainly never be abolished on our railroads. There are real wastes, however, that are often the result of competition or a desire to obtain statistical showings. Light engines are sometimes sent over a division ahead of an overloaded drag freight (instead of being double headed) in order to increase the tons per engine mile, the light engine not being considered in the train computations. There are cases of parallel roads where one has much easier grades than the other, and if the loaded trains were sent over the low grade line and the empties returned over the steeper grades, joint economy of operation would result, but this can only be accomplished by government ownership—a much greater evil.

A superintendent who was to receive a lot of new cars from a car building company on a foreign line had the cars loaded with sand consigned to his road, whereby he paid for hauling the sand, but obtained car mileage for the use of his cars from the delivering road, thereby saving a round sum for his road and obtaining speedy advancement for himself, but there was really a waste in hauling the sand, which came out of the operating expenses of both roads, to some extent.

These are just a few suggestions to show how easy it is to be misled, even by the regular statistics, unless all the facts are known in each case, and for all the various occasions of operation, the study would become one of endless complexity.

## Division of Costs

In the *Railway Age* of July 9 in his article entitled "Remedies for Wastes in Railway Operation," F. J. Lisman made a number of valuable suggestions regarding the methods of keeping accounts so that wastes and losses could be located and properly assigned to the various classes of traffic. This would mean the addition of much clerical labor, unless some of the present reports could be discontinued. There is always danger in starting the compilation of new statistics, that they may be continued indefinitely after the need for

them has expired or that they will so flood the officer who should scrutinize them, that they will get to the files without imparting their information to those who could profit by it.

Referring to the many investigations by state and federal commissions, one can sympathize with the manager of a road that, when asked what were his duties, replied "chiefly answering fool questions before commissions." The vice-president of an important line recently made the statement that the time had come when a road needed three sets of officers, one to operate the property, one to appear before commissions, and the other set to go to jail. All of which goes to show that investigations and reports can be, and often are, carried to an extreme. At the same time, rational reports carefully studied, are essential to every business.

In general, expenses may be divided into Hauling Costs and Terminal Costs, and even the general expenses can be prorated, if necessary, between these, but it is the *actual* detail costs that are of the greatest interest. Expenses for maintenance of way and equipment and conducting transportation are mostly hauling charges, while expenses for maintenance of buildings and yards are principally terminal charges referring to the handling of goods and passengers. Expenses relating to the care of cars and locomotives at shops and roundhouses are really hauling charges and should be so considered. If we desire to go into details, we will need very different records from those which show the division costs on a ton-mile basis only. For the same division and same fuel and supply costs per ton or other unit, the cost of transporting various commodities will depend upon the speed, the car loading and the type of cars needed for the goods which are hauled.

## Speed

Speed increases the cost of hauling in a very striking manner, principally as the train load must be greatly reduced if we wish to haul at high speeds (with electric traction the case is different, but we are here considering steam locomotives). As a locomotive has a horsepower limit, depending upon its boiler capacity, it follows that at twice the speed, only one-half the tractive effort will be available; at three times the speed, only one-third the tractive effort, approximately. The coal burned per ton-mile may not vary greatly, but as the crew is paid by the mile (overtime not considered) the costs per ton-mile mount rapidly, being roughly from  $1\frac{1}{2}$  to 2 times as much at 30 miles per hour as at 15 miles. The exact amounts depend on the grade, cost of coal and supplies, car repairs, wages, etc., but they can be definitely determined in any case, as demonstrated in "The Cost of Locomotive Operation" by the author and published by the *Railroad Gazette* a few years ago. This demonstrates the expensive nature of handling livestock, and when to this is added the possible depreciation of the load if the cattle are not delivered in time for the market, we can easily understand the suggestion of an operating officer that his competitors should be allowed to take the stock business.

Passenger traffic is even more expensive. The 15 hour trains between New York and Chicago were so notoriously costly to operate that for several years they have been abandoned.

It has been demonstrated that a speed of about 15 miles per hour is the most economical for ordinary freight trains,

and such commodities as coal, ore, lumber, etc., cost less to haul per ton on account of speed alone than fast freights, such as perishable fruits and live stock. If the speed is arranged to suit the goods, the most economical transportation results—in any case the cost of the speed factor—may be determined by careful study, but it requires time and patience. High speed trains, either passenger or freight, cause delays and therefore expense to other trains which must give them safe clearance.

### Car Loading

Car loading affects the cost very seriously, not only because the paying load may be a small percentage of the gross train load, but also because lightly loaded cars require more tractive effort per ton than heavily loaded cars. All this is too well known to need elaboration here, but it is well to remember the bearing of this upon the cost of hauling, and it is possible to figure the cost of such loads. The question of minimum loading is continually being fought out between shippers and railroad, but there is no question about its costing more to haul light loads. Perhaps a sliding scale would be equitable to all concerned. Then it might be possible to use containers for parcels to one consignee, and fill a car with such containers from several points and deliver them in the same way. This has recently been tried by the express companies, and corresponds somewhat to the small car units in Europe. In any event it seems as if much could be accomplished by co-operation between the shippers and the agents.

### Car Types

The selection of car types means much to a railroad, but is not often duly considered. If we compare the relative costs of flat or gondola cars and box or refrigerator cars, we see at once that one vehicle may cost three or four times that of another, so the repairs and maintenance will vary, as also the obsolescence charges. Of course, different commodities pay different rates for transportation, but these are seldom based upon the actual cost of movement. The more costly cars are certainly entitled to higher rates, which is another reason why roads hauling coal and ore are often considered so much more desirable from a business standpoint.

### Terminal Costs

Terminal costs would properly cover switching, receiving and loading, and unloading, storing and delivering, including sorting, handling, etc. Yards and buildings are a necessary feature and entail much expense, of which the railroads would be glad to rid themselves. Terminal buildings are always doubtful assets as far as returns are concerned. Note the expensive passenger station of the Pennsylvania Railroad in New York City and consider how many passengers have been induced by this structure to use that road in preference to others. The New York Central station will be more profitable on account of the improvements of "air rights," but as a rule little additional traffic is induced by costly terminals. Probably freight facilities are of more value as traffic producers, where electric cranes are available for handling heavy loads, and where storage facilities are ample to protect goods from weather and theft.

When full car loads can be taken from shippers' sidings or yard tracks and delivered in the same way, these are only the switching and accounting costs to be covered, and no doubt this would be an ideal arrangement, if universally practicable, but unfortunately, it is not and never will be. Small and various kinds of packages must be handled in and out at the expense of much unremunerative labor; that is, the labor has added no value to the goods, but rather damage. This costs the railroad companies much more than to shift a car to a siding or independent yard. Many terminals for receiving freight have only manual labor to sort

and handle the goods, whereas electric trucks, conveyors, etc., might save a lot of high priced workmen. Of course, the variety of goods and packages militates against a too elaborate mechanical layout, but there is no doubt that much could be accomplished if carefully considered. As above mentioned, special containers might help in many cases. Then terminal expenses must be considered in connection with short hauls. It costs as much to load a car for a 25 mile journey as for one a hundred times as long, but the carriage returns are inconsiderable in the former as compared with the latter and expensive floor space is occupied regardless of the journey. This leads to the conclusion that many railroads might, with profit to themselves, operate a line of motor trucks, or at least have a working arrangement with trucking companies.

Let us consider the routine of a package to be forwarded 25 or 50 miles. It must be carted from shipper to railroad freight station, removed to platform, sorted and loaded before it really starts on its journey, which may be the next day. The opposite course of events will follow on arrival and two or three days elapse between the time it leaves shipper until it reaches its destination. If now this were taken by motor truck, it would go direct from shipper to consignee in possibly four or five hours and much handling and expense thereby would be saved. With long hauls this would be entirely different, as the terminal delays would be a small proportion of the total time of the journey. Another advantage would accrue, and that is, freight cars would increase their mileage enormously by eliminating the short haul and instead of 25 miles a day they might make considerably more, all of which would mean a much greater return on the investment. These ideas may sound radical, but it is believed that they are worth serious thought, and careful computations would, no doubt, produce astonishing figures. Just what length of haul would be most economical for truck service would have to be determined for each district; probably 100 miles or so would be the limit. The value of terminal space thus gained should be taken into consideration, as in some localities a high price is paid for freight stations.

Co-operation is necessary between all the interests if waste is to be reduced to a minimum, but this should not eliminate a healthy competition, for the public benefits most thereby. This is why we have sleeping and dining cars, even on short runs, as people will travel over the road that offers the most conveniences, even at somewhat greater expense. Roads should compare figures and obtain the benefit of each other's experiences, as they do in the mechanical conventions, and as all intelligent officers approve, but careful analysis and investigation into the detail costs of each section and commodity will probably well repay for the time and expense of such work, and may lead to changes in methods of operation that would be productive of many economies.

### The Cash Register in a Ticket Office

A SPECIALLY DESIGNED cash register is in use in the consolidated ticket office at Dayton, Ohio, which is effecting measurable economies in the accounting of the office. When the offices were consolidated during the war there was a shortage of efficient ticket sellers which made the simplification of operations highly desirable. At the end of each day's business each ticket seller had to make out a report of his day's sales, classifying them by railroads. This work made it necessary for the sellers to remain a long time after the closing hour. Because of the shortage of efficient sellers it was believed that any system which would promote efficiency would make it possible to get along with fewer employees; and by making the work easier the places would be more attractive to those seeking positions. The National Cash Register Company, after studying the problem, designed a cash register to meet the needs of the situa-



the returned ticket. The register does not add the amount of the refund to the sales, although it prints the amount on the recording tape and shows which ticket seller received the ticket and refunded the money. This gives the office a permanent record of all refund transactions; it interferes in no way with actual sales and enables the accountant to check accurately the money paid out.

Aside from its value as a time saver the register also prevents errors. The ticket seller must press his identification key first and then indicate the road for which the ticket sale is made before he can record any amount. In other words the register can be operated in only one way and that way necessitates making the record as the office wants it.

The *Railway Age* is indebted to the National Cash Register Company for furnishing information and photographs and to C. L. Tipton, ticket agent of the consolidated ticket office, Dayton, for information concerning the working of the device.

## Short-Turn Overhead Trolley Conveyor System

THE SHORT-TURN overhead trolley conveyor system, illustrated in Fig. 1, is comparatively a new departure. Several successful installations have been made. The track consists of two parallel standard rolled channels, spaced  $2\frac{1}{8}$  in. between flanges and held in place by clamps. The track is designed to carry loads with no intermediate supports except at the splices, corners and switch points, and is fabricated to meet the requirements of each condition. One special feature of this system is that spanning a long gap, as

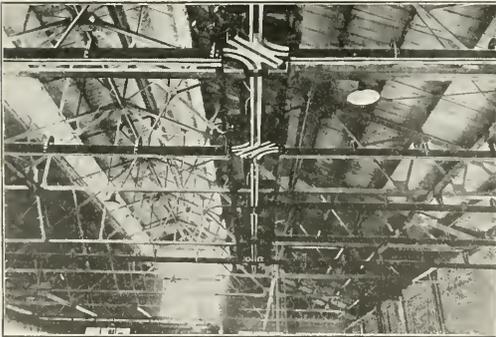


Fig. 1—View of Overhead Trolley System With Universal Switches

from one building to another, can be done without intermediate supports by using a heavier section of channel.

The short-turn trolley system consists of the standard channels, 90-degree right switches, 90-degree left switches, 45-degree right switches, 45-degree left switches, and the universal switches. Each corner and switch connection is interchangeable so that at any time in the future a right corner can be removed and a double switch or universal switch bolted in the same place. The design and exceptional compactness of the short-turn universal switch gives much greater switching facilities and covers much greater space than any other switch.

All of the short-turn corners and switches have a track curvature of 18 in., practically turning the load at right angles. This is especially adaptable in foundries for serving

a row of brass furnaces or machines close to the wall without losing valuable space by long sweeping curves. It is also a good feature in freight houses and terminals. This short-turn system can be extended out of the warehouse and along the receiving platform so as to load goods directly into an open freight car or automobile truck. The system can also be readily wired should an electric hoist be desired in place of chain falls. The track is built and shipped and can be erected in single units, thus greatly reducing the cost of erection.

Special 2-wheel, 4-wheel, or 8-wheel trolleys are provided, the 4-wheel type being illustrated in Fig. 2. There are ball-bearing wheels *W* and guide rollers *R* which run between the toes of the channels, practically eliminating friction and making it difficult for the wheels to bind against the track when rounding the curves. Carbonized steel ball bearings

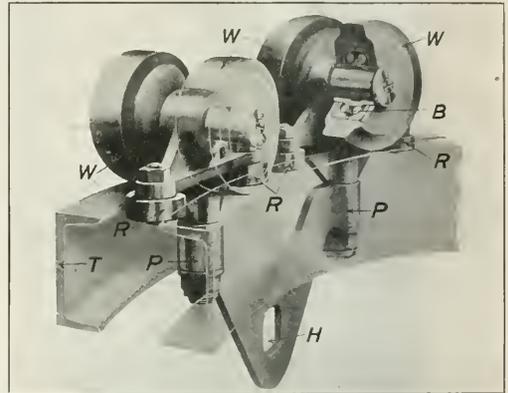


Fig. 2—Phantom View of Short Turn Trolley

are shown at *B*, pivots at *P* and the hoist connection at *H*. The trolley runs on the level top of the channel tracks and is designed to swing in 18 in. radius curves. The fact that the track is built from standard rolled channels or can be built from I-beam sections where long spans and greater strength are required, makes it easy to obtain from local stocks and easier to erect.

The operation of this system lightens the work and makes it much more easy and favorable for the men handling material, thereby decreasing labor turnover and increasing the efficiency of unskilled labor. The whole system, comprising the tracks, trolleys and switches, is so designed that it is impossible for the trolleys to run off the track or go in directions not predetermined and, therefore, causes no accidents or loss of time. This system is being manufactured and sold by the Whiting Corporation, Harvey, Ill.

THE PROPOSED TUNNEL between Staten Island and Long Island, New York harbor, was the subject, last week, of a conference in City Hall, New York, between Mayor Hylan and the presidents of the principal railroads. The mayor stated that the city desired to co-operate with the railroads. On the suggestion of Ira A. Place, vice-president of the New York Central, it was decided that each railroad company should appoint its chief engineer or some other engineering representative as a committee to confer with the chief engineer of the Board of Estimate and Apportionment, of the city, on the engineering features, and that the presidents of the roads constitute a standing committee, with whom the engineers are to confer.

# General News Department

The Cleveland, Cincinnati, Chicago & St. Louis re-employed men laid off since last February at its shops at Bellefontaine, Ohio, on July 25. The Bellefontaine shops are now running at normal capacity.

The Minneapolis, St. Paul & Sault Ste. Marie will operate the line of the Wisconsin & Northern, which it recently purchased, as a part of its Wisconsin & Peninsular division, beginning August 1.

The New York, New Haven & Hartford announces that the Railway Clerks' Union has agreed to modification of the wage schedule regarding the payment of overtime and other compensatory rates, effective as of July 1, the new schedule to remain in force pending the decision of the United States Railroad Labor Board.

The Joint Congressional Commission on Agricultural Inquiry, Sydney Anderson, of Minnesota, chairman, announces the creation of a Division of Transportation, to be in charge of D. D. Conn, Minneapolis, Minn. This Congressional Commission is to investigate and report to Congress on the cause of the present condition of agriculture and kindred questions and the Division of Transportation is to make a thorough analysis of freight rate and car service problems as they affect prices of commodities.

The Long Island Railroad has received from the United States Railroad Labor Board a decision to the effect that it must negotiate concerning rules with System Federation No. 90, affiliated with the Railway Employees' Department of the American Federation of Labor. The officers of the System Federation are all employees of the Pennsylvania Railroad. The officers of the Long Island declared they would deal only with their own employees, and the union took the case to the Labor Board.

## M. W. Painters—No Convention

The Executive Committee of the Maintenance of Way Master Painters' Association has decided to abandon the 1921 convention of that association which was to have been held at Buffalo, N. Y., on October 4. It is planned to hold the next convention in October, 1922.

## The Reid New Foundland Company

The Legislature of New Foundland, after a debate lasting three days, has adopted a law under which the Reid New Foundland Company is to continue to operate its railroad, the Colony assuming the burden of losses up to \$1,500,000 yearly.

## The "Pageant of Progress"

The advancement in railroad transportation is depicted in a number of exhibits at the Pageant of Progress at Chicago. The New York Central exhibits the locomotives De Witt Clinton and "999," as noted in the *Railway Age* of July 30. The Chicago & North Western is exhibiting the "Pioneer" which drew the first train out of Chicago in 1848. This road also shows its latest type of superheater locomotive. Other equipment shown includes a fishery service car for the stocking of interior lakes and streams and a mine rescue car with complete equipment and personnel.

## Train Robbery Near Altoona

Westbound express train No. 23 of the Pennsylvania Railroad, the Manhattan Limited, was boarded by four robbers a short distance west of Gallitzin, Pa., on the morning of July 30, about 2 o'clock, and the seven clerks in the mail car were intimidated

with pistols, and one of them was wounded. The robbers threw off, or carried off, one or two bags, and escaped. When their job was done, two of them crawled into the locomotive cab and ordered the engine man to stop. It does not appear that the amount of booty obtained was large. It is thought that the robbers boarded the train when it was stopped, after passing through the tunnel, for the helping engine to be detached.

## A Successful Campaign Against Loss and Damage

The Freight Service Committee of the St. Paul Association of Commerce is co-operating with the railroads in an effort to curtail freight loss and damage claims by carrying out an educational campaign under the slogan of "Perfect Package Week." The campaign has been a decided success and the tabulated figures for the week from June 6 to 11 have been brought to the attention of the American Railway Express Company, which, as a result, plans a national campaign. During the campaign all shipments that were received by the freight and express companies not properly packed and marked were rejected and sent back to the shipper with instructions to remedy the shortcoming. A strict account of such rejections was made and results tabulated. Out of a total of 26,041 freight shipments during the week there were 503 rejections or 1.92 per cent, and of 22,248 express shipments only 103 were rejected or 0.46 per cent. Many potential claims were eliminated from the count, however, by the traffic department's instructions, issued to all shippers just prior to the campaign.

## Consolidation of Express Companies

The Canadian National Express Company, operating on the Government railways, and the Canadian Express Company, operating on the Grand Trunk, announce that, beginning on September 1, the operation of the two companies will be consolidated, and the combined business will be continued thereafter under the name of the Canadian National Express Company. John Pullen, heretofore president of the Canadian, will be president of the new company, and W. C. Muir, heretofore general manager of the Canadian National, will be vice-president and general manager. The new company will operate on 22,000 miles of railway and will have an extensive organization in Europe. The two express companies, operating as units, had a combined annual gross revenue of \$12,000,000 and did business at nearly 3,500 established agencies. With the unified service the supply of ventilated cars, refrigerators, horse stable cars and steamheated cars will be more readily available, and the vehicle service in the cities and larger towns, being consolidated, will respond more readily to calls from the public.

## Study of Wood Seasoning

The Forest Products Laboratory, Madison, Wis., in co-operation with saw-mills and wood utilization plants throughout the country, is organizing an extensive field study of the air seasoning of wood. The purpose is to determine the piling practice which will result in the fastest drying rates consistent with the least depreciation of stock, the least amount of yard space required and the least handling costs. All the important commercial woods of the United States will receive consideration. The study of both hard and soft woods will be carried on concurrently. This investigation will furnish a comparison of the effects of such piling variables as the spacings of boards in layers, the height of pile foundations, and the directions of piling with relation to prevailing winds and yard alleys. It is expected that the study will determine whether lumber should be dried partly at the mill and partly at the plant of utilization or whether it should be dried completely at the mill. Data collected is expected also to show whether air seasoning or kiln drying is more economical.

### Southern Pacific Reduces Rate on Apples

The Southern Pacific announces that on apple shipments from California points to eastern territory, with a minimum carload weight of 30,000 lbs., not subject to storage in transit, the rate is now \$1.50 per cwt., where the old rate was \$1.66½. With storage in transit privileges, shipments of like weight will cost \$1.60, where the old rate was \$1.75½. New rates on beans, canned goods, dried fruit, etc., from California to eastern territory will go into effect on August 22. The company will also place in effect on August 3 a new rate on imported shipments of flax, hemp, jute and other fibres, vegetable oil, nut oil, whale oil, seed oil and other oils, butter and dressed poultry, through Pacific Coast ports to points east of Chicago and north of the Ohio river.

### Grain Rates Reduced in East

Traffic executives of eastern roads have announced a reduction of 5 cents per 100 lb. in export rates on wheat, corn and rye from Buffalo, Erie and Fairport to eastern export points. A reduction of 3 cents in export rates on barley and oats was agreed upon at the same time. The reduction in wheat, corn and rye rates amounts to about 25 per cent. Following are the present export rates from lake points to New York: wheat, 20.17 cents; corn and rye, 19.79 cents; oats, 19.63 cents; barley, 20.08 cents per hundred pounds. The roads will preserve the usual port differentials. An adjustment of rates from central to eastern territory was to be given further consideration at a conference to be held in Chicago this week. It is stated that the heavy reductions now made in grain export rates are not justified on the basis of the cost of transportation service, but in deference to demand from grain shippers for concessions in the rates. This year's export grain movement under existing rates exceeded the export movement of the past three years.

### Safety Section—Operating Division, A. R. A.

A Safety Section, of the Operating Division, was established by the board of directors of the American Railway Association at a meeting in Chicago on July 27. The first annual meeting of the new section has been set for Monday, September 26, at Boston, Mass. This date and place were selected because of the fact that the Tenth Annual Congress of the National Safety Council will convene there on September 27. The temporary officers of the new Section are: E. M. Switzer (C. B. & Q.), chairman; John T. Broderick (B. & O.), first vice-chairman, and Isaiah Hale (A. T. & S. F.), second vice-chairman.

The temporary committee of direction consists of the foregoing and R. C. Richards (C. & N. W.); F. M. Metcalfe (N. P.); C. H. Blakemore (N. & W.); A. O. Ridgway (D. & R. G.); H. A. Adams (U. P.); M. A. Dow (N. Y. C.); H. M. Mayo (S. P.); and T. H. Carrow (Penn.). The other committees which have been formed, with the names of the chairmen, are as follows: On publicity and education, Isaiah Hale; on prevention of grade crossing accidents, J. T. Broderick; on nominations, L. F. Shedd; on arrangements, F. W. Mitchell (N. Y., N. H. & H., New Haven, Conn.).

### Food Cost of Living Shows Slight Increase

From figures compiled in 10 cities, the Bureau of Labor Statistics reports slight increases in the retail price of food in all but one of the cities during the month ending July 15. In Detroit there was an increase of 7 per cent; in Peoria and Providence, 5 per cent; in Manchester and New Haven, 4 per cent; in Mobile and Savannah, 3 per cent; and in Atlanta and Richmond, 1 per cent. In Little Rock there was a decrease of one-tenth of 1 per cent.

For the year period, July 15, 1920, to July 15, 1921, there was a decrease of 30 per cent in Providence and Richmond; 31 per cent in Little Rock; 32 per cent in Savannah; 33 per cent in Atlanta and New Haven; 34 per cent in Manchester and Peoria; and 35 per cent in Detroit and Mobile.

As compared with July 15, 1913, the retail cost of food on July 15, 1921, showed an increase of 42 per cent in Little Rock; 45 per cent in Atlanta; 46 per cent in New Haven; 51 per cent in Manchester; 55 per cent in Detroit; 56 per cent in Richmond; and 57 per cent in Providence. Prices were not obtained by

the Bureau of Labor Statistics from Mobile, Peoria or Savannah in 1913, hence no comparison for the 8-year period can be given for these three cities.

### Steel Passenger Cars for the Northern Pacific

Sixty-two passenger cars are being rebuilt by the Pullman Company for the Northern Pacific which will be used on trains Nos. 1 and 2 running between St. Paul and Seattle. A part of the order has been delivered to the railroad company and when completed will consist of 22 coaches, 12 diners, 11 dynamo baggage cars, 12 baggage cars and five mail and express cars. Three business cars are also being rebuilt in similar manner. All of the equipment used on these trains will then be steel. The cars are similar to the latest design of Pullman cars and are built of wood with steel underframes and ends and ½ inch steel sheathing. The trucks were reinforced to carry the added weight. The advantages ascribed to this type of construction over the all-steel construction are that they are less noisy, are warmer in winter and cooler in summer and more resilient in case of impact. The head end system of lighting with power supplied by a steam turbine driven generator, located in the baggage car, is used on these trains. New switch panels were added to the cars, but the lighting fixtures were not changed. Storage batteries will be used on each car, excepting coaches and straight baggage cars.

### Urges Co-operation With American Railway Express

F. C. Fox, general manager of the eastern lines of the Atchison, Topeka & Santa Fe, has recently issued an interesting circular to officers and employees of the road, urging co-operation with the American Railway Express Company. Mr. Fox states, in part: "Since September 1, 1920, the express business on this road has been conducted by the American Express Company under a contract materially different from any heretofore existing. The present agreement, providing, as it does, for the payment to the railway company of a certain proportion of the net express income, gives our line a greater interest than ever before in the efficient and economical operation of the express business. The maximum benefit from this arrangement can be obtained only through the heartiest co-operation between officials and employees of the express and railway companies on all matters of mutual interest, thus holding to our road, through superior service and facilities, the maximum volume of express traffic, and by personal interest in its safe, economic and prompt handling and movement, keeping the expense down to a minimum.

"With the thought clearly in the mind of every one of our people that the express business is not a side issue, but is an important part of the railway company's operations, and that the express company's interests are the railway company's interests, substantial progress will be made toward increasing the express company's net earnings, with consequent benefit to our own company. I therefore want to appeal to all of you to personally interest yourselves in the handling of the express, taking the same interest in this traffic that you would in the case of freight or passenger business to the end that our line will receive the greatest possible net return from the express business."

### Illinois Central Continues Series of Public Statements

The results which the Illinois Central has secured from the series of monthly public statements which have been published during the past year in the newspapers along its lines, have been such as to justify the continuance of the policy, and the advertisements will continue to appear during the next twelve months. In the final statement of the current series, C. H. Markham, president of the company, said in part:

"We believe the railway problems of the United States require the best and most constructive thought of all the public—farmers, business men, professional men and railway men working in harmony. The railroads are ruled by public opinion. If public thought on railway questions is unprogressive, the railroads cannot make progress, which means that they will not be enabled to meet the constantly increasing demands of public service.

"The public is not entirely to blame for such unsatisfactory railway conditions as have obtained in the past. We believe the reticence of railway men themselves, in failing to keep the public

well informed, has been one of the causes of the growth of restrictive legislation, of unprogressive regulation and of an anti-railway spirit, which have worked a hardship upon railway development, and consequently upon the public itself.

"That our discussions have contributed to a better understanding of railway problems on the part of the public served by the Illinois Central System is evidenced to us in many ways. Not only have our patrons helped us in their hearty support of many problems which we have presented to them, giving us their hearty support and co-operation in carrying out our programs for better service, but the better mutual understanding which has been awakened—a better understanding on our part of our patrons' problems and a better understanding on their part of ours—has been reflected in generally improved service. Our discussions have also been a means of perfecting within our organization that spirit of loyalty and service which always has characterized the Illinois Central System."

## U. S. Chamber of Commerce

### Names Transportation Committee

Appointment of two committees to deal with transportation is announced by the Chamber of Commerce of the United States. A departmental committee for the department of transportation and communication will consider problems relating to the general field of transportation and communication, and there is a special railroad committee.

The chairman of the departmental committee is Howard Elliott, chairman of the board of the Northern Pacific Railroad, and member of the chamber's board of directors. Other members are: Vice-chairman—Lewis B. Stillwell, Lakewood, N. J., a consulting engineer and also a chamber director; Utilities—Edwin O. Edgerton, San Francisco, ex-chairman of the California Railroad Commission; Railroads—George A. Post, New York, president of the Hudson River Bridge Corporation, and W. W. Salmon, Rochester, president of the General Railway Signal Company; Marine—H. H. Raymond, New York City, president of the Clyde Line; J. M. Whitsitt, Charleston, S. C., president The Carolina Company; Highways—A. J. Brosseau, New York, president of the International Motor Company; Electric Railways—Philip H. Gadsden, Philadelphia, vice-president United Gas Improvement Company; Waterways—Douglas Fiske, Minneapolis, Lawyer; Port Terminals—B. F. Cresson, Jr., New York City, Chief Engineer, Port of New York; Communications—John J. Carty, New York, vice-president American Telephone and Telegraph Company; Postal—Lucius Teter, Chicago, president Chicago Trust Company.

George A. Post is chairman of the special railroad committee and the other members are: Railroad Executive, T. C. Powell, New York, vice-president Erie R. R. Company; Banker—Harry A. Wheeler, Chicago, vice-president Union Trust Company; Merchant—George W. Simmons, St. Louis, president Simmons Hardware Company; Railway Equipment—Wilmer W. Salmon, Rochester, president General Railway Signal Company; Railroad Administration—A. W. Smith, Washington, General Counsel U. S. Railroad Administration; Transportation Economist, Emory R. Johnson, Philadelphia, Dean, Wharton School, University of Pennsylvania; Transportation Engineer—Charles E. Lee, East Orange; Lawyer—F. C. Dillard, Sherman, Texas; Rail and Water Transport—Walter S. Dickey, Kansas City, president Kansas City and Missouri River Navigation Company.

The chamber's transportation department was organized recently with J. Rowland Bibbins as its manager. The department will deal with transportation in all its forms. In its work it will take up the following:

1. Railroads—Further study of financial resources, consolidation and efficiency, with the object of making them self-sustaining, with adequate service to the public.

2. Marine Transportation, both Lake and Ocean—The problems of the American merchant marine and proper relation to foreign competition.

3. Terminals and Ports—Intensive study of operating technique to secure a more efficient trans-shipment machine.

4. Electric Railways—The fare situation and ways and means for securing a self-supporting agency of essential public service.

5. Highways—Economic analysis of the problem of highway transport in relation to other agencies, and the proper public subsidy therefor.

6. Waterways—Economic analysis showing the true position of waterways as a natural resource, as yet largely undeveloped.

7. Communications—Encouragement of adequate development for needs of business, especially in connection with foreign countries.

8. Postal and Express—The problem of transportation of the mails upon an economic basis, as affects both shippers and carriers.

9. Air Transport—The codification of laws and regulations to promote safety and encourage aeronautical development with the maximum rapidity.

## Conferences with "Big Four" Brotherhoods

A few weeks ago the heads of the train service brotherhoods joined in a communication to Chairman Cuyler of the Association of Railway Executives making certain demands upon the railways; in substance that the railways should restore the wages of train service employees to the rates which they were receiving prior to July 1; that they should agree to seek no further reductions in wages; and should desist from asking for abolition of time and a half for overtime in freight train service.

The matter was referred to the railways of the various territorial groups. The Southeastern lines have adopted resolutions indicating that they will not comply with the demands, but will appoint a committee of railway officers to meet with the brotherhood officers and discuss matters of mutual concern if the brotherhood leaders desire.

The executives of the Western lines met in Chicago on Tuesday and took similar action.

The Eastern lines, speaking through a committee of four, at a conference in New York on Wednesday of this week, told the labor leaders that the whole question would be referred to the whole Eastern Presidents' Conference, which it is expected will take action next week. After Wednesday's conference, E. E. Loomis, president of the Lehigh Valley, issued a statement on behalf of the railroads, saying:

"The union chiefs in seeking the meeting said it was their desire to ascertain: (1) If the operating officials of the railroads will restore the wage rates in effect on June 30, 1921; (2) if all demands for further decreases will be withdrawn; (3) if all demands for the elimination of time and one-half for overtime and radical schedule revision will be withdrawn and not again pressed for a stated period.

"The railroad executives pointed out that to grant the request of the brotherhood heads would mean an increase in wages of approximately twelve and one-half per cent at a time when all other wages are coming down; would assume that no further decreases are or will be warranted by reductions in the cost of living, and would take the question of time and one-half for overtime out of the hands of the Labor Board, where it is now under discussion, and violate every agreement the men now have with their respective roads, each of which has a terminating or revision clause.

"After hearing the arguments presented by the labor men, the railroad officials said they would make a report to the Eastern Presidents' Conference, which will take final action."

Representing the companies, besides Mr. Loomis, were W. W. Atterbury, vice-president of the Pennsylvania System; E. N. Brown, president of the Pere Marquette, and Percy R. Todd, president of the Bangor & Aroostook.

For the employees there were Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Engineers, L. E. Sheppard, president of the Order of Railroad Conductors; W. G. Lee, president of the Brotherhood of Railway Trainmen and T. C. Cashen, president of the Switchmen's Union of North America.

## Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION—F. M. Nellis, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS—F. A. Pentous, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF ENGINEERS—C. E. Drayer, 29 S. La Salle St., E. I. R. R., 332 South Michigan Ave., Chicago.

- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. Co., 13 Liberty St., New York. Annual meeting, November 21 and 22, Carolina Hotel, Pinhurst, N. C.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 3, Atlantic City. Exhibits this year will be omitted.
- AMERICAN RAILROAD MASTER FITNERS' COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—N. Borchardt, 202 North Hamlin Ave., Chicago, Ill. Next convention September 12-14, Hotel Sherman, Chicago.
- AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, 1921.
- Division I—Operating.  
Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.  
Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.  
Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association), J. C. Caviston, 75 Church St., New York, N. Y.  
Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y.
- Division II—Construction and Maintenance Section. E. H. Fritch, Electrical Section. E. H. Fritch.  
Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y.
- Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Meeting postponed indefinitely.  
Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. F. Murphy, General Storekeeper, Atal, Collinswood, Ohio.
- Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 119 Valley Ave., Austin Station, Chicago. Next convention, October 18-20, 1921, Hotel Sherman, Chicago. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November, 1921, Chicago.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Market St., Chicago. Next convention, Chicago, which was to have been held August 9-11, Hotel Sherman, Chicago, has been postponed. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittlesley, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio. Next convention, September 19-24, Indianapolis, Ind.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York City. Regular meetings, 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next annual meeting, May 19, 1922, Montreal.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next convention, October 18-21, 1921, Hotel Erie, St. Louis, Mo. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.
- ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clieky, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division 2.)
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morris Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koneke, St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January. March, May and September. Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill. Convention this year has been postponed.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.
- CINCINNATI RAILWAY CLUB.—W. C. Cooper, Union Central Bldg., Cincinnati, Ohio.
- EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.
- FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division 7.)
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, which was to have been held August 16-18, 1921, Hotel Sherman, Chicago, has been postponed. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—International Railroad Master Blacksmiths' Association. Meeting with International Railway Fuel Association.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Wabasha, Minn. Next convention, which was to have been held September 12-15, Hotel Sherman, Chicago, has been postponed.
- MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, which was to have been held October 4-6, 1921, at Buffalo, N. Y., has been canceled.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division 5.)
- MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division 5.)
- NATIONAL ASSOCIATION OF RAILWAY TOOL PRODUCERS.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis.
- NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, October 11, Atlanta.
- NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.
- NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Peoples' Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.
- NEW ENGLAND RAILWAY CLUB.—W. E. Cade, Jr., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting, 2d Thursday in month, alternately in San Francisco and Oakland.
- RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.
- RAILWAY ASSOCIATION.—FRANK W. NIXON, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.
- RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August. American Club House, Pittsburgh, Pa.
- RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
- RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.
- RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 18-20, Hotel Sherman, Chicago.
- RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.
- RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division 4, Signal Section.)
- RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division 5.)
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Auditorium Hotel, Chicago. Exhibit by Track Supply Association.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meeting, 2d Friday in month, except June, July and August.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwith, West-eth Ry. of Ala., Atlanta, Ga.
- SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thibin, 935 Peoples' Gas Bldg., Chicago.
- TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Kemano Iron Works, Hilburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Business meeting, September 6, Hotel Sherman, Chicago. Exhibit this year by Railway Equipment Manufacturers' Association has been canceled.
- WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Meeting third Monday each month except June, July and August.

## Traffic News

The Department of Agriculture announces that 598,524 carload shipments of fruits and vegetables have been made this season up to July 2 or nearly twice as great as during the corresponding period of last year when 315,597 such shipments were made.

The Detroit, Toledo & Ironton, owned by the Ford interests, has filed with the Interstate Commerce Commission tariffs providing for a reduction in the rates on coal, coke, grain and grain products amounting to about 20 per cent, similar to the intrastate tariffs already filed with the state authorities.

The Chicago, Rock Island & Pacific to date has moved 9,000 carloads of cantaloupes from California as compared with 7,000 carloads for the corresponding period in 1920. The movement, which schedules 153-hour shipments from Branley in the Imperial Valley to Chicago, goes by way of the Southern Pacific, El Paso & Southwestern and the Rock Island. The season's crops started to the market in the latter part of May.

The Detroit, Toledo, & Ironton has been operating with its commercial agents and freight solicitors working from the central office since July 1. When the road came under the Ford management, about 30 of these officers were stationed about the country. All of these men have been called in and attached to the traffic department headquarters, with a view to giving service to the shipper and to work on special assignments.

More citrus fruit, with the exception of lemons, has been shipped from California and Florida so far this season than during the corresponding season last year, according to official reports received by the Department of Agriculture. Of oranges, 40,700 carloads were shipped in 1920, as compared with 48,732 in 1921; grape fruit, 9,261 cars in 1920, and 10,490 in 1921; lemons, 6,600 cars from California in 1920, as compared with 5,516 in 1921.

The Governor and other officers of the state of Alabama propose to resist with every available resource the execution in Alabama of the recent order of the Interstate Commerce Commission directing the Southern, the Alabama Great Southern and the Mobile & Ohio to increase certain freight rates between points within the state of Alabama to a parity with rates in effect between Meridian, Miss., and points in Alabama.

Southern roads appearing before Examiner John H. McQuilgan at St. Louis, Mo., asked for a revision of certain rates between St. Louis and New Orleans, La., declaring that the fixing of rates with river traffic as a basis was unfair because freight competition on the Mississippi river actually does not exist. The attention of the examiner was called to the serious handicap of roads which parallel the river as compared to those which run from the river to interior points.

At a state marketing conference held at St. Paul, Minn., on July 21, railroad officers told state officials and live stock men that it was impossible for the railroads to undertake to regulate the flow of live stock to market by changing train schedules. They suggested a campaign of education among shippers in order to get them to regulate the movement of stock themselves and declared that the railroads are compelled to handle all classes of merchandise on their lines and that it would be unfair to make special schedules favoring live stock men.

The Public Service Commission of New York has issued an order, to go into effect on August 1, requiring a general and sweeping reduction by the principal railroads of the state in the freight rates on peaches, in carloads, said to be equal to the increase which was made in these rates when the Interstate Commerce Commission authorized general advances last year. Shippers of peaches have declared that their business was in danger of destruction because of the high rates, and this claim appears to have had weight with the commission.

## Commission and Court News

### Interstate Commerce Commission

The commission has reopened the Indiana intrastate rate case, insofar as it applies to rates on water in carloads, for such further hearing as the commission may hereafter direct.

The commission has reopened the Nebraska intrastate rate case, insofar as it applies to rates on sand and gravel in carloads, for such further hearing as the commission may direct.

The commission has suspended, from July 30 until November 27, the proposed advances in rates on woolen yarn from Skowhegan, Me., to Boston, North Andover and Lawrence, Mass., and other points in New England and Trunk Line territory.

The commission has denied the application of R. H. Countiss, agent, for authority to establish rates on dried beans, canned goods, canned salmon, dried fruits and vegetables, condensed milk, rice and other commodities from Pacific coast points to certain points in eastern territory without observing the long-and-short-haul provision of the law.

Commissioner Charles C. McChord is chairman of a joint committee composed of three members of the Interstate Commerce Commission and members of the United States Shipping Board to cooperate in overlapping duties of the board and the commission due to amendments to the Interstate Commerce Act and the passage of the Merchant Marine Act. The two statutes are to be administered with the least possible crossing of paths.

The joint committee is at present considering the question of a uniform through export bill of lading. Members of the committee, in addition to Mr. McChord, are commissioners Hall and Esch, representing the I. C. C., and commissioners Edward C. Plummer, Frederick J. Thompson, and Meyer Lissner, representing the shipping board.

### Court News

#### Connecting Carrier Cannot Recover from Consignor Freight for Shipment Misrouted by Initial Carrier

A consignor and receiving carrier entered into a contract to carry a car of perishable fruit to Syracuse, N. Y., but before the goods started the contract was rescinded and a new bill of lading issued with destination Nashville, Tenn. By mistake the receiving carrier acted on the abrogated contract, sending the fruit to Syracuse. The federal district court for the Southern District of Georgia holds that the connecting carrier which carried the fruit to Syracuse could not recover freight for that service. The receiving carrier having misrouted the shipment, "it was without authority from the shipper to contract with a connecting carrier in aid of a wrongful diversion, and neither it nor its connecting carrier can lawfully charge freight to the shipper for such wrongful diversion. The connecting carrier's remedy for its freight charges is against the initial carrier, and not against the shipper, with whom it had no privity of character."—D. L. & W. Co. v. Johnson-Brown Co., 270 Fed. 679.

#### Bill of Lading. Notify Consignee, Does Not Require Notice of Right to Inspect

The Circuit Court of Appeals, Second Circuit, holds that a bill of lading for a carload shipment to the order of the consignor, notify consignee, does not require the carrier in its notice to advise the consignee of a right of inspection given by the bill of lading, in addition to stating the fact of arrival of the goods. The car having been destroyed by fire on a siding at destination, the point contested was whether under the bill of lading the railroad was liable as insurer or as warehouseman, and that depended on whether notice of arrival was given to the consignee more than 48 hours before the fire. Judgment for the plaintiff shipper was reversed.—Director General v. Lewis E. Sands Co., 271 Fed. 85.

## Foreign Railway News

### Poland Gets Rolling Stock from Soviet Russia

In compliance with the treaty of Riga, the Soviet government has delivered to Poland 155 locomotives, 435 passenger cars and 8,859 freight cars, according to Commerce Reports. The freight cars are said to be in fairly good condition.

### Railway Accidents in France

LONDON.

The following table gives some statistics of accidents in France during the past few years. The table has been compiled by the Temps (Paris) in order to reassure the nervous public of France:

Year	Total number of accidents	Killed	Injured
1912.....	209	50	754
1913.....	142	60	413
1919.....	167	271	1,064
1920.....	142	122	1,184
1921 (up to July 15).....	43	54	238

### French Train Robbers Apprehended

The bandits who robbed a Paris-Marseilles express train on the night of July 24 (*Railway Age*, July 30, page 223) were apprehended in a Paris café on July 30, according to a cable dispatch to the New York Times. Two of the robbers were killed in an attempt to escape their captors and one policeman was mortally wounded in the mêlée. The third bandit who had been captured several hours before had informed the police where the others were to be found. This robbery in which one passenger was killed and two wounded was one of a series of spectacular train robberies which have occurred in France recently.

### French Railway Places Order with Westinghouse

An order for electrical equipment amounting to \$1,200,000 has been received by the Westinghouse Electric International Company from the Midi Railway of France. The order includes transformers, synchronous condensers, lightning arresters and other substation equipment. The Midi Railway operates an extensive system, starting from Bordeaux, running through Toulouse to Cette, with many branches. The section on which the Westinghouse equipment will be used extends from Pau to Toulouse in the Pyrenees mountains, near the Spanish border. The line passes through Tarbes and St. Gaudens, and has a total length of over 100 miles.

### Mexican Northwestern to Reopen Line to Chihuahua

The Mexican Northwestern expects to have through connections established over its line from Ciudad Juarez to Chihuahua City by September 1, 1921, according to Vice Consul Harper at Ciudad Juarez. This will put into operation a portion of their lines between Madera and Temosachic that has not been operated since 1916. The establishing of another connection between Juarez and Chihuahua will open a new trade territory for both cities since the re-establishment of traffic in the Madera territory will have its influence on mining, agricultural, and other enterprises. Some of the mining companies are already planning to open up properties that have not been operated for the past five or six years. One mining corporation has recently completed a new power plant in Madera which is to furnish power for its mines located some 25 miles from that city.

### Merger Adds to Power

#### of German Locomotive Builders

Another great merger in the German metal trades has just taken place, according to the Times (London) Trade Supplement. The Rheinische Metallwaren-und Maschinenfabrik at Duesseldorf has combined with the Allgemeine Elektrizitaets Gesellschaft, the Friedrich Krupp Allgemeine Gesellschaft and the Cologne iron trading firm of Otto Wolff, and has increased its share capital by 95,000,000 marks to 120,000,000 marks (\$30,000,000 par).

By this combination the "Rheinmetall" concern will rank among the leading locomotive plants of the world, its output capacity being 350 engines, and that of the whole group about 1,200 engines. In connection with the Allgemeine Elektrizitaets Gesellschaft, increased attention will be devoted to the manufacture of electrical supplies. Krupp's and Wolff will chiefly supply raw and semi-finished products and place their extensive foreign sales organization at the disposal of the concern. It has already been decided to make a further increase in capital of 50,000,000 marks (\$12,500,000 at par) for reconstruction of plant.

It is said also that there is a movement on foot to establish a syndicate of rail manufacturers to support German interests against foreign competition. A concern at Chemnitz has increased its capital by some \$7,500,000 (par) and will greatly increase its output of locomotives. This concern, it is said, recently secured an order for 500 engines from Japan.

### English Road Facilitates Examinations of Employees

The Lancashire & Yorkshire Railway has issued a book of questions and answers relative to the rules and regulations governing the operating department which is designed to facilitate the work of the examiners and to insure a careful examination of employees seeking appointment or promotion. The book is divided into sections containing questions and answers concerning the following topics:

1. Manual Block System—Double Tracked Lines.
2. Electric Train Tablet System—Single Tracked Lines.
3. Regulations Affecting Signalmen.
4. Regulations Affecting Guards (Trainmen).
5. A Double-Tracked Line Operated as Single Track Because of Obstruction.
6. Safe Operation of Trains in General.
7. Fog Signaling.

### Purchase of Railway Supplies Exclusively in Britain Causes Dissent in India

The most important step taken by the government of India to relieve the acute congestion on the government railways has been the placing of a \$35,000,000 bond issue in England, according to a Calcutta correspondent of the Brooklyn Eagle. The proceeds of this issue, says the dispatch, are to be spent entirely for British goods and this policy is said to have evoked the following letter to the government from the Indian Merchants' Chamber of Bombay: "We would like to know how long the tragedy of purchasing railway materials for India only in the United Kingdom is to go on. Even English corporations and the governments of self-governing dominions have placed orders in foreign markets on advantageous terms, whereas India alone is fleeced in the interests of English manufacturers. My committee does not see the advantage to this country of borrowing at heavy rates in the United Kingdom, putting the burden of interest and capital charges on India and feeding English manufacturers with orders out of such money. My committee suggests that the materials for India must be purchased in India by competitive tenders, open to every nation of the world, and the lowest price tenders alone should be accepted. According to my committee's belief, a saving of at least 30 to 40 per cent would be effected by adopting this procedure."

### Road Transport and the English Railways

LONDON.

Road transport in England since the war has grown by leaps and bounds, due primarily to the large number of motor trucks which were made available for commercial purposes by the cessation of hostilities. It has cut into the earnings of the railways to such an extent that now, on the eve of the railways being returned to their owners, the railway companies are seeking to have included in the railway bill, now before Parliament, provisions whereby they will be enabled to transport freight and passengers by road as well as by rail. Arthur Watson, joint manager of the London & North Western and the Lancashire & Yorkshire, stated the railways' case quite clearly in an interview appearing in the Evening Standard (London) recently.

"Obviously a railway bill which does not deal with the ques-

tion of road transport for railways is not complete," he declared. "With the advance of mechanical science during the war, road transport agencies came into existence; they diverted the traffic—the best paying traffic—from the railways, and we feel that we ought to be in a position, so far as we can, to deal with that traffic which has been so diverted.

"As things stand at present we can only transport by road for collection and delivery purposes. Now we are seeking powers to carry by road, even though the goods do not travel on the railway at all.

"We are also seeking powers to carry passengers by road, but it is goods we have in our minds chiefly.

"What the railway companies want to make clear is that what they are seeking is not a monopoly of road transport. Their idea would be in practice to set up conferences, as is done in the railway world, with the other road transport haulers and get the rates to be charged by road agreed among them."

### Germans Get Preferential Tariff Rate By Shipping from Belgium

LONDON.

The 20 per cent rebate on customs duties accorded to Belgium by Brazil seems to have given an opening to German exporters, who have quickly seized the opportunity by negotiating with Belgian merchants for the shipment of the goods to Brazil in order to enjoy the preference. According to the Rio representative of the Federation of British Industries, the Brazilian Minister at Brussels has cabled to the government to the effect that German manufacturers have been shipping goods from Antwerp to Brazil. Both Germany and Belgium are dealing largely with Brazil in iron goods, rails, locomotives, and so forth. The Brazilian government has instructed its consuls in Belgian ports that all goods exported to Brazil must be accompanied by a declaration from the burgomaster of the town of manufacture declaring the origin of the goods.

### English Road Uses Attractive Publication to Build Up Suburban Traffic

The Metropolitan Railway, which has extensive suburban lines in and around London, has issued an attractive booklet of some 90 pages descriptive of the various suburban communities served by its lines. The book, which is called "Metro-land," is printed on gloss paper of excellent quality and is profusely illustrated with maps and photographs, a number of which are in color. Each of the communities served by the company's lines is dealt with separately, giving interesting bits of history of the towns and villages, the places of interest in them, the number of their inhabitants, the physical characteristics of the communities, the principal industries and the distance from the company's Baker street terminus in London.

One section of the book is labeled "Country Homes in Metro-land" and in it the various real estate developments in progress along the company's lines are described. Here the prospective home owner can find the cost of land, some idea of building costs and suggestions as to the monthly payments necessary to acquire residential property. The company's service even extends further than that. It will furnish definite information as to plans, cost and monthly payments to those who apply on the following coupon, which can be clipped, filled out and mailed:

Please send me further details of the ..... Estate.  
 I require  
 No. of Bedrooms.....  
 No. of Reception Rooms.....  
 Extent of Ground.....  
 Maximum Price to be Paid.....  
 Amount Available as Deposit.....  
 Name.....  
 Address.....

A supplementary publication deals with house plans and gives the reader an idea of the cost of various types of houses. A number of advertisements appear in the publications—for the most part those of real estate agents and country hotels—a fact which doubtless has materially lessened the cost to the railway and at the same time has permitted the publication of a book of much greater interest and value than would have been otherwise possible.

### European Design of Automatic Coupler

The adoption of automatic car couplers in Europe was retarded by the war, but is now again receiving attention. Since 1914 the Iron & Steel Works, Schaffhausen, Switzerland, has been manufacturing the GF automatic coupler, which couples the cars by impact and also makes connections between the brake pipes. It is now in use in Switzerland on broad gage lines, light railways and street railways and has been applied in other countries.

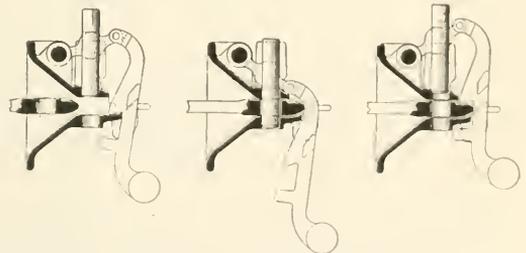
The GF coupler consists of two similar coupling heads, one of which is attached to each end of the car. The head is in the form of a funnel shaped casting with a coupling eye, in the



•The G F Coupler Head with Brake Pipe Connection

form, protruding from the funnel and provided with a hole near the front of the projection. At the back of the funnel is a bolt which can be set in a raised position. On impact the latch is released by the projecting coupling eye of the opposite head, thus making the coupling. This operation is plainly shown in the drawing. In uncoupling, the handles, shown in the photograph on each side of the head, are raised. In this position the cars can be detached after which the coupling heads resume their normal position, ready for coupling.

As the GF automatic coupler can be fitted to any kind of rail-



Positions of the Mechanism Ready to Couple, Coupled and Set to Uncouple

way vehicle, it is constructed in various ways. Working conditions on all narrow gage railways can be suited so that coupling can take place on any degree of curve. The device is fitted to two-axle cars by cross buffer rods, or scissors. The rods are supplied with springs to meet the forces of traction and impact and are kept in their central position by special centering springs. On four-axle cars the coupler is either attached directly to the truck or attached by a pivot to the underframe of the car and guided from the truck to conform to the curves of the track. A transition coupling rod is used to connect cars provided with the GF coupler with cars still fitted with couplings of the old system.

## Equipment and Supplies

### D. L. & W. Electrification Bids Rejected

All bids for supplying electrical equipment for the Delaware, Lackawanna & Western's proposed electrification of some of its mileage in the Scranton, Pa., district have been rejected. July 29 was the last day upon which bids could be submitted. They were opened immediately and it was found that all were unsatisfactory. Gibbs & Hill, consulting engineers for the Lackawanna, who received the bids, may advertise for new offers soon. The General Electric Company and Westinghouse Electric & Manufacturing Company were the only two companies that submitted bids for furnishing the heavier equipment.

### Locomotives

THE DELAWARE, LACKAWANNA & WESTERN will receive bids until 12 o'clock noon, August 10, through Gibbs & Hill, Consulting Engineers, New York City, for 7 electric freight locomotives. See item above regarding rejection of bids for electrification on part of this road.

MTSUI & Co., New York, have ordered specialties for 6 De-capot locomotives for the South Manchurian Railway, including headlights from the Pyle-National Company; driver brake rigging from the Westinghouse Air Brake Company, and superheaters from the Superheater Company.

### Freight Cars

THE SOROCABANA RAILWAY (Brazil) is inquiring through the car builders for 50 stock cars.

THE ALABAMA, TENNESSEE & NORTHERN is inquiring for 100, 50-ton flat cars and 100, 50-ton gondola cars.

ILLINOIS CENTRAL is inquiring for prices on the repair of about 900 miscellaneous box and gondola cars.

THE MATHER HORSE & STOCK CAR COMPANY, Chicago, is inquiring for 500 steel underframes for car repairs.

THE VIRGINIAN RAILWAY is having repairs made to 150 hopper cars, of 50-ton capacity, at the shops of the Virginia Bridge & Iron Company.

THE NEW YORK CENTRAL has given a contract for the repair of 500 gondola cars, for the Pittsburgh & Lake Erie, to the Youngstown Steel Car Company. This is in addition to the repairs reported in our last issue.

THE KANSAS, OKLAHOMA & GULF is inquiring for 150, 50-ton steel frame composite gondola cars with tight bottoms; 250 steel frame composite gondola cars with 12 drop doors, and 100, 40-ton steel frame composite, tight bottom car bodies.

### Passenger Cars

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 10 dining cars and 10 buffet cars.

THE FLORIDA EAST COAST, reported in the *Railway Age* of January 7, as asking for prices on 6 passenger cars, has ordered this equipment from the Pullman Company.

THE SAO PAULO-RIO GRANDE (Brazil), reported in the *Railway Age* of May 6, as inquiring for passenger train equipment, is now inquiring through the car builders for 4 sleeping cars, 6 mail cars, 8 baggage cars, and 6 passenger coaches.

### Iron and Steel

THE EAST ST. LOUIS, COLUMBIA & WATERLOO has ordered 121 tons of plate girder spans from the American Bridge Company.

THE LEHIGH & NEW ENGLAND has given a contract to the

Shoemaker-Satterwait Bridge Company, Philadelphia, Pa., for about 275 tons of bridge steel.

MTSUI & Co., New York, have ordered 135 tons of structural steel from the Consolidated Steel Corporation for export to Japan; also have ordered 4 miles of 60-lb. rail and 9 miles of 70-lb. rail, a total of about 1,500 tons, from the same company for the Osaka Electric Railway, Japan. The order for 700 tons of 80-lb. rail for the South Manchurian Railway was given to the Consolidated Steel Corporation and not to the United States Steel Products Company as was reported in our issue of July 30.

### Miscellaneous

THE CHICAGO & NORTH WESTERN will accept bids until 12 o'clock noon, August 10, for 50 ash pans for locomotives; 50 cast steel pilots for locomotives, and 21 cast steel tender frames.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, August 11, for its present requirements on bridge parts, and structural steel for bridges, frogs, repair parts for switches, switch points, switch plates and braces and crossings.

MTSUI & Co., New York, have given an order to the United States Steel Products Company for 63 sets of tramway switches and frogs, about 100 tons, for the Tokio Municipal Railway, Japan, and have also ordered 4 sets of electric trucks from the J. G. Brill Company, for the Nankai Railway, Japan.

### Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, which was noted in the *Railway Age* of July 23 (page 184), as having authorized the construction of an addition to its power house at Albuquerque, N. M., to cost about \$150,000, closed bids for this work on July 30.

CHICAGO GREAT WESTERN.—This company has awarded a contract for the construction of a rectangular enginehouse at Sycamore, Ill., to the T. S. Leake Construction Company, Chicago.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company, which was noted in the *Railway Age* of July 23 (page 184) as having closed bids for the construction of a new brick freight station at French Lick, Ind., to cost about \$10,000, has awarded the contract for this work to the T. S. Leake Construction Company, Chicago.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is accepting bids for the construction of a new 8-stall roundhouse at Amarillo, Tex., to cost about \$40,000.

CHICAGO UNION STATION.—This company has let a contract to the Underground Construction Company, Chicago, for the construction of the substructure in connection with the widening of Canal street, between Jackson and Van Buren streets.

IDAHO CENTRAL.—The Interstate Commerce Commission has issued a certificate of convenience and necessity to this company authorizing the construction of a line from Rogerson, Idaho, to Wells, Nevada, a distance of 90 miles.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of July 23 (page 184), as accepting bids for the construction of a new frame passenger and freight station at Duck Hill, Miss., has awarded a contract for this work to the A. Lund Construction Company, Chicago. This company is accepting bids for the construction of two abutments and a concrete pier near Heyworth, Ill., to cost approximately \$10,000.

INTERSTATE.—This company, which was noted in the *Railway Age* of April 15 (page 958), as about to accept bids for the construction of 18 miles of single track line with passing tracks and an interchange yard near Whitesburg, Ky., has awarded the contract for this work to Brooks, Callaway & Company, Atlanta, Ga.

KANSAS CITY SOUTHERN.—This company closed bids on July 27 for the construction of seven water treating plants to be located on its line between Kansas City, Mo., and Pittsburg, Kan., and costing a total of approximately \$50,000.

## Supply Trade News

The **Barrett Company** on August 1 removed its offices from 17 Battery Place to 40 Rector street, New York City.

The **O. M. Edwards Company, Inc.**, Syracuse, N. Y., has moved its Chicago, Ill., office to 532 First National Bank building.

**A. H. Handlan, Jr.**, vice-president and manager of the **Handlan-Buck Manufacturing Company**, St. Louis, Mo., has been elected president of the company, succeeding his father, the late A. H. Handlan; **E. W. Handlan**, vice-president and treasurer, has been made vice-president; **E. R. Handlan**, secretary, has also been elected to a vice-presidency, and **R. D. Teasdale** has been appointed secretary.

The **T. H. Symington Company**, New York, in order to better serve its customers has created a new Northwestern district for the selling of its products. **J. F. Schurch**, vice-

president of this company, and also president of the Railway Supply Manufacturers' Association, who has been in charge of the Symington office at Chicago for several years, and who is well known in railroad circles, is in charge of this district with headquarters in St. Paul, Minn. The Chicago office is in charge of **Le Roy Kramer** who has been elected vice-president and director of the company. He assumed his new duties on August 1. Mr. Kramer spent many years in the operating departments

of the St. Louis-San Francisco and the Rock Island railroads and for six years was vice-president in charge of manufacturing for the Pullman Company. During the war he acted as federal manager of the St. Louis-San Francisco and the Missouri, Kansas & Texas railroads at St. Louis under the United States Railroad Administration. He left there in the Spring of 1919 to become vice-president in charge of production for the Willys-Overland plant at Toledo, and was also for a short time vice-president of the Pierce-Arrow Company at Buffalo.

## Trade Publications

**BELLS AND ALARMS.**—The Holtzer-Cabot Electric Company has issued a 16-page booklet describing and illustrating its fire alarm, watchmen's clock and audible signal systems for use in railway service and elsewhere.

**SIGNALING SYSTEMS.**—Some of the products manufactured by the Holtzer-Cabot Electric Company, Boston, Mass., including fire-alarm systems, calling systems, watchmen's clock systems, etc., are briefly described in a 14-page, illustrated booklet which the company has recently issued.

**MANNING, MAXWELL & MOORE, INC.**—A 38-page illustrated booklet has recently been issued by Manning, Maxwell & Moore, Inc., in which is given a brief history of the development of the company and its business, followed by a complete list of the official personnel of the various departments and works operated by the corporation. The book also contains a list of the products manufactured by the corporation, as well as of the machine tools and shop facilities of other manufacturers, the distribution of which is handled by Manning, Maxwell & Moore.

## Railway Financial News

**AKRON, CANTON & YOUNGSTOWN.**—*Loan Approved.*—The Interstate Commerce Commission has approved a loan to this company of \$200,000 to assist it in meeting maturing indebtedness and in the purchase of equipment.

**ALABAMA, FLORIDA & GULF.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized this company to issue for cash \$150,000, 7 per cent sinking fund gold bonds, the proceeds to be used in constructing an extension from a point near Wilson, Ala., to Dothan, approximately 4 miles, and from Greenwood, Fla., southward to Marianna, approximately 9 miles, the construction of which has been heretofore authorized. The right of way and \$40,000 in cash will be donated to aid in the construction of these extensions, the estimated cost of which, exclusive of the right of way, is given as \$158,779. The approval is conditional upon the sale of the bonds at not less than 90 per cent of par.

**BALTIMORE & OHIO.**—*Asks Authority to Issue Toledo-Cincinnati Division Bonds.*—The Baltimore & Ohio has asked the Interstate Commerce Commission for authority to issue nominally \$2,447,000 of its Toledo-Cincinnati Division first lien and refunding mortgage 6 per cent bonds in payment of advances made to acquire a like amount of the Toledo & Cincinnati Railroad Company's first and refunding 6 per cent bonds. The latter bonds when acquired will be used to secure the issue of the bonds which the applicant now requests authority to issue. The Baltimore & Ohio has also asked authority to pledge from time to time \$2,447,000 first lien and refunding mortgage bonds as collateral security for short time loans; and for authority to issue and pledge the first and refunding mortgage 6 per cent bonds of the Toledo & Cincinnati Railroad as collateral to the applicant's first lien and refunding mortgage.

**CAMBRIA & INDIANA.**—*Loan Approved.*—The Interstate Commerce Commission has approved a loan of \$250,000 to this company from the revolving fund to assist it in meeting the maturity of short term notes on August 1. The company had applied for \$750,000.

**CENTRAL VERMONT.**—*Asks Loan from Revolving Fund.*—This company has applied to the Interstate Commerce Commission for a loan of \$75,000 for five years to retire equipment notes.

**CHICAGO & ALTON.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**CHICAGO GREAT WESTERN.**—*Loan Approved.*—This company has been granted a loan from the government by the Interstate Commerce Commission amounting to \$1,929,373.

**CISCO & NORTHEASTERN.**—*Granted Authority to Issue Stock.*—This company has been granted authority by the Interstate Commerce Commission to issue for sale at par \$264,950 of capital stock and to issue \$882,000 first mortgage 10-year, 6 per cent gold bonds, \$326,500 of which is to be used at par to pay various promissory notes and accrued interest and the remaining \$555,450 of bonds to be sold at not less than 80 per cent of par or to be pledged as collateral securing for short time notes. The proceeds would be applied to the cost of constructing and equipping the applicant's line and of additions, betterments and extensions.

**DELAWARE, LACKAWANNA & WESTERN.**—*Directors Declare Stock Dividend.*—The directors of the Delaware, Lackawanna & Western on July 28 declared a stock dividend of 100 per cent, payable August 20 to stockholders of record August 8. The taking of this action follows the approval of the Interstate Commerce Commission last April and of the stockholders of the company on July 21.

**DENVER & RIO GRANDE.**—*Suits Against Former Directors Dismissed.*—Judge Lewis, of the Federal Court, Denver, has dismissed a suit charging collusion and fraud brought by the



Le Roy Kramer

stockholders' protective committee against directors of the company and others. He has also denied the plaintiff's motion for leave to file an amended and supplemental petition. The Protective Committee has subsequently appealed to the U. S. Circuit Court of Appeals at St. Louis on the right to file an amended and supplemental complaint, and this appeal has been granted by the court at St. Louis.

The Wall Street Journal says:

The suit dismissed by Judge Lewis was the one filed by counsel for the protective committee last December, and which made general charges of interlocking directorates, and which alleged conspiracy and fraud in connection with that part of the Denver's financial history surrounding the company's default of bond interest on Western Pacific bonds, which had been guaranteed. Inasmuch as the charges in this suit were only of a general character it was expected that the protective committee would file another complaint naming more specific instances of alleged fraud, but this has not been done. The committee has made no announcement as to whether or not it intends yet to file an entirely new complaint.

The stockholders' hope of saving the property now rests with what success it might have in the Court of Appeals, though counsel for the protective committee has maintained that in the last resort the U. S. Supreme Court will be referred to and the whole matter laid before it.

In the meantime Western Pacific interests who purchased the Denver at court sale price in consequence of a deficiency judgment following foreclosure on the Western Pacific, are in Denver looking after the actual transfer of title to the property to the new Denver & Rio Grande Western.

The formal transfer of the property of the Denver & Rio Grande to the newly organized Denver & Rio Grande Western was sanctioned July 27 by Judges Lewis and Sanborn of the Federal Court of Appeals, and the transfer has taken place.

**ERIE.—New Directors.**—George T. Slade and Frank L. Polk have been elected directors, succeeding Ogden Mills and the late Francis Lynde Stetson.

**GEORGIA & FLORIDA.—New Receiver.**—John Skelton Williams has been appointed sole receiver, succeeding Langborne M. Williams, W. R. Sullivan and John F. Lewis, who have resigned as receivers.

**GREAT NORTHERN.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenue (10 months).....	\$106,801,583	.....
Operating expenses .....	94,911,125	.....
Taxes .....	8,617,402	.....
Operating income .....	\$3,273,056	.....
Federal compensation (2 months) .....	4,781,162	*\$28,868,973
Other income .....	19,747,501	3,395,294
Gross income .....	\$27,801,719	\$32,082,267
Interest, rentals, etc. ....	8,497,622	9,942,682
Net income .....	\$19,304,097	\$22,139,585
Dividends .....	17,462,916	17,462,889
Sinking funds, etc. ....	25,685	76,230
Investment in physical property .....	.....	2,500,000
Surplus .....	\$1,815,496	\$2,100,466

\*12 months.

Comprises tax liability, insurance and casualty reserves, accrued depreciation of road and equipment, and other unadjusted credits.

The annual report of the Great Northern will be reviewed editorially in an early issue.

**GREEN BAY & WESTERN.—Proposed Abandonment of Branch Line Held Not Justified.**—The proposed abandonment by the Green Bay & Western of a branch line between Onalaska, Wis., and La Crosse, 6 miles, has been held by the Interstate Commerce Commission not to be justified and a certificate of public convenience and necessity has been denied. The carrier desired to abandon the branch line because of deficits in the costs of its operation. The commission holds that the results of the operation of the branch as reflected in the accounts of the system as a whole, are not such as to call for a granting of relief in view of the showing made as to the public need for the service. If the carrier, however, can work out other arrangements whereby the public will be given the same service and at similar rates, the proceeding may be reopened. The carrier also proposed to abandon operation under trackage rights on the Chicago & North Western, between Onalaska, Wis., and Marshland, 22 miles, but the commission holds that the cessation of operations under trackage rights is not prohibited by paragraph 18 of section 1 of the act.

**ILLINOIS CENTRAL.—Authorized to Issue Bonds.**—The Illinois Central has been granted authority by the Interstate Commerce Commission to issue and sell \$8,000,000 of 15-year, 6½ per cent

secured gold bonds at not less than 93.75 per cent of par, and to pledge as collateral security for the bonds \$8,225,000 of Illinois Central refunding mortgage 4 per cent gold bonds, and \$3,820,000 of Illinois Central and Chicago, St. Louis & New Orleans joint first refunding mortgage 5 per cent bonds. The purpose of the issue is to secure funds to meet maturing indebtedness. Arrangements have been made by the carrier with Kuhn, Loeb & Co. for the sale of the bonds at 93.75 per cent of par and accrued interest.

The Illinois Central and the Chicago, St. Louis & New Orleans have also been granted authority to issue from time to time \$136,700 of Illinois Central and Chicago, St. Louis & New Orleans joint first refunding mortgage 5 per cent bonds for pledging and replying as collateral security for short time notes. The bonds are now in the applicant's treasury.

**JACKSON & EASTERN.—Asks Authority to Issue Bonds.**—This company has filed an application with the Interstate Commerce Commission for authority to issue \$95,000 of bonds, secured by a first mortgage, now in its treasury. The proceeds of the sale of the bonds will be used to pay current indebtedness and for betterments and extensions.

**LAKE ERIE, FRANKLIN & CLARION.—Authorized to Issue Notes.**—This company has been granted authority by the Interstate Commerce Commission to issue, from time to time, promissory notes for an aggregate face amount outstanding at any one time not to exceed \$25,000, in renewal of a promissory note for a like amount, the issue of which has heretofore been authorized in this proceeding.

**LANCASTER & CHESTER.—Granted Authority to Extend Bonds.**—This company has been granted authority by the Interstate Commerce Commission to enter into an agreement with the holder of \$135,000 first mortgage 5 per cent, gold bonds for the extension of the maturity date thereof from July 1 last to July 1, 1922, and to increase the rate of interest from 5 to 7 per cent per annum.

**LONG ISLAND.—Annual Report.**—The corporate income for the year ended December 31, 1920, compares with the year 1919, as follows:

	1920	1919
Compensation, January and February, 1920: year 1919	\$ 647,200	\$3,221,949
Operating for guaranty period March 1, to Aug. 31 .....	1,833,689	.....
Operating results, Sept. 1 to Dec. 31, 1920:		
Operating revenues .....	9,172,265	.....
Operating expenses .....	8,823,396	.....
Net from railway operations .....	348,869	.....
Railway tax accruals .....	396,798	.....
Railway operating deficit .....	52,437	.....
Net railway operating deficit .....	165,833	.....
Non operating income .....	760,002	719,276
Gross income .....	3,075,058	3,941,225
Interest on funded debt .....	2,311,618	2,122,786
Total deductions from gross income .....	3,585,280	3,258,719
Net income .....	510,221	682,506
Appropriation to sinking and other reserve funds .....	430	430
Balance transferred to credit of profit and loss .....	510,651	682,076

The annual report of the Long Island will be reviewed editorially in an early issue.

**MIDDLE TENNESSEE.—To Be Sold.**—The Commercial and Financial Chronicle reports the Nashville Trust Company as saying that this road, which runs from Franklin, Tenn., to Mt. Pleasant, a distance of about 44½ miles, and which was reported to have discontinued business last October, will be sold September 10 at Franklin. Officers of the Louisville & Nashville, it is reported, have made an inspection of the road and it is believed intend inquiring about the property. It is said that the Illinois Central may also be a bidder.

**MINNEAPOLIS & ST. LOUIS.—Authorized to Pledge Bonds.**—This company has been authorized by the Interstate Commerce Commission to pledge and repledge from time to time \$714,000 of refunding and extension mortgage 5 per cent gold bonds as collateral security for short term notes. The issue of the bonds was recently authorized by the commission.

**NEW ORLEANS, TEXAS & MEXICO.—Authorized to Issue Bonds.**—This company has been granted authority by the Interstate Commerce Commission to issue \$533,700 of its first mortgage bonds as collateral security for a note of \$500,000, payable to the Columbia Trust Company of New York 24 months after date.

**SPRINGFIELD TERMINAL.**—*Authorized to Issue Capital Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$62,500 of capital stock at par for cash, the proceeds thereof to pay indebtedness on capital account. The company wished to issue \$100,000 of stock, but the commission limited the amount to the sum that would be used for capital purposes.

**TEXAS CITY TERMINAL.**—*Authorized to Issue Securities.*—This company has been authorized by the Interstate Commerce Commission to issue \$500,000 of common stock and \$1,984,300 of 20-year sinking fund, 6 per cent first mortgage bonds to be used in payment for the property formerly owned by the Texas City Transportation Company, which is to be operated by the new company.

**Final Settlements with Railroad Administration**

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Delaware, Lackawanna & Western.....	\$5,000,000
Elgin, Joliet & Eastern.....	3,700,000
Gulf Coast Lines.....	800,000
New York Dock Railway.....	64,861
Fairchild & Northeastern.....	10,000

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the Railroad Administration during the twenty-six months of Federal control.

**Treasury Payments**

The Treasury has announced the payment of a loan of \$250,000 to the Cambria & Indiana and partial payments of guaranty, as follows:

Alabama, Tennessee & Northern.....	\$22,500
Boyer City, Gaylord & Alpena.....	12,500
Chicago & Erie.....	336,500
Chicago Tunnel.....	14,500
Galveston Wharf.....	39,000
Houston & Brazos Valley receiver.....	15,500
Huntington & Broad Top Mountain.....	122,400
Pittsburgh, Shawmut & Northern receiver.....	200,000
St. Joseph & Grand Island.....	40,000

**Guaranty Certificates Issued**

The Interstate Commerce Commission has issued partial payment certificates on account of the six months' guaranty, as follows:

Alabama, Tennessee & Northern.....	\$22,500
Boyer City, Gaylord & Alpena.....	12,500
Chicago Tunnel Company.....	14,500
Chicago & Erie.....	336,500
Colorado & Southern.....	340,000
Denison & Pacific Suburban.....	1,800,000
Galveston Wharf Company.....	39,000
Houston & Brazos Valley.....	5,500
Huntington & Broad Top Mountain.....	122,285
Rio Grande Southern.....	15,000
St. Joseph & Grand Island.....	40,000
Tonopah & Goldfield.....	80,000

**Dividends Declared**

Buffalo, Rochester & Pittsburgh—preferred, \$3, and common, \$1, payable August 15 to holders of record, August 8.  
 Delaware, Lackawanna & Western—100 per cent. stock dividend, payable August 20 to stockholders of record August 8.  
 Illinois Central—1 1/2 per cent quarterly, payable September 1 to stockholders of record August 5.

THE RAILROADS OF TEXAS report a total revenue for the first four months of the present calendar year of \$72,938,538, an increase of \$5,780,190; operating expenses, \$66,694,459, an increase of \$62,390. Net revenue from operation was \$6,244,229, an increase of \$5,717,800.

FRUIT GROWERS of Oceana County, Michigan, 400 of them, have sent to President Harding a request that Henry Ford be appointed director-general of the railroads of the country. The farmers say that high freight rates are destroying their profits, and they think that Mr. Ford could do for the whole country what he has done on the Detroit, Toledo & Ironton—make a general reduction in freight rates.

**Railway Officers**

**Executive**

**John Pullen**, president of the Canadian Express Company, has been elected president of the Canadian National Express Company, the two companies having been merged under the name of the latter, effective September 1. **W. C. Muir**, heretofore general manager of the Canadian National Express Company, will become vice-president and general manager of the reorganized company.

**Financial, Legal and Accounting**

**R. W. Wynn** has been appointed car accountant of the Georgia & Florida with headquarters at Augusta, Ga., effective July 8, succeeding **G. B. Matthews, Jr.**, superintendent of car service, resigned to accept service with another company. The position of superintendent of car service has been abolished.

**Operating**

**M. McKernan** has been appointed superintendent of safety of the Missouri Pacific, with headquarters at St. Louis, Mo., effective August 1, succeeding **R. H. Dwyer**, who has been assigned to other duties.

**E. M. Grobel**, assistant trainmaster of the Chicago, Milwaukee & St. Paul, with headquarters at Miles City, Mont., has been promoted to trainmaster, with headquarters at Moberidge, S. D., effective August 1, succeeding **D. D. Spade**, who has been assigned to other duties. The position of assistant trainmaster at Miles City has been abolished.

**W. L. King**, superintendent of the Southern with headquarters at Bristol, Va., has been transferred in a similar capacity to Columbia, S. C., succeeding **W. D. Post**, who has been transferred as superintendent to Knoxville, Tenn. Mr. Post succeeds **A. P. Johnson**, who has been appointed trainmaster with headquarters at Tooca, Ga., succeeding **J. F. Gaffney**, transferred as trainmaster to Knoxville, Tenn. **C. E. Burchfield**, trainmaster at Knoxville, has been promoted to superintendent with headquarters at Bristol, Va.

**W. F. Eckert**, superintendent of the Wilmington and Columbia division of the Philadelphia & Reading, has been transferred in a similar capacity to the New York division with headquarters at Philadelphia. **A. T. Dice, Jr.**, assistant superintendent of the Reading and Harrisburg divisions, succeeds Mr. Eckert. **P. S. Lewis**, assistant superintendent of the Atlantic City (a subsidiary of the Philadelphia & Reading), has been appointed superintendent of the same road with headquarters at Camden, N. J., and the position of assistant superintendent has been abolished. **A. T. Owen**, superintendent of stations and transfers of the Philadelphia & Reading, has been appointed assistant superintendent of transportation in addition to his present duties. **C. A. Beach**, superintendent of the New York division, has been appointed assistant to the superintendent of stations and transfers. **J. E. Turk**, superintendent of the Atlantic City and the Delaware River Ferry (both subsidiaries of the Philadelphia & Reading), has been appointed general superintendent of the Delaware River Ferry and the position of superintendent of the Delaware River Ferry has been abolished. **W. D. Kinzie**, assistant superintendent of the Shamokin division of the Philadelphia & Reading, has assumed the duties of trainmaster in addition to his present duties. **D. S. Haldeman** has been appointed assistant superintendent of the Reading and Harrisburg divisions with headquarters at Reading, Pa. These changes were effective August 1.

**Traffic**

**T. J. Shea** has been appointed general agent, freight department, of the Chicago & Alton, with headquarters at Chicago, effective July 16.

J. F. Zurn, agent, consolidated ticket office, Fort Worth, Tex., has been appointed district passenger agent of the Texas & Pacific, with the same headquarters.

S. W. Gafner, ticket agent of the Lehigh Valley, with headquarters at Buffalo, N. Y., has been promoted to division passenger agent, with the same headquarters.

Andrew L. Doggett, whose appointment as assistant general freight agent of the Baltimore & Ohio with headquarters at Pittsburgh, Pa., was announced in the *Railway Age* of July 9 (page 94), was born at Paris, Tex., June 17, 1883. He was educated in the public schools of Cincinnati, O., and entered railway service August 27, 1898, as a messenger in the general freight office of the Baltimore & Ohio at Cincinnati. Subsequently he served as claim record clerk, bill clerk, rate clerk and claim clerk in the various freight traffic offices of the company at Cincinnati. In 1907, he was appointed traveling freight agent at Cincinnati and served in that capacity until 1917 when he was appointed commercial freight agent at Akron, O. In 1919 he was promoted to division freight agent at Youngstown, O., which position he was holding at the time of his recent appointment.

A. Kittler, assistant agent, consolidated ticket offices, Newark, N. J., has been appointed division passenger agent of the Lehigh Valley, with headquarters at Ithaca, N. Y.

W. R. MacFarland, whose appointment as general passenger agent of the Chicago Great Western, with headquarters at Chicago, was announced in the *Railway Age* of July 23 (page 185), was born at Columbus, Ohio, in 1876. He entered railroad service on September 1, 1897, on the Hocking Valley, remaining in the service of that company until September 1, 1901, when he became a rate clerk on the Pennsylvania and served in that position until January 1, 1912. He was then promoted to chief rate clerk in the passenger department of the road at Pittsburgh, Pa. Mr. MacFarland served continuously in this position until March 1, 1920, when he was promoted to assistant general passenger agent of the Northwestern region of the Pennsylvania, with headquarters at Chicago. His recent appointment, effective July 16, brought him to the Chicago Great Western, succeeding A. C. Irons, resigned.

W. M. Brooks has been appointed commercial agent of the Atlanta, Birmingham & Atlantic with headquarters at Cincinnati, succeeding J. J. McCarty, resigned, effective July 20.

T. P. Fenelon, assistant agent, consolidated ticket office, Fort Worth, Tex., has been appointed division passenger agent of the Gulf, Colorado & Santa Fe, with the same headquarters.

E. G. Hukill has been appointed traffic manager of the Cleveland, Southwestern & Columbus, with headquarters at Cleveland, Ohio, succeeding C. C. Collins, who has resigned.

S. M. Spears, city freight agent of the Illinois Central, with headquarters at Memphis, Tenn., has been promoted to commercial agent, with headquarters at Louisville, Ky., succeeding C. Klinger, deceased.

L. R. Capron, whose promotion to assistant freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., was announced in the *Railway Age* of July 16 (page 144), entered railway service in April, 1902, as an office boy in the freight traffic department of the Chicago, Burlington & Quincy at St. Paul, Minn. A year later he was employed in a similar capacity by the Northern Pacific and served in various clerical positions in the general freight department of that road until 1914, when he was appointed chief clerk to the vice-president in charge of traffic. He was promoted to assistant general freight agent, with headquarters at St. Paul, on April 1, 1915, and was given jurisdiction over rate litigation before the Interstate Commerce Commission and various state railroad commissions. Mr. Capron was transferred to Seattle, Wash., on March 1, 1920, and was serving in that position at the time of his recent promotion.



A. L. Doggett

### Mechanical

G. L. Ernstrom has been appointed road foreman of engines of the Yellowstone division of the Northern Pacific, effective July 7.

### Special

R. P. Rockefeller has been appointed special assistant in the office of the assistant to the president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago.

L. J. Benson, district special agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been promoted to chief special agent, lines west, with headquarters at Seattle, Wash., succeeding J. Wernick, who has resigned. W. E. Grant, district special agent, with headquarters at Milwaukee, Wis., succeeds Mr. Benson. J. E. Nolan succeeds Mr. Grant. The promotions and appointments were effective July 15.

### Obituary

Le Grand Young, formerly counsel of the Utah Central, the Utah Southern and the Union Pacific, died at his home near Salt Lake City, Utah, on July 25.

W. C. McLaughlin, formerly assistant general freight agent of the Baltimore & Ohio, with headquarters at Cleveland, Ohio, and later a member of the auxiliary committee of the Central Freight Association, died at Chicago on July 24.



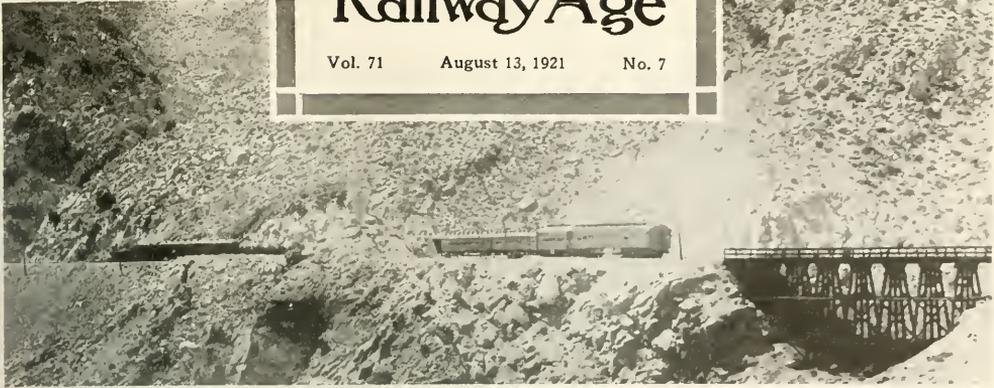
W. R. MacFarland



Station at Le Mans, France

# Railway Age

Vol. 71 August 13, 1921 No. 7



Through Carrizo Gorge, on the San Diego & Arizona. Photo from Underwood & Underwood, N. Y.

## Contents

Lackawanna Elevates Tracks Through East Orange . . . . .	Page 281
Two-Mile Section Between Newark, N. J., and Orange Forms Closing Link in Company's Suburban Grade Crossing Elimination Program.	
Fuel Conservation Plan of Central of Georgia . . . . .	285
Economies Averaging Over \$30,000 Effected by Consistent Efforts and Co-operation of Employees.	
I. C. C. Will Not Measure Efficiency of Railroad Labor . . . . .	291
Majority Decides Elements Indeterminable and Carriers' Claims Indefinite—Long and Detailed Dissenting Opinions by Commissioners Daniels and Pott r.	

### EDITORIALS

Increasing Track Capacity at Moderate Costs . . . . .	275
Progress of Funding Legislation . . . . .	275
Rail and Motor Transport in England . . . . .	275
Good Food and Comfortable Quarters . . . . .	275
A Proper Respect for Signals . . . . .	275
Highway Construction and Transportation . . . . .	276
Standards of Shop Practice . . . . .	276
Revise the Maps . . . . .	276
The Esprit de Corps . . . . .	277
A Problem of Organization . . . . .	277
Railway Traffic Standing Still . . . . .	277
The Railway Problem . . . . .	278
More Security Owners Than Employees . . . . .	278
The Railways' Interest in Highway Construction . . . . .	278
Chicago, Burlington & Quincy . . . . .	279

### GENERAL ARTICLES

Lackawanna Elevates Tracks Through East Orange . . . . .	281
Coopering Cars for Grain . . . . .	284
Fuel Conservation Plan of the Central of Georgia . . . . .	285
I. C. C. Has Served Valuations on 168 Railroads . . . . .	289
New 60-Ton Electric Locomotive for Tidewater Southern . . . . .	290
I. C. C. Will Not Measure Efficiency of Railroad Labor . . . . .	291
Canadian Railway Results in Calendar Year 1920, by J. L. Payne . . . . .	294
Freight Car Loading . . . . .	296
Piece Work Dispute Again Before Labor Board . . . . .	297
Senate Committee Begins Hearings on Funding Bill . . . . .	299

### GENERAL NEWS DEPARTMENT . . . . . 301

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building

CLEVELAND: 4300 Euclid Ave.

LONDON: England: 34, Victoria St., Westminster, S. W. 1.

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Urasingne, London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. E. LYNN  
R. E. TRAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STUBBING  
C. W. FOSS  
J. E. KELLNERBERGER  
ALFRED G. OEHLEK  
E. W. KRAEGER  
HOLLYMIBE PARKES  
C. N. WINTER

MILBURN MOORE  
F. L. WOODWARD  
J. E. COLE  
L. M. SANDWICK  
J. G. LYNN  
T. H. DUNN  
D. A. STEEL

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free, United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00 £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 8,800 copies were printed, that of these 8,800 copies 8,000 were mailed to regular paid subscribers, 50 were provided for counter and news company sales, 24 were mailed to advertisers, 80 were mailed to employees and correspondents and 248 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 311,100, an average of 9,719 copies a week.



A Ryerson Standardized Spring Shop  
Where springs are repaired at the lowest possible cost.

## Increase Spring Life

A railroad shop repairing over 700 tons of locomotive springs per month replaced hand spring repair methods with Ryerson Standardized Spring Shop Equipment and increased the life of the springs by 300%.

At the same time the number of men employed was reduced one-half.

By uniform shaping and treatment throughout, Ryerson machinery has the advantage over hand work in producing a more uniform, reliable and durable product.

*We are prepared to furnish Spring and Flue Shop layouts to meet individual requirements, together with complete description of each machine.*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Railroad managements are confronted with many and varied problems which will increase in their complexity as traffic gradually approaches normal. In many localities congestion will tend to occur and one of the important subjects to consider at present is how best to prepare to prevent it. Those operating and engineering officers who are not familiar with what signaling has accomplished may naturally consider double track as the logical remedy. Before plans are definitely determined upon it is well to consider the results which may be obtained by the installation of signals in connection with the possible relocation of passing sidings, water and coaling stations, etc. The Signal section of the American Railway Association in its latest report, submitted charts and data concerning the location of automatic block signals with reference to *time spacing*. The proper application of this information will demonstrate to operating and other officers the extent to which a signal system will aid in getting trains over the road in shorter time.

### Increasing Track Capacity at Moderate Costs

There seems to be little hope of immediate action by Congress on the President's recommendation that the railroads' obligations to the government be funded. The Senate has been planning a recess of a month or six weeks and the fear has been expressed that if the railroad funding bill is brought up at this time the consideration of the measure will preclude the possibility of any vacation for the senators. The matter is largely in the hands of the President. If he insists on immediate action undoubtedly his wishes will be respected. Even in that event, however, discussion and conferences would require some time. If the President does not urge immediate consideration of the measure final action on it cannot be expected for a month or two. Favorable action by Congress on the bill is a matter of considerable importance to the railroads and to business generally. Any steps that may be taken, therefore, to expedite its passage without working undue hardship on Congress will naturally meet with general favor on the part of those who have the interests of our transportation system at heart.

### Progress of Funding Legislation

The railroads are so fully occupied at the present time with solving the problems of rail transportation that any suggestion that they enter the motor truck transportation field on a large scale could not be expected to meet with a cordial reception. In this connection, however, it is interesting to note that the railways of England are asking that they be permitted to enter that field. The situation in Great Britain, of course, is considerably different from that in this country. The average length of haul of freight in that country is under the limit within which it is claimed in some quarters that motor trucks can operate economically. Unquestionably there is a certain amount of L.C.L. traffic moving over short distances on railways everywhere which is carried at a loss and would

be well for the motor trucks to get this business. At the same time if motor transportation companies work independently of the railroads there will be some wasteful competition between the two agencies. Some traffic will be hauled by road which could better be moved by rail and vice versa. The same holds true as regards passenger traffic. If the English railways are interested in moving freight and passengers by motor truck they should be granted that privilege. Only by co-ordinating the two systems of transportation under one management can the selection of the most economical method of transport for given shipments be assured. Economies effected in this manner redound to the benefit not only of the transportation companies and shippers but to society as a whole.

The part which poor food and poor sleeping quarters play in making railroad employees dissatisfied with their jobs cannot be overestimated. This factor is especially important in the case of train and engine employees who spend the greater part of their time away from home. Often, especially at outlying terminals, the only hotels and restaurants available are of the lowest order. It is of course neither feasible nor desirable that expensive hostelry be provided at such points but plain, wholesome, well cooked food and good, clean beds are necessary and every effort on the part of railway officers to secure these accommodations for their men at reasonable prices will pay many times over in improved morale. Many hotels and restaurants adjacent to railroad yards are under obligation to the railroads for certain concessions. In such cases criticism of the service or the prices by a trainmaster or superintendent would have added weight. If the hotel is in no way connected with the railroad the suggestion that the company was considering the erection of an establishment of its own might be effective. This is a matter which can probably best be handled by division officers. A trainmaster or a division superintendent is in a position to know the kind of treatment his men are getting and, if it is not the best, a few well chosen words from him to the hotel men from time to time should at least serve to improve conditions somewhat. If food and lodging away from home were more attractive, layovers of a few more hours would be less odious and demands for punitive payments less insistent.

### Good Food and Comfortable Quarters

Occasionally operating officers indicate that they regard automatic signals as a liability rather than an asset in the economics of train operation. Such an attitude cannot help but be reflected by the men who operate trains under the automatic block signal system. The employees may be more inclined to take a chance in order to make their running time than they would be if the officers had impressed them with the true function of signals in expediting train movement while at the same time promoting safety. It is an economic necessity for signal indications to be acted on properly, for otherwise the investment in them is ineffective and serious results may

### A Proper Respect for Signals

### Rail and Motor Transport in England

occur, the alibi then being that "the signals failed to work properly." Recently two opposing trains, a passenger and a freight, very nearly collided in single track automatic signal territory. At the investigation the blame was laid on the signal controlling the entrance to the single track section, the trainmen saying they received a false proceed indication. The signal department could find no evidence of signal trouble. Shortly afterward two freight trains very nearly met in a similar collision and again the signal was blamed, although it was found to be working properly. Naturally, the confidence of the operating officers was lowered; until a quiet investigation disclosed the fact that, to make time, some of the train crews were in the habit of disregarding the stop indication of the particular signal in question. This instance, which is typical of others, shows the importance of proper signal observance and discipline. Operating officers can do much to instill proper respect for signals by their own attitude. In fact, this is the first essential to strict observance by their men.

One of the many factors which have contributed toward past congestions of traffic has been attempts to move supplies and materials for road building when seasonal traffic has been moving in large volume. The railways can well afford to lend their aid to Secretary Hoover in his endeavor to secure increased economy and efficiency in highway construction. In a letter addressed to the governors of the various states he has urged the letting of contracts for road building in the fall instead of in the winter and spring, supporting his position with a report made for him by a committee representing the larger engineering societies, outlining the advantages which would accrue. The railroads are concerned chiefly with the effect which such a procedure will have upon transportation. The first advantage apparent to the railroads will be that the movement of contractors' supplies and materials will be advanced some two months or more, thus bringing the peak of the demand for movement of this traffic earlier in the year. The second advantage would result from the longer working season, which would distribute the demand for freight cars over a longer period and permit a more uniform utilization of railway equipment. In the middle west where letting of contracts in the fall has been practised successfully, an increase of approximately 46 per cent in time for grading and 37 per cent in time for concreting was obtained. Experience in recent years, especially in 1919 when the major portion of the country's hard surface highway projects was carried over, has been such as to bring about increased favor for this plan. The amount of money allotted for highway construction in 1922 is large. The amount of transportation required will be, as a consequence, large in proportion and, if there is any revival of general business by next spring, shippers of road building materials will benefit by shipping them early.

While labor troubles constitute the most difficult problem confronting railroad managers today, there is another ever-present problem in the establishment of satisfactory standards of shop practice. It is essential that these standards be safe and productive of economy, therefore they should be established only after thorough investigation. Each railroad should define its own standards, to be followed on the entire system and continued only as long as economical; not after they are obsolete and have been displaced by up-to-date practices. Good standards will support themselves and, as was recently said, "the surest way to kill a poor standard is to insist on it to the letter." It is not maintained that standards should be so

rigidly adhered to that all initiative of local officers is destroyed. On the contrary, there should be a continual search for improved methods. The important point to guard against is the adoption of so-called improved methods before a thorough investigation has demonstrated that they are time and labor-savers. When the parts of cars and locomotives fail, shop superintendents, master car builders and master mechanics often arbitrarily change designs in accordance with their personal ideas and without finding out what the real or fundamental cause of the trouble is. The duties of these officers are in reality limited to responsibility for maintenance and production, and the best results are secured when all changes are made by the designing engineer who keeps in close touch with the maintenance men and thus learns how various locomotive and car parts are standing up in service. In addition to the possibility of standardizing both general shop practice and many small locomotive parts, considerable economy can be effected by standardizing small tools. In this case the problem is to determine the forms of tools demonstrated by experience to be most satisfactory, and take steps to insure that these tools are manufactured in quantities and distributed to all points on the system. To be of the greatest benefit, it is essential that shop standards be arranged in substantial, systematic form, so that they can be furnished to all interested and be enlarged and revised when necessary.

It is all too frequently the experience in planning or making property alterations or additions and in meeting situations imposed by operating conditions where the use of a map is at least desirable, to find before or during the performance of the work, that the maps, prints, diagrams or sketches covering the point in question are incorrect or lacking in the necessary detail. This is particularly the case where underground or otherwise not easily accessible, but nevertheless important, layouts such as waterlines, sewer pipes, plumbing or wiring, are the subjects of consideration. A bad leak occurs, which for the lack of a complete map, defies efforts to locate it; a break, a clog, a fire or some other unusual condition arises which involves the finding of a forgotten valve, the location of old pipes for the purpose of either utilizing them or of avoiding them, or the complete study of existing layouts with a view to making important changes. When the maps available are complete and correct the performance of the work involved is greatly facilitated, but when incomplete and incorrect, as they too frequently are at the very point where they are needed most, namely, at terminals, they often not only do not serve the purpose for which they were prepared, but also give rise to expenses which may be justifiably attributed solely to their deficiency. Manifestly they should be complete and should be correct and up to date, and all parties who make use of maps usually will find it to their own ultimate advantage to see that they do conform to these standards. Where maps are in error or incomplete usually it is not difficult to account for the cause. Although an accurate representation of the work at one time, alterations or additions to existing layouts have been made at frequent intervals by operating or other forces about which the engineering department has not been informed or the recording of which it had neglected altogether or postponed until the proper location of the work could only be estimated; or again local conditions governing at the time may have necessitated changes in the original plans which the individual in charge, uninstructed, neglected to record. But whatever the origin of the deficiency, the fact remains that the map should be correct and to that end, whether it requires a closer supervision by the engineering departments of all work of a kind done by operating forces, or the frequent inquiry and inspection of his territory by the local engineer, the maps should be kept revised.

### Revise the Maps

### Highway Construction and Transportation

### Standards of Shop Practice

In recent months a great deal of emphasis has been laid upon the wisdom of directing close attention to the study of all manner of processes and practices and of methods and machinery with respect to their ability to promote economy, better service and a more rapid rehabilitation of the railway properties. At a time when the prosperity of the railroads rests more upon their efficiency of operation than ever before, when their expenses are greater and their income far less than a prosperous condition could justify, who would say that such emphasis was not well placed? If there are practices in use which no longer have anything to recommend them but the years through which they have been perpetuated, now indeed is the time to find them out; likewise, the opportunity for improvement in the machinery or the potential benefit in its replacement. But by all means, in doing this let us not be unmindful of the man. In war times much was heard of the "Esprit de Corps," when it was applied to the army. Now we might well apply it to the railroads. At that time the attitude manifested by the men was a fundamental, all-important consideration, the nature of which was a close index of the probable success of the undertaking. The railroad situation is one different in degree only—not kind. To attain even fair results there must be alive the willingness to work as well as the ability to do so, and along with it fidelity of purpose, enterprise, pride and loyalty. Without forces of this kind active in some degree, little can be accomplished with all the attention given to machinery and methods. There may be some industries where the man need be considered scarcely more than a mechanism, but this cannot be said of the railroads. There is too much diversity of occupation and of conditions and too wide a distribution of the immense and heterogeneous constituency. Here a proper "Esprit de Corps" is essential, and those officers do wisely who recognize it and exert themselves constantly to maintain it.

During recent months the labor situation has completely changed. From a period featured by an acute shortage the country has passed into one marked by a labor surplus. This situation has arisen because of the general let down in industrial activities and presents to employers of labor a problem hardly less important than that facing them during the shortage. Then the problem was to find the men for the jobs. Now it is to carry on the reduction of forces in such a manner as to avoid completely disrupting the organizations. Anyone experienced in labor supervision on the railroads knows well the difficulties that must be overcome in building efficient working forces from the ground up. In the present situation the more fortunate roads will, in all probability, find it feasible in the force reduction to stop short of the danger point and retain in service the more experienced men of all departments. On the other hand the less fortunate roads may find it necessary to reduce forces, in certain departments, to the point where the organization is seriously injured. Such roads, on the revival of business, will find themselves faced with a difficult task; that of recruiting and bringing to a point of efficiency a new organization. At least one industrial concern which has found it necessary to dispense with the services of experienced and valuable men is taking steps which promise to lighten the task of getting back to normal on the resumption of business. Its plan is to first impress on the employees the fact that the lay-off is temporary. Representatives of the company keep in touch with the men personally and by letter during the period of idleness. Blanks are forwarded to the men on which any change in address may be reported. In certain instances temporary work has

been found for the men with other concerns. All of this is done in such a way as to convince a man that he is in fact an essential unit of his company. There is no apparent reason why some similar plan cannot be adopted by roads which temporarily have had to lay off men. Such a course will, in the long run, prove advantageous both to the managements and the employees.

## Railway Traffic Standing Still

IT IS DIFFICULT, if not impossible, to draw from the recent trend of railway traffic any rational conclusion regarding future business. The total number of cars loaded with freight in the four weeks ending on July 23 was 2,981,106. This was slightly less than in the four preceding weeks, but the small decline can be entirely accounted for by the fact that the week ended July 9 included the 4th of July holiday. The car loadings mentioned compare with 3,559,081 for the same weeks in 1920, and 3,365,049 for the same weeks in 1919. The decline in shipments as compared with those of 1920 and 1919 was substantial and negative past indications of a possible revival of traffic such as occurred in the latter half of 1919.

The statistics of car loadings make it easy to locate the cause of the small freight movement. The total volume of agricultural products being shipped is very large. The movement of grain is much heavier than in either 1920 or 1919. Shipments of merchandise, which include mainly the higher grades of manufactured products, also are larger.

On the other hand, shipments of the bulkier raw materials used in manufacture, especially forest products and ore, and also the movement of coal, are almost extraordinarily small.

The coal situation is unprecedented. Never since reliable statistics regarding the production and transportation of coal have been kept have shipments of bituminous coal been relatively so small as thus far this year. The years 1914 and 1915, like 1921, were years of business depression. Since then, however, the population and producing and consuming capacity of the country have largely increased. Nevertheless, in the first seven months of 1921 shipments of bituminous coal were 12,000,000 tons less than in 1914, and 2,000,000 tons less than in 1915. Compared with other years they range from 29,000,000 tons less than in 1919 to 110,000,000 tons less than in 1918. It is a remarkable fact that while there has been such a great reduction in shipments of bituminous coal, the amount of anthracite shipped thus far this year has been slightly larger than last year. Coal ordinarily constitutes about 35 per cent of the tonnage of the railways. There can be no substantial increase in their total traffic while shipments of coal continue so small.

Practically all recognized authorities on business conditions agree that underlying conditions are improving. Bank reserves are increasing, interest rates are lower and prices in general are becoming more stable. The farmers are selling their grain and getting money with which to pay their debts and increase their purchases. While the movement of railway traffic has remained practically unchanged for three months, railway net earnings, as a result of recent reductions in expenses, are bound to show increases. If, in addition to increased net earnings, the railways receive the payments from the government contemplated by the plans of President Harding's administration they will be able substantially to increase their purchases. In fact, they already have begun to do so. Increased purchases by the farmers and the railroads will substantially improve general business conditions.

The prolonged stagnation of railway traffic is disappointing, but it is impossible to believe in view of the general situation that there will not be in future months a slow but steady increase of traffic and earnings.

## The Rail Problem

IT IS NOW TEN YEARS since the rail problem was brought forcibly to the attention of railway officers by the epidemic of failures which occurred during the winter of 1911-12. They have been continuously studying this problem ever since. While many independent investigations have been made, they have centered to a large extent in the work of the Rail Committee of the American Railway Engineering Association. This committee has presented numerous reports of special investigations to determine the influence of various conditions on the quality of the steel. These studies have undoubtedly contributed to the improvement in the character of the rails now being rolled, as far as wear is concerned. However, it is also true that similar improvement has not been evinced in the quality of the rails, as measured by freedom from failures. In fact, rail failures are becoming more numerous on many roads, and this is causing much concern to railway maintenance officers.

In an effort to secure better material, the Rail Committee prepared a specification which was adopted by the American Railway Engineering Association in 1920, and which imposed a number of new restrictions on the manufacturers, which were designed to eliminate defects causing failures. As pointed out by G. J. Ray, chairman of this committee, at the annual convention last March, the manufacturers are unitedly opposed to this specification, either refusing directly to accept orders for rails to be rolled under it or placing such a high premium on them as to accomplish the same purpose, basing their position largely on the contention that the roads have not proved the necessity for these restrictions or the fact that conformity with them will eliminate the present defects.

The result is that there is now a deadlock between the railways and the manufacturers, while the rails continue to fail and to endanger traffic. Such a condition should not be permitted to continue. The relatively large number of rail failures is a reflection on the ability of the manufacturers to produce sound rails and only to a lesser extent on the railway engineers who accept them. The situation demands action, particularly to determine the causes for the various defects contributing to these failures with such conclusiveness that the proper remedies can and will be delayed. Undoubtedly the main things needed are less controversy and more co-operation between the railways and the manufacturers, and closer concentration on the causes and remedies of the more serious kinds of failures.

## More Railway Security Owners Than Employees

THE NUMBER of stockholders the railways have is ascertainable with approximate accuracy, since the names of practically all stockholders are shown on the companies' books. Taking the railways as a whole it has long been believed that the number of owners of their bonds is larger than the number of their stockholders, but it is more difficult to ascertain the exact number of them.

The Northern Pacific, using the best sources of information available, recently had a count made of its bondholders and found that there were approximately 37,000. On March 18, the date on which its stock books closed preceding the annual meeting of stockholders, it had 36,000 stockholders. This makes the total number of owners of its securities 73,000.

The public is prone to show more solicitude for the employees of railways than for the owners of their securities, mainly because it assumes that there are many more employees than owners of securities. The average number of employees of the Northern Pacific in the year 1920 was 35,244, while it now has about 30,000. In other words, the

Northern Pacific has more than two security owners for every employee.

The following table shows the number of employees and the wages paid, the number of bondholders and the interest paid, the number of stockholders and the dividends paid, by the Northern Pacific in 1920:

Number of employees.....	35,244	Total wages.....	\$66,503,794
Number of stockholders.....	36,000	Total dividends.....	17,360,000
Number of bondholders.....	37,000	Total interest.....	12,134,438

It will be seen that while the railroad had twice as many bondholders and stockholders as employees, the wages paid by it were more than twice as large as the total interest and dividends paid.

The ownership of the Northern Pacific's stock and bonds may be more widely diffused than that of the average railway, but it is probably true of the railways as a whole that the number of people who own their securities is not far from twice as large as the number employed by them. The Northern Pacific is not a typical road in one important respect. It is a relatively prosperous railway and the amount of interest and dividends paid by it is larger in proportion to the wages paid than is the case with most railways.

The wages paid by the railways as a whole increased 285 times as much between 1912 and 1920 as the total interest and dividends paid by them to their bondholders and stockholders in spite of the fact that the bondholders and stockholders probably outnumber the employees by two to one. And yet labor leaders constantly cry out that the employees are oppressed for the benefit of a few Wall Street magnates, who, they say, "own" the railroads!

## The Railways' Interest in Highway Construction

THE HIGHWAY CONSTRUCTION program is today assuming vast proportions. Starting more or less locally in the vicinity of the larger cities a few years ago, it has today become national in extent and its contemplated expenditures aggregate vast sums of money. It is estimated that approximately \$390,000,000 was spent for this purpose in 1919, while the amount available for highway construction work in 1921 has been placed at \$1,394,000,000.

Although this program may at first glance appear to be outside the scope of railway activities, it is in reality of concern to the roads from a number of angles. From the traffic standpoint it has been estimated that the railways must transport 100 carloads of equipment and materials for every mile of highway constructed. However, another and even more important angle to the railways is the fact that they are among the heaviest tax-payers and are therefore interested in the proper expenditure of the funds to which they contribute, to secure roads of the proper character of construction. They are interested for the same reason in the proper use and maintenance of these roads after they are built. As transportation agencies they are also concerned with the expenditure of these funds for the development of co-ordinating arteries radiating from their lines rather than paralleling them.

Up to the present time the highway program in general has been unco-ordinated, both as to the location of the roads and as to their character of construction. Each local unit, state or county, has proceeded to improve those roads which best serve its local needs without reference to a comprehensive program. It has likewise selected the type of construction according to its best information (or lack of information). There has been no central agency which has led in the development of standards of construction to determine those most economical. In fact, most of the constructive work which has been done in the development of highway standards

has been done by those who are promoting the use of their materials in this work.

In spite of the large expenditures which have already been made and the far larger ones now being made or in immediate prospect, the feeling prevails in many quarters that we still have much to learn regarding the types of construction most suitable for various local conditions and classes of traffic, and the rapid deterioration of many of these roads of even recent construction supports this contention. The railroads who guard their own expenditures most carefully by trained staffs of specialists have a right to expect that the public authorities to whom they will turn over large sums of money in taxes of one kind or another within the next few months, will exercise similar care. This will involve far more engineering study and design than has been given most highway construction to date.

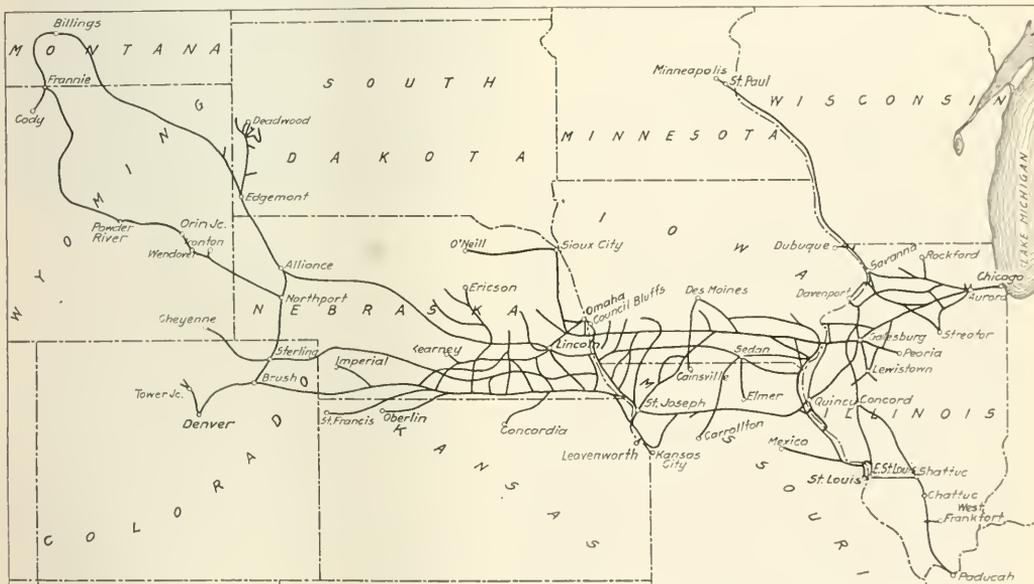
### Chicago, Burlington & Quincy

**I**F A MEDAL were to be awarded to the railroad that has secured the most publicity during the past several months, there would probably be a unanimous decision in favor of presenting it to the Chicago, Burlington & Quincy. Through the application to the Interstate Commerce Commission

as a property; one would be merely adding to a wealth of material that has already been published.

The question that would be more worthy of discussion might better be the manner in which this high-grade and prosperous carrier has fared under federal control and the progress it is making in meeting the many problems resulting from the aftermath of government operation. Analysis shows that in important respects the experience of the Burlington has not been exceptional. Its operations have shown an increase in gross earnings similar to that of most roads, the usual still greater increase in expenses and the like resulting decrease in net which are typical. The Burlington's standard return for the period of federal operation was \$33,360,683. In 1918 it earned for the government a net railway operating income of \$25,016,100; in 1919, \$25,156,532. In 1920, including two months of federal control, six months of operation under the guaranty provisions of the Transportation Act and four months of private operation, the company's net railway operating income, as reported in the December monthly statement to the Interstate Commerce Commission, was but \$8,012,045.

The year 1920 was the busiest in the Burlington's history with the exception of 1918. In 1920 the road carried 47,233,256 tons of freight as compared with 47,264,416 tons in 1918. The revenue ton-miles in 1920 were



The Chicago, Burlington & Quincy

covering the steps proposed by the Hill lines to refund the Burlington joint 4's and as a result of the sale of the new issues, the property and its operations were put in the lime-light for an extended period. Searching analyses on the part of financial houses and others were made public, and the final result was that the Burlington came through the tests with a record of 100 per cent. Someone has suggested that the factors to determine whether a railroad property will be successful are chiefly three—its strategic position; its physical characteristics and its management. The Burlington was given a grade of A on all three points and presumably now stands before the public as an example of what an American railroad ought to be. In view of all that has taken place, it is hardly necessary to discuss the Burlington

14,130,364,374 as against 14,162,605,344 in 1918. In 1920 the total freight revenues were \$131,040,733; in 1918, in which year traffic was carried at lower rates, the freight revenues were \$104,492,837. Total revenues in 1920 were \$186,872,918; in 1918, \$144,172,769. The increase in revenues as between the two years was thus about \$42,700,000. The increase in operating expenses as between the two years was \$49,000,000. To carry this comparison further, attention should also be given to 1916, in which year the Burlington did less business than in either 1918 or 1920, but in which it earned the largest net. The increase in total revenues in 1920 over 1916 was \$77,700,000; the increase in operating expenses \$90,000,000.

These facts are brought out in this detail because they

are of special importance as far as the Burlington is concerned. The Burlington is noted for its conservative financing and the practice that has been followed over an extended period of years of putting earnings back into the property for the purposes of bringing it to higher standards and of enabling it to operate more efficiently and economically. The management of the Burlington seemed to have an almost uncanny way of utilizing its funds to the best advantage. As a result it was enabled to derive full advantage from the growing traffic of its increasingly prosperous and expanding territory and, in short, to benefit in an unusual degree from the working out of what the economists call the law of increasing return. It is not advisable to put too much stress on operating ratios. However, it is a fact, nevertheless, that over a period of years the operating ratio of the Burlington showed a steady decrease; in the year ending June 30, 1913, it was 66.59 per cent; in 1916, but 59.74. Since that time, however, the tendency has been the other way; in 1917, it was 64.27 per cent; in 1918, 77.73; in 1919, 78.42 and in 1920, 86.32 per cent.

The increase in operating ratio in these several years can not be attributed to any marked decrease in operating efficiency, although it is to be presumed that the important factor of morale must have suffered on the Burlington during the war just as it did on all other roads. In 1913 the average revenue train load on the Burlington was 484 tons; in 1916 it was 575 tons; in 1918, 669 tons; in 1920, 655 tons. The average revenue load per loaded car in 1913 was 19 tons; in 1916, 20.53 tons; in 1918, 25.78 tons; in 1920, 24.86 tons. The Burlington in 1920 secured a figure of net tons per train, including in this case both

the total material expense (excluding fuel) increased \$9,554,628, or 39.77 per cent and the total fuel expense increased \$5,579,855, or 40.58 per cent. These several comparisons might be carried further, but no doubt enough has been said to show that the Burlington's difficulties, serious as they are, are after all, only those of the railroads as a whole.

The Burlington is in rather a better position than most roads. It should realize rather better than most roads on any improvements that may be brought about in the railway situation. The fact that a road as favorably situated and as efficiently operated as this one should have been so adversely affected as it has been, is, however, rather a clear indication of how serious the railway situation is and has been.

In reviewing the operations of a road like the Burlington, or the Lackawanna, which are noted for their continued physical improvement, one cannot fail to omit reference to the particular projects that may be under way at the time. The Burlington in 1920 had capital expenditures totaling \$14,737,456, including \$8,516,660 for road, \$6,176,945 for equipment and \$43,851, general. "Capital expenditures generally," says President Holden in his report, "have been directed toward the improvement of existing property, particularly locomotive shops and terminals, yards and station facilities and primarily for increasing efficiency and economy of operation."

Among the improvements in hand in 1920 were those related to the Chicago union station project; grade elevation through Aurora, Ill.; new engine terminal facilities at Galesburg, Ill., Pacific Junction and Denver, Colo.; second track

## CHICAGO, BURLINGTON &amp; QUINCY OPERATING RESULTS

Year	Freight Revenue	Passenger Revenue	Total Revenue	Total Expenses	Net Revenue	Operating Ratio	Revenue Tons	Revenue ton Miles	Average Haul	Average revenue Train load	Car load
1912-13	\$64,063,856	\$21,895,691	\$94,374,485	\$62,842,891	\$31,531,594	66.59	33,389,439	8,791,435,597	263.30	483.83	19.10
1916	77,310,516	21,833,534	109,191,204	65,235,705	43,955,499	59.74	39,278,135	10,923,326,440	278.10	574.69	20.37
1917	87,008,590	24,373,780	122,342,707	78,632,343	43,710,363	64.27	45,364,552	13,143,186,449	289.72	629.39	23.53
1918	104,492,837	28,052,905	144,172,769	112,067,616	32,105,153	77.73	47,264,416	14,162,605,344	299.65	668.81	25.78
1919	107,019,738	35,345,235	154,011,438	120,777,801	33,233,636	78.42	40,235,427	11,952,720,771	297.07	620.97	22.60
1920	131,646,733	36,468,265	186,872,918	161,304,686	25,568,232	86.32	47,233,256	14,130,364,374	299.16	654.85	24.86

revenue and non-revenue freight, of 766. This was the highest train loading of any carrier in the west whose operations are at all comparable with the Burlington's with a single exception—the Great Northern, which had in 1920 net tons per train averaging 777. Further than that the car miles per day on the Burlington in 1920 were 31.8, a high figure. The ton-miles daily per car on the Burlington in 1920 averaged 611; the average for the western district was 503, and for the country, 496. The decrease in net earnings on the Burlington in 1920 came about in spite of efficient operation.

The trouble with the Burlington in 1920 and, at present as well, was the wage scales, the increased costs of fuel and the fact that the traffic to be handled fell off before the benefit of the rate increases in Ex Parte 74 could be realized to counterbalance the increased expenses. In the comparisons which have been given above, comment on the figures for the year 1919 was omitted, because in 1919 the traffic handled was considerably less than in either 1920 or in 1918. However, it may be noted that the ton-miles of revenue freight in 1920 were 18.22 per cent over 1919 and the total operating revenues 21.34 per cent greater than in 1919. As against these increases there was an increase of 33.55 per cent in operating expenses. The increase in revenues as between the two years was \$32,861,480; in expenses, \$40,526,885.

The reason for the increased expenses is plainly evidenced by the following figures: In 1920, as compared with 1919, the total payroll increased \$28,950,520 or 37.83 per cent;

on the Beardstown and St. Joseph divisions, totaling about 11 miles; work on bridges, including notably the Platte river bridge at Northport, Neb., completed in August, 1920; the installation of 300 miles of automatic block signaling on the Aurora and Lincoln divisions of which 97 miles was completed in 1920, etc. A total of 340 miles of 90-lb. and 100-lb. rail were laid in 1920. During 1920 the Burlington placed orders for 15 six-wheel switching, 16 Mikado and 15 2-10-2 type locomotives and 500 stock cars, a substantial portion of which were delivered before the close of the year.

The operating results in 1920 as compared with 1919 follow:

	1920	1919
Mileage operated .....	9,390	9,372
Freight revenue .....	\$131,646,733	\$107,019,788
Passenger revenue .....	36,468,265	35,345,285
Totals .....	186,872,918	154,011,438
Maintenance of way expenses .....	30,263,101	21,487,643
Maintenance of equipment .....	42,366,974	32,422,401
Traffic expense .....	1,752,317	1,064,457
Transportation expenses .....	79,828,378	60,170,510
General expenses .....	5,191,045	4,183,847
Total operating expenses .....	161,304,686	120,777,801
Net revenue from operation .....	25,568,232	33,233,636
Taxes .....	8,792,392	8,115,392
Operating income .....	16,702,350	25,086,664
Net railway operating income .....	12,975,246	22,530,855

Corporate income account is as follows:

	1920	1919
Railway operating income and standard return .....	\$11,230,951	\$30,735,006
Gross income .....	30,706,991	31,881,131
Interest on funded debt .....	6,816,006	6,669,587
Total deductions from gross income .....	7,782,627	8,338,660
Net income .....	22,924,364	23,542,471
Dividends .....	8,867,128	8,867,128
Income balance .....	13,826,158	14,173,088

# Lackawanna Elevates Tracks Through East Orange

## Section Between Newark, N. J., and Orange Forms Closing Link in Suburban Grade Crossing Elimination

THE DELAWARE, LACKAWANNA & WESTERN has recently started work on the elevation of its main line through East Orange, N. J., on the Morristown branch of the Morris & Essex division. This operation involves approximately two miles of track, lying between the city lines of Newark, N. J., on the east and Orange on the west. The work is in reality the completion of the program started a number of years prior to government control, for the elimination of all grade crossings, the addition of a third or express track, and the construction of more modern passenger sta-

city of Newark, because of the necessity of securing sufficient elevation through the major portion of the city of East Orange to permit of the construction of undercrossings without too great a depression of the streets involved. This necessary elevation is obtained by the use of a  $1\frac{1}{2}$  per cent grade from a point 200 ft. east of the Newark-East Orange city line to Greenwood avenue, at the east end of the Grove street station, the first stop in East Orange, changing there to a 0.78 per cent grade for about 1,200 ft. to North Maple avenue, at which point the line will revert to the  $1\frac{1}{2}$  per cent grade, which will be maintained until the East Orange station is reached. From there west, the line will continue to ascend, on grades varying from 0.55 per cent through the East Orange station down to 0.177 per cent through the Brick Church station and finally joining the present elevated line in the city of Orange at a level grade. These grades result in a maximum elevation of the new tracks of approximately 20 ft. above the present track.

The grade crossings to be eliminated will necessitate the construction of six new and independent undercrossings, the rebuilding of an existing structure over the East Orange



Laying the New Temporary Track Alongside of the Old Line

tions in the suburban territory served by it. This work, consisting of a section on the main line to Morristown and one in the vicinity of the Ampere station on the Montclair branch, marks the closing link of the entire program.

The main line section involves the elimination of 11 existing grade crossings, the alteration of numerous street grades incidental thereto, the addition of a third main track, the construction of two new passenger stations and the raising and reconstruction of a third passenger station. The section on the Montclair branch involves the elimination of three existing grade crossings and the alteration of street grades in their vicinity, the provision of a new undercrossing, as well as the raising and reconstruction of one passenger station. With these improvements the grade crossing problem of the Lackawanna will have been virtually disposed of, so far as it concerns the densely populated suburban territory in the vicinity of New York.

### Grades Are Increased to

#### Secure Undercrossing Clearance

The present line through East Orange is double track, connecting with a three-track line through Newark on one side and through Orange on the other, with three stations intervening, Grove street, East Orange and Brick Church. From the point where the line emerges from the Roseville cut there is an ascending grade of 0.78 per cent which continues to the East Orange station, running level through the station as well as through the Brick Church station, otherwise being on an ascending grade until it connects with the elevated line through Orange.

The new line will have a steeper grade where it leaves the



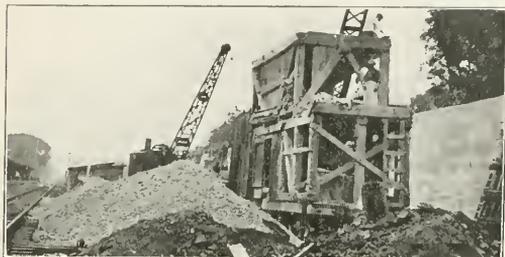
One of the Steel Forms Which Is Being Used Between the Old Line and the Temporary Tracks

Parkway, the provision for six other undercrossings as parts of the elevated station and platform structures at East Orange and Brick Church, together with a subway for pedestrians at North Fifteenth street and an overhead footbridge at North Maple avenue. The independent undercrossings will follow the general design used in the construction of similar crossings on the Orange and South Orange work installed in previous years. The designs developed utilize reinforced concrete slabs for the bridge floor, supported by centrally located concrete piers and abutments and in some instances sup-

ported by the addition of rows of concrete piers or columns along each curb line. The parapets in this type are made integral with the slabs and where the crossing is skewed are reinforced to act also as girders. The design is such that in either case a clear opening of not less than 16 ft. 6 in. is maintained between the center pier and the curb lines.

**Cantilever Flat Slab Type of Viaducts at Stations**

The two new stations will be constructed to the north of the tracks, the one at Brick Church remaining in approximately the present location while the East Orange station



At Work in the Vicinity of the Temporary East Orange Station

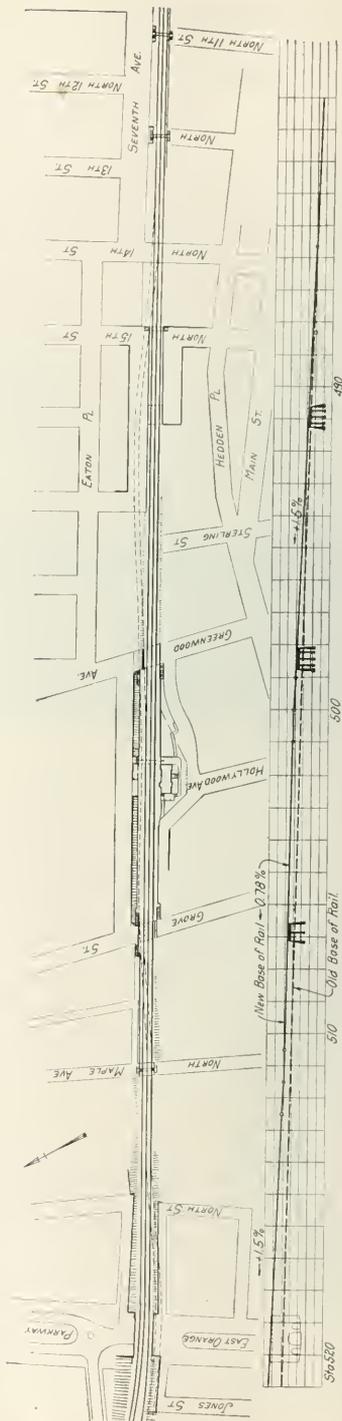
will be located between Main street and Arlington avenue. The tracks at these points will be carried on long reinforced concrete viaducts, with 800 ft. to 1,100 ft. platforms serving the three tracks. The type of construction adopted for these viaducts is the cantilever flat slab type so successfully used at South Orange and Buffalo and will consist of reinforced concrete slabs supported on four longitudinal lines of circular columns at Brick Church and five lines at East Orange. The eastbound main and the express tracks will be served by island platforms, while the westbound main will have separate platforms along the north side of the viaducts. A part of the space under the platforms and tracks will be utilized



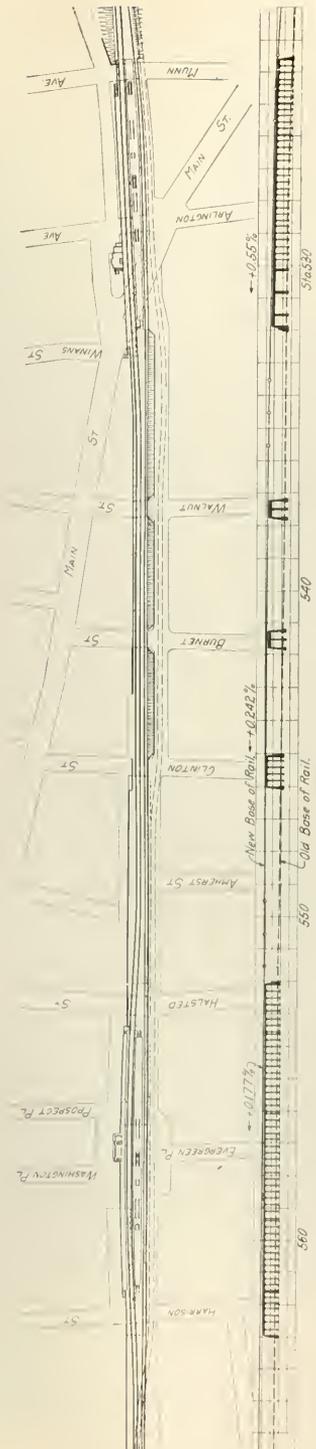
The Start on the Retaining Walls in the East Orange Parkway Section

for additional station facilities, consisting of waiting rooms, ticket booths, etc. The island platforms and the waiting rooms in the stations will be accessible by stairways through the slab structure to the facilities at the lower level, thus obviating the necessity of any crossing of tracks at grade, by incoming or outgoing passengers. The platforms will be covered for a portion of their length and will also have stairs at each end, leading to the streets.

The Grove street station and shelter house will be elevated to conform to the new grade of the tracks, a new street level



Grade Profile and Track Layout of Track Elevation Work East of East Orange Parkway



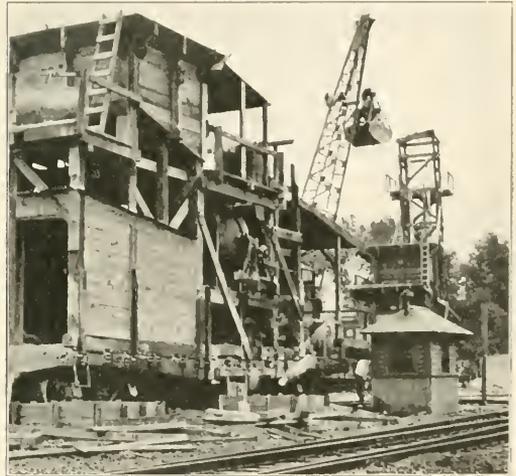
Grade Profile and Track Layout of Track Elevation Work West of East Orange Parkway

floor will be constructed and also a subway connecting the station with the shelter house.

**Elevation Necessitates Considerable**

**Changes in Street Grades**

The elevation of the tracks through East Orange will necessitate considerable changes in existing street grades in addition to some construction of entirely new streets. In the majority of cases it will be necessary to depress the streets for depths varying from three feet to ten feet in order to secure the required clearances of 13 ft. to 14 ft. In the vicinity of North Fifteenth, Sixteenth and Seventeenth streets, an entirely new street will be constructed on the north side paralleling the tracks and connecting North Fifteenth and Seventeenth streets. From Eaton Place, one block north of the railway, the two last named cross streets will be given a descending grade of about four per cent to the junction with the new or proposed street. From this point the grade will continue to descend to the center of what would be North Sixteenth street if it were cut through. Passing under the tracks at this point, the traffic will be swung to the east again,



Large Capacity Concrete Mixers on Flat Cars and Locomotive Cranes Facilitate the Work

paralleling the tracks and passing over another new street leading into North Fifteenth street. The total length of street changes involved at this crossing will be approximately 1,200 lineal feet and will entail some fairly heavy grading.

Other extensive street alterations will be made in the vicinity of the Grove street station and at the East Orange station, where Main street as well as Arlington avenue will be slightly depressed. At the Grove street station the changes will be the greatest in lineal feet and will include changes in grade, of Grove street, Eaton Place paralleling the tracks. Greenwood avenue and the approaches to the station between Greenwood and Hollywood avenues, totaling altogether about 2,400 lineal feet of new grades.

**Temporary Tracks to Be Laid During Construction**

On account of the topographical conditions to be overcome the problem really divides itself into two sections, an east end and a west end with East Orange Parkway practically the dividing line. Temporary tracks will be laid throughout and traffic maintained over the temporary tracks until, with exceptions, the new line is ready for service on the east end

From East Orange Parkway to the connection with the old work at Orange, the problem has been greatly simplified, so far as the construction facilities are concerned, by the availability of a street paralleling the Lackawanna's line. A temporary double-track line has been laid along this street, with a complete automatic block signal installation. At the Parkway heavy concrete retaining walls will be built to carry the two temporary tracks and afterward used to retain the new embankment at this point. With traffic thus completely detoured around the west end of the work, the necessary retaining walls, viaducts, undercrossings and stations can be constructed, the fill made, the new tracks laid and made ready for use.

The temporary relocation of the main tracks has entailed the construction of a temporary station between South Clinton and Burnett streets, and a temporary waiting room between Burnett and Walnut streets, with driveways leading to both and a platform extending the full length of the two city blocks. This will serve the patrons of the present stations at East Orange and Brick Church.

### East End Will Be Raised Under Traffic

At the other or east end the problem is much more difficult, because of the limiting conditions, which will require that the temporary tracks be kept somewhere near the present alignment. Leaving the Newark depression the temporary tracks will swing out to the north, paralleling the present roadbed until they reach the east end of the Grove street station. Through this section it will be possible to carry the new work practically to completion without interference of traffic, but from the east end of the Grove street station to East Orange Parkway the work of raising to the new grade will have to be carried on chiefly under traffic. From the point mentioned the tracks swing back onto the present roadbed, following the north edge for a short distance and then cross the present alignment, joining the two temporary tracks laid in the street on the south side of the line. With the completion of the work on either side of the part just described the temporary tracks will be cut into the new lines by means of run-offs and the final raise to grade then made. With three tracks available two will be kept in operation while the third is being raised after which the operation is shifted to another set and the method repeated.

The design and construction of this improvement at East Orange is being carried out under the direction of G. J. Ray, chief engineer of the Delaware, Lackawanna & Western; M. H. Doughty, division engineer; F. J. Nies, architect; A. E. Deal, bridge engineer; M. Hirschthal, concrete engineer, and O. H. Kellogg, assistant engineer, in direct charge of the work. The contractors on the work are the F. M. Tallot Co., H. F. Curtis and Hyde & McFarland.

## Coopering Cars for Grain

**E.** F. FORD, freight service inspector of the Chicago, Burlington & Quincy, has prepared some useful suggestions to grain shippers, calling attention to the need for careful inspection and preparation of grain cars, particularly at this time when over \$4,000,000 out of a total of \$6,000,000 paid out in loss and damage claims to grain, represents shortages resulting from causes other than wrecks. Mr. Ford says:

It has been our experience that grain can be moved practically without leakage by the right kind of teamwork on the part of shipper and railroad agent. Our statistics show as many as 100 to 200 cars from a certain station forwarded without a claim, while a nearby station forwarded half as many cars and had several claims, both stations being on the same railroad and the empty cars allotted by the same car distributor and set to elevators by the same train crews.

Investigation of such cases invariably develops that at the station having such good results, there is teamwork on the part of shipper and railroad agent in the inspection and coopering of cars, while at the station having unsatisfactory results we find there is little or no co-operation between shipper and agent. The local will set out an empty car, and if the agent sees a "Fit for Grain" tag on it he has it set for loading, shipper does what he regards a good job of coopering and the car is loaded. Three heads are better than one, and if the shipper would request the railway agent to look the car over after it has been coopered, in many instances defects which escaped the previous inspection would be discovered.

A shipper should not assume that a car is fit for loading simply because a "Fit for Grain" tag is on it. Car inspectors, like the rest of us, are liable to error. The safest course is for the local agent and the shipper to carefully inspect the car before loading regardless of the tag.

Reject any car with weak or broken door or end posts, leaky roof, creosote or oil-soaked floor, or if it is an old car which in your judgment cannot be made grain-tight by a fair amount of coopering.

Look carefully for cracks at side walls caused by short floor boards and cover tightly with paper or burlap, cleating the paper or burlap.

Cover tightly in the same manner all defective places found in car lining, being particular to cover with tight fitting boards end-door openings.

King pins and draft bolts should be covered and cleated.

Grain lining at top and belt rail should be carefully inspected and where not absolutely grain-tight it should be made so by use of paper or burlap calking.

Place paper pads tacked to door post to give smooth surface and tight fit to grain doors, which should be nailed with 12d nails two to each end of each grain door. This is important, since experience proves that 12d nails are the exact size required for safety—this nail gives 1/4 inch penetration into the oak door post and will hold the door in its place through any rough handling car might encounter. Smaller nails give trouble and larger nails require chopping out and consequent destruction of grain door at unloading point.

Cover with paper all grain door cracks and where loading heavier than 60,000 lbs., reinforce with an extra door across joints between first, second and third door joints from the bottom.

Go over the outside of car and securely fasten with cement-coated nails any loose sheathing boards you may find.

Prevent any possible leakage where sills have rotted by using burlap padding nailed to bottom of sill and further secure sheathing by nailing a strip of board over it at the rotted sill.

Before a wagon load of the new crop is taken in, the cautious shipper satisfies himself beyond any doubt that his scales are in good shape, having them inspected and overhauled if necessary. He also keeps a complete record of purchases and of cut-off when elevator is made empty during shipping season, of weights loaded, outturn weights, etc., so that when an actual loss in transit has occurred the shipper is able to present satisfactory proof to the railroad of the extent of his loss.

Team work by shipper and railway agent wins for both, and heads off claims.



Photo by Keystone.

Railway Station at Lucerne, Switzerland

THE STATE SUPREME COURT OF MINNESOTA, on July 22, held that the United States Railroad Administration is liable for damages resulting from a fire which started on the Great Northern tracks near Cloquet, Minn., and swept into that city in October, 1918, causing a loss of many hundred thousand dollars.

# Fuel Conservation Plan of the Central of Georgia

Over \$30,000 a Month Saved by Consistent Efforts and  
Co-operation of Employees

**A**BOUT FIVE MONTHS ago, the Central of Georgia effected a permanent organization of committees for securing the greatest possible economy in the use of fuel. Splendid results have been obtained under this plan and the fuel performance for the months of April and May showed reductions in the unit consumption of approximately 18 per cent compared with April and May, 1920. Based on the average price prevailing during these months, the monetary saving amounted to \$36,967 and \$38,080, respectively.

The June issue of *The Right Way*, the employees' magazine issued by the Central of Georgia, is a special number devoted principally to the subject of fuel economy and contains numerous articles by employees in the various departments, outlining the methods they are using to reduce the coal consumption. One of the principal articles is by W. H. Fetner, superintendent of motive power and chairman of the general fuel committee. This article describes concisely the organization and methods which have been applied with such success in reducing the fuel consumption and is therefore reprinted below:

For a number of years in the past the Central of Georgia has followed the usual plans in conducting fuel economy campaigns. Fuel meetings were held at various points on the system and many practices were introduced by which fuel could be saved.

These campaigns are productive of certain results, but, unless followed continuously from day to day and month to month, do not produce any permanent improvement. With this idea in mind, and in order to bring down the coal bill and get results that will be permanent, the vice-president and general manager conceived the idea of a regular fuel organization of a permanent character.

This organization was effected during the month of February and was carried out according to the plan of the vice-president and general manager. The first step was the appointment of a general fuel committee, of which the superintendent of motive power is chairman. The other members of this committee are the assistant general manager, general superintendent, chief engineer, engineer of maintenance of way, purchasing agent, general road foreman of engines, engineer of tests and the transportation inspector.

This committee handles the following matters: The coal supply, distribution of different grades with the view of getting the best possible results from each grade of coal, method of handling coal at chutes, the storage of coal, regulation of the coaling of locomotives to full capacity at certain points, and to light capacity at others, in order to save expense of hauling, and the settlement of questions submitted by division committees and others pertaining to fuel and its related subjects. The committee meets once a month, or oftener if necessary, at the call of the chairman.

## Purchase of Fuel

In order to get the best results in handling the above questions, sub-committees were appointed from the members of the general committee to specialize on certain matters. To handle the purchase of fuel, the following sub-committee was appointed: The purchasing agent (chairman); the assistant general manager, the general superintendent, and the engineer of tests.

A certain proportion of our fuel supply comes from the Alabama fields. This supply has been obtained for a number of years from the same mines, and therefore the majority

of the company's firemen are very familiar with this fuel.

This contract is renewed from year to year, but close inspection is made of this fuel from time to time, and visits are made to the mines and washers of the operators furnishing the fuel, by the engineer of tests. Samples of the fuel are sent to the company's laboratory and analysis made. In this manner we keep posted on the physical and chemical condition of our fuel.

It is necessary from time to time to purchase spot coal, sometimes in considerable quantities, due to a falling off of the regular supply. This is brought about from several causes, and very often necessitates going into new fields for a supply. This is handled by the engineer of tests. He visits the mines, investigates conditions and obtains samples. Report is made to the committee, who decide for or against the purchase, as the case might be. If the investigation indicates that the coal in question is worth considering, a car is ordered and the coal is tested on the locomotive under working conditions. By following this method we are assured of getting a good grade of coal. It is then the committee's duty to see that the quality is kept up to standard by the operators.

## Distribution and Storage

The sub-committee on the distribution and storage of coal is as follows: The general superintendent (chairman); the purchasing agent, the chief engineer, the general road foreman of engines, and the engineer of tests.

This committee, as mentioned above, handles the distribution of fuel. It is impossible for the railroad to get all of its fuel supply from one mine, consequently we have the usual conditions resulting from the use of fuels from different districts. Some of the coals which we use will mix with any other, while some will not, and if these latter are mixed the usual troubles arising from this cause will follow. I refer particularly to the forming of clinkers in the firebox, which is always objectionable and very often serious, as it is the cause of low steam and delayed trains, besides the waste of fuel. Our committee, knowing these conditions, arrange the distribution of the different coals with the idea of reducing the mixing to a minimum. They also handle the storage of coal to the end that the proper coal will be stored in the proper place and in the proper manner.

There is a sub-committee on coaling stations, as follows: The chief engineer and engineer of maintenance of way.

This committee has supervision over the maintenance of coal chutes and coaling stations, the selection of new ones, and any change that might be made in order to facilitate the handling of fuel from a standpoint of efficiency and reduction of cost.

The sub-committee on coaling locomotives consists of the general road foreman of engines and the transportation inspector.

## Division Fuel Committees

This committee supervises the coaling of locomotives, with the view of saving as much hauling as possible. In order to do this the fuel stations must be located as near the coal supply as possible. It certainly is just as easy for a locomotive to make a round trip over a certain division, starting from one end with its supply of fuel, as from the other. In this manner considerable expense is saved, which includes fuel burned in the unnecessary hauling of coal.

This covers all the duties of the general committee, as well

as the sub-committees. The next step in the formation of our fuel organization consisted in the appointing of committees on each division and also at certain terminals.

The division committee consists of: The superintendent (chairman); master mechanic, trainmaster, road foreman of engines, roadmasters, supervisor, chief dispatcher, two locomotive engineers, two locomotive firemen, one conductor and one yardmaster.

These division committees meet once a month on regularly scheduled days and handle the following subjects:

First—The holding of special fuel meetings at different points on the division with their employees, in the interest of fuel economy.

Second—Method of coaling locomotives at different chutes. Preventing the overloading of tanks, thereby saving fuel which would otherwise be lost off the tank during the movement of the locomotive about the terminal and on the road.

Third—The separation of different grades of fuel on chutes, where necessary to provide selected grades for passenger service. Also the separation of different grades at chutes which serve two or more divisions using different coals.

Fourth—The daily inspection of the quality of coal unloaded on the chutes.

Fifth—The periodical inspection of chutes to prevent waste of fuel which falls off locomotive tanks from overloading, and which in other ways gets on the ground.

Sixth—The handling of locomotives at terminals and engine houses to prevent them being fired up too far in advance of their leaving time; to prevent them from being held too long at cinder pits awaiting fires to be knocked, or being delayed in getting into the engine house. They also supervise the firing up of locomotives, not only with the view of saving fuel at this point, but to get the fires properly started and in good condition when the locomotive is turned over to its crew.

Seventh—The assignment of regular engines to regular engineers and firemen.

Eighth—The supervision at engine houses of repairs to locomotives, with the view of specializing on repairs to defects which make locomotives wasteful of fuel.

Ninth—Prevention of delays at engine houses and yards.

Tenth—The arrangement of schedules and meet orders so as to avoid excessive delays to freight trains at meeting points. To avoid where possible putting long and heavy freight trains in sidings on grades which are hard to start away from. In other words, it is the idea to give the long, heavy train the advantage at all times possible.

Eleventh—The reduction of slow orders, particularly on grades, and the prompt removal of flags when work is complete.

Twelfth—The flagging of trains by maintenance of way employees.

Thirteenth—The supervision of fuel at all stationary boilers, which includes shop boilers, pumping station boilers, heating plant boilers, etc.

Fourteenth—All other matters of interest, including the constant talking to and keeping the question of fuel economy before all engineers, firemen, trainmen, yardmen, engine-house men, and all others either directly or indirectly concerned with the handling of fuel.

All of the above subjects are of considerable importance, and each one has a direct bearing on the question of fuel economy; so in order to get the most efficient handling, sub-committees were appointed to handle each subject. These committees consist of from two to five members of the division committee, selected according to their experience with and their knowledge of the subject in question.

These sub-committees make their reports to the division committee, either as a special report or at the regular meeting of the committee, as the occasion may require.

At our most important terminals there are terminal committees which handle as many of the aforementioned matters as may apply to them. These committees are composed of the superintendent of terminals, master mechanic, general yardmaster, supervisor, coal chute foreman, one engineer and one fireman.

At some of the more important outlying points we have committees composed of the general foreman, two or more engineers, two or more conductors, two or more firemen and one yardman.

These committees work in conjunction with the division committee, and handle all matters pertaining to fuel economy.

Full reports of all committee meetings are made and copies are sent to each member of the general committee, as well as to the committees of other divisions.

In this way the general committee keeps in close touch with what is being done on all divisions. They can observe the interest that is being displayed by individuals and by committees. It is the policy of the general committee for one or more of its members to attend division meetings whenever possible.

The interest manifested by the various employees, whether committee men or not, is wonderful. Every member of each committee started out with the avowed intention of doing his very best toward the movement.

Improvement was seen in a short while. The efforts of those directed towards the repairs to locomotives, particularly those which caused excessive waste of fuel, soon began to bear fruit, with the direct result that we have better satisfied engine crews. This improvement in the condition of their engines of course is an incentive to them to put forth their best efforts and get out of the locomotive the best possible results.

### Concerted Efforts Bring Results

As a result of these efforts our fuel performance for the system for the months of February and March, 1921, was quite an improvement over that of February and March, 1920, as shown by the following figures:

	Passenger service, pounds of coal per pass. train car miles	Freight service, pounds of coal per 1,000 gross ton miles	Switching service, pounds of coal per locomotive mile
February, 1920.....	23	240.7	141.8
February, 1921.....	22	216.5	132.5
March, 1920.....	22.4	235.7	137.7
March, 1921.....	18.9	197.1	121.6

The actual saving in dollars, due to a better fuel performance in the three classes of service, was \$15,073.03 for February and \$39,172.89 for March, 1921. This shows conclusively what can be accomplished by the concerted efforts of every one concerned, whether it be the fireman who puts the fuel in the firebox, the engineer who is handling the engine, the men who take care of the train line, the men who attend to the front end, the flue blower and many others. Each one has a direct influence on the performance of the locomotive by doing his part of the work well, and thereby preventing failures on the road.

With the view of creating further interest in the work, it was decided to publish each month, as soon as possible after the data was all in, the individual performance of each locomotive. This was started with the month of March, and is to be continued. This will show some interesting facts from month to month, and our first statement has already brought about considerable rivalry in certain quarters. Some remarkable performances have been made by engine crews in their efforts to lower their fuel record.

### Keeping the Men Interested

We have crews which have made two round trips between two terminals with our large Mountain type locomotives, handling passenger trains of from 6 to 10 cars a total distance of 412 miles on one tank of coal, or on less than 18

tons, for so far each one has gotten into his last terminal with a safe margin left.

Another splendid performance is the covering of 536 miles with a 19 in. by 26 in. 10-wheel locomotive, handling a three car train and consuming 11 tons of coal. Still another one may be mentioned, that of certain crews handling 8 and 9 car steel trains, with a 23 in. by 28 in. Pacific type locomotive, 382 miles on 11 and 12 tons of coal.

It is not necessary for a locomotive to have its fuel supply replenished every time it makes a short run. In the first place, imagine a tank holding 16 to 18 tons of coal; at the end of the first trip approximately four tons has been consumed. The locomotive is taken to the coaling station and enough coal put on to fill the empty space, and in the majority of cases the coal left on the tank is not touched. How long do you suppose this excess coal remains on the tank? If the coal was moved toward the gate and the fresh lot put on in the rear it would be quite different but the coal is not put forward as a general rule unless the locomotive is to turn without getting an additional supply.

The making of such performances as just mentioned shows what can be done when anyone puts his heart into his work. You cannot expect an engineer or fireman to have his heart in his work when he gets on his engine and finds it dirty and ill kept. What would any fireman say, one with any pride at all, if when he looks into the fire door he finds his fire in bad shape, dirty and clinkered; and the engine just from the engine house? Then when they start out they discover that the piston valve packing is blowing or that engine loses one or two exhausts when the lever is pulled up, driving boxes or main rods pounding and various other defects. Could you expect them to put forth their best efforts? All you can expect of them is that they will handle that locomotive over the road just as it has been handled in the engine house.

### Saving Fuel in the Roundhouse

While the engineer and fireman are not the only ones who can waste or save fuel, the engine house is a very good place to start with; so, as mentioned before, we started specializing on those repairs which had to do directly with the efficient performance of the locomotive from a fuel standpoint.

It would surprise anyone who has had experience in these matters, to know just how much fuel can be saved by the

proper supervision over the fire builders. How much fuel is wasted yearly by firing locomotives up too far in advance of their schedule leaving time? A modern locomotive will consume approximately 300 lb. of coal per hour standing under steam with all valves closed. This will vary, of course, with weather conditions and conditions of the locomotive. Don't let your fuel be wasted in this manner, as there is no excuse for it. Have men on the job that understand the building of fires. Don't let the locomotives reach the train with the fires dirty and improperly made. They can be properly prepared and it is the duty of those in charge of this part of the work to see that it is done.

I feel that too much emphasis cannot be placed on the foregoing, as I have always considered that the handling of locomotives at the terminals presented a splendid field for the fuel economist.

I cannot take up the space necessary to go into all the details concerning the many ways in which the locomotive is allowed to waste fuel, but I must mention some of them, such as dirty flues, choked grates, restricted air openings in the ash pan, air leaks in the front end, blowing piston and valve packing, and many others. Soot is a better insulator against heat than asbestos, so keep the flues clean and free from everything that prevents the transfer of the heat to the water in the boiler. Keep the air spaces in the grates open and see that each locomotive has air space in the ash pans, equivalent to at least 14 per cent of the grate area. Keep the front end tight, for you cannot maintain the vacuum in the front end unless you do, and if the vacuum is not maintained the locomotive cannot properly burn the fire, and we have the usual result—waste of fuel. When the pistons and valves are allowed to blow, steam is wasted and in addition the cylinders and steam chests cannot be properly lubricated.

Much has been said and a great deal written on the subject of fuel economy, but until it becomes a fixed principle we cannot expect to accomplish a great deal. The interest manifested in this work by the employees of the company is truly remarkable, and due to this interest our April performance, which has just been published, is a splendid achievement. The pounds of coal per thousand gross-ton miles per passenger car train mile and per switching locomotive mile, is the lowest in the history of the railroad, and as a result the company makes a saving in its fuel account of \$36,967. Co-operation has brought this about.

• • • • •



The Interstate Commerce Commission

Left to right—J. B. Campbell, M. W. Potter, C. B. Aitchison, H. C. Hall, C. C. McChord, Chairman E. E. Clark, B. H. Meyer, W. M. Daniels, J. B. Eastman, J. J. Esch and E. I. Lewis.

Supplemental Tentative Valuations

STATEMENT SHOWING "FINAL VALUE"—INVESTMENT IN ROAD AND EQUIPMENT AND CAPITALIZATION AS STATED IN THE VALUATIONS BY THE INTERSTATE COMMERCE COMMISSION

Table with columns: Date of val., Miles of road, Miles of all tracks, Carrier, Wholly owned and used, Owned but not used, Used but not owned, Total value, Total used, Total owned, Carriers' books, Investment in road and equipment, Accounting's, Debt, Capitalization (General, Special, etc.), Total.

Tentative Valuations

Table with columns: Date of val., Miles of road, Miles of all tracks, Carrier, Wholly owned and used, Owned but not used, Used but not owned, Total value, Total used, Total owned, Carriers' books, Investment in road and equipment, Accounting's, Debt, Capitalization (General, Special, etc.), Total.

1915	31	St. Johns River Terminal Co., Ry. Co.	1,880,300	600	405	1,880,900	1,880,705	1,295,005	100,000	1,206,219
1916	12	St. Louis & Northern R. R. Co.	2,820,321			2,820,321	2,820,321	2,132,165	4,744,000	1,662,450
1917	16	Southern Railway System	4,600,121	400,000		5,200,121	5,330,039	5,531,384	7,000,000	5,883,421
1915	97	Tombah & Goldfield R. R. Co.	1,856,150	40,000		1,856,150	1,856,150	3,747,657	2,150,000	377,000
1915	22	The Washington, Potomac & Chesapeake Ry. Co.	216,658			216,658	216,658	2,621,445	300,000	101,000
1915	44	Wisconsin River Branch R. R. Co.	115,537			115,537	115,537	508,956	300,000	56,500
1915	4	Woodstock Ry. Co.	489,213			489,213	489,213	128,904	114,880	60,000
1917	14	Delaware & Northern R. R. Co.	1,417,210			1,417,210	1,417,210	1,288,717	1,250,000	
1916	46	Dodge & Chickamauga R. R. Co.	360,328		662	360,328	360,328	1,224,333	500,000	
1916	23	Montana Western Ry. Co.	186,500		5,450	186,500	186,500	889,436	500,000	
1915	20	Altoona, St. Louis & Western R. R. Co.	17,282,977		43,286	17,282,977	17,282,977	39,481,687	150,000	379,850
1916	450	The Trinity & Brazos Valley Ry. Co.	9,964,056		516	9,964,056	9,964,056	19,347,000	19,347,000	29,064,406
1916	303	Gulf, Texas & Western Ry. Co.	1,667,771		7,460	1,667,771	1,667,771	2,955,453	102,250	170,000
1917	98	Fourche River Valley & Indian Territory Ry. Co.	250,000		7,460	250,000	250,000	333,678	338,000	100,000
1916	19	Dearing Southwestern Ry. Co.	453,000		39	453,000	453,000	978,486	500,000	
1917	29	Intermountain Ry. Co.	891,127		39	891,127	891,127	915,298	918,203	522,500
1915	28	Lufkin, Hemphill & Gulf Ry. Co.	117,072		1,216	117,072	118,288	118,288	100,000	
1916	63	Missouri & Northern R. R. Co.	3,177,706		2,218	3,177,706	3,177,706	5,151,144	1,000,000	536,000
1916	3	Pacific & Rio Grande R. R. Co.	2,400,000			2,400,000	2,400,000	4,421,667	2,928,800	1,983,800
1916	10	Pacific & Atlantic R. R. Co.	3,311,488			3,311,488	3,311,488	5,114,291	448,461	200,000
1916	90	Sumpter Valley Ry. Co.	1,829,745			1,829,745	1,829,745	1,739,159	810,000	810,000
1917	34	Timpson & Henderson Ry. Co.	390,000		7,643	390,000	392,643	397,080	250,000	
1916	96	Central R. R. of Oregon	2,896,272		4,999	2,896,272	2,896,272	11,569,746	5,500,000	2,671,888
1916	174	Grand Canyon Ry. Co.	1,179,824		179,874	1,179,824	1,359,698	1,998,785	1,406,500	642,863
1916	64	Lithonia & Arabia Mountain Ry. Co.	47,000		4,858	47,000	51,858	60,000		
1916	3	Minneapolis & Rainy River Ry. Co.	1,250,000		608,803	1,250,000	1,250,000	1,571,116	60,000	
1915	63	The Ann Arbor Ry. Co.	625,000		14,719	625,000	647,719	1,565,918	475,000,000	972,700,913
1915	118	San Joaquin & Eastern R. R. Co.	11,046,455		80,765	11,127,220	11,127,220	17,341,338	17,341,338	8,223,304
1916	61	San Joaquin & Eastern R. R. Co.	1,148,000			1,148,000	1,148,000	1,196,939	1,000,000	1,438,760
1917	19	Blisset River R. Co.	392,223			392,223	392,223	659,608	250,000	
1916	50	Blisset River R. Co.	1,566,000		106,928	1,566,000	1,566,000	1,686,191	1,686,191	75,000
1916	8	Blinnet & Southern Ry. Co.	56,000			56,000	56,000	112,878	75,000	65,544
1916	2	South Manchester R. R. Co.	171,188		13,237	171,188	184,425	93,576	40,000	

In addition to this amount, \$4,094,000 receivers' certificates and notes have been issued, for which the A., B. & V. and the two terminal companies are jointly and severally liable. The investment and capitalization figures shown above for the Western Pacific Ry. Co., are those of the date of valuation. On December 31, 1917, the company was reorganized with an investment in road and equipment of \$86,988,845 and a capitalization of \$95,000,000.

## I. C. C. Has Served Valuations on 106 Railroads

THE PRESIDENTS' CONFERENCE COMMITTEE on Federal Valuation of the Railroads has just issued a statement relative to the progress on valuation work up to the present time from which statement the following information and tabulated results have been taken.

Prior to April 5 of the present year the Interstate Commerce Commission had served 55 tentative valuations. As a consequence of the decision of the Supreme Court of the United States in the mandamus action brought by the Kansas City Southern against the Commission, (requiring the latter to report the present costs of condemnation and damages or of purchase of lands used for common carrier purposes in excess of the present value of such lands), it became necessary to prepare supplemental tentative valuations.

On April 5 the Interstate Commerce Commission served such supplemental tentative valuations covering the properties of the Atlanta, Birmingham & Atlantic, the Kansas City Southern System, the Winston-Salem Southbound and the San Pedro, Los Angeles & Salt Lake. At various dates since then supplemental tentative valuations have been served upon the other carriers which heretofore received tentative valuations. Within the last few days, in addition to the above, the Interstate Commerce Commission has served tentative valuations upon 51 other carriers.

These valuations are of significance to the carriers as they are the first submitted by the Commission in which any figure of value or "final value" as it is therein called, is reported, and the first containing any estimate of the present cost of condemnation and damages or of purchase in excess of original cost or present value of lands, as required by the second paragraph of the valuation act and the decision of the United States Supreme Court above mentioned.

The statement made by the Commission in these supplemental valuations as to its finding of "final value" generally is as follows:

"Final Value.—After careful consideration of all the facts submitted in this proceeding, and the cost valuations heretofore made, including the excess cost of the carrier lands, appreciation, depreciation, going-concern value, working capital and materials and supplies, and all other matters which appear to have a bearing upon the values here reported, the values, as that term is used in the Interstate Commerce Act, of the property of the above-named carriers owned and used, used but not owned, and owned but not used, devoted by the carrier to common carrier purposes, are found to be as follows:"

The same statement is made in the new tentative valuations, excepting that the following clause is necessarily omitted:

"submitted in this proceeding, and the cost valuations heretofore made"

From an examination of the facts reported in the tentative valuations it would seem that in most instances the figure of final value reported is about the sum of the estimated cost of reproduction less depreciation, the present value of the carrier lands and working capital, including materials and supplies. In some instances where the original cost of carrier lands was in excess of the present value, as reported by the Commission on the acreage basis, the amount of the original cost of carrier lands seems to have been included in the finding of "final value" rather than the sum reported as the present value of the carrier lands. Apparently nothing has been specifically included for the excess cost of carrier lands, appreciation, and going concern value. The present value of the carrier lands which is reported is, generally speaking, merely the acreage or lot value of the adjacent lands applied to the area of the carriers' property. A tabulation has been

prepared and appears below showing the findings of the Commission in the valuation of each of these carriers.

Paragraph "First" of the Valuation Act requires, among other things, that "the Commission shall in like manner ascertain and report separately other values and elements of value, if any, of the property of such common carrier." The tentative valuations first served contained this statement: "No other values or elements of value were found to exist." Both the supplemental and the new tentative valuations make no reference whatever to "other values and elements of value," excepting in so far as these elements may be considered as included in the element of going-concern value, to which the Commission states it has given consideration.

Paragraph "First" of the Act also requires the Commission to report, among other things, "an analysis of the methods of valuation employed and of the reasons for any difference between any such values and each of the foregoing cost values."

Neither the supplemental tentative valuations nor the new tentative valuations contain any analysis of methods other than by reference to the so-called analyses which are contained in and made part of the decision of the Commission in the valuation of the Texas Midland and the supplemental tentative valuation of the Kansas City Southern.

To date 323 preliminary engineering, 247 land and 184 accounting reports have been tendered to the carriers for examination. They are classed as follows:

Class	Lessors			Term. Cos.	Electric Cos.	Tel. Cos.	Steamship Cos.	Not Classified
	I	II	III					
Engineering Reports (Prel.)...	69	51	86	35	46	2	2	30
Land Reports (Prel.).....	53	48	82	14	34	1	1	13
Accounting Reports (Prel.)...	38	33	63	8	28	1	1	12
Eng. and Land Accounting Reports (Prel.).....	37	30	48	8	22	2	1	10

## New 60-Ton Electric Locomotive for Tidewater Southern

THE TIDEWATER SOUTHERN, a subsidiary of the Western Pacific, has recently placed in operation a 60-ton electric locomotive which embodies several interesting features. The present electrified section of the Tidewater Southern is arranged for 1200-volt operation that will be changed over to 1500 volts in the near future. The new locomotive was designed for operation at the higher voltage in view of the contemplated change in potential and will be used for handling the increased interurban freight traffic in the San Joaquin Valley between Stockton and Thurlock, California.

The locomotive is 37 ft. 4 in. long; 9 ft. 7 in. wide, with a total wheelbase of 25 ft. 5 in. All of its weight is carried on the driving axes. The cab has the sloping end steeple type of construction, extending practically the whole length of the underframe, which consists of four steel channels extending the entire length of the platform tied together by heavy rolled bars for the top and bottom member with cast steel webs of the end frame castings and to the bolster plates on the bottom. The bolsters are built up of 1 in. steel plates, 10 in. in width, riveted to all four longitudinal sills.

The drawhead casings are bolted to the center sills, which are in turn riveted to the end frame. The draft gear consists of MCB couplers with 5 in. by 7 in. shank, standard twin springs and follower plates. The whole platform is floored, and the structural steel frame is stiffened by brace plates and a steel floor which extends the width and length of the locomotive.

The side frames of the two four-wheel trucks are built of

heavy rolled bars for the top and bottom member with cast steel pedestals. The bolster or center transom is bolted rigidly to the side frames, and the entire weight of the truck, as well as that of the superstructure, is carried by semi-elliptic springs hung by links to the double side equalizer bars, which rest on the journal boxes. The journals are of standard design with MCB bearings and wedges. The wheels are of solid rolled steel, 36 in. in diameter, with MCB treads and flanges.

The locomotive is driven by four 750/1500-volt, box frame, forced ventilated railway motors through a single reduction gear of 69.17 ratio. The motors are arranged for shunted field operation, which gives a continuous rating on 1500 volts of 14,500 lb. continuous tractive effort at 22 miles an hour. It will operate at reduced speed on 600 volts. The type M single unit control is used with two master controllers giving ten steps with four motors in series and seven steps with two in series. The motors are permanently connected in groups of two in series.

The motor rheostats, and various parts of the control equipment, are housed under the sloping ends of the cab. Current is collected by two pole trolleys which will operate



Electric Freight Locomotive Designed to Operate from 1500-Volt Trolley

through a range of from 14 ft. to 22 ft. above the rail. There is a main switch with a magnetic blowout for opening the main circuit in emergency, or for inspection, and a number of auxiliary switches for the control of headlights, cablights, dynamotor blower set, compressor and compressor relay, control circuits, heaters, field shunting and control transfer. Headlights, as well as cablights, control and compressor relay, are operated from the dynamotor, except when the locomotive is being run on 600 volts, when they are operated from the trolley. There are two air compressors with a combined piston displacement of 70 cu. ft. per minute when delivering air at 100 lb. per sq. in. pressure. Air is used for sanders, bell ringer, and control, in addition to the air brakes.

ORDERS HAVE BEEN ISSUED by the Bureau of Valuation of the Interstate Commerce Commission closing the five district offices and consolidating all work in Washington. H. M. Jones, member of the Engineering Board, with headquarters at Chattanooga, has been appointed supervising engineer and T. P. Artaud, supervisor of land appraisals at Washington, has been appointed executive assistant. It is expected that staff positions in district offices will be abolished as the offices are closed.

# I. C. C. Will Not Measure Efficiency of Railroad Labor

## Elements Indeterminable and Carriers' Claims Indefinite—Long and Detailed Dissenting Opinions

**D**IFFERENCES in the cost of labor do not include changes in the quality or effectiveness of labor but only changes in wages, the Interstate Commerce Commission held in a decision handed down on August 6, prescribing the principles to be followed in fixing the maximum amount to be included in the carriers' accounts for operating expenses for maintenance during the guaranty period of six months following the termination of federal control on February 28 last year. Commissioners Daniels and Potter dissented from the opinion of the majority.

In fixing the allowance for maintenance the basis to be used by the commission will be the expenditure of the carriers for maintenance during an average six months of the test period (three years ended June 30, 1917) adjusted to differences in the cost of labor and materials and in the amount and use of the property. The same process will be used computing charges representing depreciations and retirements.

The proviso regarding the cost of labor, in the standard contract, is held not to "open the door to a comparison of the quality or efficiency of labor. To hold otherwise would be contrary to the plain intent of the proviso \* \* \* for it is impossible by resort to the accounts of carriers to determine the relative efficiency of labor at various periods; and the introduction of this indefinite and intangible factor would have relegated the accounting test to the very limbo of con-

troversy and conflict of opinion which it was designed to avoid. Moreover, what the carriers have in mind is really not the cost of labor but cost of accomplishment, an aggregate made up of the cost of labor multiplied by the quantity necessary for a given task. If it had been the intent to include the factor of quality or effectiveness, or efficiency, whatever it may be termed, this would have been done in apt and unmistakable language and not by the strained construction of a phrase susceptible of a simpler interpretation. This view is strongly confirmed by the history of the negotiations.

"A further significant fact is that the proviso permits the director general to fulfill his obligations in two ways—either by actual expenditure upon maintenance or by payment into funds for future use. If the latter method had been selected, obviously any comparison of efficiency of labor would have been out of the question, although a comparison of wages would have been wholly feasible \* \* \*. The insistence of the director general that efficiency of labor should be eliminated from consideration sprang from the conviction that any attempt to weigh and appraise so indefinite a factor could only be productive of endless controversy. The soundness of this conviction and the inconclusive character of such attempts have been confirmed by the claims which the carriers have filed."

The decision is "by the commission" and is numbered 1176 in the Finance Docket. An abstract follows:

### The Commission's Decision

By section 209 of the transportation act, 1920, carriers accepting its provisions were guaranteed relatively the same operating income for the "guaranty period" as had been paid by the government as compensation during the period of federal operation, and the Commission was charged with the duty of determining the amounts payable and was given certain directions governing the method of determination. The Commission was required so far as practicable to apply the rule set forth in paragraph *a* of section 5 of the "standard contract" between the United States and the carriers. This requires the railroad property to be returned in substantially as good repair and in substantially as complete equipment as it was when taken, and that due allowance be made for any difference that may exist between the cost of labor and materials as between the test period and the period of government control.

Following are the salient features of the decision:

The contention of the director general is that the law recognized the impossibility of determining by any physical comparison the amount of maintenance for which the government was liable and provided instead a simple mathematical or accounting method. The property taken over was so vast that any attempt to ascertain and compare by actual inspection its physical condition at the beginning and at the end of federal control was manifestly out of the question. The maintenance expenditures during the test period were the basic measure, but it was recognized that because of changes in wages and prices and in the amount and use of the property these expenditures would not serve the purpose fairly unless they were equated in accordance with such changes. So far as labor is concerned, the director general confines the equation to the change in wages, including the effect upon wages of reduction in hours of service, and he has already made settlements with a number of important carriers upon that basis. The carriers, however, contend that the equating process should allow, also, for changes in the quality or effectiveness of labor, or they will be unjustly deprived of very large sums of money; that labor was far less effective in the guaranty period than in the test period, because of changes in working rules and conditions and because, also, of a notable reduction of efficiency arising out of changes in personnel and other causes. The controversy centers over the meaning of the words "cost of labor." The director general contends that these words mean only the rates of pay per unit for the recognized varieties of railroad labor, while the carriers con-

tend that the labor must be related to the accomplishment of a given result, and hence that the words include in their meaning quality as well as wages. The original draft of contract proposed by the carriers contained the language: "increases in the cost of material, increases in the price of labor, *decreases in the efficiency of labor*," but the italicized words were eliminated at the instance of the director general. Similarly the carriers lay stress upon the substitution of the words "cost of labor" for "price of labor," and hold that this is inconsistent with any intent to make "cost" synonymous with "price" or rate of pay. It appears, however, that in one of their later drafts the carriers combined reference to "cost of labor" with a provision requiring consideration to be given to "differences in efficiency of labor," thus indicating that the change from "price" to "cost" was not deemed of controlling importance or to make unnecessary specific reference to the matter of efficiency.

We are clear that it was the purpose of the law to provide a simple and easily applied test which would make it possible to measure compliance with the covenant by resort to the accounts of the carriers and without the prolonged controversy which would follow any method involving physical inspection or opinion evidence. \* \* \* The words "cost of labor" in paragraph *c* do not, we think, open the door to a comparison of the quality or efficiency of labor and we therefore find that differences in the "cost of labor," as these words are used in paragraph *c* do not include changes in the quality or effectiveness of labor, but only changes in wages.

All formulae used in the railroads' claim are based upon the theory that changes in the ratio of maintenance expenditures for labor and for materials, so far as they are not accounted for by differences in prices and wages, necessarily reflect changes in the quality or effectiveness of labor. This theory presupposes a degree of similarity, in two given periods, between the kind of work and the conditions under which it is performed which no formula can establish and which the very nature of maintenance makes improvable. The incongruous results which such a formula will produce may easily be shown.

There are also factors affecting the quantity of maintenance labor which have no connection with its quality or efficiency. Such are efficiency or inefficiency of management, changes in standards or methods, weather conditions, the effectiveness of mechanical appliances which may be utilized, and the extent to which repairs

are made under contract in outside shops. The last-named has especial significance in connection with the operations of the guaranty period. \* \* \* That inequity may result if changes in efficiency of labor are not taken into consideration, is far from clear. The government paid most liberal compensation for the use of the railroad properties for war purposes. If there was a decrease in labor efficiency, does it follow that the railroads and their owners were in equity entitled to complete immunity from the burdens which fell upon the country because of the war, or that results would have been in any degree more favorable for them during that period if their properties had remained in private hands?

When the roads were taken over much of their equipment was in poor condition, and \* \* \* we are confronted by claims for undermaintenance during 32 months totaling in the neighborhood of a billion dollars. From this there might well be deduced a present physical condition of the railroads gravely perilous to both life and property. Yet in 1920 these railroads carried relatively more freight and passengers in the aggregate and more freight on the average in each car than at any time in their history.

In the interpretation of statutes the administration of which is committed to such special tribunals as the executive departments, the Supreme Court of the United States has followed the interpretations of the administrative bodies in cases of doubtful meaning, and has deemed a reenactment of any such statute with knowledge of the administrative interpretation, without corrective change, as a congressional sanction or adoption of that interpretation. \* \* \* The transportation act, 1920, which prescribed the contract provision for our guidance, was in every way analogous to the reenactment of a statute with knowledge of an administrative interpretation of it, and these considerations may well influence us in the determination of the issues now before us.

The carriers contend that the obligation of the government was to return the property in as good condition as when taken over; that losses in physical life of property, represented by depreciation, should therefore have been paid for at current values; and that the obligation under the guaranty of section 209 in this respect is the same. But depreciation charges are computed at an annual percentage of the book value and retirement charges take up any remaining portion of this value not accounted for by depreciation or salvage. Upon any unit of property, therefore, these charges do not change as market prices rise or fall; but since new property is taken into the accounts at cost when acquired, the aggregate expenditures for depreciation and retirements are to this extent affected by changes in current price levels. It may be assumed that the bulk of the equipment in use during the guaranty period was bought prior to the test period and was still in use at the close of the guaranty period. Its replacement cost is yet unknown. This is equally true of other property, and it is not proper in determining amounts payable under the guaranty to take into consideration differences in cost of labor and materials which would not have affected the accounts if guaranty-period conditions had been substituted for those of the test period, and neither depreciation nor retirement accounts will be adjusted for such differences.

The guaranty of section 209 was accepted by 667 carriers, and to date they have been paid on account amounts totaling well over \$400,000,000. A balance still to be paid is in controversy, and this report deals with the two major questions which have been in dispute and which were argued before the full Commission last December. Minor questions are appropriately left to be determined as they arise in specific cases. Upon one of these major questions, that which has to do with depreciation and retirements, we are all in agreement. As to the other, there are differences of opinion. It is needless to say that this report is not based upon a distinction between offensive and inoffensive inefficiency. One dissenter goes so far as to state that the carriers make no claim for allowances based on inefficiency. The fact is that the records are filled with their statements as to the alleged expense caused by "inefficiency of labor," with nothing whatever to indicate an intent to limit the expression to any particular species. The carriers claim that various factors, apart from changes in wages or prices, have increased the cost of maintenance work, but they do not undertake a segregation so that we may know what portion is ascribed to any one factor; they ask for a lump sum based upon a formula, revised from time to time, assumed to cover all elements of increased cost whatever they may be. The carriers' adherence to formula has been largely guided by results, and they have yet to accept any without reservations. \* \* \*

Stress is laid upon changes in working conditions. During the guaranty period the Pennsylvania Railroad contracted for the repair of certain locomotives at the Baldwin Locomotive Works. It is significant that in our investigation of this matter the carrier's own witness testified that the cost of repairing a locomotive at the railroad's shops as compared with the cost in the Baldwin shops might be fairly put at a ratio of \$9,453 to \$22,434. This notwithstanding the changes in working conditions. The effect of the "national agreements" is a highly controversial matter, and as yet but one side has been presented to the Senate investigating

committee. If, however, any of these changes in working conditions in effect caused an increase in wages and the amount of the increase can be shown by satisfactory evidence, there is nothing in this report which would preclude an allowance accordingly.

### Commissioner Daniels Dissents

It is agreed that the scales of wages and the prices of materials increased to such an extent that the money expenditures for a given amount of maintenance were substantially greater in the guaranty period than in the test period; not only were the wages per hour or per day increased, but in certain cases the hours of labor per day were reduced, new rates and rules for overtime were established, new working conditions were imposed, and extensive changes in the personnel of shop and other forces incident to the war were experienced. A complete interpretation requires consideration also of differences between the amount of property maintained, and of any difference in use between that of the test period and during the guaranty period which is substantial enough to be considered.

The contentions of the carriers are that they are entitled to be allowed whatever amount was required to accomplish the same amount of physical maintenance that was done during an average six months of the test period; but it has been urged by the director general that if, say, the laying of 100 tons of rail should require 125 hours' work, while in the test period the same amount of work was done in 100 hours, he should pay for only 100 hours in the guaranty period, notwithstanding the fact that the expenditure of such amount during the guaranty period would have resulted in replacing a smaller amount of rail and would have failed to accomplish "the same relative amount, character, and durability of physical repair." One of the curious inconsistencies of this contention seems to be that while it concedes full allowance for whatever changes in the cost of outside labor may be reflected in the higher cost of material, it refuses similarly to allow for the corresponding cost of labor to the carrier in putting the same amount of material in place.

The President in his message to Congress had defined the term "maintenance" as "a guaranty" from the government to the carriers that "their properties will be maintained throughout the period of federal control in as good repair and as complete equipment as at present." It was thus made the duty of the director general, in making contracts with the several carriers, to provide for the maintenance of their properties by the government in such condition as would assure to them the return of their properties, as the President and Congress both declared, "in substantially as good repair and in substantially as complete equipment as it was in at the beginning of federal control." The majority report discusses this matter, but its conclusion is drawn from exceptional cases, where carriers in the test period had undermaintained their properties, and hence overstated their net income. In cases where the director general afforded only the same relative amount of maintenance as the too scant expenditure made by the carrier itself in the test period, it is true that the property at the end of federal control might be in worse condition than at the beginning of such control. But this elevates an exceptional condition into the rule, unless we have ground to believe that American railways generally were undermaintained during the test period. There is nothing whatever to justify the conclusion that it was the purpose or intent of the director general to depart from his instructions or to disregard the act of Congress. There is nothing in the law which would compel us to say that the director general has entered into a contract which does not provide generally for the maintenance of the property in such condition as to assure its return to its owners in substantially as good repair and in substantially as complete equipment as it was at the beginning of federal control.

The majority report says that if the director general had made payment into funds for future use, comparison of efficiency of labor would have been out of the question. I believe that this contention, while plausible, will not stand analysis. The alternative method—of paying money into funds—was to provide for the effectuation of what direct outlay on maintenance would otherwise have secured. Can it be seriously argued that if the dollar currently paid in wage during federal control would have provided more maintenance in actual physical work the director general would have had to pay into funds an amount of money more than sufficient to pay for the maintenance done during the test period? If he would not, how can the conclusion be avoided that he was required, if he elected the alternative method, to pay into funds sufficient to provide for the same amount of work as would have been necessary if the work had been done and paid for outright? While the director general would not agree to the insertion in the contract of the suggested provision as to "inefficiency of labor," neither would the carriers accept the term "price of labor." The contract as finally written rejected both and used the term "cost of labor," and this term we are called upon to construe in the light of its use in the contract, the instructions of the President to the director general, and the requirements of the statute.

It is to be noted that the negotiations respecting the form of the contract were not dealings in the ordinary and usual sense between the parties to the contract. The contract was submitted as standard and was submitted to the individual carrier for its acceptance or rejection. Some carriers refused to sign and others took what was offered in preference to a lawsuit. The rule which we are directed to observe is to be applied "whether or not such contract has been entered into with the carrier whose railway operating income is being computed." The contract is therefore to be interpreted solely in the light of the law which provided for it.

In the face of the duty of the director general as an agent to carry out the instructions of his principal and of his duty to comply with the act of Congress, it is impossible for us to conclude that it was the mere expenditure of money without regard to the result on the maintenance of the property which was in his contemplation or in the contemplation of any of the parties. \* \* \* A comparison of costs of labor without having a unit of labor to deal with is impossible. The units must be comparable units and measurable. A calculation involving only a comparison of the cost of a man's labor at one time with the cost of a woman's labor or a boy's labor at another time would not be a comparison of the cost of labor required to do a particular piece of work. The comparison of the cost of labor necessarily involves dealing with the cost per unit of work done. The purpose in mind was to do as much in the way of maintenance in one period as had been done during another, for presumably the same amount of maintenance would produce the same result in physical repairation. There was no other way to carry the spirit of the act, the proclamation of the President, and even the standard contract into effect. We can not hold that, as used in the contract, cost of labor is synonymous with the price of labor. \* \* \*

The test of the interpretation of the words "cost of labor" is, therefore, to be found in the inquiry as to what changes would have been effected in the accounts showing the expenditures and charges for maintenance during the test period, by substituting for the labor conditions of the test period the labor conditions of the period of federal control or the guaranty period. The adjustments can not be limited to the rate of wages per day or per hour of labor, but must include adjustment for every element of cost of physical repairation or material replacement or restoration, or of what has been referred to as "the labor cost of material in place." The carriers must be required to produce the adequate proof, but on production thereof, they are entitled to its benefit. A greater allowance than this would be unjust to the United States; a less allowance than this would be unjust to the carriers.

### Discussion Should Have Been Confined to Specific Cases

Commissioner Potter, dissenting, reviewed the case of the Baltimore & Ohio and cited at length a study of the subject by Colonel W. A. Colston, director of the Commission's division of finance.\* Mr. Potter said in part:

It is the direct command of Congress that due allowance shall be made for *any* difference in the cost of labor and materials. I dissent from the majority report. I concur in that part of the dissenting report by Commissioner Daniels wherein he demonstrates conclusively that the carriers are entitled to "the same relative amount, character, and durability of physical repairation," which can only mean the cost of material in place. The majority report admits that we are charged with the duty of determining the amounts payable by the United States under the guaranty referred to and that we were given certain specific directions governing the method of determination. It neither determines nor tells how to determine allowances for differences in costs of labor and materials, allowances for differences in amounts of property maintained, or allowances for differences in use of property. It deals with a bugbear of inefficiency of labor which is only a man of straw. When the phrase "inefficiency of labor" is used in the offensive sense of slacking or dereliction of labor, implying a falling short of labor in its duty, it means one thing. My contention and I think the contention of the others in the minority is that when not used in the offensive sense, allowance should be made to the carriers for expenditures made under changed terms and conditions. The majority report is not clear as to whether it is intended to deny allowance to the carriers for such portions of their actual expenditures as resulted from such changed terms and conditions. It is chiefly upon the theory that the majority report would refuse to allow expenditures made necessary by such changed terms and conditions or that it fails to pass upon any claim of the carriers based on the alleged inefficiency of labor, where such phrase is used in the offensive sense referred to. It is obvious that there is much doubt as to whether such a claim would be susceptible of adequate proof. The distinction between the different meanings of the phrase "inefficiency of labor" was drawn to our attention on December 4, 1920 by our director of

finance [Colonel Colston]. His statement, modified to show comparisons of cost per effective hour of labor, is shown in an appendix [not reproduced here]. I have pointed out to my associates voting with the majority that the inefficiency of labor which is made the very gist of their discussion is not in any sense, and certainly not in the offensive sense in which used by them, in issue in this case. I have been unable to secure the correction of the report in this regard and am therefore put to the necessity of showing the real issues by a review at some length of the history of the case. \* \* \* In compliance with instructions, our director of finance proposed as a basis for our determination of the general principles for the fixing of maintenance charges a report in the case of the Baltimore & Ohio, which involved all of the principles as to which a determination was required, and which was based upon the plan tentatively agreed upon between our bureau of finance and the carriers. I think it is very unfortunate that we did not follow the course thus outlined and render our decision in a concrete case, rather than adopt the practice of making an announcement in the abstract. \* \* \*

The familiar principle announced in the *Hermanos Case* cited in the majority report is not applicable to an interpretation of the standard contract. The necessity for the "long continued" construction of a statute which the majority opinion treats lightly is the very essence of the decision referred to. Not only is "long continued construction" lacking in this case but as a matter of fact there has never been any general acquiescence. The present controversy is due to the fact that the other parties interested do not accept the director general's construction and the general principle involved has never been settled by any administrative body. The principle that the director general, a contracting party, would be permitted to interpret or construe his own contract would be an anomaly in the law.

[Commissioner Potter here went into a detailed examination of those features of the national agreements which enhanced the cost of railroad operation, contending that all these should be considered by the Commission.]

### Dissenting Opinion by Commissioner Campbell

Campbell, Commissioner, dissenting, said in part:

The interpretation placed by the majority upon the phrase "cost of labor" is, in my judgment, contrary to the plain and natural significance of these words. If the words of an instrument are plain and unambiguous, as in this case, resort may not be had to extraneous facts in order to ascertain the intent of the parties thereto. A comparison of costs of labor without having a unit of labor to deal with is impossible. The unit must be measurable and the result obtained is the standard by which a unit is to be measured. In other words, the carriers are entitled to be paid for maintenance in place.

Commissioner Hall did not participate in the disposition of this case.



From the Quebec Chronicle

The Universal Scapegoat

\*This was printed in the *Railway Age* of June 17 last, page 1403.

# Canadian Railway Results in Calendar Year 1920

Operating Ratio Was 97 Per Cent—Total Earnings Increased, but  
Net Declined Chiefly Owing to High Labor Costs

By J. L. Payne

Formerly Comptroller of Statistics, Department of Railways and Canals

“ONE OF THE MOST unfavorable years in their history” is the mild but significant statement with which the Dominion Bureau of Statistics commences its preliminary report of operating results on Canadian railways for the calendar year 1920. An analysis of the details which follow would justify the choice of a stronger adjective; for 1920 was really a frightfully disastrous year for the railways of Canada. If it were not for the fact that government is back of lines representing more than 52 per cent of the total operating mileage, another such year might very well mean the stoppage of transportation by rail over a large part of the country. The facts warrant such a gloomy forecast.

Fragmentary information in relation to the Canadian National group, as announced to Parliament several months ago, had prepared the public mind for the full data now given out. In the meantime, the Canadian Pacific report had been issued, and it was avidly accepted as a countervail to the exceedingly discouraging deficit which the Minister of Railways had been compelled to reveal to the country.

Thus the worst and the best were known in advance of the full figures which have now been published. The worst relates to the government system, and yet the Canadian people do not appear to feel any particular sense of uneasiness about the matter. They know that business will go on as usual. Back of that, they also know that the continued operation of the state roads means continued losses, which must fall upon the Dominion treasury; but they have a complacent and quite impersonal way of looking at that aspect of the situation. If taxpayers had not that disposition, the whole business of administration would be immediately and drastically reorganized the world over. As Otto H. Kahn declared recently in his brochure on “Pressing Problems and Some Suggestions,” the article that has risen in cost higher than any other has been government. Yet people do not seem to care.

The burden of growing taxes raises no outcry; but a small advance in the freight rates makes everybody vociferous in denunciation. We live in a world full of contrarities.

## Operating Ratio 97 Per Cent

The ratio of operating expenses to gross earnings in 1920 was 97.17 per cent. Within that pregnant statement of fact lies the whole story of trouble. All other figures are merely collateral and explanatory. For 1919 the ratio was 92.2, which must be compared with an average of 71.0 during the period between 1900 and 1917. In some of those eighteen years the railways had experienced hard times. That was notably true of 1914 and 1915, and the cause was not altogether the disorganization which followed the outbreak of war. The shrinkage of traffic had begun very positively before Germany invaded Belgium, and it is reasonable to assume that an indefinite period of stringency had set in when the war came along to create a feverish and unnatural revival of trade. Trade and traffic are synonymous. That revival, however, was accompanied by such wild advances in the cost of labor and materials, and such a violent expansion in resultant operating expenses, that, despite higher rates and swelling receipts, the railways have finally been brought to the verge of absolute bankruptcy.

We shall be able in a moment to identify quite clearly an

outstanding cause for this distressing spectacle of insolvency, notwithstanding that it was accompanied by unprecedented buoyancy in railway earning power. Before doing so, it is well worth while to pause long enough to recognize the important change which has taken place in the attitude of the public mind—for there is such a thing as a public mind—toward railway interests.

It would have been futile three years ago to tell the people at large that the railways were in trouble. Not a trace of sympathy would have been aroused. There might even have been satisfaction. The railways were “corporations” and stood for “big business,” separate and aloof. They were harried by vexatious legislation and many other demonstrations of hostility.

Today, for the first time, the situation of the railways is understood, and to the extent that such understanding rests on a clear appreciation of the vital relationship which must always exist between commerce and transportation it represents unreckonable compensation for adversity. It may have needed just such unparalleled tribulation to open the eyes of the people and awaken their conscience.

## Largest Gross—Smallest Net

The railway cataclysm of 1920 was co-incident, as has been said, with the largest volume of gross earnings on record. Large, however, as were receipts, the flow of expenditures reached proportions beyond all preceding standards. The total of gross revenues was \$491,938,857, as against \$408,598,361 for 1919. Operating cost, on the other hand, rose from \$376,789,093 to \$478,002,823. Thus, while inflow was increasing by 20.4 per cent, outgo increased by 26.7 per cent.

This happened in a year when the trend should have been in the opposite direction if safety was to be assured. A net operating revenue of \$13,936,002, after \$9,553,990 for taxes and \$59,102,979 for interest on funded debt had been paid, left a corporate loss for the year of \$43,088,388. There was a decrease of \$17,873,265 in net operating revenue, and an increase in corporate loss of \$28,159,722. Grave as is this showing, it does not include many millions of fixed charges attaching to the older units of the government system. The bookkeeping of the government in respect of capital account has already been explained in these columns, and it must suffice to say that it excludes everything but the primary outlay for actual construction.

Here again one is impelled to moralize. If the large volume of gross earnings just indicated had come to the railways of Canada under normal conditions as to outgo, what a vital help to them it would have been! The popular notion has hitherto been that transportation agencies wanted big earnings for the sole purpose of paying fat dividends, some of them on diluted capitalization. That they desired to be in a position to reward in a reasonable measure investors in their securities may be admitted without the slightest hesitation. Such a motive was proper and sound from every angle of view. The watered stocks were myths conjured largely by prejudice. But that was far from being their chief purpose. To sane and ambitious railway executives abundant income is associated with reserves for additions and betterments, so that borrowing may be unnecessary.

It is singular that when a bank accumulates a huge re-

serve it is credited with commendable shrewdness and prescience, while if a railway does precisely the same thing it is accused of greed and dishonesty. The aim is the same in both cases, and the means to the end arc identical. In the final reckoning, moreover, it is just as important that the transportation agencies of the country should be strong as that the banks should be strong. In the awakening which has now occurred, bringing with it a dispassionate judgment mingled with sympathy, this fundamental truth may be recognized. If it is, it will mean much to the hard pressed railways. The pinch from which they are suffering so acutely will not have been wholly unavailing if that is one of the results.

Swollen earnings grew out of larger traffic and higher rates. During 1920 the railways of the Dominion hauled 127,388,453 tons of freight, which was within a few thousand tons of the record mark of 1918. For the year there was a gain of 15,900,673 tons. Ton-miles had an aggregate of 31,893,182,716, which was the highest ever registered, and showed that business was really good. The number of passengers carried was 51,306,074—also a new high score. Passenger miles, however, did not gain in proportion, solely because the average journey was shortened. That was one of the phenomena of the situation in the United States last year. More people used the trains; but they did not travel as far as they had done in other years. Gains were also made in revenues from mail, express and incidentals. In short, there was activity in all departments, and 1920 would have brought unprecedented prosperity to the railways of Canada, with qualifications as to the government system, if it had not been for the high and quite extraordinary cost of operation. That cost absorbed not only all but 2.83 cents of every dollar which was received during the year, but ate up nearly every trace of profit and left the roads in the weakest state they have ever been in during the seventy odd years of their history.

Of the 56 railways reporting, 31 paid operating expenses and 25 had a deficit. Of the 31 which made one hand wash the other, so far as operating revenues and operating cost were concerned, 19 showed a net corporate income of \$36,581,437. The Canadian Pacific accounted for that credit balance almost wholly. It is an exceedingly strong road, and enjoys unique advantages as to profitable results from outside operations. It paid its usual dividend on common stock, but could scarcely have done so if it had been confined to net railway earnings. To do what it did in 1920 involved exceptional economies, including sweeping reductions in staff and in train mileage. All the railways appear to have cut down on maintenance, which is always a sign of distress, and they only do it when they have to.

**High Expenses Due Mainly to High Labor Costs**

Why were operating expenses so high and so destructive in 1920? The Dominion Bureau of Statistics gives the answer in these words: "Over 56 per cent of the increase in operating expenses was in salaries and wages, which increased about 25 per cent, or from \$233,323,074 to \$290,431,221, and about 14 per cent was in the cost of fuel." In all that has thus far been brought to public notice with respect to the railway payroll for last year, only the facts relating to the Canadian National and the Canadian Pacific have been available. It is now possible to sum up the situation for the Dominion as a whole, and when that has been done the full story of what were the consequences of the McAdoo and Chicago awards are brought out graphically. There cannot be any escape from the conclusion, no matter how the figures are set down—so long as they are fairly stated—that the railways were impoverished by the scale of wages they were compelled to pay to their employees. Let the official statistics tell their own tale, as is shown in the following table:

	Number of employees	Total remuneration
1913	178,652	\$115,749,825
1915	124,142	90,215,727
1917	146,175	129,626,187
1918	143,493	152,274,953
1919	173,728	233,323,074
1920	184,934	290,431,221

If these totals of compensation be reduced to averages per employee the result is as follows:

	Average per employee
1913	\$648.09
1915	727.54
1917	887.85
1918	1,064.86
1919	1,333.25
1920	1,570.75

There is something at once significantly suggestive in the fact that, while the volume of salaries and wages increased by 25 per cent in 1920 over 1919, the average per employee gained by but a little over 17 per cent. The explanation is found in the need for more men to do the same amount of work. Although the national agreements did not extend to Canada, there was nevertheless on this side of the line the same lowered efficiency which had been so conspicuous in all industries as the result of the labor situation during the latter stages of the war period. As between 1918 and 1920 the average wage grew by 47.5 per cent, and as compared with 1917 by 76.9 per cent. Going back to the year prior to the outbreak of war, the 1920 average showed an advance of 142.4 per cent.

The rise in the volume of compensation to employees is even more striking than the average. As compared with 1919 the difference in 1920 was 25 per cent. Over the total for 1918 it was 90.8 per cent, and over 1913 it was 152.1 per cent. It may be conceded that 1915 was an abnormal year, and for that reason might be excluded; but it stands in the official record, and shows that the aggregate of compensation to employees in 1920 was 222.2 per cent higher. In fact, it was this swiftly rising total of outgo under the head of salaries and wages which carried operating cost to the point where it seriously threatened to crush the railways beneath its weight. It has all but done that.

This year the expenditure for labor will be lower than it was in 1920. The 12 per cent cut has just gone into effect, after repeated conferences with representatives of the unions and considerable show of resistance. Some of the minor organizations have not yet agreed to the lower scale. They are protesting that it is not justified by the cost of living, and is going to cause great hardship among large groups of workers; but their acquiescence is not of controlling importance after the Big Four have taken the reduction. This much may be said with assurance: Public judgment is absolutely and unqualifiedly on the side of the railways. The attitude of the press makes that abundantly clear. Therefore, while there will be much of complaining and calling for arbitration, it is not probable there will be anything in the nature of a strike. It is somewhat surprising that, while the McAdoo and Chicago awards went into effect in Canada automatically, the jurisdiction of the National Railway Labor Board is now called in question by railway employees on this side of the boundary, and they want the whole matter opened up.

The grounds on which these minor unions are holding out are two in chief: First, that economic conditions do not justify them; and second, that the National Railway Labor Board is without jurisdiction in Canada. The first contention is supported by arguments which merely mean "we need the money," and may therefore be dismissed as unimportant. The second suggests quite sharply the inconsistency and insincerity of these men. They accepted the McAdoo award of 1918, and the Chicago award of 1920, without any compunction or the uttering of a syllable on the score of jurisdiction. The Canadian railways might very well have raised that question; but they did not. They accepted the awards

and their consequences. To appeal now for arbitration, which would involve a repetition of the proceedings at Chicago earlier in the year, would make for an indefinite delay. That is probably the sole purpose in view. In the meantime, there is nothing to show that this action is supported, either morally or otherwise, by the major brotherhoods.

The official figures raise the loss on the government system in 1920 to \$71,909,927, as against the estimate by the Minister of Railways of a little under \$70,000,000 in March last. Since the corporate deficit on 37 roads—which had no share in the net income of \$36,581,437 enjoyed by the 19 roads referred to in a preceding paragraph—was \$79,669,825, it follows that the shortage on lines outside of the government group was \$7,759,898. But the fact must not be overlooked that a very large volume of fixed liability is not charged against the Canadian National, and if the account as to capital were made up on a sound basis the loss for the year would not fall below \$140,000,000. That is to say, there are quite unavoidable and legitimate charges, amounting to about \$70,000,000, which are omitted from the government statement.

In the light of details which the full report for 1920 affords, the causes of this large deficit on the government

## Freight Car Loading

THE LOADINGS of revenue freight for the week ending July 30 totaled 796,570 cars—an increase of 6,222 cars over the week ended July 23, according to the reports of the Car Service Division of the American Railway Association. Loadings of revenue freight during the corresponding week of 1920 totaled 936,366 cars and for the corresponding week of 1919—925,195 cars.

The week showed gains in the loadings of all commodities except coal and ore. Loading of grain and grain products is heavier this year than during either 1920 or 1919. For the week ended July 30, 66,416 cars were loaded, or 26,564 more than were loaded during the corresponding week in 1920 and 9,301 more than the similar period of 1919. Compared by districts, increases over the week before in the number of cars loaded with revenue freight were reported in the Eastern, Southern, Central western and Southwestern regions but decreases in the Allegheny, Pocahontas and Northwestern. All reported decreases compared with the corresponding week last year except the Central western.

The surplus of cars in serviceable condition continues to decline, due principally to the increased demand for grain

### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary All Districts: Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, July 23, 1921.

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Total revenue freight loaded			Received from connections				
								Mdse. L.C.L.	Miscellaneous	This Year	Corresponding Year	Corresponding Year	This Year	Corresponding Year	Corresponding Year
Eastern	1921	10,216	2,517	41,233	806	4,318	2,961	56,081	71,574	189,706	228,161	230,406	187,929	265,047	228,291
Allegheny	1920	5,607	2,479	56,620	3,280	8,353	9,614	35,783	106,435	228,161	157,508	189,129	189,139	135,655	138,274
Pocahontas	1921	274	163	20,149	19	1,272	20	2,575	5,221	29,693	34,639	36,593	12,188	21,435	18,367
Southern	1921	5,062	2,036	20,215	251	13,256	239	34,685	33,866	109,600	126,335	113,255	62,915	75,989	69,995
Northwestern	1921	11,774	6,827	6,424	468	11,388	22,044	27,748	34,405	121,078	163,391	157,397	42,417	61,503	60,917
Central Western	1921	23,455	8,066	11,385	1,213	15,682	47,671	31,005	40,936	118,967	126,282	120,238	50,019	67,765	63,452
Southwestern	1921	9,562	2,230	4,218	181	5,835	709	15,197	25,874	63,796	60,481	62,654	43,877	45,825	49,072
Total, all roads	1921	64,919	24,689	152,142	3,928	43,126	33,655	208,316	259,573	790,348	928,418	909,296	503,926	673,219	628,308
Increase Compared	1920	29,442	1,421	49,448	9,199	14,989	43,659	186,209	330,476	122,321	368,651	22,107	55,995	70,903	138,370
Decrease Compared	1919	13,274	4,703	31,641	4,443	15,681	37,869	109,078	119,334	928,418	909,296	928,418	909,296	673,219	628,308
Decrease Compared	1919	13,274	4,703	31,641	4,443	15,681	37,869	109,078	119,334	928,418	909,296	928,418	909,296	673,219	628,308

L. C. L. Merchandise loading figures for 1921 and 1920 are not comparable, as some roads are not able to separate their L. C. L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

July 16	1921	56,991	24,802	152,116	3,737	44,037	31,484	208,078	255,006	776,353	942,851	902,296	484,300	681,684	627,841
July 9	1921	38,015	21,867	115,331	3,830	34,356	26,312	180,658	209,129	639,698	796,191	809,845	434,929	633,997	554,129
July 2	1921	40,547	24,923	157,265	4,354	47,542	30,335	215,887	253,955	774,808	891,621	743,226	311,035	651,932	584,596
June 25	1921	38,821	28,229	156,999	4,557	49,427	28,921	215,678	252,429	775,561	911,503	845,684	516,603	664,420	591,200

system are brought out with unmistakable definiteness. It will not be necessary to go into the matter in this sketch, since a careful analysis was presented in the *Railway Age* of July 16. The more complete data now available serve to accentuate the weak spots which were then exposed. For example, the average trainload of the Canadian Northern, which is the most important in the amalgamation and enjoys favorable grades, was but 354 tons, as compared with 528 for the Canadian Pacific. Going still deeper into the results of management, and considering per passenger mile and ton-mile service combined it cost the Canadian Northern 1.057 cents for labor alone, as against .674 to the Canadian Pacific, or a difference of 56.8 per cent adverse to the state road.

Measured in another way, the total of passenger and ton-miles per employee on the Canadian Northern was 153,019, as against 222,459 on the Canadian Pacific. If operating efficiency be gaged on that basis, then it is completely obvious that the corporate road showed a betterment of 45.4 per cent.

cars in the Central West. The Car Service Division's new figure, "cars temporarily out of service due to business depression" (which figure includes all surplus serviceable cars as well as bad order cars in excess of 7 per cent of the total) shows a decrease of 28,991 cars from the total of 555,168 on July 23 to 526,177 on July 31.

Of the total of 555,168 on July 31—321,781 were serviceable freight cars, while the remaining 204,396 were cars awaiting repairs. On July 23 the surplus of serviceable cars was 350,772. Surplus box cars in good repair at the end of the month numbered 100,207 compared with 119,442 on July 23, or a reduction within that period of 19,235 cars. Reports showed 161,723 surplus coal cars in serviceable condition, which was a reduction of 6,845 cars in a little more than a week.

As a result, mainly, of the demand for grain cars, a shortage in certain sections of the country of 3,905 freight cars was reported by the railroads. This was an increase of 1,137 cars over that on July 23. Of the total, 3,710 consisted of box cars, an increase of 1,207 cars in a week.

# Piece Work Dispute Again Before Labor Board

## Employees' Reply to Carriers' Testimony in National Agreements Case—Hearings to Last Five Days

THE ABROGATION OF RULES, the terms of which prohibit piece work in railroad shops, is again under discussion before the Railroad Labor Board. On August 8 hearings on this subject were begun as a result of the disagreements which have been reached between approximately 70 carriers and representatives of their shop employees. In practically all of the negotiations which have been conducted during the past month between individual carriers and their own employees, the employees have stood firmly for the retention of Rule 1 of the Shop Crafts National Agreement providing for the payment of employees on an hourly basis. This rule prohibits the payment of shop employees on a piece work basis. Because of this universal disagreement, the Board ordered the present hearings. Again, when B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor, finished presentation of his case in the controversy over national agreements, he stated that his testimony was complete except for the submission of data on the subject of piece work. Mr. Jewell was promised at that time an opportunity to complete his case, and these hearings, according to the opening announcement of Vice-Chairman W. E. Hooper, were called in compliance with the request of the employees for opportunity to answer the voluminous testimony on the uneconomical effects of the abolition of piece work presented by the Conference Committee of Managers in the hearings on national agreements.

At the opening session on August 8 Mr. Walber raised the question as to whether the present hearings are a continuation of the hearings on national agreements or whether they are to be considered as separate hearings on disputes filed with the Board as a result of the negotiations between individual carriers and their own employees ordered by the Board in Decision No. 119. Mr. Walber stated that it was the feeling of the carriers that the real question before the Board is whether it is right to deprive officers of the railroads of the right to conduct their systems under a plan which is more economical and more efficient than the plan whereby employees are paid by the hour.

A large portion of the first day's testimony was taken up with a plea by Mr. Jewell for separate hearings on each disagreement certified to the Board during the past few weeks. He contended that the Board should hear testimony from representatives of each carrier and from the representatives of the employees on each road. In stating his position Mr. Jewell outlined the program of the shop men's organization on national agreements, and in this connection maintained that the only instructions issued to local representatives of his organization were that they negotiate an agreement acceptable to them and to the employees whom they represent on each railroad.

In closing the first day's testimony Mr. Walber stated that the carriers intended to rest their case largely on the testimony presented by the Conference Committee of Managers. He formally submitted this testimony in the present case.

On August 9 the Labor Board announced that five days of five hours each would be allowed for the hearings in this case. The first four days are to be devoted to the employees' reply to the piece work testimony of the Conference Committee of Managers and the last day is to be devoted to rebuttal statements by representatives of the carriers. Vice-Chairman Hooper in making the announcement stated that the only question before the Board at this time is whether or not the rule prohibiting piece work should or should not

be continued. After considerable discussion as to the procedure which should be followed the hearing was adjourned until August 10 at Mr. Jewell's request.

Committeemen representing the shop employees on 28 eastern and 26 western carriers involved in the disputes over piece work appeared before the Board on August 10 and vigorously protested the re-establishment of piece work. Practically all of the local committeemen stated that from 95 to 100 per cent of the shop employees represented by them have voted against the re-establishment of piece work on the grounds that this system of pay works a hardship on the employees, constitutes a form of slavery, prevents the payment of punitive overtime and makes impossible the payment of a living wage. Many of the committeemen based their arguments largely on the fact that the re-establishment of piece work would wipe out their punitive overtime to a great extent and the introduction of this argument was protested by Mr. Walber, who called attention to the fact that the present hearings are on the question of piece work. Mr. Jewell replied that the two subjects are so closely allied that they must be considered together. This point was not made an issue and the hearings continued.

### Board Renders Another Decision in Pennsylvania Dispute

A decision in the controversy between the Pennsylvania and the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees over the election of representatives to negotiate new agreements regarding rules and working conditions was announced by the Board late last week. This dispute is to a large extent similar to the dispute between the Pennsylvania and its shop men, described in the *Railway Age* of July 16 (page 115).

The Labor Board in its decision held that:

1. The carrier was within its rights in denying that the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees represented a majority of that class of employees, and requiring evidence of the alleged fact.
2. An election to be freely participated in by all employees of that class, union and non-union, to select representatives to negotiate rules and working conditions was proper and legal.
3. That the carrier was wrong in refusing to allow the name of any organization to go on the ballot. There is nothing in the Transportation Act to justify this course. Said statute recognizes the existence of organizations of railway employees, and the right of the men to belong to such organizations is no longer seriously questioned in any quarter. The railway employees have built up organizations with their money, have put at the head of them the men they consider most competent and trustworthy, and have acquired a vast amount of information, statistical and general, bearing on matters affecting their rules and working conditions. It is unjust and unreasonable to seek by methods, direct or indirect, to deprive them of the efficient representation afforded by these organizations, provided, of course, a majority of them desire to be so represented. On the other hand, if the carrier, by fair and legal methods, can win the support of a majority of its employees to non-union representation in this important statutory conference, it has the undoubted right to do so. Putting the name of an organization on the ballot was equivalent to putting the names of individuals there, because it simply meant that the chosen officers of the organization would represent the employees, if the majority vote authorized.
4. Said organization of employees was wrong in its suggestion that the ballot contain only the names of organizations to the exclusion of individuals. This ignored the rights

of non-union men, and was therefore unjust and unreasonable.

5. The insistence of the carrier that no name should go on the ballot save that of an employee of the carrier is not justified by the statute. The employees had no desire, however, so far as the record shows, to place on the ballot the name of any one not an employee.

6. The carrier had no legal right to adopt a regional division for the purpose of requiring the employees to elect regional representatives. The Transportation Act contemplates that the class of employees directly interested on the entire system shall select their representatives, and even if it did not, the carrier would have no right to make such arrangement without the consent of the other contracting party. Such a power to subdivide into districts could easily degenerate into the process known in politics as gerrymandering.

The carrier had no right to segregate for the purpose of such election, the clerks in the general offices at Philadelphia and Pittsburgh, as the character of their work and the conditions under which it is performed are not so dissimilar from that of the other clerks as to constitute them a distinct class of employees. This action was in disregard of Decision No. 153 of this Board, which is here cited for further direction on this particular matter. For the same reason the carrier did not have the right to otherwise subdivide the clerks for the purpose of said ballot. The groups into which they were divided did not constitute distinct classes of employees.

7. The carrier was correct in its contention that the employees embraced in the membership of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees constitute more than one distinct class of employees within the meaning of the Transportation Act.

The Labor Board holds that, under the Transportation Act, one distinct class of employees cannot negotiate rules for another distinct class. For example, the laborers employed in and around stations, storehouses and warehouses have no right to participate in the election of representatives to negotiate rules for clerks, and vice versa the clerks have no right to participate in the election of representatives to negotiate rules for said laborers.

The fact that these different and distinct classes of employees belong to the same organization does not affect the question under consideration. The organization may admit to its membership as many different classes of employees as it may see fit, but it cannot throw their combined vote and strength to the election of representatives to negotiate, under the Transportation Act, for any one distinct class of employees. The organization may be selected, however, to represent any class of employees that belong to it.

The Labor Board has heretofore held that employees performing work similar in its general characteristics and in the conditions surrounding it belong to the same class, within the meaning of the statute. It now holds the converse of this proposition—namely, that employees performing work dissimilar in its general characteristics and in the conditions surrounding it must be assigned to different classes, within the meaning of the statute.

It is not always easy, however, to classify employees, for there are varying degrees of similarity and dissimilarity in their work and working conditions.

The Board then divided the employees represented by the clerks' organization into three groups: clerks, foremen and storekeepers and office, station, warehouse, storehouse and elevator forces not included in the first two groups.

Continuing, the decision said:

8. When the dispute arose as to the essential preliminary of how the representatives of the employees should be selected, neither party should have proceeded further, until that disagreement was composed either by further conference or by reference to the Labor Board.

The Transportation Act places the carrier and the employees in a contractual relationship as to the negotiation of rules and working conditions, and neither of the parties has the right, either directly or indirectly, to dominate or dictate the other party's selection of its representatives.

The statute expressly says that the employees directly interested shall "designate and authorize" their representatives.

Inasmuch as the law requires the carrier to deal with the representatives of the employees, it necessarily follows that the carrier must know who the duly authorized representatives are. It is therefore proper for the carrier to be kept in close contact with the election and to be represented in the conduct thereof.

In this connection it may be added that all regular labor organizations and the unorganized employees of the carrier should be fairly represented in every step incident to the taking of such a ballot.

The misunderstanding which arose as to the proper method to adopt, for the selection of the representatives of the employees for the conference on rules deprived great numbers of employees, apparently a majority, of their legal right to be represented. This sort of a situation is not conducive to industrial peace. The carrier ought not to be content with it, because it is unjust and un-American.

It cannot be said that this case involves in any sense the question of the open or closed shop. Neither does it involve any attempt to deprive the carrier and the employees of the right to sit down at a conference table and settle their own differences, if any arise, as to rules and working conditions. On the contrary, it is the purpose of this Board by its decision to guarantee both to the carrier and its employees, union and non-union, every right conferred upon them by the law, to the end that there may be the harmonious co-operation essential to the well-being of all parties and the highest service to the public at large.

The election conducted by the Pennsylvania was declared "illegal and void," the rules negotiated by the representatives elected by the company ballot to be "void and of no effect," and another election to determine the choice of a majority of each of the three classes of employees as to their representatives in the negotiation of new rules and working conditions was ordered in the decision. The Board also called a conference on or before August 15 at which the representatives of the carrier, of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, of any other similar organization and of each group of one hundred or more unorganized employees who desire separate representation to formulate plans for the new election.

#### Board Orders Secret Ballot on Pennsylvania

In an addendum to the Pennsylvania decision announced in the *Railway Age* last week the Labor Board on August 5 ordered a secret ballot to determine representatives to negotiate new agreements regarding rules and working conditions. The decision of the Board in this case directed that each employee voting should show on his ballot his name, craft, place of employment and whether working or furloughed and should then seal and forward the ballot to the proper committee. The attention of the Board was called to the fact that this method of balloting in this instance would be objectionable because there is such conflict of interest. The addendum is the result.

#### Pennsylvania Allowed More Time to Comply

The Pennsylvania Railroad has asked for and been granted 15 days' grace (to August 25) on the order of the Railroad Labor Board requiring the company to confer with representatives of "System Federation No. 90" concerning plans for an election to select members of the committee to deal with the company in the revision of the rules of employment of its shopmen.



Eastern Railway Station at Paris

# Senate Committee Begins Hearing on Funding Bill

Some Senators Opposed to Final Action Before Recess—  
Finance Corporation Director Defends Measure

WASHINGTON, D. C.

HEARINGS began before the Senate Committee on Interstate Commerce on August 9, on the Townsend bill which would enable the War Finance Corporation to purchase obligations of the carriers for the amounts due by them for capital expenditures made by the government during the period of federal control, and to use the proceeds of the sale thereof to advance funds to the carriers for the amounts due them. A similar bill has been introduced in the House by Representative Winslow, as was noted in the *Railway Age* of last week.

Testifying before the committee, Eugene Meyer, Jr., Director of the War Finance Corporation, said that passage of the bill would mean the employment of an additional 1,000,000 men during the coming winter. The bill contemplates only the revival of the powers given the War Finance Corporation during the war, he said. The Corporation would have no direct dealings with the railroads under its provisions. It would simply be enabled to buy such securities as it deemed advisable. No appropriation for this purpose would be necessary or desirable, he added. Purchases of railroad securities by the War Finance Corporation would, in his opinion, have a stimulating effect upon many lines of business.

Senator Townsend asked whether an emergency existed that necessitated passage of the bill. Mr. Meyer thought an emergency did exist, that an emergency existed whenever a million men were out of employment. He was then asked if he were firmly convinced that the bill would restore confidence in railroad securities.

"I have no doubt of it," he replied. "Conditions are working in that direction right now, and I think we can materially accelerate the restoration of confidence. By restoring confidence in the railroads, confidence will be restored in all other lines, and this bill will mark the beginning of the real reconstruction period."

## Alba B. Johnson's Letter to the Committee

Immediate passage of the railroad legislation is essential, the committee was told in a letter written by Alba B. Johnson, president of the Railway Business Association. He asked that no amendments modifying the transportation act be considered by the committee as a part of the pending bill, because of the delay that such amendments would entail.

"Rather than contribute even a half hour to the delay, the Railway Business Association refrains from offering testimony," Mr. Johnson wrote. He called attention to reports that the bill might either be delayed until after a recess or defeated through irrelevant amendments which the majority of the two houses would find unacceptable. Mr. Johnson's letter follows:

Reports persist that the passage of S. 2337 (the Townsend Bill) may either be delayed until after a recess or defeated through irrelevant amendments which Congress would not accept. Hundreds of thousands of men look for work to members of our association, manufacturers of railway equipment, material and supplies. Unemployment among them reaches great proportions. These men, their families and the communities in which they live and trade are waiting for full force or full time. They must wait until the railroads can obtain money with which to pay supply bills and to place new orders.

S. 2337 would give the roads time in which to repay sums advanced by the government during federal control for capital purposes and release for immediate cash remittance balances due the roads from the government on other accounts.

Rather than contribute even a half hour to the delay the Railway Business Association refrains from offering testimony at your hearing appointed for August 9 and requests instead that this letter be inserted in the record.

We urge:

1. Prompt Action. A voluntary vacation for Congress without this enactment would mean an involuntary vacation without pay for hundreds of thousands of industrial employees.

2. Separate Action. We hope you will exclude serious consideration of amendments not essential to clarify the primary purpose of the bill. Congress has no mandate of ascertained public purpose to modify any essential principle of the Transportation Act of 1920. If discussion of general amendments is desired it can be conducted most advantageously on its merits free from confusion with the discharge of a plain governmental obligation, so recognized by the President of the United States, the Secretary of the Treasury, and the Director General of Railroads. If it shall be proposed that Congress at this time abandon its established policy in order to make railway rates by statute instead of through an administrative tribunal created by it, such a reversal of federal method and practice requires in safety to the public a discussion so thorough that postponement of industrial resumption through the debate is unthinkable.

## Opposition to the Bill

The bill was opposed at Wednesday's hearing before the Senate Interstate Commerce Committee by Senator LaFollette and by several Democratic Senators, among whom was Senator Pomerene, of Ohio, who referred to the proposed funding program as a "hand-out." The bill was defended vigorously by Eugene Meyer, director of the War Finance Corporation, who declared that it was a measure for national as well as railroad rehabilitation.

In answer to the questions of Senator LaFollette as to where the bill had originated, Mr. Meyer said he had discussed the question with the President and that the bill had been drawn thereafter by G. C. Henderson, counsel for the War Finance Corporation. Mr. Meyer said he had not attended any conference at which President Harding discussed the legislation with railroad executives and that no one outside the War Finance Corporation had a hand in drafting the bill.

"Did you know that Mr. Hoover was going to New York to confer with railway executives about it?" persisted Senator LaFollette. Mr. Meyer disclaimed such knowledge.

Senator LaFollette referred to loans by the War Finance Corporation to the Brooklyn Rapid Transit Company and a New Orleans street railway company, which, he said, soon afterwards became bankrupt. The Senator said he did that to indicate "how business was transacted." Director Meyer said he regarded the Brooklyn Rapid Transit loan as "eventually good," and said the New Orleans loan had been paid in full.

Senator LaFollette sought to show that the bill really would authorize the War Finance Corporation to fund, or sell, over one billion dollars of railroad securities rather than only \$500,000,000. Mr. Meyer declared that funding of the latter amount only was contemplated or could be reasonably accomplished.

## Director General Davis Testifies

The limit of funding under the bill, Director Davis of the Railroad Administration told the committee would be \$500,000,000 and "probably under." Giving a detailed statement of the railroad debts to the government for additions and betterments—mostly equipment—furnished carriers during the war, Mr. Davis said a total of \$1,144,000,000 had been advanced for that purpose. Of this,

he said, the railroads had given \$310,000,000 in equipment trust notes and \$70,000,000 paid in cash, leaving a balance of \$763,000,000, of which \$61,000,000 already had been funded privately. About \$700,000,000 of the government advances, therefore, he said, have not been funded, but for various reasons, lack of securities, etc., Mr. Davis stated that the bill would require funding of less than \$500,000,000.

No change is proposed by the bill, Mr. Davis added, in the authority given him under the transportation act to settle all claims against the government. Mr. Davis said the bill would be "greatly beneficial." "Its whole purpose," he said, "is to let the public, instead of the government, carry these loans." Examination of Mr. Davis was continued Thursday.

#### Illinois Manufacturers Urge Favorable Action

Chairman Cummins on Wednesday received a letter from Charles A. Livingston, representing the Illinois Manufacturers Association, urging prompt enactment of the bill "in order that the railroads, industries and all shippers may immediately be relieved that transportation troubles may be averted and unemployment be lessened."

Not all of the railroad securities held by the government will be accepted and marketed by the War Finance Corporation, Director Meyer said during his opening testimony on Wednesday. Only the good securities now held by Director Davis of the Railroad Administration will be funded, Mr. Meyer said, explaining that the provisions of the funding bill were permissive and not mandatory upon the War Finance Corporation. The securities which are deemed good by the corporation, Mr. Meyer stated, would have to be marketed gradually.

"Of course, we can't throw hundreds of millions of securities on the market," he said. "We would take them over temporarily and market them later, furnishing funds to enable the director general to adjust accounts with the railroads." Senator Kellogg, of Minnesota, interjected that there was nothing in the funding bill relating to settlement of claims between the railroads and the government. "It simply takes the railroad securities now held by the government and transfers them to another branch of the government to be sold," said Senator Kellogg.

Director Meyer added that in advancing funds to the director general on the railroad securities taken by the corporation the director general then would have funds to proceed with adjustments of accounts.

About \$700,000,000 of the railroads' equipment notes given for loans by the government during the war are held, Mr. Meyer said. "These are frozen credits, and we propose to unfreeze them for the benefit of the government," he said.

#### Postponement of Action Possible

President Harding had expressed the desire that the funding bill should be passed before the recess of Congress which has been set tentatively for August 20, but he was told by the Republican leaders that this would be practically impossible. Tremendous pressure is being brought upon the Executive and upon Congress for quick action on the bill, but there is considerable opposition to it in both Houses. The leaders fear that to attempt to jam it through before the recess would provoke a filibuster that would prevent passage of other essential legislation.

#### The Winslow Bill Referred to Committee

The banking and currency committee of the House voted on Monday to authorize its chairman, in his discretion, to move in the House for rereference of the Winslow railroad funding bill to the banking and currency committee. This bill, like the agricultural relief bill, is in the form of an amendment to the War Finance Corporation act, and is identical with the Townsend bill, the hearings upon which began before the Senate Interstate Commerce Committee on Tuesday. Chairman McFadden said he had not decided whether

an attempt to get jurisdiction of the bill, which at present is in the hands of the interstate and foreign commerce committee, should be made. He said there would be no effort to combine the agricultural relief bill and the Winslow bill, should the latter be referred to this committee by the House.

#### The I. C. C.'s Decision As To

#### Maintenance Allowances in Guaranty Period

Elsewhere in this issue there appears an abstract of a decision by the Interstate Commerce Commission denying the claims of the railroads to include in their allowances for maintenance during the guaranty period, charges to cover the inefficiency of labor. Following this decision, Secretary Mellon of the Treasury Department said that in accepting payment from the government covering the guaranty period the railroads will be expected to relinquish all right to appeal to the courts in the further attempt to secure payment of these claims. Acceptance of final settlements by the railroads reserving the right to receive further payments in the event that the courts uphold their claims for compensation for inefficiency of labor will not be possible under Secretary Mellon's decision. The carriers would either be compelled to sign a waiver relinquishing their rights of appeal to the courts or else have final payments agreed upon held up pending action by the courts on the disputed claims.

The same point of view as expressed by Secretary Mellon regarding payments for the guaranty period is held by Senator Lenroot regarding payments for the period of federal control. He has announced that he would propose an amendment to the Townsend bill now in committee providing that none of the benefits of the bill should extend to roads refusing to relinquish all claims against the government growing out of inefficiency of labor under federal control. The proposal advanced by the senator was endorsed by several of his associates.



Monument Erected by Employees of the Tyrone Division of the Pennsylvania in Memory of Their Fallen Comrades

# General News Department

**G. C. Williams** has been appointed assistant superintendent of steamers of the Southern Pacific, with headquarters at San Francisco, Cal., effective August 3, succeeding F. A. Fish, retired.

The **Illinois Manufacturers' Association**, through its president, George R. Meyercord and Secretary John M. Glenn, has appealed to President Harding by letter to hasten the financial settlement with the railroads in order to enable the carriers to carry out their repairs of rolling stock. It is pointed out that unless repairs are made a car shortage will result.

The **Southern Railway** announces the shortening of the time of eight through passenger trains, to be put into effect on August 14. No. 38, the northbound New York & New Orleans Limited, will arrive at New York 40 minutes earlier than at present and No. 25 and 26, the Memphis Special, will be run through in about two hours, 20 minutes less time than at present. Several other trains will be quickened an average of about one hour each.

A 20 per cent wage reduction applying to all employees of the National Railways of Mexico earning 100 pesos or more a month went into effect on August 1. Following the refusal of the railway directorate to rescind this order for a wage cut, the organized employees issued an ultimatum threatening a general strike if the former scale of compensation was not continued.

The **strike** of the 302 members of the federated shop crafts on the Cincinnati, Indianapolis & Western, noted in the *Railway Age* of July 30 (page 196), which started on July 22, because the railroad would not pay the men time and one-half for overtime, has been called off, and about half of the men have returned to work. They will be received by the company, however, as new men, having lost their seniority rights by their walk-out. B. A. Worthington, president of the road, states that the new men who were taken on to fill the positions of the strikers will not be discharged to give room for the returning men.

## Congressional Discussions of Tax Problems

The Ways & Means Committee of the House on Wednesday agreed to recommend the repeal of the transportation taxes on freight, passengers, seats and berths, beginning with January 1, 1922. The taxes on express shipments and on pipe lines were retained in the draft of the proposed revenue law. The losses resulting to the Federal Treasury from the proposed changes are estimated as follows: Repeal of freight taxes, \$145,000,000; of passenger taxes, \$100,000,000 and of Pullman taxes, \$8,000,000; total, \$253,000,000. In revising the transportation taxes the Committee did not follow the program suggested at the conference on Tuesday between President Harding, Secretary Mellon, the Republican members of the ways and means committee and Representatives Mondell, Madden and Campbell. At that conference the proposal was that the transportation taxes should be reduced 50 per cent next January and the balance on January 1, 1923.

## Committee to Administer Valuation Order No. 3

A committee has been created to consider questions arising under the administration of order No. 3 of the Division of Valuation of the Interstate Commerce Commission. This committee consists of two representatives of the Bureau of Valuation, one of the Bureau of Accounts, and three of the carriers. The following have been named as members of this committee. Morris A. Zook, resident engineer, Bureau of Valuation, Washington, D. C.; William L. Fulton, senior civil engineer, Bureau of Valuation, Washington, D. C.; W. H. Swinney, assistant to director of accounts, Bureau of Accounts, Washington, D. C.; H. L. Ripley, corporate and valuation engineer, New York, New Haven & Hartford, Boston,

Mass.; E. M. Thomas, comptroller, Chesapeake & Ohio, Richmond, Va.; and A. A. Ferguson, mechanical valuation engineer, Missouri Pacific, St. Louis.

## Australians to Investigate

### American Stores Department Methods

Five prominent Australian railway men have arrived at San Francisco, Cal., to make a study of American railroad methods of handling materials and supplies with a view to installing a similar system on the Australian railways which are operated by the government. The visitors are: C. W. J. Coleman, chief storkeeper; H. J. Canny, outdoor superintendent; G. H. Wion, assistant engineer of signals; H. E. Sergeant, stores branch officer, all of the Victorian railways and W. H. Clarke, comptroller of stores, New South Wales government railways.

## Intimidation of Negro Workers

The continued harassment of negro trainmen and workers on the Illinois Central in the southern states has led to the belief that an organized plot exists to intimidate and kill them in an effort to drive the negroes from the line. Two negroes have been ambushed and killed on the Yazoo & Mississippi Valley near Lake Cormorant, Miss.; one has been slain near Raines, Tenn., just out of Memphis, another met death as a train was passing Aberdeen Junction near the same city and two were wounded near Sturgis on the Aberdeen and Durant branch of the road. The last death reported was near Water Valley, Miss., the latter part of July, for which two men were indicted on July 30 at Water Valley, Miss. Special agents of the railroad have been working on the cases for several months and are exerting every effort to protect the negro employees of the road and run down the conspirators.

## Net in June, \$51,778,000

The net railway operating income of the railroads in June was \$51,778,000, which was \$14,697,346 more than in May. The figures are those of 202 Class I railroads operating 235,548 miles of line.

The earnings for June, says the statement of the Association of Railway Executives in which the figures are given, on the basis of the tentative valuation fixed by the Interstate Commerce Commission for rate making purposes under the Transportation Act, would be at the annual rate of return of 3.1 per cent compared with 2.4 per cent the previous month. Tabulations show, however, that the railroads fell short \$47,295,000 or 47.7 per cent of earning 6 per cent contemplated by the act. This was, however, the largest amount earned during any one month by the railroads since last November, when their net operating income was \$54,343,793.

The operating ratio in June, 1921, was 82.34 per cent as compared with 85.43 per cent in May. In June, 1920, it was 96.84 per cent, in May, 1920, 95.60 per cent.

Operating revenues in June for the railroads of the United States totaled \$461,127,000, which was a decrease of 6.7 per cent compared with those for the same month last year. Operating expenses were \$379,688,000 or 20.7 per cent less than in June one year ago. The net operating income was \$51,778,000 compared with an operating deficit of \$14,612,000 during the same month in 1920.

From September 1, 1920, when the guaranty period ended, to June 30, last, the net operating income of the rail carriers was \$368,445,000, which, on the basis of their tentative valuation, would be at the annual rate of return of 2.5 per cent. This amount falls short \$516,626,000 of that contemplated to be earned under the rates established by the commission.



REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total revenue, Operating expenses, Traffic, Transportation, General, Total, Operating ratio, Net operating income (or loss), Net after rentals, Net after 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Operating revenues (Freight, Passenger, etc.), Maintenance of way and structure, Operating expenses (Traffic, Trans-shipment, etc.), Total, Net railway operations, Operating income (or loss), Net after rentals, and Net after rentals 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.	Average mileage operated during period.			Operating revenues			Operating expenses			Total.	Operating ratio.	Net from railway operations.	Operating income.	Net after rentals, 1920.	Net after rentals, 1921.
	Freight.	Passenger.	Total (inc. misc.)	Way and structure.	Equip. ment.	Maintenance of equip. ment.	Traffic.	Trans- portation.	General.						
Missouri Pacific	7,300	\$6,940,163	\$1,534,066	\$1,801,675	\$1,941,710	\$1,316,748	\$3,535,088	\$2,899,085	\$7,720,479	89.90	\$863,634	\$5,255,697	\$2,031,631	\$5,243,358	\$5,243,358
6 mos.	7,300	\$6,959,470	9,662,510	11,721,511	9,999,343	47,436,882	1,779,342	47,436,882	3,159,233	90.53	4,964,568	3,159,233	2,077,521	1,345,774	1,345,774
Mobile & Ohio	1,155	1,095,684	141,679	2,232,827	37,569	688,993	33,686,933	2,211,662	1,417,685	98.22	108,599	299,699	152,000	144,244	144,244
6 mos.	1,155	1,095,706	956,999	1,320,451	2,865,973	4,869,933	521,662	8,627,360	37,336	814,002	395,649	235,921	235,921	500,350	500,350
Monongahela	106	270,019	33,032	33,179	74,163	2,407	92,969	7,878	260,594	84.79	46,946	40,446	19,161	46,946	46,946
6 mos.	106	1,656,438	229,080	482,539	432,790	12,529	628,611	51,070	1,697,538	88.57	277,636	238,636	7,522	463,974	463,974
Monongahela Connecting	7	.....	.....	9,132	80,591	906	12,508	38,459	37,553	103.40	27,881	38,439	65,822	264,600	264,600
6 mos.	7	.....	.....	50,357	80,591	3,064	213,002	38,459	37,553	103.40	27,881	38,439	65,822	264,600	264,600
Montour	56	140,487	6,900	144,362	36,908	48,068	34,683	71,134	127,882	88.58	16,470	11,421	33,615	51,828	51,828
6 mos.	56	7,841,557	6,605	804,784	158,865	6,933	43,607	811,247	80,585	90.93	14,462	40,285	115,067	58,598	58,598
Nashville, Chatt. & St. Louis	1,338	6,716,796	2,543,178	10,993,338	1,756,116	2,825,028	431,165	5,046,238	347,336	103.41	344,950	653,410	362,262	1,211,078	1,211,078
Nevada Northern	164	7,677	5,084	10,146	10,102	499	7,339	2,633	34,740	171.26	10,294	30,071	18,728	60,559	60,559
6 mos.	164	148,254	10,745	69,692	21,901	3,667	4,181	2,957	283,938	84.18	15,778	10,294	66,435	174,228	174,228
6 mos.	164	.....	.....	74,441	157,288	.....	338,656	27,375	507,189	92.03	51,754	6,245	11,925	198,591	198,591
New Orleans & South Shore	7	.....	.....	35,291	46,946	4,307	96,102	10,084	194,077	85.27	33,328	7,375	47,119	179,901	179,901
6 mos.	7	.....	.....	35,291	46,946	4,307	96,102	10,084	194,077	85.27	33,328	7,375	47,119	179,901	179,901
New York & Great Northern	6 mos.	6,078	15,610,230	8,679,053	27,866,495	2,930,767	6,045,558	10,313,934	812,304	21,061,694	75.58	5,804,761	5,116,497	6,074,643	6,923,353
6 mos.	6,076	94,749,442	45,293,543	157,526,612	17,375,729	37,043,368	1,976,676	67,546,979	5,012,065	131,331,369	83.37	26,195,341	16,322,375	17,104,165	9,226,723
Cincinnati Northern	June 245	338,560	18,534	368,095	49,978	53,569	81,448	7,346	198,489	53.03	169,956	151,019	115,785	23,815	23,815
6 mos.	245	1,831,361	111,391	1,252,663	266,746	330,176	32,406	640,987	45,066	1,341,521	76.54	411,145	319,538	248,724	61,983
Cleve., Cin., Chic. & St. Louis	June 2,410	8,843,905	1,572,113	6,942,874	897,218	1,738,765	2,921,007	2,600,687	164,296	5,797,438	83.36	1,155,449	802,935	751,999	577,704
6 mos.	2,417	37,948,914	8,587,491	39,593,766	5,228,025	8,602,434	6,783,312	18,064,076	1,016,518	33,909,312	85.64	5,684,454	3,751,780	2,966,903	4,042,805
Indiana Harbor Belt	June 120	.....	.....	729,324	50,705	148,405	3,511	296,963	28,765	538,252	74.13	194,072	138,071	76,193	579,250
6 mos.	120	.....	.....	4,027,755	601,109	868,843	23,442	2,151,882	162,091	3,897,597	86.48	595,158	454,541	88,600	1,746,238
6 mos.	120	.....	.....	4,582,242	884,491	1,338,349	31,150	1,446,186	114,246	3,897,582	84.58	70,661	38,345	53,026	73,830
6 mos.	120	.....	.....	3,867,908	360,237	2,286,863	427,286	931,092	23,691	861,690	65.59	2,369,332	28,468	50,248	79,413
Lake Erie & Western	June 738	688,372	45,188	734,568	141,648	183,574	17,715	40,874	30,086	803,896	103.79	29,378	26,025	80,853	371,184
6 mos.	738	3,882,482	357,754	4,551,359	747,125	1,220,502	113,826	2,146,609	171,787	4,399,029	98.76	55,330	245,878	264,336	207,277
Michigan Central	June 1,865	3,989,574	1,841,969	6,331,524	741,158	1,147,014	97,478	2,430,449	151,539	4,633,606	73.18	1,697,919	1,481,834	1,459,699	793,062
6 mos.	1,865	21,355,192	9,871,129	34,384,225	4,270,097	6,764,863	593,737	15,306,656	934,346	28,298,185	82.06	6,166,039	4,840,483	4,809,264	1,809,186
Pittsburgh & Lake Erie	June 234	1,999,454	234,214	1,639,711	255,470	419,370	18,390	668,602	67,823	1,430,927	87.27	208,784	24,002	253,689	593,232
6 mos.	234	9,433,097	1,568,312	12,366,910	1,989,278	3,497,338	125,335	5,112,448	453,914	11,206,483	90.67	1,153,661	116,671	1,289,314	997,553
Toledo & Ohio Central	June 593	7,979,497	922,550	2,223,241	153,694	222,241	9,590	334,428	36,225	7,652,505	83.91	157,760	102,915	131,316	151,073
6 mos.	593	4,038,649	458,919	2,299,220	882,066	1,133,639	65,642	2,171,840	176,237	4,445,645	89.01	58,884	216,344	425,449	419,568
New York, Chicago & St. Louis	June 574	2,334,639	133,639	2,860,191	504,572	450,572	3,827	861,919	74,842	1,731,882	78.39	472,361	380,973	343,490	309,689
6 mos.	574	12,306,873	1,320,307	13,120,307	1,313,687	2,699,922	33,038	5,634,542	443,558	10,449,676	79.65	2,670,631	2,078,159	2,016,933	2,113,018
N. Y., New Haven & Hartford	June 1,986	4,710,983	670,422	1,662,614	2,392,220	2,692,220	4,530,531	334,079	9,137,042	93.60	625,644	259,063	83,396	437,033	437,033
6 mos.	1,986	24,677,090	3,484,694	5,995,901	8,184,432	14,173,544	367,405	29,930,923	2,190,837	30,101,103	100.36	306,101	2,694,266	473,672	4,322,167
Central New England	June 301	640,872	20,925	684,374	138,966	108,135	3,827	236,410	14,422	498,460	72.83	185,014	164,531	125,404	149,167
6 mos.	301	3,294,353	151,916	4,109,667	610,295	620,291	23,853	1,663,860	90,339	3,092,372	73.23	1,100,295	904,617	685,527	685,527
New York, Ontario & Western	June 569	4,333,355	1,123,802	1,266,839	832,366	1,266,839	5,079	517,854	206,971	3,092,610	65.55	231,016	195,516	152,675	80,598
6 mos.	569	4,333,355	1,123,802	1,266,839	832,366	1,266,839	5,079	517,854	206,971	3,092,610	65.55	231,016	195,516	152,675	80,598
Norfolk & Western	June 2,320	5,904,489	898,716	7,050,016	1,119,622	1,639,850	75,036	2,675,540	159,122	5,675,366	80.50	1,374,652	984,475	1,347,706	1,347,706
6 mos.	2,320	42,643,335	4,972,336	39,101,071	5,799,416	8,842,831	437,368	16,642,858	95,349	33,673,957	86.16	5,422,111	3,078,720	4,367,386	4,367,386
Norfolk Southern	June 942	2,929,242	863,309	3,931,407	628,356	611,120	136,768	1,911,776	199,880	3,509,921	89.28	441,478	277,334	162,190	172,537
6 mos.	942	2,929,242	863,309	3,931,407	628,356	611,120	136,768	1,911,776	199,880	3,509,921	89.28	441,478	277,334	162,190	172,537
Northern Pacific	June 6,655	5,097,499	1,609,313	7,408,685	2,266,627	1,861,662	1,273	3,005,833	239,103	7,652,341	101.29	243,406	634,339	307,827	307,827
6 mos.	6,655	28,050,466	8,314,853	40,747,221	8,051,236	10,168,234	735,809	18,368,663	1,533,443	39,417,468	97.50	1,969,753	3,338,665	5,623,875	5,623,875
Northwestern Pacific	June 534	1,892,778	1,337,569	3,690,774	742,671	490,860	39,230	1,635,083	104,653	3,032,042	83.15	688,739	473,931	398,298	398,298
6 mos.	534	1,892,778	1,337,569	3,690,774	742,671	490,860	39,230	1,635,083	104,653	3,032,042	83.15	688,739	473,931	398,298	398,298
Pennsylvania	June 7,333	99,148,739	11,010,534	43,266,215	5,761,450	9,941,078	402,470	177,198,676	1,213,673	35,215,894	81.39	8,051,671	6,896,275	5,020,549	5,020,549
6 mos.	7,333	99,148,739	11,010,534	43,266,215	5,761,450	9,941,078	402,470	177,198,676	1,213,673	35,215,894	81.39	8,051,671	6,896,275	5,020,549	5,020,549
Balti., Chesapeake & Atlantic	June 7	.....	.....	18,150	719,230	80,555	8,741	459,642	24,693	802,146	111.57	.....	.....	.....	.....
6 mos.	7	.....	.....	18,150	719,230	80,555	8,741	459,642	24,693	802,146	111.57	.....	.....	.....	.....
Cin., Edm. & Northern	June 76	8,500	8,185	94,519	19,918	19,918	3,620	8,850	3,620	8,850	104.57	4,031	12,957	12,957	
6 mos.	76	458,900	49,966	530,881	101,479	145,481	10,380	359,372	19,203	646,093	119.82	105,312	184,167	184,167	
6 mos.	76	458,900	49,966	530,881	101,479	145,481	10,380	359,372	19,203						

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Operating revenues, Maintenance of way and structures, Traffic, Trans-shipment, General, Total, Operating ratio, Net from operations, Operating (or loss), Net after interest and rentals.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.	Average mileage operated per period.		Operating revenues—		Maintenance of—		Trans- por- ta- tion.	General.	Total.	Operating Ratio.	Net from operations.	Operating (or loss).	Net after other credits.	Net after remits (2020).
	June	6 mos.	Freight.	Passenger.	Total.	structure.								
American S. S. Lines	6 mos.	1,350	\$671,864	\$367,059	\$1,038,923	\$14,465	\$171,135	\$16,510	\$778,408	95.61	\$83,271	\$31,748	\$309,678	\$-820,975
Galv., Harrisburg & S. Ant.	June	1,350	1,353,676	1,032,907	2,386,583	4,421	364,899	41,921	2,748,403	88.51	174,242	1,479,169	1,772,224	-3,055,160
Houston & Tex. Central	June	912	752,885	266,564	1,019,449	133,957	143,438	22,316.90	1,165,845	87.27	136,725	92,907	830,195	-90,865
Houston, East & West Texas	June	191	4,400,421	1,365,994	5,766,415	1,672,939	1,035,553	123,827	7,465,771	92.28	468,684	204,230	69,079	234,534
Louisiana Western	June	210	1,657,979	991,103	2,649,082	38,127	66,009	10,306	2,715,417	88.77	33,995	8,226	4,013	96,811
Morgan's La. & T. R. & S. C.	June	200	1,378,967	583,118	1,962,085	333,247	469,538	68,439	2,441,664	87.35	391,156	225,854	210,500	507,067
Texas & New Orleans	June	475	3,100,457	929,736	4,030,193	436,310	542,219	11,113	4,572,522	135.36	144,450	185,853	153,274	183,179
Spokane International	June	165	513,562	95,406	608,968	63,117	128,767	47,743	676,738	85.02	62,074	42,063	17,918	135,268
Spokane, Portland & Seattle	June	319	4,330,780	1,777,418	6,108,198	39,936	81,646	8,547	6,229,781	105.13	219,046	340,869	54,766	253,593
Tennessee Central	June	202	1,818,661	929,146	2,747,807	1,178,396	263,629	238,819	3,016,632	79.68	210,038	130,111	43,769	181,626
Term. R. R. Assn. of St. Louis	June	36	.....	.....	146,118	.....	.....	.....	146,118	.....	.....	.....	.....	161,665
East St. Louis Connecting	June	3	.....	.....	125,885	.....	.....	.....	125,885	.....	.....	.....	.....	88,486
St. L. Merchants' Bridge Term	June	9	.....	.....	774,956	.....	.....	.....	774,956	.....	.....	.....	.....	241,894
St. L. Transfer Ry.	June	6	.....	.....	1,742,584	284,334	153,235	1,365,015	1,742,584	.....	.....	.....	.....	283,510
Texas & Pacific Ry.	June	1,949	12,112,266	4,522,306	17,634,572	62,078	23,176	1,276	17,669,726	57.80	338,260	236,519	208,458	113,364
Toledo, Peoria & Western	June	247	1,596,647	41,602	1,638,249	34,851	35,323	2,292	1,675,874	134.52	49,243	59,432	60,383	23,192
Toledo, St. Louis & Western	June	454	679,449	291,126	970,575	98,541	121,385	49,734	1,041,700	87.19	50,973	381,597	276,786	392,106
Trinity & Brazos Valley	June	368	2,022,554	1,878,859	3,901,413	47,998	39,836	322,811	4,034,247	134.52	49,243	59,432	60,383	23,192
Ulster & Delaware	June	128	85,070	48,616	133,686	26,652	31,387	1,165	135,133	96.58	4,305	3,271	298,300	66,639
Union R. R. of Pa.	June	45	.....	.....	1,885,554	859,256	508,974	1,891,138	2,272	3,772	.....	.....	.....	1,561,558
Union Pacific	June	3,614	5,947,426	1,948,056	7,895,482	1,065,714	1,658,941	167,544	9,521,977	82.61	376,795	195,847	109,323	131,510
Oregon Short Line	June	239	1,812,347	588,100	2,400,447	483,534	541,022	88,742	3,032,213	71.71	13,776,697	10,749,152	101,533	739,971
Oregon Wash. R. R. & Nav.	June	223	1,237,396	600,915	1,838,311	520,496	432,032	60,767	2,331,199	82.61	2,706,742	1,150,662	980,305	5,371,166
St. Joseph & Grand Isl.	June	258	1,271,144	83,406	1,354,550	13,013	26,000	16,019	1,377,569	93.81	835,254	252,116	44,508	1,567,395
Virginian	June	326	1,231,144	83,406	1,314,550	13,013	26,000	16,019	1,337,569	92.50	168,774	31,662	71,258	225,920
Walsh	June	376	1,454,988	462,463	1,917,451	1,163,868	1,943,917	63,742	3,861,418	65.03	3,355,586	2,770,347	2,916,303	1,561,844
Western Maryland	June	297	1,280,015	93,341	1,373,356	165,381	327,344	30,578	1,700,685	88.21	3,111,859	2,366,710	890,177	5,208,477
Western Pacific	June	1,011	6,802,949	2,186,538	8,989,487	1,034,820	1,193,475	192,666	10,183,368	77.21	324,410	36,410	349,004	521,931
Wheeling & Lake Erie	June	511	1,901,726	74,085	1,975,811	194,386	279,846	33,596	2,255,657	68.61	466,157	390,628	350,301	27,753
	6 mos.	511	5,721,149	490,160	6,211,309	717,958	1,568,770	160,677	7,780,727	84.60	1,039,219	583,475	450,223	-122,237

\*\*Corrected report.

## Traffic News

The Missouri Pacific, the Chicago & Alton and the Wabash have announced round trip excursion rates between Kansas City and St. Louis, Mo., on August 13 of approximately the one way fare.

The Great Northern has announced that new commodity rates on ore and concentrates from Great Northern points to the Bunker Hill smelter at Bradley, Idaho, will become effective August 19.

The St. Louis-San Francisco has opened an office in the United Fruit Company building at New Orleans, La., in charge of F. A. Edmondson, who has been appointed general agent of the freight department.

Repeal of Section 15-a of the transportation act, which prescribes rule for rate-making, was urged before the Commission on Agricultural Inquiry this week by S. H. Cowan, counsel for the American National Livestock Association. He did not "challenge the integrity" of the commissioners but "challenged their judgment" in valuation decisions. If Congress would enact legislation putting railroad rates back where they were when the lines were taken over, and valuation figures were disregarded, the railroads would have a large business.

The Adriatic Mining Company and more than eighty other independent operators in the Lake Superior iron district charged before Examiner Hösmer of the Interstate Commerce Commission, Chicago, on January 24, that the United States Steel Corporation is benefiting by discriminatory rates. The petition, upon which hearings have been started, was filed against the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Great Northern, the Duluth & Iron Range, the Duluth, Missabe & Northern and four other railroads serving the northern iron mining district.

Freight rates on grain, grain products and grain by-products from Chicago and points taking Chicago rates, to north Atlantic seaboard ports for export, are to be reduced, temporarily, 7½ cents per 100 lb., as a result of conferences held at Chicago, last week, between the railroads and shippers' representatives. Corresponding reductions will be made in the rates from points in Central Freight Association territory east of Illinois. Authority will be sought to make the reduced rates effective on 10 days' notice. The reduced rates are to be in force only until October 1.



Transferring Mail at New York from Ocean Liner to New York Central's Harbor Steamer

To expedite the delivery of foreign mails inbound steamers are now met by a New York Central harbor boat, thus providing for delivery of mails before ocean vessel is released from quarantine.

## Commission and Court News

### Interstate Commerce Commission

The Commission has reopened the railway mail pay proceeding for reexamination and further hearing of the facts and circumstances surrounding the transportation of the mail and the services performed by several "Short Line" carriers in the West who applied for reopening of the case.

The commission has further suspended until September 5, the operation of certain rates on lumber and other forest products from California and Oregon to various points in Minnesota, via the Chicago, St. Paul, Minneapolis & Omaha and the Great Northern, which rates would result in increases varying from 4½ to 9 cents per 100 lb.

Proposed withdrawal of the Chicago, St. Paul, Minneapolis & Omaha and the Great Northern from participation in joint rates on lumber and forest products, in carloads, from points in California and Oregon to Nebraska, Iowa, Minnesota and Wisconsin have been found not justified and the suspended schedules were ordered canceled on or before September 4. Fourth Section relief was denied.

### Court News

#### Practice as to Demurrage Acquired in by Shipper Equivalent to Agreement, and Binding

In an action by the Minneapolis, St. Paul & Sault Ste. Marie for demurrage on a car of wheat destined to Minneapolis, it appeared that, while originally it was the practice to observe the tariff rule literally by giving notice to the consignee after arrival of cars in the city, a serious congestion at the terminal about 1906 caused a change, and with the concurrence of the state commission, the Minneapolis Chamber of Commerce and the Northern railroads, the practice was established of stopping the cars of wheat at outlying stations and having samples taken and sent in advance to Minneapolis by passenger trains, manifests being forwarded to the consignee in place of the written notice of arrival. On July 7, 1917, the defendant notified the plaintiff in writing it would no longer observe the practice. The demurrage sued for in this case arose prior to the written notice given by the defendant. The defendant claimed that although he had on previous occasions paid demurrage, that had been on cars of whose actual arrival he had learned personally. The Circuit Court of Appeals, Eighth Circuit, rejects the defendant's contention. "Prior to the letter of July 7, 1917, the road could not lawfully have made defendant an exception to the practice so long as it was willing to receive and receipt for the manifests, and a corresponding disability rested on the defendant. The demurrage rule recognizes the validity of agreements in lieu of written notice. The Interstate Commerce Commission said that the practice existing at Minneapolis as it had for many years 'for the mutual benefit of consignees and carriers, and generally acquiesced in by the former, is tantamount to an agreement.'—Minneapolis T. Assn. v. C. B. & Q., 49 I. C. C. 308, 315. A similar practice was upheld in *Berwind-White Co. v. Chicago & Erie*, 235 U. S. 371, 35 Sup. Ct. 131, 59 L. Ed. 275. It was held that, although cars billed for reconignment may not have actually reached the point named as destination, demurrage may attach for the time held after reaching the point convenient to the belt line for transfer, where, under usual practice for many years, cars so billed were held for reconignment. The court said that the contention that the cars had not reached destination as provided in the demurrage rules was frivolous." Judgment for the defendant was reversed and a new trial ordered.—*Minneapolis, St. P. & S. S. M. v. Van Dusen Harrington Co.*, 272 Fed. 255.

THE RAILROAD COMMISSION of California has given tentative permission to the Southern Pacific to withdraw 18 passenger trains from service in various parts of California. The Commission reserved the right to require the restoration of any part of this service should complaints from patrons be made.

## Foreign Railway News

### Spanish Manufacturers in Market for Car Axles

A combination of Spanish manufacturers which is in the market for a quantity of car axles has supplied Commercial Ataché Cunningham, Madrid, with blue prints of the material they require. These plans have been sent to the New York office of the Bureau of Foreign and Domestic Commerce where they are open for inspection to American manufacturers interested.

### Electrification of the Victorian Railways

It is reported in the Times (London) Trade Supplement that the Victorian Railways Commissioners (Australia) are about to convert a further 100½ miles of their lines from steam to electric traction and that the work is to be completed by the end of February, 1923. In addition to this electrification, which covers the passenger carrying routes, a number of lines exclusively used for freight traffic are to be converted and the electric system extended over several of the busier sections of the country lines. This work will entail the overhead wiring of considerably over 100 miles of track, the erection of a number of sub-stations additional to those already in use, the replacement of the existing signaling equipment, and the construction of several workshops fully equipped with all types of machine tools. It is proposed that Australian materials shall be used to the fullest extent possible under the local conditions.

### Orient to Resume Construction of Mexican Line

Formal notice was recently conveyed to President Alvaro Obregon by D. J. Hafl of Kansas City, general counsel of the Kansas City, Mexico & Orient Railroad, according to reports from Monterey, Mexico, that the stockholders of that company have voted to resume construction of the main line that will close the gap between Sanchez, state of Chihuahua, and Fuerte, state of Sinaloa, a distance of approximately two hundred miles. The work will be started as soon as the construction forces can be organized, according to Juan F. Trevino, superintendent of the Chihuahua division of the road. With the filling in of this gap the main line of the Kansas City, Mexico & Orient will have been finished from a point about fifty miles south of Presidio, Texas, on the Rio Grande, to the port of Topolobampo, on the Pacific. It is planned to resume the construction of the main line from Alpine, Texas, to a connection with the existing northern terminus of the Mexico division in the near future, it is officially stated. The cost of the construction of the two hundred miles of road between Sanchez and Fuerte will be approximately \$10,000,000, United States money, Mr. Hafl was said to have informed President Obregon.

### International Commerce Chamber

#### Urges Freedom of Transportation

The International Chamber of Commerce at its meeting in London the latter part of June adopted resolutions urging the free movement of freight trains over international borders and the construction of the railway tunnel under English Channel. The resolution reads in part: "The chamber approves the construction of a channel tunnel between the British Isles and the continent of Europe and requests the appropriate national committees to bring this conclusion to the notice of the governments concerned. The chamber also approves the inauguration of regular services of sea-train ferries across the English channel, and across other bodies of water where commercially feasible, and they request the national committees of countries interested in the establishment of such ferries to take promptly practical steps for their establishment and to offer the aid of the chamber in regard thereto.

"The chamber requests that the railway systems take joint measures with a view to establishing, on great international traffic routes, in a manner similar to that adopted

for the conveyance of passengers, connecting services which will ensure rapid transportation of international long distance freight trains, both for express and ordinary goods service. To this end the national committee of countries interested in the respective international traffic routes are requested to take promptly the practical steps to secure the establishment of such routes and to offer the aid of this chamber in any necessary international negotiations. The chamber calls the attention of the railway companies to the importance of the institution of a company for the purpose of providing the public with special rolling stock for such international transportation of goods and for ensuring by proper means of supervision, the security and rapidity of said means of conveyance."

### May Exports of Track Materials

Steel rails valued at \$1,362,473, track spikes valued at \$38,108 and miscellaneous track materials valued at \$388,583 were exported during May. All of these figures are much less than similar totals for the preceding month. The largest buyers of rails during the month were Japan, China, Argentina and the Dutch East Indies. The detailed figures, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Railroad spikes		Rails of steel		Switches, fr. gs. splice bars, etc.
	Pounds	Tons	Tons	\$	
France	.....	.....	.....	.....	\$1,252
Norway	.....	.....	35	\$2,800	11,808
Spain	.....	.....	.....	.....	27,926
Switzerland	.....	.....	.....	.....	70
Turkey in Europe	.....	.....	.....	.....	54
England	.....	.....	.....	.....	669
British Honduras	400	\$19	.....	.....	.....
Canada	72,834	3,762	704	33,447	17,963
Costa Rica	3,000	146	.....	.....	2,957
Guatemala	2,000	83	.....	.....	146
Honduras	.....	.....	339	20,172	3,867
Nicaragua	10,000	358	.....	.....	.....
Panama	4,900	159	.....	.....	1,391
Salvador	.....	.....	15	900	801
Mexico	50,350	5,050	120	5,048	9,171
Jamaica	.....	.....	.....	.....	560
Trinidad and Tobago	.....	.....	.....	.....	341
Cuba	95,540	5,494	1,487	87,504	22,948
Dominican Republic	7,300	390	.....	.....	1,358
Argentina	125,200	8,536	1,800	117,000	54,443
Chile	.....	.....	.....	.....	1,623
Colombia	8,000	320	6	362	23
Ecuador	.....	.....	.....	.....	906
Dutch Guiana	.....	.....	.....	.....	324
Peru	41,360	1,607	500	32,465	4,488
Uruguay	.....	.....	500	32,465	9,918
Venezuela	1,200	60	.....	.....	137
China	29,120	3,259	6,543	351,355	19
Kwantung, leased territory	.....	2,334	2,008	82,535	38,375
British India	.....	.....	32	2,511	98,138
Straits Settlements	.....	.....	.....	.....	1,132
Dutch East Indies	.....	.....	2,015	114,830	78,255
Japan	137,110	6,185	5,750	388,613	80,151
Siam	.....	.....	1,329	79,758	.....
Australia	.....	.....	.....	.....	4,005
Philippine Islands	60,000	2,680	538	31,088	7,335
British South Africa	.....	.....	101	4,848	2,619
Portuguese Africa	.....	.....	150	7,237	365
Total	647,614	\$38,108	23,492	\$1,362,473	\$388,583

### China Notes

Considerable construction work is going on in small jobs. Projects under construction, planned or recently completed, are shown in the accompanying map by a dotted line. Existing railways are shown by a solid line. The earthwork on the Cheefoo-Weihsien railway in Shantung has been practically completed during the month as a measure of famine relief. Another measure of famine relief is the earthwork on the Tsangchow-Shihchiang line, now under way. The western half of this route is nearly finished. Difficulties in land purchase have held up work on the eastern half. The western section was under the direction of the Peking-Hankow line and the eastern section under the Tientsin-Pukow line until about a month ago, when a separate administration was formed for the entire line. The director, Li, was formerly chief engineer of the Peking-Hankow line. On May 1, the section from Fengchen to Suiyuan was opened to traffic. The formal opening will take place June 1, but public goods have been carried on construction trains throughout May. The term Peking-Suiyuan Railway is no longer a misnomer, but may soon become so, for it is intended to continue the line west to Pao Tou Chen. Surveys for additional construction on the Canton-Hankow route

are under way, and tunnel contracts on the westerly portion of the Lung Hai line will be let shortly.

#### MINISTER OF COMMUNICATIONS OUSTED

The present conference of the "war-lords" of North China has resulted in the ousting of Yeh Kung-cho as minister of communications. Mr. Yeh took a strong stand against the use of railway revenues for any purpose outside of immediate promotion of railway interests, although he had agreed to the allocation of some \$200,000 as an emergency matter, to the payment of the arrears in the salaries of the striking teachers. The premier, however, considered that loyalty to the administration required each department to contribute all available funds to the general purposes of the government. Those familiar with the situation consider that Mr. Yeh has cleverly extricated himself from a very difficult situation. It is well known that the Anfu administration last summer "swept the bin" of all loose cash. Very heavy repayments of mortgage loans fall due this year. The rate of exchange for the repayment of such sums, and also for



A Part of China with Recent and Proposed Railway Construction Shown by Dotted Lines

the payment of interest is very adverse. And on top of it all the railways are showing decreasing revenues for the first time in their history. This is due in part to the effects of the famine, and in part to the commandeering of rolling stock by militarists. For the time being the latter is the principal reason, for it is well known that there is still more grain to be moved than the railways are able to handle under present conditions. On the other hand, during the conference at Tientsin and Peking Chang Tso-lin, Tuchun of Manchuria, has kept from three to five locomotives constantly under steam awaiting his pleasure. This has continued for over a month. Hence it is likely that Mr. Yeh knew just what he was doing when he defied "the powers." He may be expected back in power within a comparatively short time, for he remains as president of Communications University, and in that position has an excellent opportunity for extending his following among the larger element. In the meantime his interests in the Ministry are being safeguarded by the appointment of Dr. C. C. Wang as director of the Railway Department. Americans will remember Dr. Wang as the man who accompanied Mr. Yeh on his trip through our more important cities. Dr. Wang's place on the Chinese Eastern Railway will be taken by C. S. Liu.

A further step in the welding of the Chinese Government lines into a unified system was taken recently in the Third General Traffic Conference, which legislated for a permanent rate and classification committee to be located in the Ministry of Communications. This committee would be charged with the responsibility of studying through traffic conditions with the special purpose of developing business. It will have charge of the editing of tariffs, interpreting doubtful constructions, and of initiating rates on new commodities. In short, it becomes the rate department of the Chinese Government railways except for purely local business.

A persistent rumor states that the Peking-Suiyuan line is trying to float a large loan for the purchase of additional rolling stock. It is more likely that the proceeds of any loan which may be floated will be used for the Pao Tou Chen extension.

## Equipment and Supplies

### Lehigh Valley Will Have 3,200 Cars Repaired

The Lehigh Valley has awarded contracts for the repair of equipment, as follows:

American Car & Foundry Company.....	1,000 box cars
Major Car Corporation.....	1,000 box cars
Buffalo Steel Car Company.....	500 steel coal cars
American Car & Foundry Company.....	500 steel coal cars
Lehigh Structural Steel Company.....	200 steel coal cars

In making the awards, figures prepared by the Lehigh Valley reveal that these contracts have been let at a saving of over \$308,000 to the company, as compared with the cost of making these repairs in its own shops. This saving is made even in the face of the recent reduction in wages and is due to the rules and working conditions affecting costs in the railroad shops with which the outside contractors do not have to contend.

### Locomotives

THE GREEN BAY & WESTERN has ordered 2 Mogul type locomotives from the American Locomotive Company.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of July 9 as asking for prices on the repair of from 100 to 130 locomotives, has rejected the bids, and may make repairs to some of the locomotives in its own shops.

### Freight Cars

THE CENTRAL OF GEORGIA is having repairs made to 200 box cars, in its own shops.

THE ATLANTIC COAST LINE is having repairs made to 350 box cars, in its own shops.

THE PITTSBURGH & WEST VIRGINIA is having repairs made to 300 hopper cars at the shops of the Koppel Car Repair Company, Koppel, Pa.

### Passenger Cars

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for two 70-ft. steel combination passenger and baggage cars.

### Iron and Steel

MITSUI & Co., New York, received bids on August 12, for 500 tons of splice bars, for 60-lb. rails, for the Japanese Government Railways.

THE ROBERT DOLLAR CORPORATION, 11 Moore street, New York City, has quoted prices on 17,000 tons of 85-lb. rail for the Pekin-Mukden Railway, China.

THE AMERICAN MANGANESE STEEL COMPANY, Chicago, has again made a reduction of 15 per cent in the price of manganese steel castings, of Balkwill articulated cast manganese railroad crossings.

### Signaling

THE CANADIAN NATIONAL has ordered from the General Railway Signal Company of Canada, Ltd., materials for block signaling the line between Painsec Junction and Sackville, N. B., 30 miles. This consists of 55 top-of-mast low-voltage model 2A signals, with necessary relays and other apparatus to be installed by the company's forces; also signal material for installation near Levis, Quebec, consisting of 12 top-of-mast model 2A signals, with relays, etc.

### Miscellaneous

MITSUI & Co., New York, have ordered 20, 4-wheel car trucks from the J. G. Brill Company for the Yokohama Municipal Railway.

THE CHICAGO, BURLINGTON & QUINCY will receive bids until 12 o'clock noon, August 19, for 150 rolled steel wheels for tenders and passenger cars. The company will receive bids until 12 o'clock noon, August 23, for 400 sheets of galvanized steel, grades 24 G and 26 G, and 660 sheets of tank steel.

## Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of 10 miles of second track between Florence, Kansas, and Burns, Kansas, at a total cost of approximately \$390,000.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the Heine Chimney Company, Chicago, for the construction of a reinforced concrete chimney, 150 ft. high, at Lincoln, Neb.

CHICAGO & NORTH WESTERN.—This company contemplates rebuilding a highway bridge over its tracks and yard at Proviso, Ill., which burned on August 7, with a loss of approximately \$100,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is accepting bids for the construction of a new 10-stall roundhouse at Eldon, Mo. The company is also accepting bids for the construction of a new car repair shop at Inver Grove, Minn., with dimensions of 250 ft. by 87 ft.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has rejected all bids submitted for the construction of a new coaling station at McFarland, Kansas, and will accept new bids.

ILLINOIS CENTRAL.—This company is accepting bids for the work of widening the bridge approaching its passenger platforms at the Randolph street station, Chicago.

JACKSON & EASTERN.—This company, which was recently authorized by the Interstate Commerce Commission to construct its proposed line from Sebastopol to Jackson, Miss., a distance of approximately 60 miles, has completed surveys for this project.

KANSAS, OKLAHOMA & GULF.—This company has applied to the Interstate Commerce Commission for authority to extend its line from Baxter Springs, Kansas, to Pittsburg, a distance of 25 miles.

STATE OF NEW YORK.—The superintendent of buildings of the state of New York who was noted in the *Railway Age* of July 23 (page 104) as opening bids for the construction of a terminal freight house at Rochester, New York, and a bridge over the Hudson river at Cohoes, N. Y., has awarded a contract for the former to W. F. Martens, Rochester, N. Y., and for the latter to the Terry & Tench Company, New York City.

## Trade Publications

HEATERS.—Catalog No. 230, designed to suit the needs of all classes interested in heaters and heating, has been issued by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. The first part of the book describes the construction, operation and mechanical details of Sturtevant heaters and is intended for those who are not buying this class of apparatus regularly. The latter part, which gives performance tables, diagrams and dimensions, is for the benefit of engineers, architects and steamfitters, to enable them to choose the heater necessary for any given building. Diagrams showing proper methods of making steam connections and the space occupied by heaters are also included.

CAR DUMPER.—The Wellman-Seaver-Morgan Co., Cleveland, Ohio, in its recently issued bulletin No. 63 presents a detailed description of the construction and operation of the Wellman Revolving Car Dumper which has been developed to meet the demand for a machine of low capacity adaptable to plants where first cost is a governing factor and where efficiency, low operating cost and a minimum of labor is essential. The bulletin is illustrated with photographs, assembly drawings and diagrams showing the machine in progressive stages of the dumping cycle. Diagrammatic information as to the force required to dump railroad cars of high capacities is also included.

## Supply Trade News

The Tuco Products Corporation, New York, has opened an agency at Spokane, Wash., in charge of L. J. McNally.

The Q & C Company of New York, Chicago and St. Louis are now the exclusive agents in the railroad field for Century steel fence posts as manufactured by the Funk Brothers Manufacturing Company, Chicago Heights, Ill.

William S. Murray, formerly chairman of the Superpower Survey, and Henry Flood, Jr., formerly engineer secretary of the Superpower Survey, have formed the firm of Murray & Flood, Grand Central Terminal, New York.

E. A. Woodworth, formerly with the Imperial Belting Company, Chicago, as railroad representative, has left the service of that company to take charge of the southwestern territory for the United States Metallic Packing Company, Philadelphia, Pa., with headquarters in Chicago.

Edward B. Germain, general manager of the Harlan plant, Bethlehem Shipbuilding Corporation, Wilmington, Del., has been appointed manager of sales of the corporation, with office at 111 Broadway, New York. Mr. Germain went to Wilmington in December, 1918, from Elizabeth, N. J., where he held the position of general manager of the Moore plant of the same corporation. Cecil W. Weaver, formerly general superintendent of the marine department succeeds Mr. Germain. The Harlan plant, besides its shipbuilding and ship repair facilities has extensive passenger shops with a capacity of 250 steel passenger coaches a year.

## American Locomotive Shows Good

### Earnings for First Six Months

The American Locomotive Company in the six months ending June 30, 1921, according to the semi-annual report issued early this week, earned a profit available for dividends of \$3,901,043, as compared with \$4,333,927 in the preceding six months ending December 31, 1920. The profit was equivalent to \$12.10 per share on the common stock, after providing for the regular \$3.50 semi-annual dividend requirements on the preferred stock. The gross for the six months ending June 30, 1921, was \$45,114,934. The surplus for the six months, after the payment of dividends, totaled \$2,276,043, compared with \$708,927 for the preceding six months, but the latter figure was after the deduction of \$2,000,000 for reserve for additions and betterments.

In his remarks to stockholders, President Andrew Fletcher says, in part:

The inventory account of materials and supplies on hand and work in progress on June 30, 1921, amounted to \$6,555,331 in comparison with \$15,119,342 as of December 31, 1920.

The total current assets of the company on June 30, 1921, were \$46,666,883 and total current liabilities \$6,838,401; the excess of current assets over current liabilities being \$39,828,482, after providing in current liabilities a reserve of \$2,870,033 to provide for shrinkage and value of notes and bills receivable, discount on Canadian funds and other contingencies and a reserve of \$3,011,367 for United States and Canadian income and profits taxes.

On June 30, 1921 the company had no loans payable and had in its treasury on that date among other securities \$10,750,000 of United States treasury certificates of indebtedness and \$2,000,000 of New York City 6 per cent corporate stock and tax notes.

During the six months ended June 30, 1921, there was expended for additions and betterments to the plants \$564,655, which has been charged to the reserves created from surplus of previous years. There has been no money spent on the proposed new plant in the St. Louis district other than the cost of the land and it is the present intention of the company to withhold active development of that property until general business requirements of the company warrant it.

The total unfilled orders for new locomotives, reconditioning of old locomotives and miscellaneous work on June 30, 1921, was \$4,595,958, of which domestic business was 16.5 per cent and foreign business 83.5 per cent, the foreign business being mostly for Japan, China, and South Africa.

It is difficult to forecast the future business of this company for the next six to twelve months. At the present time there are but few inquiries for new locomotives either for domestic or foreign use, but there is encouragement in the fact that the administration of our government is working on the many difficult problems affecting the prosperity of the country and we are hopeful that the railroad and transportation matters, so vital and far-reaching in effect on the general business of the country and particularly

to the business of the equipment companies, will be adjusted in the near future on a sound business basis.

The condensed income account for the six months was as follows:

	Six months to June 30, 1921	Six months to Dec. 31, 1920
Gross earnings.....	\$25,989,781	\$45,114,934
Manufacturing, maintenance and administrative expenses and depreciation.....	21,390,554	39,409,404
Gross profit.....	\$4,599,227	\$5,705,530
Interest on bonds of constituent companies, etc.....	43,184	45,036
Net profit.....	\$4,556,043	\$5,660,494
Deduct for United States and Canadian income and profits taxes.....	655,000	1,326,567
Available profit.....	\$3,901,043	\$4,333,927
Dividends on preferred stock.....	875,000	875,000
Dividends on common stock.....	750,000	750,000
Reserve for additions and betterments.....	\$2,276,043	\$2,708,927
Surplus.....	\$2,276,043	\$708,927

## Obituary

**Thomas Madill**, who served for many years in the sales department of the Sherwin-Williams Company, Cleveland, O., died in Los Angeles, Cal., on July 23. He spent practically his entire business life with The Sherwin-Williams Company in its railway trade.

**Henry Carr Ferris**, president of the Railway & Mine Supply Corporation, El Paso, Texas, died in that city on July 25. Mr. Ferris was born in Sandusky, Ohio, March 1, 1865, and graduated from Stevens Institute of Technology in the class of 1888, with the degree of mechanical engineer. The following year he began railroad work with the Toledo & Ohio Central, serving as resident engineer and engineer of maintenance until April, 1902. He subsequently served consecutively as assistant superintendent and superintendent on the Union Pacific, vice-president and general manager of the Pittsburgh, Binghamton & Eastern and as general manager of the Chihuahua & Pacific, now the Mexico Northwestern. In February, 1915, he was appointed receiver of the Missouri, Oklahoma & Gulf. In 1919, when that road was under federal control he served as an official of the Railroad Administration and in February, 1920, was elected vice-president and general manager of the reorganized company, the Kansas, Oklahoma & Gulf, resigning from that position on September 1, 1920, to engage in private business at El Paso, Texas.

**Charles Haines Williams**, first vice-president of the Chicago Railway Equipment Company, died at Chicago on the morning of August 8. Mr. Williams was born in Baltimore, Md., on April 1, 1875, and was educated in the public schools of Baltimore and at the Baltimore Polytechnic Institute, from which institution he graduated in 1893. He later took a special course in mechanical drawing and machine design in the Maryland Institute. After four years as a special apprentice in the Mount Clare shops of the Baltimore & Ohio, where he worked in the machine and locomotive shops, the erecting shop and in the foundry, drafting room and test department, Mr. Williams, on July 6, 1897, left the Baltimore & Ohio to become connected with the Chicago Railway Equipment Company, as mechanical inspector. In 1917, he was elected first vice-president of the company and a director, which positions he occupied at the time of his death.

**W. S. THROOP**, CLAIMS ATTORNEY of the Erie Railroad, in an address to locomotive enginemen, suggests that where they see a highway traveler approaching a crossing without any apparent indication of stopping, and at excessive speed, the engineman should, in addition to the usual crossing signals, sound a series of short blasts. If the wayfarer pays attention, his life may be saved; and if he persists in his efforts to get over the crossing ahead of the train, the succession of short whistle-blasts will attract the attention of any persons within hearing, and thus may enable the railroad to put up a better defense, in case a lawsuit should follow. Mr. Throop calls attention to the fact that outside witnesses usually tell conflicting stories as to whether the engineman did or did not sound the whistle.

## Railway Financial News

**CANADIAN PACIFIC.—Declares Regular Dividend.**—This company has declared the regular quarterly dividend of 2½ per cent on common stock and the usual semi-annual dividend of 2 per cent on the preferred stock, both payable October 1 to stock of record September 1.

**CENTRAL VERMONT.—Loan Approved.**—The Interstate Commerce Commission has approved the granting of a loan to this company of \$65,000 for three years, for the purpose of retiring certain equipment notes.

**CHARLES CITY WESTERN.—Authorized to Issue Bonds.**—This company has been granted authority by the Interstate Commerce Commission to issue \$10,400 of 10-year, 6 per cent, first mortgage notes to be dated July 1, 1921, and to be sold at not less than par. This approval is supplementary to authority granted to the company on July 8 to issue \$373,600 of these bonds, making the total to be issued \$384,000.

**CHICAGO, ROCK ISLAND & PACIFIC.—Authorized to Pledge Bonds.**—This company has been authorized by the Interstate Commerce Commission to pledge and repledge from time to time all or any part of \$8,364,000 of first and refunding mortgage gold bonds, now pledged without the authorization of the commission, as collateral security for outstanding short term notes or for any short term notes which may be issued.

**DENVER & RIO GRANDE.—Bond Interest Not to Be Paid.**—The semi-annual interest amounting to about \$350,000 on the Denver & Rio Grande adjustment, 7 per cent bonds, due October 1, will not be paid, according to an announcement made August 9. The interest is payable, if earned during the period of January 1 to June 30. The principal reason for not paying the interest is understood to have been the Pueblo flood in which the road suffered damage estimated at about \$1,500,000.

The Wall Street Journal says:

With the announcement that the earnings did not warrant the adjustment interest payment it became known that there was another reason why no action could be taken on it. To allow the payment, sanction of the board would be necessary and this is not possible inasmuch as there is no longer a quorum of the old Denver board. Of the eleven original members six have resigned time to time in the past year or so. This, together with the essential fact that the earnings did not cover the interest, led to the announcement of deferment made by an official on behalf of the five remaining board members.

**FLINT BELT RAILROAD.—Authorized to Construct New Line.**—The Interstate Commerce Commission has granted this company a certificate of public convenience and necessity authorizing the construction and operation of a line of railroad in Genesee County, Michigan. The company proposes to build a road 8¼ miles in length, establishing a belt line around the congested district of the city of Flint, Mich. The company expects to complete and to put in operation about 5¼ miles this year and to have the line in complete operation before July 1, 1924.

The commission has further issued an order permitting the company to retain all excess earnings for a period of ten years ending July 1, 1934, as provided in section 15a of the Interstate Commerce Act.

**Authorized to Issue Stock.**—The company has also been granted authority by the commission to sell for cash, at par, \$1,000,000 of capital stock, the proceeds to be used for the construction and equipping of the line. The cost of the line is estimated at \$1,002,411, excluding right-of-way, substantially all of the land having been obtained by donation.

**INTERNATIONAL & GREAT NORTHERN.—Asks Authority to Issue Notes.**—James A. Baker, receiver, has asked authority from the Interstate Commerce Commission to issue 24 notes aggregating \$194,300, exclusive of interest, payable one each month, after date, in part payment for locomotive equipment, the purchase price of which is \$388,600, purchased from the Baldwin Locomotive Works.

**LEAVENWORTH & TOPEKA.—Granted Authority to Issue Bonds.**—The Interstate Commerce Commission granted authority to this company to issue at par \$80,000 of first mortgage 7 per cent bonds, of which \$57,000 are to be delivered to certain persons in

part payment for equitable or contingent interests held by them in the line operated by the applicant; \$3,000 to be sold to reimburse its treasury for a like amount expended in cash in part payment for such equitable or contingent interest, and \$20,000 to be deposited with the Central Trust Company, of Topeka, Kan., for the purpose of creating a sinking fund required by the state laws of Kansas.

**Asks Authority to Increase Capital Stock.**—This company has asked the Interstate Commerce Commission for approval of an increase in its capital stock from \$100,000 to \$152,175. The increase is for the purpose of exchanging the stock of the applicant for \$50,000 of the aid bonds of the Leavenworth & Topeka Railroad Aid Benefit District of Jefferson County, Kan., to aid in the construction, operation and maintenance of its line. The company has also asked authority to renew \$43,274 of short-term notes.

**LOUISVILLE & NASHVILLE.**—*Asks Authority to Issue Stock.*—The Louisville & Nashville has asked authority from the Interstate Commerce Commission to issue \$53,000,000 of capital stock for distribution as a stock dividend pro rata among its stockholders. The applicant also asks authority to execute and deliver its first and refunding mortgage to secure divers series of bonds, to issue Series A of these bonds aggregating \$28,615,000 and to sell \$12,753,000 of this amount outright to J. P. Morgan & Co. at not less than 94½ per cent to the applicant and to hold the balance in its treasury for future disposition. The bonds to be issued and sold are to bear interest at 6 per cent, payable semi-annually, to mature April 1, 2003, and to be redeemable at the option of the Louisville & Nashville, October 1, 1936, or on any interest date thereafter at 102 per cent of the face amount, together with accrued interest.

The execution of the first and refunding mortgage and the issuance of various series of bonds is for the purpose of reimbursing the applicant's treasury for the refunding of various funded debts and for meeting other present and future financial needs of the company. The company states that a great part of its earnings, which might have been paid to the stockholders in cash, has been used to improve and enlarge its property. The applicant states that \$53,000,000 was determined upon as the amount of the increase because it was decided that the total authorized capital stock of the company should be not less than \$125,000,000, and it is stated that the company's investment of earnings in property has been far in excess of the proposed issue.

As to the mortgage and bond issue the management of the carrier reached the conclusion, according to the application to the Interstate Commerce Commission, that it was essential that some plan be devised at once for the making of one large mortgage through which the company's existing mortgage debts could be refunded as they matured and which would provide for other financial needs of the company.

**MIDLAND VALLEY.**—*Asks Authority to Issue Bonds.*—This company has asked authority from the Interstate Commerce Commission to issue \$363,000 of first mortgage, 5 per cent bonds to reimburse it in part for expenditures from current income on additions and betterments.

**NEW YORK CENTRAL.**—*Authorized to Issue Bonds.*—The New York Central has been granted authority by the Interstate Commerce Commission to issue \$4,425,000 of 4 per cent consolidation mortgage bonds in exchange, par for par, for a like amount of New York Central & Hudson River Railroad Company's 3½ per cent Lake Shore collateral bonds.

**READING COMPANY.**—*Common Stockholders' Committee Granted Right to Appeal.*—Judge Thompson on August 4 granted to the committee of the common stockholders, of which Seward Prosser is chairman, the right to appeal to the United States Supreme Court from the decision of the district court relative to the segregation of the coal and railroad properties in which decision it was held that the common and preferred stockholders had equal rights of participation in the segregation.

**TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.**—*Asks Authority to Pledge Securities.*—The Terminal Railroad Association of St. Louis has asked authority from the Interstate Commerce Commission to pledge \$439,000 par value, general mortgage, 4 per cent bonds with the Secretary of the Treasury in lieu of \$285,000 now held as collateral security for the performance of the applicant's contract under Section 209 of the Transportation

Act in connection with advances thereunder, to save the applicant the premium it now pays for the surety bonds.

**Guaranty Certificates Issued**

The Interstate Commerce Commission has certified partial payments of guaranty to the following roads:

Franklin & Pittsylvania.....	\$3,000
Live Oak, Perry & Gulf.....	10,000
Savannah & Statesboro.....	2,500

The Interstate Commerce Commission has certified to the Treasury partial payment of guaranty as reimbursement for deficits during Federal control to the following roads:

Butler County.....	\$50,000
Moshassuck Valley.....	15,000
Mt. Jewett, Kinross & Riterville.....	10,131
St. Louis-San Francisco.....	500,000

**Tentative Valuations**

The Interstate Commerce Commission has announced the tentative valuation of the used property of the Bangor & Aroostook, Northern Maine Seaport Railroad and the Van Buren Bridge Company, as of 1916, as \$25,350,084. The tentative valuation of the used property of the Seaport Railroad is \$3,850,000, and of the Van Buren Bridge Company, \$77,500, which is included in the foregoing total.

The Interstate Commerce Commission has also announced supplemental tentative valuations of the used property of the following carriers:

Clarendon & Pittsford.....	1917	\$490,212
Kaukahee & Seneca.....	1915	825,645
Munroe Belt.....	1915	62,654
Roscoe, Snyder & Pacific.....	1916	558,393

**Treasury Payments from Revolving Fund**

The Treasury announced the payment of loans from the revolving fund to the following carriers:

Akron, Canton & Youngstown.....	\$212,000
Chesapeake & Ohio.....	2,669,000
Seaboard Air Line.....	293,500

The Treasury also announced partial payments of guaranty to the following roads:

Alabama Northern.....	\$3,000
Bristol.....	3,000
Butler County.....	50,000
Georgia Northern.....	1,500
Kentwood & Eastern.....	64,000
Midland Valley.....	63,000
Moshassuck Valley.....	15,000
Penn Yan & Lake Shore receiver.....	15,000
Railway Transfer Company of the City of Minneapolis.....	65,000
St. Louis-San Francisco.....	500,000
Ursina & North Portland.....	70,000

**Dividends Declared**

Canadian Pacific.—Common 2½ per cent, quarterly, and preferred, 2 per cent semi-annually, payable October 1 to stockholders of record September 1.



Photo by Keystone

Crown Prince of Japan Arriving at Portsmouth, England

# Annual Report

## Chicago, Burlington & Quincy R. R. Co.—Sixty-seventh Annual Report

Chicago, January 1, 1921.

### CAPITAL STOCK AND FUNDED DEBT

To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:  
Federal control of this Company's transportation system ended on February 29, 1920.

The annual compensation for its use, as provided by the contract of October 8, 1918, between the Director General and this Company was as follows:  
Chicago, Burlington & Quincy Railroad Company..... \$33,360,683.11  
Quincy, Omaha & Kansas City Railroad Company..... 29,396.50  
\$33,390,079.61

The compensation which will be allowed for the months of January and February, 1920, is understood to be 60/366 of the annual compensation.  
These figures are based on the average railway operating income of the Company for the three year period July 1, 1914, to June 30, 1917, inclusive. They are subject to a revision (not yet completed) by the Interstate Commerce Commission.

The following statement cannot be accepted as a final showing of the income of the Corporation for the year 1920. The final figures will not be known until complete settlements are reached of the Company's claims against the Railroad Administration and for the Guaranty Period under the Transportation Act, 1920.

The Interstate Commerce Commission in its annual report of carriers has called for a table designed to show the income separately for the two months of Federal control, six months of the Guaranty Period and four months of the Corporate Period, and that table is given on pages 28 and 29 of this report.

Beginning with the Guaranty Period, this Company adopted the plan, authorized in the Interstate Commerce Commission's classifications of accounts, of keeping its accounts strictly on the basis of accruals. This change affected but slightly the Corporate Income for the year as payments made subsequent to the end of Federal control on February 29, 1920, but attaching to transactions had during Federal Control Period, were charged or credited to the account of the Director General.

### COMPARATIVE STATEMENT OF CORPORATE INCOME, YEARS ENDED DECEMBER 31

1920	1919
\$5,560,113.85†	\$33,360,683.11

RAILWAY OPERATING REVENUES	
\$110,385,624.32	Freight .....
31,445,171.57	Passenger .....
3,220,489.33	Mail .....
3,797,628.95	Express .....
2,987,078.26	All other transportation .....
3,490,458.49	Incidental .....
157,354.50	Joint facility .....
\$155,483,805.42	Total railway operating revenues.....

RAILWAY OPERATING EXPENSES	
\$28,367,933.14	Maintenance of way and structures.....
36,353,037.27	Maintenance of equipment.....
1,580,802.84	Traffic .....
69,529,774.77	Transportation .....
1,976,085.75	Miscellaneous operations.....
4,557,894.10	General .....
348,170.72 Cr.	Transportation for investment—Cr.....
\$142,017,420.15	Total railway operating expenses.....

\$19,026,499.12	..... Net .....	\$33,075,844.01
\$7,707,712.65	..... Railway tax accruals.....	\$2,340,837.66†
\$8,835.11	..... Uncollectible railway revenue.....	
	Railway operating income and standard return .....	\$30,735,006.35

NON-OPERATING INCOME	
\$1,803,974.48 Dr.	..... Equipment rents (net).....
1,808,522.59 Dr.	..... Joint facility rents (net).....
110,779.88	..... Miscellaneous rents.....
977,616.56	..... Dividends and miscellaneous interest.....
8,175.14	..... Miscellaneous income.....
	Estimated amount due under guaranty Transportation Act, 1920.....
21,991,964.87	..... Total non-operating income.....
\$19,476,039.38	..... Gross income.....
\$30,706,990.74	..... Total gross income.....

DEDUCTIONS FROM GROSS INCOME	
\$55,888.64	..... Miscellaneous rents.....
6,816,006.44	..... Interest on funded debt.....
2,877.44	..... Interest on unfunded debt.....
\$7,771.81	..... Amortization of discount on funded debt.....
852,083.47‡	..... Miscellaneous income charges.....
\$7,783,626.99	..... Total deductions from gross income.....
\$22,924,363.75	..... Net income.....

DISPOSITION OF NET INCOME	
\$231,077.96	..... Sinking funds.....
8,867,128.00	..... Dividends .....
\$9,098,205.96	..... Total appropriations of income.....
	Income balance transferred to profit and loss.....
\$13,826,157.79	..... Total disposition of income.....

†January and February, 1920. ‡Corporate. §War tax only.  
§Includes "Lap over" items credited and charged by Federal Administration.

On December 31, 1919, the Capitalization outstanding in the hands of the public was:	
Capital Stock .....	\$110,839,100.00
Funded Debt .....	168,050,000.00
Total .....	\$278,889,100.00

During the year 1920 the following changes were made thereto:	
By the issuance of Gold Notes for equipment acquired from allocation by the United States Railroad Administration last note maturing Jan. 15, 1935.....	\$6,000,000.00
By the purchase of Sinking Fund Bonds, 1921.....	3,000.00
By the purchase of Sinking Fund Bonds, 1922 (Denver Extension) .....	68,700.00
Total Addition.....	\$5,988,300.00

And the outstanding on December 31, 1920, was:	
Capital Stock .....	\$110,839,100.00
Funded Debt .....	174,038,300.00
Total .....	\$284,877,400.00

On November 3, 1920, an application was made to the Interstate Commerce Commission for authority to issue additional Capital Stock to the amount of \$60,000,000. This application has been granted and arrangements made to make the issue early in 1921.

During the year the Sinking Fund 4s of 1921 were paid off and the Denver Extension bonds of 1922 were all retired excepting an outstanding balance of \$10,300, which have not yet been presented and for which funds have been deposited with the Trustee and the mortgage released.

### GENERAL OPERATIONS

Revenues:	
Total Operating Revenues for 1920.....	\$186,872,918.07
Total Operating Revenues for 1919.....	154,011,437.62
Increase.....	\$32,861,480.45
or 21.34%	

This increase was distributed as follows:	
Freight Revenues.....	\$24,626,944.77—23.01%
Passenger Revenues .....	1,122,980.62—.61%
Mail Revenues .....	4,074,813.76—2.18%
Miscellaneous Operating Revenues.....	2,128,594.82—1.14%
Incidental Operating Revenues.....	908,146.48—.48%
Total .....	\$32,861,480.45—21.34%

The relative tonnage of commodities as compared with year 1919, was, in:	
Farm products increased.....	28,663 tons—0.34%
Animal products decreased.....	346,867 tons—10.35%
Mine products increased.....	6,171,743 tons—42.80%
Forest products decreased.....	14,373 tons—0.47%
Manufactured products increased.....	1,115,458 tons—13.15%
Total carload shipments increased.....	6,954,624 tons—18.39%
Total L. C. L. shipments increased.....	43,205 tons—1.78%

The tonnage handled in 1919 was restricted by reason of the general business depression which followed the close of the war and the coal strike in the latter part of the year. In comparing with 1918 the revenue tons decreased 31,160 or .066 per cent.

The decrease in tonnage of animal products was due partly to the extreme dry weather on the northwestern lines in 1919, which increased live stock shipments for feeding during that year.

The increase in tonnage of mine products was due to the coal strike in 1919, during which year the decrease in tonnage of bituminous coal as compared with 1918, was 5,730,768 tons. This tonnage carried in 1920 was less than that of 1918 by 721,588, or 4.14 per cent.

Expenditures (Operating):	
The increase in Operating Expenses was distributed:	
Maintenance of Way and Structures.....	\$8,775,458.42—40.84%
Maintenance of Equipment.....	9,944,573.27—30.67%
Traffic Expense .....	687,859.44—6.62%
Transportation Expense .....	19,657,867.77—32.67%
Miscellaneous operations.....	500,981.28—2.94%
General Expense.....	1,007,196.09—24.07%
Total Operating Expenses, 1920.....	161,304,686.05
Total Operating Expenses, 1919.....	120,777,801.16
Increase.....	\$40,526,884.89—33.55%

Operating Ratio, 1920.....	86.32%
Operating Ratio, 1919.....	78.42%

Increase.....	7.90%
Operating expenses per revenue train mile, 1920.....	4.13
Operating expenses per revenue train mile, 1919.....	3.35
Increase.....	\$0.78—23.28%

The total payroll increased..... \$28,920,520.04—37.83%  
The total material expense (excluding fuel) in 1920..... 9,554,628.14—39.77%  
The total fuel expense increased..... 5,579,854.99—40.58%

Expenditures (Capital):	
Expenditures during the year were:	
For Road .....	\$8,516,660.45
For Equipment .....	6,176,944.81
For General.....	43,851.09
Total.....	\$14,737,456.35

Capital Expenditures generally have been directed toward the improvement of existing property, particularly locomotive shops and terminals, yards and station facilities and primarily for increasing efficiency and economy of operation.

There have been no new main lines or extensions built during the year. Substantial progress has been made by the Chicago Union Station Company upon the new Union Station and Terminal project, with consideration of prevailing conditions; the work during the year embracing the completion of the viaducts at Harrison, Taylor and Randolph streets, and progress upon the viaducts at Polk and Canal streets, and Roosevelt Road, and upon the concrete dock wall along the south branch of the Chicago River.

Progress has been made upon the work of rebuilding freight facilities at Harrison and Canal streets made necessary because of the Chicago Union Station project, this work embracing foundations, sewers and track

rearrangements resulting in total expenditures for the year of \$489,078.25, bringing the total cost to date to \$2,173,051.00.

Plans have been completed and approved by the Postmaster General for the new building for handling railway mail to be built in the vicinity of the Union Station, and construction will be undertaken early in 1921.

The elevation of tracks and revision of grades through the City of Aurora, Ill., was continued, and that portion lying west of Broadway was completed. This work embraces the change of alignment of main tracks and the construction of new subways, involving an expenditure for the year of \$388,421.61, bringing the total expenditure to date to \$2,312,961.55.

Additional engine terminal facilities have been constructed at Galesburg, Ill., embracing a 16-stall roundhouse with coal, water and cinder handling facilities. The expenditure for this project amounted to \$163,257.95. This improvement is necessary and will greatly facilitate the handling of power at this important point.

New locomotive facilities at Pacific Junction were constructed, consisting of one 6-stall roundhouse with coal, water and cinder handling facilities involving an expenditure of \$82,945.99. This likewise was a much needed improvement for the purpose of facilitating the handling power.

Locomotive terminal facilities at Denver, Colo., were improved during the year by the installation of improved power plant and coal and water facilities, involving an expenditure of \$67,240.66. There has also been acquired for the purpose of developing a locomotive repair shop, a tract of land of ample size and conveniently located for this purpose.

The construction of second track on the Beardstown and St. Joseph Divisions which had been temporarily suspended in 1919, was continued during the year, involving a total expenditure of \$399,255.64. This embraced the completion of six miles of line between Ayres, Ill., and Durlay, Ill., and eleven miles between Waldron, Mo., and Beverly, Mo.

The customary program of substituting permanent construction for temporary bridges was continued. An important item of this program was the completion of the Platte River Bridge at North Platte, Neb., placed in service in August, and involving an expenditure during the year of \$22,418.46, bringing the total expenditure for this project to \$294,050.85.

The program of applying automatic block signals to important traffic routes for safety and efficiency of operation was continued during the year. There was undertaken the construction of 300 miles of such signals on the Aurora and Lincoln Divisions. There were placed in operation during the year, 97 miles, and the remainder will be completed early in 1921. The expenditures for the year were \$448,552.02.

The program of laying 90 and 100 pound rail in main line was continued during the year. There were applied a total of 340 miles of new rail and 206 miles of second hand rail, the latter being upon less important lines.

Arrangements were made during the year for the purchase and construction of the following equipment:

15 Switch engines. 31 Freight engines. 500 Stock cars.

Substantial deliveries were made upon these undertakings during the year.

Industrial—There were constructed and extended during the year industrial tracks as follows:

	New Tracks	Extensions
On Lines East.....	32	16
On Lines West.....	17	4
<b>Total New Tracks.....</b>	<b>49</b>	<b>20</b>

Industrial activity was not up to normal on account of the reaction following the close of the war, but a number of substantial and important industries have been located. Among the important developments in this

connection were the completion of three beet spurs in the North Platte Valley to serve two new sugar factories, one which has been completed at Mitchell, Neb., and another at Minatare, Neb., not yet completed. These facilities serve a district developing an increased beet acreage in 1920 over 1919 of approximately 10,500 acres.

During the year the oil receipts at refineries served, amounted to 6,673 carloads, and outbound shipments therefrom amounted to 40,908 carloads. The bulk of the inbound oil was transported by pipe lines. In addition, there was a movement of crude oil not banded at refineries, of 521 carloads, making a grand total movement of oil originating in Wyoming of 41,429 carloads. The production of crude oil within the state is constantly increasing, and large additions to important refineries are now under way. A continued growth of this class of tonnage may be anticipated.

There were approximately 10,500 acres of land homesteaded in Wyoming, Alliance, Sterling, Sheridan and Casper Divisions, and a total of 5,692 families located. There were 2,222,389 acres of land homesteaded in Wyoming, and this should cause several thousand new families to come into that state. In addition there were about 10,000 acres of irrigated homesteads taken up divided equally between the Shoshone and North Platte projects which should mean an influx of approximately 150 new families.

**Agricultural—**  
Two special agricultural exhibit cars were operated during the year on Lines West; one during March to stimulate increase in acreage and to improve the quality of the potato crop; and another during the fall to stimulate better farming in the semi-arid districts. This effort aroused a great deal of interest, about four thousand farmers inspecting the potato car, and 270 farmers were supplied with certified seed from the car. In field tests this seed proved superior to the native seed.

About 430,000 pounds of improved seed potatoes were purchased through exchange bulletins. The potato acreage was increased about 15 per cent above last year. A poster calling attention to the necessity of providing storage for potatoes and grain resulted in the construction of twenty-five potato storage cellars.

On the "better farming" car, attention was given to the importance of crop rotations for dry lands, adapted seeds, dairying and silos and greater diversification and safer lines of farming. One hundred and thirteen towns were visited, with a total attendance of about 14,000 farmers.

A large number of farmers' meetings have been attended. Several thousand copies of special posters and bulletins have been issued on potato growing, storage, preventing losses in handling potatoes, farm feeds, silos and dairying. Three hundred thousand pounds of miscellaneous seeds, and thirty-five carloads of cotton cake, corn, hay and alfalfa feeds have been transferred through the marketing service. Three carloads of dairy cows were purchased and shipped to Wyoming farmers. A market was found for four carloads of seed potatoes.

There has been a steady growth in the population and the number of farms in the western territory. Personal letters and advertising booklets were sent to 2,138 persons who inquired for land. These inquiries were a continuation from the year previous, as no colonization advertising was done during the past year. Land values were advanced from 50 to 150 per cent.

There has been a steady increase in the dairy industry in spite of the enormous increase in grain production resulting from the high prices.

Substantial progress has been made in the matter of final settlements with the United States Railroad Administration of matters growing out of Federal control.

By order of the Board of Directors.

HIALE HOLDEN,  
President.

GENERAL BALANCE SHEET

December 31, 1920

ASSETS		LIABILITIES	
<b>Investments:</b>		<b>Capital Stock:</b>	
Property investment—road and equipment:		Common Stock.....	\$110,839,100.00
Road.....	\$406,501,585.72	Long term debt:	
Equipment.....	99,273,186.44	Bonds held by the public.....	\$174,038,300.00
General expenditures.....	1,139,235.09	Bonds held by trust accounts sinking funds.....	10,816,300.00
	\$507,454,094.45	Bonds owned by the Company, unpledged.....	12,205,700.00
<b>Sinking funds:</b>		<b>Total</b> .....	<b>\$197,060,200.00</b>
Bank assets.....	\$10,830,984.54	Less bonds held by or for the Company included in above.....	23,021,900.00
Company's own issues included, Par value.....	10,816,200.00	<b>Total long term debt.....</b>	<b>174,038,300.00</b>
	14,784.54	<b>Current liabilities:</b>	
Deposits in lieu of mortgaged property sold.....	622,475.30	Traffic and car-service balances payable.....	\$3,864,868.11
Miscellaneous physical property.....	917,965.13	Audited accounts and wages payable.....	15,685,201.04
<b>Investments in affiliated companies:</b>		Miscellaneous accounts payable.....	1,223,444.19
Stocks.....	\$30,194,892.12	Interest matured unpaid.....	1,051,507.50
Bonds.....	1,577,236.93	Dividends matured unpaid.....	531.25
Notes.....	4,761,472.72	Funded debt matured unpaid.....	51,600.00
Advances.....	1,566,070.14	Unmatured interest accrued.....	1,158,755.12
	33,814,213.91	Other current liabilities.....	1,921,558.04
<b>Other investments:</b>		<b>Total current liabilities.....</b>	<b>24,957,485.25</b>
Stocks.....	\$5,510.00	<b>Deferred liabilities:</b>	
Bonds.....	7,370,318.06	Other deferred liabilities.....	\$135,308.29
Notes.....	239,064.08	<b>Total deferred liabilities.....</b>	<b>135,308.29</b>
Miscellaneous.....	275.00	<b>Total deferred liabilities.....</b>	<b>135,308.29</b>
	7,615,167.08	<b>U. S. Government deferred liabilities.....</b>	<b>76,028,122.88</b>
<b>Total investments.....</b>	<b>\$550,438,700.41</b>	<b>Unadjusted credits:</b>	
<b>Current assets:</b>		Tax liability.....	\$5,186,435.49
Cash.....	\$8,170,985.14	Insurance reserves.....	\$78,935.57
Time drafts and deposits.....	30,000.00	Operating reserves.....	9,235,174.55
Special deposits.....	955.39	Accrued depreciation—Equipment.....	42,019,152.54
Loans and bills receivable.....	6,063,464.86	Other unadjusted credits.....	5,661,611.60
Traffic and car-service balances receivable.....	2,760,423.71	<b>Total unadjusted credits.....</b>	<b>63,681,369.75</b>
Net balance receivable from agents and conductors.....	4,744,406.76	<b>Corporate surplus:</b>	
Miscellaneous accounts receivable.....	8,714,149.60	Additions to property through income and surplus.....	\$51,725.81
Material and supplies.....	21,659,456.12	Funded debt retired through income.....	31,244,732.60
Rents receivable.....	2,022.65	Sinking fund reserves.....	10,736,141.82
Other current assets.....	1,126,074.47	Profit and loss.....	214,129,390.70
	\$53,293,092.70	<b>Total corporate surplus.....</b>	<b>256,661,990.93</b>
<b>Total current assets.....</b>	<b>\$53,293,092.70</b>		
<b>Deferred assets:</b>			
Working fund advances.....	\$181,884.33		
Other deferred assets.....	704,034.84		
	885,919.17		
<b>Total deferred assets.....</b>	<b>885,919.17</b>		
<b>U. S. Government assets.....</b>	<b>68,411,065.86</b>		
<b>Unadjusted debits:</b>			
Insurance premium paid in advance.....	\$85,277.64		
Discount on funded debt.....	2,147,158.17		
Other unadjusted debits.....	31,130,403.15		
	\$33,362,838.96		
<b>Total unadjusted debits.....</b>	<b>\$33,362,838.96</b>		
<b>Grand total.....</b>	<b>\$706,341,617.10</b>		

## Railway Officers

### Executive

**Samuel M. Russell**, general superintendent of the Toledo, Peoria & Western, with headquarters at Peoria, Ill., has been appointed receiver with the same headquarters, effective August 3, succeeding E. N. Armstrong, deceased. Mr. Russell was born at Bedford, Pa., and was educated at the Sheffield Scientific School of Yale University. He entered railroad service in 1889 as a rodman in the engineering corps of the Pennsylvania lines west of Pittsburgh, and was employed in this work during summer vacations until 1892. On the latter date he was employed on construction work in the engineering department of the Pennsylvania, and two years later was transferred to the freight department at Canton, Ohio. In 1894 and 1895 he served at Canton and in the office of the auditor of freight receipts at Pittsburgh, Pa. In 1895 he was appointed engineer in the maintenance of way department, where he served until December, 1899, when he was promoted to assistant engineer maintenance of way. A year later he was promoted to engineer maintenance of way of the Pennsylvania lines west of Pittsburgh. Mr. Russell entered the service of the Toledo, Peoria & Western in February, 1904, as engineer maintenance of way. He was appointed superintendent a few months later and served in that position until December, 1916, when he was promoted to general superintendent, in which position he was serving at the time of his recent appointment.



S. M. Russell

### Financial, Legal and Accounting

**G. B. Matthews, Jr.**, has been appointed car accountant of the Columbus & Greenville, with headquarters at St. Louis, Missouri, effective August 1. Mr. Matthews succeeds R. B. McAlpin.

**W. J. Bingham**, auditor of through passenger traffic of the Pennsylvania with headquarters at Philadelphia, has retired from active railroad service after 52 years in the service of the company.

**F. G. Middleton**, assistant auditor of the Indiana Harbor Belt with headquarters at Gibson, Indiana, has been appointed auditor of disbursements with the same headquarters. **C. K. Thomas** has been appointed auditor of freight accounts with headquarters at Gibson.

**A. B. Bierck**, assistant secretary of the Philadelphia & Reading, has been appointed comptroller with headquarters at Philadelphia, succeeding **G. H. Parker** who has been appointed general auditor. **W. K. Bean** has been appointed assistant auditor of disbursements. Mr. Bierck will in addition to his new duties retain his former positions as vice president of the Reading Company and assistant secretary of the Philadelphia & Reading.

### Operating

**G. W. Todhunter**, general yardmaster of the Southern Pacific with headquarters at Fresno, California, has been pro-

moted to the position of terminal trainmaster with the same headquarters. **H. A. Kuehn** succeeds Mr. Todhunter as general yardmaster.

**Ernesto O. Y. Llano**, superintendent of the Nacozari Railroad, with headquarters at Sonora, Mexico, has been appointed general manager of the National Railways of Mexico with headquarters at Mexico City.

**R. H. Johnson**, general manager and purchasing agent of the Peoria & Pekin Union, with headquarters at Peoria, Ill., has resigned and the purchasing department has been placed under the jurisdiction of the president's office.

**L. K. Owen**, superintendent of dining cars of the Spokane, Portland & Seattle with headquarters at Portland, Oregon, has been appointed superintendent of dining cars of the Northern Pacific with headquarters at St. Paul, Minnesota, effective August 15, succeeding **G. W. Nelson**, assigned to other duties.

### Traffic

**P. C. McCormick** has been appointed commercial agent of the Baltimore & Ohio, with headquarters at Chicago.

**H. E. Heal** has been appointed Canadian passenger agent of the Pennsylvania, with headquarters at Toronto, Ont.

**W. S. Farnsworth** has been appointed general agent of the Gulf, Colorado & Santa Fe with headquarters at Mexico City, Mexico.

**L. F. Daspit**, traffic manager of the Shreveport, La., Chamber of Commerce, has been appointed assistant general freight agent of the Southern Pacific, Texas and Louisiana lines, with headquarters at Houston, Tex.

**H. M. Jouver**, acting general freight and passenger agent of the Baltimore & Ohio with headquarters at Chicago, has been appointed general freight and passenger agent with the same headquarters, effective August 1.

**J. O. Gill**, has been appointed district freight agent of the Gulf, Mobile & Northern, with headquarters at Memphis, Tennessee, effective August 3. Mr. Gill succeeds **W. H. Askew**, who has been transferred to Kansas City, Missouri.

**C. W. Getty**, special representative, passenger department, of the Pennsylvania with headquarters at Chicago, has been promoted to assistant general passenger agent with the same headquarters, effective August 1, succeeding **W. R. McFarland**, resigned.

**F. A. Edmonson**, formerly commercial agent of the St. Louis-San Francisco, with headquarters at Cincinnati, Ohio, has re-entered railroad service and has been appointed general agent of the same company, with headquarters at New Orleans, La.

**W. M. Brooks**, foreign freight agent of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., has been appointed commercial agent, with headquarters at Cincinnati, Ohio, succeeding **J. J. McCarty**, resigned, and the office of foreign freight agent has been abolished.

**G. F. Kay**, freight traffic representative of the Southern, with headquarters at Dallas, Tex., has been promoted to commercial agent, with the same headquarters, effective August 1, succeeding **C. M. Agnew**, deceased. **H. B. Coogan**, freight traffic representative, with headquarters at Memphis, Tenn., succeeds Mr. Kay.

**A. C. Irons**, formerly general passenger agent of the Chicago Great Western, with headquarters at Chicago, who was incorrectly reported in the *Railway Age* of July 16 (page 144), as having become associated with the D. H. Howland Sugar Company, has become a member of the firm of **F. C. Van Ness & Son**, with headquarters at Toledo, Ohio, instead.

**E. S. Manchester**, traffic representative of the New York, Chicago & St. Louis, with headquarters at Buffalo, N. Y.,

has been promoted to division freight agent, with headquarters at Erie, Pa. **G. B. Merrill**, freight representative, with headquarters at Erie, has been appointed traffic representative with headquarters at Buffalo, succeeding Mr. Manchester. **J. V. Jamieson** succeeds Mr. Merrill. The promotions and appointments were effective August 1.

**E. C. Marks**, traveling freight agent of the Louisville & Nashville, with headquarters at New Orleans, La., has been promoted to commercial agent, with the same headquarters. **J. E. Power**, city freight service agent, with headquarters at New Orleans, Louisiana, succeeds Mr. Marks. **G. W. Kingsmill** succeeds Mr. Power. The promotions were effective August 1.

**A. S. Collins** has been appointed commercial agent of the Chicago, Rock Island & Pacific with headquarters at St. Paul, Minn., succeeding **J. B. Rayn** who has been promoted to division freight agent with headquarters at Des Moines, Ia. Mr. Rayn succeeds **W. S. Williams** who has been transferred as division freight agent to Estherville, Ia., succeeding **M. M. Knapp**, retired. These changes were effective August 6.

**C. T. Mackenson, Jr.**, has been appointed assistant general freight agent of the Central region of the Pennsylvania with headquarters at Pittsburgh, Pa. Mr. Mackenson was born at Harrisburg, Pa., on June 16, 1886, and was educated in the public schools of that city. He entered railway service on April 7, 1903, in the office of the general freight agent of the Cumberland Valley and became chief clerk to the general freight agent of that company on June 1, 1910. He entered the service of the Pennsylvania as chief clerk to the division freight agent at Philadelphia on August 1, 1912. On July 1, 1914, Mr. Mackenson became chief rate clerk in the general freight department of the company and on December 1, 1916, was appointed division freight agent at Altoona, Pa. On November 26, 1917, he entered military service and returned on May 1, 1919, as division freight agent at Uniontown, Pa., and was transferred to Pittsburgh in a similar capacity in September of that year. He was serving in this position on August 1, when his appointment to his new position became effective.

**Claude W. Getty**, special representative passenger department of the Pennsylvania, with headquarters at Chicago, has been promoted to assistant general passenger agent, with the same headquarters, effective August 1. Mr. Getty was born at Norristown, Pa., on January 12, 1890, and was educated at the University of Pennsylvania. He entered railroad service on June 20, 1907, with the Pennsylvania at Philadelphia, Pa., and after 4 years' service in various positions in the operating and transportation departments, he was transferred to the passenger department of the general offices at Philadelphia. He served in various capacities in that department until November 1, 1917, when he was made chief clerk to the passenger traffic manager. When the Northwestern region of the Pennsylvania was created on March 1, 1920, Mr. Getty was transferred to the passenger department at Chicago, as special representative, with special assignment to the developing of dining car service of the lines west of Pittsburgh. He was serving in this position at the time of his recent promotion.

Appointments and promotions in the traffic department of the Pennsylvania have been made effective August 1 as follows: **C. T. Mackenson**, division freight agent, Central region, with headquarters at Pittsburgh, has been promoted to assistant general freight agent, Central region, with the same headquarters, succeeding **R. E. Cook**, resigned. **H. H. Gray**, division freight agent, Central region, with headquarters at Pittsburgh, with jurisdiction over the Lines West has been transferred to the Lines East, succeeding Mr. Mackenson. **F. X. Quinn**, division freight agent, Central region with headquarters at Buffalo, N. Y., has been transferred to Pittsburgh, succeeding Mr. Gray. **S. T. Stackpole** succeeds Mr. Quinn. **E. S. Neilson**, division freight and passenger agent, Eastern region, with headquarters at Chambersburg, Pa., has been appointed division freight agent with headquarters at Baltimore, Md., succeeding Mr. Stackpole. **F. W. Nash**, division freight agent, Central region, with headquarters at Columbus,

O., succeeds Mr. Neilson. **W. R. Cox** succeeds Mr. Nash. **J. M. Steenberg**, division freight agent, Northwestern region, with headquarters at Toledo, O., has been promoted to assistant to the freight traffic manager, Northwestern region, with the same headquarters. **H. C. Oliver**, division freight agent, Northwestern region with headquarters at Richmond, Ind., succeeds Mr. Steenberg. **J. E. Collins** succeeds Mr. Oliver.

### Engineering, Maintenance of Way and Signaling

**E. J. Bayer**, assistant engineer maintenance of way of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Galion, Ohio, has been appointed engineer maintenance of way of the Evansville, Indianapolis & Terre Haute, with new headquarters at Washington, Indiana, effective August 1, 1921.

### Mechanical

**James I. Mailer**, whose promotion to superintendent of motive power of the Fort Smith & Western, with headquarters at Fort Smith, Ark., was announced in the *Railway*



J. I. Mailer

*Age* of July 23 (page 186), was born at Alma, Wis., on April 24, 1877, and entered railroad service in December, 1893, on the Winona & Western. In 1897, he was employed by the Chicago Great Western as a machinist where he served until 1899, when he went with the Great Northern as a fireman. In 1900, after firing on the Northern Pacific and Southern Pacific he returned to the Chicago Great Western as shop foreman. A year later he was appointed general foreman of the Minnesota North, Wisconsin where he served until 1904. Mr. Mailer has been in the service of the Fort Smith & Western continuously since 1904. From 1904 to 1906 he served as general foreman at Fort Smith, and from 1906 until January 1, 1921, he was employed as an engineman. On the latter date he was promoted to master mechanic and was serving in this position at the time of his recent promotion.

### Purchasing and Stores

**H. S. Burr**, general superintendent of stores of the Erie with headquarters at New York, has been appointed assistant to the manager of stores with the same headquarters. **C. K. Reasor** has been appointed to a similar position with the same headquarters. The positions of general superintendent of stores and assistant general superintendent of stores have been abolished. These changes were effective August 1.

### Special

**John R. Leighty**, assistant chief engineer of the Missouri Pacific, has resigned to become group engineer for the western group of the President's Conference Committee on Federal Valuation of the Railroads, with headquarters at Chicago, succeeding to part of the duties of **H. C. Phillips**, resigned to enter private practice. Mr. Leighty was born at Spencerville, Ind., on September 16, 1870, and was educated at Rose Polytechnic Institute. He entered railroad service with the Wisconsin Central, now a part of the Minneapolis, St. Paul & Sault Ste Marie, in 1891, as a freight bill clerk. A few months later he went with the Chicago & North Western as a rodman, and later became instrument man and assistant engineer. As assistant engineer, Mr. Leighty had charge of construction work

in the Wood street (Chicago) yard and of the track work in connection with track elevation on the Rockwell street branch to 43rd street, Chicago. Later he became road-master at Sparta, Wis., and at Carroll, Iowa. In 1899, he went with the Union Pacific where he was assigned to duties in connection with track reconstruction and ballasting work in Wyoming. The following year he entered the service of the Baltimore & Ohio as an assistant engineer, with headquarters at Newark, Ohio. Later he was transferred to Winchester, Va., Parkersburg, W. Va., and Cumberland, Md. In 1907 he was appointed engineer maintenance of way of the Western district of the Missouri Pacific with headquarters at Kansas City, Mo. In October, 1918, he was promoted to corporate chief engineer with headquarters at St. Louis, and later was appointed to the position of assistant chief engineer, which position he was holding at the time of his recent appointment.

**H. C. Phillips**, chairman of the western group engineering committee, of the President's Conference Committee on federal valuation of the railroads, has resigned to engage in consulting engineering practice, specializing in the valuation and inspection of railroads, with office at 14 East Jackson boulevard, Chicago. Mr. Phillips has been retained in an advisory capacity by the western group of the President's Conference Committee, but will give a large part of his time to private consulting practice. Mr. Phillips was born in New York, on May 6, 1869, and graduated from Princeton University in 1890. He entered railway service in July of the same year as assistant engineer on the New York & Northern, now a part of the New York Central, at Yonkers, N. Y., and was with that road until February, 1893, when he went with the New York, New Haven & Hartford, as assistant engineer on construction, serving first on four-track work at Milford, Conn., and then on track elevation work in Boston. From October, 1895, to 1898, he was engaged in engineering work in New Mexico, part of the time being engaged on location survey work for the Pecos Valley & Northeastern. In February, 1898, he entered the service of the Atchison, Topeka & Santa Fe, as inspection engineer, serving in New Mexico until October, 1899, when he was placed in charge of building branch lines in Oklahoma. In June, 1901, he was appointed assistant superintendent, with headquarters at Fort Madison, Iowa, and from February, 1903, to June, 1904, he was engineer of the Western Grand division of the Santa Fe at La Junta, Colo., and was then transferred to San Francisco, Cal., to complete the surveys and take charge of construction of the San Francisco & Northeastern, with the title of chief engineer of that line. In September, 1906, he was appointed chief engineer of the Atchison, Topeka & Santa Fe Coast Lines, with headquarters at Los Angeles, and in April, 1912, was appointed valuation engineer of the Santa Fe system, with headquarters at Chicago. He resigned that position in August, 1915, to become assistant general secretary of the President's Conference Committee on federal valuation of the railroads, and on January 1, 1917, was elected general secretary of that organization, with headquarters at Philadelphia, Pa. He resigned as general secretary in May, 1918, to accept an appointment as chairman of the western group of the engineering committee at Chicago, which position he now leaves to enter private practice. **George W. Hand**, assistant to the president of the Chicago & North Western, has been appointed chairman of the western group, engineering committee, and **John R. Leighty**, assistant chief engineer of the Missouri Pacific, has been appointed group engineer for the western group, with headquarters at Chicago.

## Obituary

**J. H. Leyonmarck**, mechanical engineer of the Chicago & Alton with headquarters at Bloomington, Ill., died at his home in that city on August 1.

**James W. Terry**, auditor of the San Antonio & Arawas Pass, died at his home in San Antonio, Tex., on August 1. Mr. Terry had served as the company auditor for more than 25 years.

**Thomas S. Howland**, vice-president, and formerly secretary and treasurer of the Chicago, Burlington & Quincy, died in the Massachusetts General Hospital at Boston, Mass., on



T. S. Howland

August 8. Mr. Howland had served as vice-president of the Burlington since 1907. During most of this time he held the position of secretary and treasurer also, but resigned this office on May 26 of this year. He was born at North Dartmouth, Mass., on February 13, 1844, and was educated at the Lawrence Scientific School of Harvard University. He entered railroad service on March 1, 1868, in the engineering corps of the Burlington & Missouri River, being engaged on location surveys with that road until 1876. In this year he was appointed secretary to the president of the Chicago, Burlington & Quincy road and served in this position until 1883, when he was elected secretary. On December 16, 1901, Mr. Howland was elected assistant secretary and assistant treasurer of the Chicago, Burlington & Quincy Railway, which had leased the Chicago, Burlington & Quincy road. A year later he was promoted to treasurer and assistant secretary of this company, and on June 30, 1907, he was elected vice-president, treasurer and secretary, with headquarters at Chicago. He was serving as vice-president of the Burlington at the time of his death.

THE VALDOSTA, MOULTRIE & WESTERN RAILROAD is being torn up, the business of the line not being sufficient to keep it alive; and one of the problems of the man who is trying to save the material is to keep enemies from burning the trestles. Threats have been made that this means of blocking the road would be adopted in order to prevent the transportation of the material to the eastern end of the line. Armed guards were stationed at the important bridges. This railroad, built about ten years ago, extends from Valdosta, Ga., northwest 42 miles to Moultrie. In its prime it had three locomotives and 19 cars.



Photo by Keystone

Waterloo Station, London, with Holiday Crowds Leaving the City

# Railway Age

Vol. 71 August 20, 1921 No. 8



## Contents

Will the Mechanical Department Make Good? .....	Page 325
Some Large and Troublesome Problems Must Be Tackled Aggressively and Settled Promptly.	
Should the Railroads Repair Their Equipment .....	345
Because of Accounting Methods, Many Important Factors Are Not Taken Into Consideration.	
No Meeting of Mechanical Division This Year .....	355
Reports of Eight Committees Abstracted Here Have Been Submitted by Letter Ballot to Members by General Committee.	

### EDITORIALS

College Courses on Transportation .....	319
Make the Most of Material Handling Machines .....	319
Keep on the Look Out for Fires .....	319
Keep the Future Well in Mind .....	319
The Field for High-Power Machinery .....	320
A Word to the Wise on Water .....	320
Automatic Train Stops; Debit and Credit .....	320
Mechanical Devices Provide a Remedy .....	320
Which Do Railway Employees Favor? .....	321
While the Railways Help Pay the Bill .....	321
Increased Shipments of Farm Products .....	322

### LETTERS TO THE EDITOR

The Chief Clerk and His Responsibilities .....	323
Is the College Graduate Equipped for Railroad Work, by S. Ennes .....	323
Coach Windows in Hot Weather, by E. Marjoribanks .....	324
Life of Ties is Limited by Mechanical Destruction, by F. B. Freeman .....	324

### GENERAL ARTICLES

Will the Mechanical Department Make Good? .....	325
Railroad Funding Bill Reported Favorably to Senate .....	335
Two Roads Adopt Heavier Rail .....	336
Correct Illumination for Yards and Scales .....	337
How Herry Can Afford Reduced Rates on His Little Railroad .....	340
Britain's Plans for Solution of Labor Problems .....	341
Freight Car Loading .....	342
Work on Detroit River Bridge to Begin in 1922 .....	343
"Get the Safety Habit" .....	344
Should the Railroads Repair Their Equipment? .....	345
Water Treatment—Intermittent or Continuous, by W. R. Toppan .....	347
Railroads Complete Testimony on Piece Work .....	351
A Coaling Station of Pre-Cast Concrete Construction .....	354
No Meeting of Mechanical Division This Year .....	355
A Simplified Check for Largo Freight Houses .....	379
Electrical Communication in Railroad Service .....	380
The Need for Railroad Statistics .....	381

### GENERAL NEWS DEPARTMENT..... 383

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Ursalgmec, London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON	A. P. STYERLING	MILBURN MOORE
H. B. ADAMS	C. W. FOSS	E. J. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. E. COLE
R. E. TRAYER	ALFRED G. OEHLER	L. M. SANDWICK
C. B. PECK	F. W. KRAEGER	J. G. LYNE
W. S. LACHER	HOLCOMBE PARKES	L. H. DUNN
J. G. LITTLE	C. N. WINTERS	D. A. STEEL

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$3.00. Foreign Countries (excepting daily editions), \$10.00 £2 0s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue, 9,000 copies were printed; that of these 9,000 copies, 8,950 were mailed to regular paid subscribers, 53 were provided for counter and news company sales, 343 were mailed to advertisers, 65 were mailed to employees and correspondents, and 480 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 320,100, an average of 9,700 copies a week.



Ryerson Spring Shop Equipment  
is reducing spring repair costs for this road.

## Saving a Road One-Third of Its Spring Costs

After installing Ryerson Spring Shop equipment one road reduced its locomotive spring costs from \$4.40 to \$3.20 per 100 lbs. and paid for the spring repair equipment in one year.

Such maintenance economies are rapidly reducing the cost of transportation of progressive railroads.

We can tell you what you can save. Ask us!

**JOSEPH T. RYERSON & SON**

Established 1842      Incorporated 1888

CHICAGO   ST. LOUIS   DETROIT   BUFFALO   NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The communication in this issue on the question of the college man and the railroad is, to say the least, thought-provoking. Heretofore, the question, as

### College Courses on Transportation

discussed in these columns, has centered largely around its application to the graduates of engineering courses—civil, mechanical and electrical. Now comes an operating officer with the pointed suggestion that the colleges might well turn their attention to the development of courses in transportation, thus making a definite start "towards the scientific study of one of the great problems of the day and in the end we should enjoy the same improvement in transportation that we have in medicine, law and engineering."

The development of a transportation system in any locality is contingent on the character of service required. Prior to the war the problem of the railroads of this country was to extend the transportation system sufficiently to keep pace with its extensive development.

### Make the Most of Material Handling Machines

Roughly speaking, the year 1913 marks the transition from the extensive to the intensive in the development of the country and, as well, from a period of comparatively cheap labor to one of high costs. As a consequence the transportation problem has assumed a new aspect. Under present conditions it is acknowledged that one of the most important factors in the cost of moving freight is that of the cost of handling at transfer points and terminals. It is also conceded that developments in terminal facilities have not kept pace with the advances made in track facilities, in the means of conveying traffic—cars and locomotives—and devices for speeding up operation—modern signal appliances, etc. In other words the terminals, in busy seasons, now act as "the neck of the bottle" in the transportation system, being unable to handle economically the volume of traffic offered or that which could be transported over the line. Investigations into what may be accomplished by properly installed material handling devices towards decreasing costs and increasing capacity should be well worth while.

When smoke and flame have played havoc with property intended for other purposes than the entertainment of those near enough to witness the spectacle, the importance of fire prevention again becomes a subject of absorbing interest.

### Keeping on the Look-Out for Fires

An investigation is held in which directly or indirectly a goodly portion of officialdom participates. Typewriters renew acquaintanceship with dusty files and letters again circulate to refresh memories of forgotten instructions. Fire pails are again restricted to the service of fire. Fire barrels are cleaned of their cinders and refilled. Fire hydrants are again repainted and their locations made known to responsible parties. Pipe lines are flushed, hose and extinguishers inspected, apparatus repaired and fire drills reinaugurated. Thus are preparations made to meet the next emergency. Ostensibly they are

ample. As a matter of fact, such preparations provide no better guarantee against further loss than those made prior to the fire which caused them, unless subsequently the interest in fire prevention is constantly kept alive and vigilance maintained. The fact that within the last few weeks heavy losses have been caused the railroads by fire makes it very evident that the possibility of fire is still present, and since we are in the midst of a summer season characterized by protracted heat and little rain, suggests the appropriateness of again directing attention to means for the prevention of fire. If locomotives have been equipped with apparatus for sprinkling bridges it is an appropriate time to see that they are being used. If terminals have been provided with elaborate and expensive fire apparatus, it is well to make sure that in case of an emergency there will be full knowledge of its proper use. It is unfortunate that a heavy loss should be incurred at any time through inability to find the one man familiar with the working of the pumping machinery, but it would be particularly unfortunate for any railroad to experience interruption of traffic and loss from fire at a time when the need for conserving resources of all kinds is as acute as at present.

One of the troublesome complications encountered in the solution of urban grade separation problems concerns the

### Keep the Future Well in Mind

provision for side tracks to accommodate the industries adjoining the right-of-way. In many cases the volume of business offered the railroad is not sufficient to warrant the additional expenditure to provide the side track on the new grade and under some circumstances the owner of the adjoining property is unable to make the necessary changes in his building to accommodate the new elevation of the service track. As a consequence grade separation not infrequently results in discontinuing side track service to the small shipper. In a few cases, the situation has been met by continuing a service track on the street level, where the slow and infrequent movement of cars and locomotives does not constitute a serious hazard or obstruction to the street traffic. It goes without saying that where this plan has been put into practice, its adoption has been influenced as much if not more by pressure from the shippers as through the influence of the railroad alone. It would seem, however, that such a plan can be justified only in particular cases. It must be borne in mind that the agitation for grade separation arises primarily in cases where the grade crossings constitute a serious obstruction to the traffic as against those cases where the element of hazard alone is present. The rapid increase of motor vehicles is constantly producing new problems in street transportation. There is a very definite tendency toward the establishment of thoroughfare streets with traffic regulations that provide for a minimum of interference from the traffic on the intersecting streets and it is on these very thoroughfare streets that the pressure for grade separation is most urgent. It appears, therefore, that any plan for grade separation on main traffic streets which does not provide for the complete separation of the rail and street traffic may eventually prove unsatisfactory.

thereby giving rise to pressure on the part of the public for still further relief in the form of grade separation at other street crossings.

It has always been the policy of the *Railway Age* to advocate the installation of modern high-power railroad shop machinery and equipment wherever the conditions warrant. It is not advisable, however, to install this machinery in every case simply on the ground of its being modern, powerful and provided with all

### The Field for High-Power Machinery

the latest improvements. In cases where the volume of work is small, it would obviously be poor business judgment to use an expensive, high-production machine and allow it to stand idle a considerable portion of the time with interest charges eating up what profit may have accrued while the machine was in operation. Labor saving devices should be installed in railroad shops and obsolete equipment eliminated, but only after a detailed study of the situation and a careful balancing of costs against possible savings. We cannot state the case more plainly than was recently done by a prominent mechanical department officer who said: "Modern, high-power shop machinery should be selected with extreme care. A time study should be made of machine operations, and machine tools that cannot produce to the capacity of modern tools should be abolished or used only in cases of emergency. The higher capacity tools should be operated on two shifts in order to secure a greater production." It will pay mechanical department officers responsible for shop output to study their machine tool requirements with the same accuracy and thoroughness that an industrial manufacturer would consider necessary. In a particular case a carefully prepared statement, taking into account the possibility of two-shift operation and balancing reduced labor and production costs against higher interest and depreciation charges will show at a glance whether or not it is economical to install a high-production machine. Recommendations can then be made to the higher railroad officers and, in by far the great majority of cases, such recommendations based on facts will receive both prompt and favorable attention.

"That the use of purified or softened water produces great savings in railroad operation is almost universally realized."

### A Word to the Wise on Water

Thus begins the article "Water Treatment—Intermittent or Continuous," found elsewhere in this issue. This statement may or may not meet with the unqualified approval of the reader; likewise others appearing elsewhere in the discussion. Nor is it so essential in this case that they should if the reader derives a better understanding of an industry which deserves and is acquiring an increasingly prominent place in railway operation. There has been too much misunderstanding of the subject of water treatment for the best interests of the railroads themselves. Persuaded to install a plant at some point in the belief that it would eliminate a troublesome water problem, there has been a tendency at times to regard with suspicion any explanation given of an apparent failure of the installation to effect the expected results; or, having approved the expenditure of a large sum to erect a softening plant at some point, there has been a tendency to discountenance efforts made at a later date to modify the design or to effect extensive alterations, all because water softening has been considered too much of a stereotyped process involving a fixed design and typifying a definite performance rather than the application of scientific principles to problems which in some localities are extremely difficult of solution. Accordingly by discussing the progress which has been made in the design of water softening plants, together with enu-

merating the many factors which enter into the choice of a design and their possible effect upon the performance of the plant, the article referred to serves a valuable purpose by creating a better perspective and a wider appreciation of this subject than many readers may have had before. It is well to point out, however, that the discussion should not be interpreted as one enabling the reader to determine the proper design for any particular location, for it should be remembered that the entire discussion is based upon two extreme types of water softening plants, and that in all cases local conditions should receive careful consideration.

To equip the railways of Great Britain with automatic train stops would cost £2,278,950 (or, roughly, twelve million dol-

lars), and in 1920 the number of collisions which were investigated by the Ministry of Transport and which, theoretically, would have been prevented by an automatic stop, was six. This is an estimate presented before the July meeting of the Institution of Railway Signal Engineers, at London, in a paper by Mr. Thorowgood. Looking at these figures we may say that if the six collisions cost \$100,000 each, the amount of money that could be saved by preventing them would be equal to the annual interest on the cost of the stops (at five per cent). In other words, the stops would pay for themselves. In addition, they would save the lives of passengers and trainmen and prevent untold anguish, things which cannot be measured in money. These figures are the result of an exceedingly rough calculation. A dozen other signal engineers could, no doubt, present six statements much more favorable and six much less favorable. But the estimate seems worthy of a moment's notice if only to remind us that a comparison of this sort is not wholly impossible. The American railroad system is many times larger than that of the United Kingdom; but, on the other hand, our collision record is worse than that of the English roads, per unit of traffic. Mr. Thorowgood's estimate is based on equipping 5,750 distant signals (all there are in the country) and 24,635 locomotives. What would be his basic data for a similar calculation in this country? A collision killing a car full of passengers, like that of February 27 last, may simplify the problem for the road that pays for that collision; but what is the name of the road where the next disaster is going to happen? The sober calculator must consider that question.

An article in the *Railway Age* of July 30, 1921, drew attention to the exceedingly important relation wages paid to labor bear to the cost of transportation under present conditions. It was pointed out that in 1912, 43.1 cents of each dollar of railway revenue was paid to labor.

During the six-year period—1912 to 1917 inclusive—there were only slight variations from this proportion, the maximum of 44.1 cents being reached in 1914 while in 1917 only 43.3 cents of each dollar was so expended. The year 1918 marks the beginning of the period of high cost of railway labor. During that year 53.6 cents of each dollar of operating revenue was charged to the labor account or an increase of more than 23 per cent over the preceding year. During the years 1919 and 1920 the proportion of the railway dollar spent for labor increased steadily and in 1920 amounted to 59.9 cents. The true significance of these figures was contained in a recent statement of the American Association of Railway Executives in which concrete examples are cited of instances where the increased labor cost, since 1917, entailed in transporting certain articles exceeds the increases in freight charges which have been put

### Automatic Train-Stops; Debit and Credit

### Mechanical De- vices Provide a Remedy

into effect during the same period. Also it should be borne in mind in considering these figures that, in the report just mentioned, attention is drawn to the fact that the labor cost alone of transporting certain articles at the present time equals or exceeds the amount charged for transporting the same articles between the same points prior to 1918. Such facts and figures certainly point out in no uncertain manner that the need for reducing the labor charge in transportation is imperative. A more general utilization of material handling or labor saving devices in the movement of freight will in many instances do much partially to relieve this situation.

## Which Do Railway Employees Favor?

**T**HERE IS A WIDESPREAD and increasing demand from many classes of the public for reductions in railway rates. The effect this ultimately must have on the employees of the railways should not be overlooked by the employees and their leaders, although it probably will be.

Sooner or later reductions of rates will have to be made. Reductions in rates sufficient to satisfy public sentiment cannot be made unless there are large reductions in operating expenses in addition to those that already have been secured. Since the railroad payroll constitutes almost two-thirds of railway expenses, the bulk of this reduction of expenses must be made in the payroll. The reduction in wages recently granted by the Railroad Labor Board, on the basis of the same number of men that was employed before the big slump in business came, would reduce the payroll only 12 per cent. The employees and their leaders are simply fooling themselves if they believe that this is all the reduction in the payroll that is going to be made. Sooner or later a permanent reduction in the payroll much larger than this must and will be effected. It must and will be effected to enable the railways to earn reasonable net returns and to reduce the rates they charge the public.

A reduction in the payroll does not, however, necessarily mean a reduction in wages. A reduction in the payroll may be secured either by increasing the efficiency and output of each employee, and thereby reducing the number of men that must be employed, or by reducing the wages paid without increasing the average efficiency of the employees or reducing their number. From the standpoint of the employees, the railways and the public, it would be far better to effect the necessary and inevitable reduction of the payroll by increasing the efficiency of each employee than by reducing the wages. The result would be that fewer men would be employed by the railways than when a heavy business was being handled last year; but when general business revives there will be plenty of work for all who want it, and a permanent reduction in the number of railway employees would not mean that any men who have been in the service of the road would actually be unable to get work to do.

Will the employees and the leaders of the labor organizations, then, favor a policy which will tend to increase the average efficiency of each employee and enable the wages to be kept on a relatively high basis, or one which will not increase the average efficiency of each employee and will inevitably make necessary further reductions in wages?

The leaders of the labor organizations thus far have favored relative inefficiency and further reductions in wages. They have not said that they favor this policy, but they are taking a course which, if they persist in following it, will make the adoption of this policy necessary. The leaders of the shop crafts' unions are fighting stubbornly for the retention of all the rules in their national agreement. Many of these rules have had the direct effect of reducing the average efficiency and output per man. If continued in force they will have the same effect in future. Therefore, their inevitable tendency will be to compel the railways to employ

more men than otherwise would be necessary, and to seek reductions in basic wages which might not otherwise be necessary.

This course has not been followed with such persistency by the leaders of other railway labor unions as by those of the shop crafts' unions, but to a greater or less extent it has been followed by most of them. That it is to the interest of a great majority of railway employees to increase their average efficiency and output, and thereby arm themselves with the best possible argument against further and large reductions of their wages, is a fact so plain that it is difficult to understand how they can overlook or disregard it. They bitterly denounce those who advocate reductions of their wages, and yet back their labor union leaders to the limit in fighting for rules and methods of work which tend directly to make it impracticable to pay them high wages. Nothing, it would seem, could be plainer than that low efficiency must result in low wages, and that in the long run only high efficiency can make possible the payment of high wages.

## While the Railways Help Pay the Bill

**I**N THE LAST ISSUE we pointed out the direct interest which the railways have in the extension of the highway construction program now under way. As property owners and tax payers they have such interest through the large amounts which they are called upon to pay for highway construction in the form of assessments of one kind or another. Because of this fact they have a right to demand that public authorities will expend these funds with the same care which the roads themselves exercise in their expenditures for improvements to their own properties, since all funds for either purpose are derived directly or indirectly from the public in the form of earnings from transportation services. It is therefore pertinent to consider the manner in which these highway funds are being expended today, and to compare the methods used with those employed by the railways.

Before a railway builds a line its officers ascertain the amount and character of the traffic which may be expected to move over it, and then determine the weight of the locomotives which will be required to haul this traffic economically. With this information the engineering department proceeds to design its structures to carry these loads. Its bridges are designed for light or heavy locomotives according to the demands of the operating department. The rail, the amount of ballast and other details of the roadway are selected in like manner to support a specific load.

The amounts which the railways will pay to public authorities for the construction of highways during the next few months will be sufficient to build many miles of railways. Yet these funds are not being spent with anything approaching the same degree of scientific accuracy with which the railroads spend their own money. While it is true that the highways built to date are in general on the routes of heaviest travel, the density of traffic varies widely even on these roads. Yet one generally finds a uniform width of roadway and type of construction without reference to this variation in traffic although much of the highways built during the last year have cost over \$40,000 a mile.

Having determined the amount of traffic which should but usually does not influence the width of roadway provided, the character of the construction should next receive consideration. Yet again little real engineering research work has been done to determine the influence of sub-soil conditions on the character of construction, the most economical form of construction for various classes and densities of traffic, the amount and character of the reinforcement in concrete, etc. Rather one finds that one state or county has adopted a certain design of concrete construction as its standard, an-

other brick, another some form of asphaltic macadam, etc., reflecting more directly the relative effectiveness of the local salesmen of these various materials than their merits for the particular local conditions existing.

These methods are used in practically all parts of the country. One of the states which has been most active in the construction of highways is California. It is therefore interesting to know that this subject has become so acute in that state that the California State Automobile Association and the Automobile Club of Southern California joined in retaining several leading engineers to make an exhaustive study of the highway situation to determine whether the highways which were being constructed were giving the service which was expected of them. In the report made early this year there appears the statement that "The commission has lacked foresight and vision by failing to carry out adequate and sufficient experimentation, research and investigation on a broad and comprehensive scale, while it has not taken advantage of the few experiments that it did make. It used practically the same type of construction throughout the state, irrespective of the requirements of the traffic, sub-soil and drainage. Such a policy is economically and structurally unsound and open to grave criticism." The report further states that some of the pavements have broken down in four and a quarter years, practically before the retirement of any of the bonds issued to build them had begun.

Again the report states that "In Southern California field inspections indicate that as high as 30.5 per cent of the concrete pavements are in poor condition, requiring reconstruction either now or at an early date. An additional 19.3 per cent is in only fair condition, serious failure having already begun." \* \* \* \* \* "Probably \$10,000,000 worth of state and county pavements in Southern California have failed."

Since they have contributed so largely to these funds, the railways have a direct interest in seeing that the moneys which are expended are spent properly. By insisting that their engineering officers satisfy themselves that proper design and construction methods are being employed, they will not only protect the investment which they have in these highways, but will be rendering a service to the public at large.

## Increased Shipments of Farm Products

THE FACTS ABOUT the railway business almost always arise to confute and embarrass those who base their discussions of railway affairs on mere theories as to what the facts are or ought to be. The present freight rates have been widely attacked by theorists on the ground that they are "higher than the traffic can bear." It has been argued that they have prevented the movement of much traffic and that this has been one of the main causes of the prolonged business depression.

The facts regarding the shipments of farm products utterly refute this theory. Railway rates have been advanced as much in proportion on farm products as on other commodities. The prices of farm products have declined more since the rates were advanced than the prices of any other very large group of commodities. Therefore, on this theory the rates on agricultural products should be especially difficult for the traffic to bear and should sharply curtail its movement. A few months ago an extensive propaganda was being carried on which was predicated on the assumption that if the rates were maintained they would greatly restrict the movement of farm products.

The sequel is illuminating. The total traffic of the railways thus far in 1921 has been abnormally small. Paradoxical as it may seem, while the total traffic moving has been abnormally small the shipments of farm products have

been almost unprecedentedly large. Throughout the present year shipments of grain and grain products have been much larger than in 1920 or 1919, before the present freight rates were fixed. In the eight weeks ending July 23 the shipments of grain and grain products were 97,105 cars greater than in the same weeks of 1920, and this is typical of what has been going on throughout the present year.

A very extensive and energetic propaganda was being carried on a few months ago to show that it was and would continue to be impossible for the farmers to ship their fruits and vegetables to market on the present rates. What are the facts? During the season of 1920 up to August 6 the total shipments of fruits and vegetables were 145,316 carloads, while in the season of 1921 up to the same date the total shipments were 171,390 carloads. These are the statistics of the Bureau of Markets of the United States Department of Agriculture.

There has been a corresponding increase in shipments of other kinds of produce. From January 1 to August 6, 1920, shipments of butter were 314,600,000 pounds, while during the same period of 1921 they were 346,800,000 pounds. Shipments of cheese increased from 105,500,000 pounds to 113,600,000 pounds; shipments of dressed poultry from 86,300,000 pounds to 93,800,000 pounds; shipments of eggs from 10,300,000 cases to 11,500,000 cases.

It was said that cantaloupes could not be shipped from the Imperial Valley of California to the eastern market on the present rates. The number and tonnage of cantaloupes shipped were greater than in 1920. It was said that the large peach crop of Southern Georgia could not move to market under the present rates. The Department of Agriculture reports that "shipments of peaches from Southern Georgia during the season just ended were twice as great as during the 1920 season, and growers regard the season as fairly successful despite the lower prices this year. A tabulation of carlot shipments to August 1 shows 9,500 cars shipped from Southern Georgia and about 10,500 cars from the entire state. In 1920 the carlot shipments were 5,500 from the entire state up to August 1."

The *Railway Age* does not contend that the present rates on farm products should be indefinitely continued. They and other rates should be reduced when the operating expenses of the railways have been reduced enough to justify reductions of the rates. But the people who contend that the present rates are protracting the industrial depression by preventing the movement of a large amount of traffic which would move if the rates were reduced are talking nonsense. The present rates are relatively higher, as compared with past years, on farm products than on any other large class of commodities, yet the farm products throughout the year have been moving in larger volume than before the rates were advanced.

It may be said, however, that freight rates are only relatively a small part of the prices of farm products, and that the present rates are restricting the movement of cheaper and more bulky commodities in whose cost to the user the railway rate is a larger factor. There is no class of commodities more bulky or the freight rates on which are relatively higher in proportion to the prices for which they sell than sand, gravel and stone. The shipments of sand, gravel and stone in the seven weeks ending July 16 were 33 $\frac{1}{3}$  per cent more than they were in the same weeks of 1920.

The facts show beyond any rational question that the traffic of all kinds will bear the present rates and that the present small volume of traffic is due to general business conditions and not to the present freight rates. There ought to be reductions in railway rates in the future but they should not be based on false ground and they should not be made until the traffic of the railways has increased and their operating expenses have been reduced enough to enable the railways on lower rates to make a reasonable return.

## Letters to the Editor

### The Chief Clerk and His Responsibilities

COLUMBUS, Ohio.

TO THE EDITOR:

The article by "Chief Clerk" in your issue of July 23 on the duties, responsibilities and salaries of chief clerks, expressed so thoroughly the feeling which exists among chief clerks and officers alike, that it is disappointing, to say the least, to find there is still an operating officer of any standing with the feeling expressed in the article signed "Operating Officer" in your issue of August 6. "Operating Officer's" article is its own best answer, and were it not for the impression it might leave with the uninformed, and the fact that you have recognized the article editorially, I should not consider an answer necessary.

This discussion seems to have developed into one relating particularly to operating department chief clerks and I will endeavor to answer "Operating Officer" with that in mind. From the fact that I have had more or less of the (so-called) outdoor experience and the further fact that my superior is a promoted chief clerk, I feel competent in a small way to make reply.

The fallacy of the theory that operating department chief clerks do not make good operating officers was proven years ago. The best evidence of that fallacy is the large number of prominent and efficient operating officers on the various lines today who have been promoted from chief clerks. One of the more important lines in the eastern territory for years followed the policy of allowing its chief clerks to grow old in that capacity, but in recent years has evidently discovered that its chief clerks provide excellent timber for efficient operating officers, as several of them have been promoted to superintendents.

The lack of outdoor experience, while perhaps constituting a small handicap when first assuming the duties of an official, would to my mind in no way compare with the advantage obtained by the chief clerk because of having associated closely with the higher operating officers, obtaining their opinions and ideas of railroad management and having impressed upon them thoroughly the relation between earnings and expenses. The outdoor man, lacking this association and seldom having access to the reports of operating results, fails to keep abreast of the times during periods of depression and seldom takes action toward keeping the expenses of his particular portion of the property in line with the earnings until his superior gets after him.

It has been stated the chief clerk is handicapped because of his lack of experience in handling men. Is it not true he is obliged to handle all of the men under the supervision of his superior, including officers, and is it not true that supervision of that character requires a greater degree of diplomacy and tact than the handling of the average outdoor worker? (The section foreman may be a good handler of men but would he necessarily also make a good officer?)

I want to take issue with the implication in the letter of "Operating Officer" to the effect that the authority which is now delegated to chief clerks is the cause of lower operating efficiency. If the average intelligence and loyalty of the officers below the general officers was as high as that of the chief clerks to the general officers, I should be willing to lay a small bet that the operating efficiency would be increased rather than lowered.

In regard to curtailing chief clerk's authority: I feel quite

sure if "Operating Officer" were to suggest to his superior that he reduce the authority now delegated to his chief clerk and handle personally more of the work passing through the officer, he would be frankly told his boss already has more than he could do and that when he (Operating Officer) gets a little higher up the ladder he will undoubtedly realize that the chief clerk is the assistant to his superior although (unfortunately for the chief clerk), he has never been able to give him that title nor the salary to go with it.

If the theory advanced by "Operating Officer" is the correct one, why would it not be proper for the vice-president or general manager to say to his subordinates, when leaving the line for anywhere from two days to two months, "Gentlemen, I am going off the line and in my absence it will be necessary for you to use your own judgment in connection with matters which you are accustomed to take up with me"; quite the contrary the operating officer gives his chief clerk to understand he will be held responsible for results in the absence of his superior and the subordinate officers so understand it. They also understand they should take up with that chief clerk for approval matters which should be taken up with the vice-president or general manager, as the case may be, were that officer available.

In this day of labor troubles and various and divers other troubles, when managing officers find themselves overburdened with work and responsibility, it is almost pathetic to suggest they increase their own burdens or that the authority of their immediate subordinates be curtailed.

"CHIEF CLERK TO GENERAL MANAGER."

### Is the College Graduate Properly Equipped for Railroad Work?

CLEVELAND, Ohio.

TO THE EDITOR:

Marion B. Richardson's letter in the *Railway Age* of June 17 asking, "Do the Railroads Want College Men?" and calling attention to the apparent lack of interest of railroad managers in college men and the indifference of the latter to railroading as a career, together with other letters on the subject, revives the problem so many railroad fathers have wrestled with, "Shall I send the boy to college or put him to work?"

In reply to Mr. Richardson's question, I venture to say that never before was the demand, the necessity, or the probable reward for adequate transportation as great as at present, with a corresponding demand for transportation men regardless of where they were trained. And if railroad managers are neglecting the colleges as recruiting fields, or college men are indifferent to railroading as a business, there is some good reason for the mutual lack of interest. In hunting for that reason I have been led to wonder if it was not in some small degree chargeable to the failure of our schools to teach transportation, with the result that college men are not started right and that they and the managers are disappointed and discouraged with the results.

Transportation is the business or service of moving people and commodities from place to place. In supplying it, a great many facilities and tools are used: on sea, by ships and docks; on land, by railroads with their tracks, stations, locomotives, cars, etc. And the prizes go to those who can furnish that service.

Most young men who go to college with the idea of fitting themselves for railroad work take up engineering and finish by specializing in civil, mechanical or electrical engineering; and with the minor exception of a few schools, this is the limit of special instructions available to fit them for their intended work.

After four years in college they must serve some railroad

at least as much longer in what is virtually an apprenticeship at a very small salary, learning the practical side of their specialty, which is limited to building and maintaining some of the facilities or tools used in transportation. At the end of that period they are generally qualified to maintain, and in some cases to build tracks, locomotives, cars, signals, etc., etc. But all they have learned about manufacturing transportation, which is the service the railroads are selling to the public—*i. e.*, moving passengers and freight from point to point—and the service the public is willing and anxious to pay for, they have acquired by contact with the men who are using their tools to move cars. And when a young man's mind is full of the intricacies and possibilities of a modern locomotive, he does not have time to learn much else, with the result that he is delayed in the race for the prizes in the transportation field and frequently discouraged and disappointed by the more rapid advancement of someone in another department.

The Cramps will build ships, and the locomotive companies locomotives in any number and kind ordered. But if the Cramps were asked to take their ships and keep New England supplied with coal, or the locomotive builders were asked to take their locomotives and move five thousand loads a day through Pittsburgh, they would very likely say, "Go get a transportation man." And the young college man, after a total of eight years of school and service, would not ordinarily be as well equipped to do the job as the young man who, on finishing high school, had entered railroad service as a fireman, brakeman, yard clerk, telegraph operator or any of the kindred occupations, where from the start he was engaged in moving cars. The results can be verified by studying the list of railroad executives, most of whom started young in actual service.

Whether or not transportation can be taught in the schools as engineering, medicine and law are taught is an open question. The writer believes, however, that with something of the same support those professions enjoy, it is possible to give a student an appreciation of the whys and wherefores of a railroad, together with an understanding of what is needed to manufacture transportation; an understanding that he would be years learning in actual service and that will reduce some of the handicaps that college men, with an ambition for a career in transportation, are now laboring under.

I believe, for instance, that it is possible to teach a student the theory and requirements of an operating unit such as a division. The business of a division, like the railroad of which it is a part, is to move a certain number of passengers and tons of freight in a stated time. Given this arbitrary requirement with controlling factors, such as grade line, etc., the student can be taught what tracks, main and auxiliary; what engines, passenger, freight and switch; what cars, passenger and freight; what facilities for fuel, water, communicating, signalling, dispatching; what housing or shelter for passengers, freight and railroad property; what machinery and tools for maintenance; what supplies for operation; what records and accounting, and, most important, what men and organization are needed.

This is but a skeleton of the man and material requirements of a division without any instructions as to their use, but as there is nothing mysterious about transportation and plenty of men competent to teach it, some of the fundamentals of good operating practices can be included.

If this is done the graduates who have studied transportation will leave college with such an understanding of the reason for a railroad, of its purposes and functions, and of the fundamentals necessary to serve the public, that they will learn quickly to know whether the facilities and organization at hand are adequate and whether or not the methods in use are proper. The graduate will, in fact, be as well equipped to move cars as the graduates of law, engineering and medical

schools are to practice their professions. All must serve an apprenticeship in the school of experience.

He will also have a long start over the man who confined his studies to engineering and should overtake the one who on leaving high school had to go to work, but most important of all, a definite start will have been made towards the scientific study of one of the great problems of the day and in the end we should enjoy the same improvement in transportation that we have in medicine, law and engineering.

Yes, the railroads want college men. S. ENNES,  
Vice-President, Wheeling & Lake Erie.

## Coach Windows in Hot Weather

MAPLEWOOD, N. J.

TO THE EDITOR:

There is nothing new under the sun! This very sweeping statement must be accepted as a truth of holy writ; but certainly we do now and then meet novel arrangements of old things.

On this my first visit to America for many years, and while sojourning in this quiet hamlet, I have discovered an absolutely startling innovation in railroad operation; the Delaware, Lackawanna & Western arranges its passenger-car windows so that they can be opened in summer; in hot weather, damp weather, or any kind of weather. Not in forty years have I found a road of which this could be said. Even Pullman cars, cared for as well as any cars in the world, frequently arouse the ire of the passenger who wishes to raise a sash at 2 a. m.

And this Lackawanna trick is so simple. They just put two little blocks of wood under the bottom of the sash. This prevents the sash from being completely closed, and prevents it from sticking.

At the approach of cold weather the little block is taken out.

Please print this news on your editorial page.

Only this last week, on two of the most prominent roads in New England, I have found the most obstinate sashes that I ever saw. Even with my patent non-burglarious window-opening jimmy (which you will recall was described and illustrated in your columns some years ago) I was compelled to exert all the muscular energy at my command before I could start those persistently frozen sashes. I should think that they had not been opened since the days of McAdoo.

By the way, how is it that that great reformer did not tackle this troublesome feature of operation?

E. MARJORIBANKS.

## Life of Ties Limited by Mechanical Destruction

BOSTON, MASS.

TO THE EDITOR:

I note an editorial in your issue of June 10, "Why All Roads Do Not Treat Ties." You might have mentioned as one of the reasons, and a very important one, the fact that on roads with heavy traffic the large majority of the ties are not removed on account of decay but because of mechanical destruction and that therefore until such roads get all of their ties tie-plated efficiently it is a waste of money to install treated ties, as they secure no longer service from them owing to the mechanical destruction from rail cutting and spike killing.

F. B. FREEMAN,  
Chief Engineer, Boston & Albany.

OFFICIAL BREVITY.—A message from a section foreman to the roadmaster read: "No. 6 did not whistle. Please send me another hand car."—*Union Pacific Bulletin.*



## Will the Mechanical Department Make Good?

Some Large and Troublesome Problems Must Be Tackled  
Aggressively and Settled Promptly

WE ATTEMPTED in the *Railway Age* of June 10, 1921, to outline some of the more important problems of the mechanical department which require attention in the interests of improved economy and efficiency. Up to this time we have received in the neighborhood of 150 letters commenting upon these suggestions. Practically all of our suggestions met with almost unanimous approval; if anything the criticisms have been that we should have placed even greater emphasis on some of the points. There is, of course, a rea-

son for this unanimity of opinion. Such suggestions as were made were neither new nor radical. They represented largely ideas or practices which have been tried and have proved effective on one or more roads.

The purpose of this article is to discuss some of these things more at length. The points which are here developed were suggested and inspired by comments of practical railroad officers—executive as well as mechanical—and are not the products of idealists or theorists.

### The Human Element and Management Problems

The mechanical department, more than any other department on a railroad, is concerned with the so-called labor problem. Listen, for instance, to the expressions of one motive power officer: "In the light of my personal experience during the past three and one-half years in the matter of preparing voluminous reports on every conceivable phase of the railroad operating and accounting situation and conferring with committees of employees from every sub-department of the mechanical department, I cannot conceive of anything that would bring about better results than for the employees to get down to business, put the paid chairmen of committees to work and all hands render a fair day's work for a big day's pay, and forget some of their so-called petty grievances so as to give the managing and supervisory forces an opportunity to take stock of their knowledge of railroading (which will otherwise soon become a lost art) and do some actual constructive thinking along these lines. President Harding is credited with saying that 'There should be more business in government and less government in business.' This fits the railroad situation like a glove. Let us do some actual railroading for a few years and cut out a lot of this useless bunk, and the results will astonish the world."

The attitude is a typical one. It is needless here to review the situation or touch upon the factors which have been responsible for it. The present situation must be regarded

as a natural reaction from former conditions, greatly aggravated by developments which took place in the industrial and railway world during and following the war. Conditions were in a bad way prior to the world war; this was due in a large sense to the extremely rapid growth of the industries and railways, the resulting steady advance in the standards of living of the people generally, and a lack of understanding of the principles underlying the proper handling of the human element in industry.

The present situation is intolerable and is seriously injuring the country as a whole, and particularly the employees, the managements and the investors. "If a house be divided against itself, that house cannot stand"—but somehow or other this truth is mighty slow in penetrating. Will it be recognized before it is too late?

Must American railroads, because of a lack of vision on the part of the leaders of the various interests involved, face a situation similar to that in Great Britain which was so strikingly summed up in the following words in a recent cable to the New York Tribune from Hartley Withers, editor of *The Economist* (London): "Labor here is so convinced by its war-time experience that the country is a bottomless purse out of which every one can be made happy if only they shout loud enough—and labor is still so deluded by the promises of the government, made during the general





election just after the armistice—that a long trial of strength, carried out to the bitter end, is probably necessary to bring it back to the facts of life. The amount of suffering inflicted upon innocent people, with no direct interest in this economic contest, is simply appalling, and the infliction of discomfort shows how far we still are from achieving real economic civilization. We can only hope that good will follow in the long run."

A very large responsibility rests upon the mechanical department heads of the railroads in this country. This statement is made in the full knowledge that the Labor Board at present is a controlling factor in the labor question. After all, however, it is not rules or regulations that will settle the problem—they only seem to complicate it and make it worse, especially when the rules are imposed by a third party. The difficulties will only be relieved by the infusion of the right spirit throughout each organization. This means a broadening of attitude on the part of both officers and men. If they cannot undergo this process then the trouble will continue in spite of any possible rules or regulations which may be imposed.

What spirit, then, should dominate the minds of officers and men alike? There is too much foolish, unsound talking being done on all sides—too much superficial thinking—too little of the open-minded attitude. Men must trust and have confidence in each other before the problem can even receive fair consideration. John Leitch, in his book "Man to Man," describes his scheme of industrial democracy which is now being used in many manufacturing establishments with excellent results. But John Leitch behind any scheme of organization would get results because of his abiding faith in his fellowmen. He trusts them, he is not afraid to place responsibility upon them, and they pretty well live up to the faith he has in them. Do we discard our credit systems upon which trade and commerce are based because a few men abuse it? Surely not! Why not have a greater degree of confidence and faith in the men throughout the organization. It is remarkable how a man lives up—or down—to the opinion which others have of him or of the results they expect of him.

W. L. Mackenzie King, for so many years minister of labor in Canada, has recently written a book entitled "Industry and Humanity." He makes this statement in the introduction, "The existing attitude of capital and labor toward each other is too largely one of mistrust born of fear. . . . If industry is to serve humanity, this attitude must be one of trust inspired by faith. An industrial system characterized by antagonism, coercion and resistance

must yield to a new order based upon mutual confidence, real justice and constructive good will." His book, and it is an extensive treatise, deals with ways and means of eliminating this fear which paralyzes industry.

A better condition will not be brought about by rules, or orders, or correspondence. Some managements have already made great strides in the right direction by really getting acquainted with the men, by dealing with them in a patient and broad way and by using great pains to educate them to a realization of their individual importance to the success of organization and to a detail knowledge of its problems.

There are many ways in which the right spirit can be infused into an organization. Some roads already have it to a marked degree, others can make good progress by studying what has been done on other roads and in other industries. If the problem is recognized in its simple form and if the serious danger which confronts the country is realized if it is not corrected, then a long step will have been taken and it will be comparatively easy to solve it.

Incidentally, the foremen and subordinate officers will be a large factor in righting conditions. One of the great mistakes in the mechanical department—

### The Foreman

indeed it is almost a crime—has been the lack of appreciation of the foremen. The *Railway Age* has consistently called attention to the fact that a condition which allowed the foreman with all his responsibility to draw less wages than some of the men under him was all wrong and could not work for real efficiency. Instead of making a big man of the foreman and utilizing him to the full the tendency has been to dwarf and push back into insignificance the very keystone of the arch—and the roads are today paying for it dearly. A few of them are waking up. The foreman, as clearly explained—in the article in the *Railway Age* of June 10, is a most vital factor—he forms the only real contact between the management and the men. If he does not understand how to handle men, if he does not fully appreciate the policies and problems of his company, then how in the world can the men be expected to co-operate fully and intelligently?

Possibly no one thing was commented upon more extensively in the letters we have received than the necessity for frequent get-together meetings for the training and instruction of the foremen. Here is a typical extract from one of the letters:

"Human nature has not changed in the past thirty years. The kind smile and friendly greeting is just as welcome today as it was yesterday, but the smile and greeting are no





longer as evident. Where formerly the workman took his troubles to his immediate supervising officer, satisfied that he would obtain a sympathetic hearing, he now takes them to his committeeman, not because he feels that he cannot obtain justice under present conditions, but because something, somehow has built up an icy wall between them.

"The question therefore is, how can we get back to that old esprit de corps, that spirit of harmonious relationship that formerly prevailed? Here and there a few big men have found the answer and the results are visibly reflected in the operating ratio.

"The small roads have been merged into the large system. The president who formerly had 500 miles of railroad now has 5,000. Obviously, he can no longer call each employee by his given name; equally patent is it that he can no longer give his attention to the minute details as before. Furthermore, his work now keeps him more at headquarters; he cannot make the frequent trips over the property that he once enjoyed; therefore, he loses that intimate knowledge of his subordinate officers that was at one time a major asset.

"What is the answer?" Simply this, "If the Mountain won't come to Mahomet, Mahomet must go to the Mountain."

"The subordinate officers must go to the chief officers—and that there be no embarrassment—on invitation. This means regular meetings monthly, quarterly or semi-annually, as may fit the needs. Let this extend down the line, i. e., the chief officer call in his immediate staff including the chief mechanical officer. The superintendent of motive power meet with his staff, etc. The master mechanic in turn to have regular meetings with his staff, etc. At these meetings let there be full and frank discussion, each group handling such matters only as can properly come before it; make the meetings more nearly concerning the rank and file a general clearing house

#### Frequent Staff Meetings

where suggestions may be brought in covering any improvement in methods, etc., have complaints of the workers adjusted through their immediate foremen, and a spirit of enthusiasm injected that will permeate through the entire rank and file. Such meetings will necessarily throw the foremen into more intimate relationship not only with their immediate superiors, but also with the rank and file, as the call for suggestions will arouse a spirit that calls for effort. The germs of workable ideas usually originate in the ranks, to be developed and made practical by the officers; therefore in the search for germs, the seeker must mingle intimately with the men in order to bring out their best thoughts, and where proper credit is given, this exchange leads to mutual understanding and mutual satisfaction.

"The success of the foreman depends upon his men; the success of the officers upon their staff. Confidence begets confidence. When men see that confidence is reposed in them they will not violate it. Pessimists to the contrary, notwithstanding, the world is getting better."

The war seriously interfered with the splendid work which was being done by a few roads in apprentice training. Post

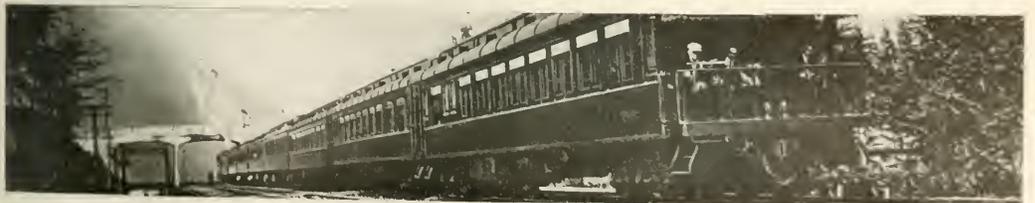
#### Training and Recruiting

war conditions have not helped the situation. The strength of an organization is in its men. What will happen to the roads if they continue to neglect this vital question? Is it not time that this problem was faced fairly and squarely? Are there not in the mechanical department men of real vision that will lead their fellows to a full appreciation of the problem—or will things just continue to drift along. Is it not high time that not only apprentices, but all new employes—as well as some of the older ones—were taken in hand and really trained for their jobs? Why waste time and effort in using dull tools when so much more can be accomplished with sharp ones?

## A Constructive Motive Power Policy

There is nothing alarming in the present motive power situation. Whatever danger may lie ahead is due primarily to the complacent attitude that naturally arises when over 10 per cent of the power is stored in serviceable condition. There is little operating trouble chargeable to the locomotives and little difficulty in keeping them in repair. But this is no cause for self-congratulation. It is merely the result of the existing conditions. The least efficient locomotives are now

standing idle, the reduced force is made up largely of men who have been long in service. The shop forces are experienced mechanics and the enginemen are skilled in handling the power. Under such conditions there is a minimum of trouble and a natural tendency to rest on the oars which must be combated. The slack season is always the time to prepare for heavy business and the present lull gives an opportunity to survey the situation and organize the opera-





tions to make every move count, should not be overlooked. One of the first objects of the mechanical department officer should be to avoid the necessity for repairs insofar as possible.

#### Avoid the Necessity for Repairs

Too much emphasis cannot be placed on insuring proper operation to avoid damage to the power, as is well brought out in the following comments from a motive power officer.

"Carelessness in the use of the power, met by insufficient discipline in proportion to the expense involved, is a hindrance. Men who have been long in the service of running locomotives will get careless with the result of damage involving considerable money and considerable time with the locomotive out of service. . . . In carrying out the principle of successful management, the responsibility should be centered in the individual involved, if corrections are to be made and the men as a whole educated up to their responsibility individually. Individual responsibility and individual credit will build up more co-operative effort on the part of all concerned, and we must eliminate all discouraging conditions, the greatest of which is the carelessness and abuse of equipment which, without correction or discipline, breeds a like condition in those responsible for its care. Engine failures should be followed up to fix responsibility and the facts in each case should be made known to all having to do with equipment so that engine inspection will become more acute. Failures, the fault of design, will be more readily corrected and in the issuance of instructions and circulars, they should be checked and followed up if they are to be of any use whatever."

There is need for close attention to the reporting of defects, both by the enginemen and the roundhouse inspection forces. The defects covered by the Locomotive Inspection Act usually receive first consideration and if the forces are inadequate, or if a locomotive is needed promptly other work is likely to be done in a hurried and superficial manner. The federal law is intended to place the emphasis on safety and unfortunately it causes minor matters to assume undue importance. The result is that in too many cases, mechanics are required to pack valves in the cab to prevent the least trace of steam leaks when they could be much better employed setting valves or replacing leaky valve or cylinder packing. The authority of the federal inspector is a powerful force in getting the work covered by the inspection rules done. However, there are other matters of far greater importance from the standpoint of economical operation. It is necessary to keep the essentials of efficiency constantly before the men to avoid such work being slighted. The federal inspection rules

should be supplemented with other regulations that will insure the continuous maintenance of the machines at the highest practicable efficiency.

The consistent development of a railroad system requires a well-rounded plan for systematic improvement of the facilities to permit more economical operation. The mechanical department should keep in touch with the plans of the executives and map out the motive power program as far in advance as

#### Schedule the Locomotive Program

possible, adapting it to the future operating program to get the maximum benefit both from new and existing locomotives. In this connection a motive power officer wrote "The disposition of existing locomotives should continue to receive careful attention. The size and power of locomotives used on any part of a railroad should be governed by traffic conditions. Main lines and important branch lines on which the hauling capacity of individual locomotives determines the average tonnage handled per train should be provided with locomotives as heavy and powerful as track, bridges and other physical conditions will permit. Less important lines on which the average train load is determined by the volume of business offered for each train should be provided with locomotives large enough to handle the trains offered, with sufficient reserve power to take care of occasional light increases in business without double-heading or running extra trains.

"Some small locomotives are needed for light service on practically every railroad, but these small locomotives in proportion need not be less efficient than larger ones. The use of a locomotive larger than the service requires will result in some loss, as the larger locomotive will consume the same amount of fuel and water pulling the train and more for propelling itself; it will probably cost a little more for its own maintenance, as well as that of track and bridges and may call for an increase in the engine crews' wages."

In the motive power of practically every road there will be found one or more classes of locomotives which, because of inherent defects in design, do not give satisfactory results. There are very few designs that cannot be made satisfactory by the application of modern devices. Oftentimes the application of a single improvement will put a locomotive in condition to handle a heavier train and increase its capacity so that it is made an efficient machine for a class of service in which it could not be utilized before.

Prior to 1910, many railroads built compound locomotives





in an effort to develop a type that would decrease the cost of operation. The resulting fuel economy was often questionable and the additional complication of the machinery increased the maintenance charges so that little if any gain resulted in the majority of cases. About 10 years ago, the introduction of superheating opened the way for remarkable savings in fuel. In commenting on the situation, a prominent designer recently said, "When some great improvement is made which brings about a marked increase in the efficiency of the steam locomotive, we are apt to lessen our efforts in this direction for a while, but progress is bound to be made. I have been associated with the building of steam locomotives for many years and not once have I ever felt that the limit has been reached in any particular, either as to size, economy or durability." Certainly this is no time to slacken activities in improving the locomotive, yet many railroads in buying new power apply superheaters and give little consideration to other devices which, while not yet

well established, give promise of effecting a marked increase in efficiency. Surely economy is quite as important now as it was one or two decades ago when the railroads were devoting so much attention to compounding.

There is need for an open-minded attitude toward all new methods that promise to yield a fair return. The roads should be willing to accept a share of the burden of perfecting such improvements. Precedent is still an important factor in the adoption of new methods and meritorious designs must pass through a long period of trial because of the hesitancy of railroad officers in accepting devices until their value has been established by long periods of actual service. Much of the expense of development work under actual service conditions could be avoided by trying out designs in special testing laboratories. There is evidence of a growing sentiment in favor of a co-operative research bureau such as the Mechanical Division of the American Railway Association has under consideration.

## The Business of Owning Cars

The movement of the grain crop, now approaching its height of this year, has been a perennial source of heated discussions among mechanical department officers of the various sections of the country, over the question of responsibility for the unfit condition of large numbers of the box cars marshaled in the grain producing regions preparatory to the heavy crop movement. The peak of the grain movement seldom if ever exceeds a weekly loading of 75,000 cars out of a total freight loading of 700,000 to 1,000,000 cars, and yet with approximately 1,000,000 box cars in service in the United States there is usually the greatest difficulty in securing enough cars in a state of repair fit for grain loading to meet the temporary demand. This is a striking bit of evidence of the low character of average freight car maintenance standards.

Reference has frequently been made to this situation in these columns and attention has been drawn to the fact that although the condition of the equipment is unusually bad, at the present time this situation differs only in degree from that which periodically follows each cycle of increasing and declining traffic. Why do these conditions persistently recur? Does not the fact that they continue despite all efforts to overcome them in detail, suggest that there may be fundamental

defects in the methods adopted for dealing with them?

Essentially the ownership, operation and maintenance of freight cars is a business proposition involving about 15 per cent of the total investment in railroad property and a maintenance expenditure amounting to nearly as large a proportion of the total operating expenses. These expenditures are made to purchase serviceable car days, the number of which in relation to the maintenance charges and the cost of the capital is the only measure of the efficiency of these expenditures. Serviceable car days is a matter not of days alone but of the degree of serviceability. A car with holes in the floor and a leaky roof may not be shown on the bad order report, but its service value is far from equal to that of a car fit for grain service. A car of wood construction with short draft sills, spending from 40 to 60 days a year on repair tracks and requiring maintenance expenditures in proportion may be an expensive investment to maintain in comparison with a modern composite or steel car which does not appear on the repair track more than 10 to 20 days a year, even though ownership of the latter may involve twice or three times as great an initial investment.

The degree of serviceability and, to a large extent the number of serviceable days is a matter of maintenance standards. Whatever may be the standards of individual roads with respect to their own equipment, it is evident that





with nearly 50 per cent of all freight cars on foreign lines under normal conditions the average standard of maintenance during periods between heavy repairs is largely affected by the conditions surrounding interchange.

Best results require that adequate repairs be made as defects develop. It is generally conceded that in the long run any other policy increases both maintenance expenditures and unserviceable car days. But the attainment of these results depends in a large measure on the foreign line, which is offered a scale of prices for labor and material limited strictly to cost. Certainly no road is to be condemned for a disinclination to pay a rental of a dollar a day for the privilege of repairing at cost a car that will leave its line a few days after the repairs are completed.

Are adequate current repairs to be expected in interchange unless billing prices are fixed at least high enough to compensate the repairing lines for the lost rental service?

Twenty years ago the per diem rate was 20 cents per car per day. Five years ago it was 45 cents. Last year the growing appreciation of the business aspect of car ownership made possible the establishment of the present dollar a day rate. But the increased per diem without at least a coordinate development in the standard repair prices is likely to result in a reduced average of car serviceability. Sound business principles, recognizing the duty of the individual road to serve its own interests, would even suggest that the prices be fixed to pay a reasonable profit on the transaction.

By far the most important business aspect of car ownership at the present time is the proper disposition of cars of weak center construction, particularly those with short draft timbers which has been the subject of discussions before the Master Car Builders' Association and the Mechanical Division since 1914. The steps that have been taken by those organizations to eliminate such cars from interchange have recently been set forth in these columns\* and need not be reviewed at this time. In passing, however, it is worthy of note that the Arbitration Committee in this year's report recommends another year's extension of time before the prohibition on the interchange of these cars becomes effective.

What several years of general discussion and legislation have failed to accomplish for the country as a whole, a careful business analysis of the cost of owning cars of this type, long ago accomplished on a number of railroads.

In one case a thorough canvass of the car situation developed the fact that, by replacing a large number of cars of

inadequate construction and the reinforcement of others, the reduction in maintenance expenditures and loss of service time during the four or five years before the new equipment reached its level of maintenance requirements, would amount to an average return of 16 per cent a year on the entire cost of the new equipment and over 50 per cent a year on the cost of the reinforcements.

There are several hundred thousand cars in service which require an annual maintenance expenditure from two to three and four times as great as would be required by new or rehabilitated equipment, and the service value of the new equipment would be far greater than the existing equipment.

Another factor which enters into the problem of equipment retirements is the proper utilization of the depreciation and retirement accounts. These accounts are too frequently regarded as mere matters of bookkeeping. On the contrary they are important factors in the economics of equipment ownership.

#### Utilize the Retirement Account

It is a matter of importance in determining the most economical policy of operation to determine the point beyond which an increase in the depreciation rate ceases to effect a greater decrease in the average cost of maintenance over the life of the equipment. Once fixed, nothing should be allowed to interfere with the retirement, or at least the complete rehabilitation of the equipment, when the established age has been reached.

The all-steel car presents a number of problems satisfactory solutions of which have by no means yet been reached.

#### Is the All- Steel Car Justified?

Many of these cars are deteriorating much faster than had been expected and the more uniform deterioration of the entire structure as compared with cars of composite or all-wood construction leads to heavy accumulations of repairs at the end of periods ranging from eight to fifteen years. Owing to this characteristic, steel cars require careful watching toward the end of this period to prevent expensive and disastrous failures in service, and make the careful determination of depreciation rates to be applied to these cars a matter of special importance.

Experience with these cars also raises the question whether all-steel construction as a substitute for composite construction has been fully justified. The answer to this question depends largely on local conditions. The more effective protection against decay possible with the composite type of construction is a point strongly in its favor, and directs attention to one of the greatest difficulties in connection

#### Weak Cars Are Money Losers

\*See the *Railway Age* for June 10, page 1314.





with the satisfactory maintenance of all-steel equipment.

Another problem which has been created by the present status of the railway shop labor situation involves the determination of the future status of freight car repairs, particularly steel cars. The present restrictive conditions affecting labor output in railroad shops are already showing a marked tendency to drive this work off the railroad and into the contract

### Outside Repairs of Cars

shops. Owing to the comparatively short period during which the steel car has been in extensive use the requisite amount of special facilities for the repair of these cars has not yet been provided. Under these conditions is it not a serious question whether the investment of new capital to provide the additional facilities needed on many roads, is advisable, as long as contract shops are available, operating on a piece work basis and managed for a profit under competitive conditions?

## Organize Shops to Meet Present Conditions

Preceding and during the war, railroad shops were inadequate both in number and equipment. Practically no new shops have been built since to supply this need largely on account of the financial condition of the railroads. The immediate pressing need, however, is for the reorganization of shop forces and methods to bring present locomotive and car equipment up to a satisfactory maintenance standard and enable improvement programs to be successfully carried out.

A new attitude on the part of railroad shop men towards their work is greatly needed and shop reorganization should start at this point. The old adage about making a horse drink applies also to making a man work but there is this difference: in the latter case, the big majority of men are susceptible to reason and argument based on common sense. Many railroad shop men have already seen the inevitable results of curtailing production and are now striving to give a fair day's work for a fair day's pay. These men should be encouraged and afforded an incentive wherever possible in order that others may come around to their way of thinking.

### Abolish Labor Slacking

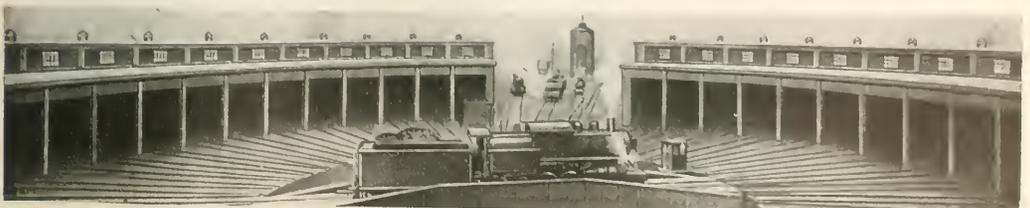
The most practical and easy method of affording this incentive is through the re-establishment of piece work systems for railroad shop repair work. The arguments regarding piece work in railroad shops are summed up in an editorial on page 823 of the April 1, 1921, *Railway Age*, which points out that piece work systems have been used, and with good results, in practically all branches of railroad shop work. The argument that piece work systems tend to produce inferior work is refuted and shown to be without foundation. On the other hand the establishment of a simple, readily understood, piece work system by which men are paid in proportion to their industry and ability to produce will show immediate results in increased shop output. The importance of setting a fair price is emphasized, as is the fact that all

benefits of piece work will be lost if rates are cut as soon as a man begins to make substantially more than his day rate.

The majority of shop men will fall in line with reorganization plans and if they do not voluntarily, some means must be devised to make them. Railroad shop output must be brought up to a high standard and a fair day's work secured from every man even at the expense of employing additional timekeepers to check the time spent on individual jobs. One railroad man says, "When I instituted timekeeping, we found getting the time, in place of allowing the mechanics to make out their own time slips, was a saving to the company, notwithstanding the fact that we put on nine additional timekeepers."

It is self-evident that without accurate knowledge of detailed shop costs, no shop can be efficiently operated. The importance of having simple, reliable cost systems which will show the cost of detailed operations as near as possible to the time they are performed can hardly be overestimated. In this way only can costly practices be eliminated and replaced by efficient ones. A valuable article entitled *Cost Accounting—Key to Cost Control*, was published in the June, 1920, *Railway Mechanical Engineer*, page 374, and should receive the attention of all mechanical department officers interested in shop output and efficient management.

Regarding cost accounting, one railroad man has this to say, "In answer to your request for comment am moved to strongly approve the recommendation of extension of cost accounting in the mechanical department, to include not only material and labor but to consider supervision, overhead and all the details of the burdens properly chargeable to shop costs. The idea would be to provide mechanical supervising and estimating officers with fairly exact data covering finan-





cial features of department questions . . . The cost, or money factor, is a composite variable dependent upon so many conditions that generalizing will not adequately cover." Shop policies and practices cannot be intelligently decided upon without accurate cost knowledge. It is also suggested that cost accounting methods be more uniform, at least for different shops on a single system, in order that conclusions may be comparable.

In commenting on the special article in the June 10 issue of the *Railway Age*, favorable mention was made of the paragraph on shop schedules. A schedule is just as important to a well-regulated shop as an accurate scale is to a machinist. No reorganization of railroad shop work can be completely successful unless consideration is given to the possibilities of increased output by scheduling the work. The importance and indeed necessity of scheduling repair work on various locomotive parts in order that all may be completed at the proper time for application to the locomotive has been demonstrated time and again and needs further comment only for the sake of emphasis. The advisability of scheduling car repair work is not so generally appreciated; since the issue of June 10, a valuable article on Scheduling and Routing Systems for Car Shops was published in the August, 1921, *Railway Mechanical Engineer*, page 502.

A new adjective was used recently by a railroad man to describe many machines now employed in railroad shops and enginehouses. He called them "prehistoric." While this term cannot be accurately applied to any machine tool the fact is that much of the machinery now in use was designed in the time of carbon-steel tools and before high-speed steel was introduced. The result is that these machines are absolutely unable to stand up under the heavy cutting feeds and speeds possible with modern high-speed steel tools. In order to speed up the work and save much money that is now being spent in wages, antiquated machines should be retired and replaced by those capable of modern high production.

Besides being deficient from a production standpoint, many of the old machine tools are not equipped with up-to-date time-saving features. For example, the operations of boring and facing a driving box can best be performed on a boring mill equipped with an adjustable, self-centering chuck. This work is being done at one shop as follows: The driving box is first bored on a horizontal boring, drilling and milling machine, after a large amount of time is consumed in setting

up the driving box and as much more in taking the cut. The second operation is to transport the driving box to a 36-in. engine lathe and clamp it to the face-plate for machining the hub face. The difficulty in handling a heavy driving box by means of chain falls, and fastening the box to the lathe face-plate can readily be imagined. Centering the box and adjusting the clamp requires several trips around the lathe and finally the hub is faced off by a tool in the cross slide tool post. These two operations of boring and facing required at least six times as long as should have been necessary, owing to the lack of a modern boring mill. The important point is that this practice is followed not at some small shop but at the largest shop of a trunk line system.

The use of automatic and semi-automatic machinery for the production of duplicate parts in railroad shops was mentioned in the article of June 10 but at least one of our readers did not think sufficient space was allowed for the subject. It is apparent that railroad men more and more appreciate the need for centralized production departments equipped with automatic machinery for the manufacture of duplicate parts. The increased output due to the installation of automatic machinery wherever the volume of work warrants, will pay ample returns on the investment.

The question of what parts can be economically manufactured in railroad shops and what should be purchased from outside manufacturers can be settled only by an accurate knowledge of the relative costs. This involves finding the detailed costs of manufacturing in railroad shops for comparison with the quotations of outside manufacturers for the work in question. Railroad shops have certain facilities for the repair and maintenance of cars and locomotives but many of them do not have equipment to manufacture store house materials.

In this connection, another railroad man writes, "It is apparently the belief, or has been under former conditions, that it pays a road to manufacture more or less of its repair and maintenance materials, a few having gone to the extent of including locomotives and cars . . . Here again comes in the acid test of shop costs which, owing to labor markets, location relative to material markets, size of road, and quantity production facilities, all have a bearing and prevent the formation of a general rule which will cover.

There is no question of the necessity of manufacturing activity to get railroad equipment into shape if we are to have general trade improvement and movement and whether the manufacturing for the roads is to be done by the roads or by manufacturers, must be worked out on the basis





determined as a desirable policy. The spirit and co-operation of railway supply manufacturers is well known. Being generally specialists, their facilities and costs, are more accurately determined than is possible on a railroad and are reflected in their prices, which if measured against the railroad costs, accurately computed, would place the business where it belongs."

Regarding the need for practical and conservative specifications for railroad material, we cannot do better than quote from a letter recently received as follows: "A uniform practice as to specifications if followed by all railroads, would certainly reduce the cost of the materials and probably could increase the quality of the material appreciably and yet be subject

#### General Material Specifications

## Terminal Facilities for Modern Locomotives

Owing to the present comparatively small traffic, practically all engine terminals are able to turn the necessary locomotives without difficulty and not so much is heard about terminal needs. It is to be hoped, however, that railroad men will not be like the man who, "Did not shingle his house in fair weather and could not when it rained." Sooner or later there is bound to be a revival of traffic which will once more show up engine terminals as one of the weakest links in the railroad chain.

Past experience has demonstrated that many engine terminals are decidedly inadequate in equipment and unorganized as to methods of handling the work. It is felt that many railroad men fail to appreciate the seriousness of this condition and the vital importance of engine terminals as a factor in efficient railroad operation. Otherwise, how account for the reasoning by which \$65,000 is spent for a modern locomotive and no adequate means provided for taking care of it? Delays to the locomotives will soon cost more than enough to make at least a few of the essential terminal improvements. It has been well said that "There is nothing that will cause as much slowing up on a railroad as a poorly designed engine terminal and expecting to do the work on the modern locomotive in a shed without necessary equipment. It was all right 40 or 50 years ago when the locomotives were small and one man could pick up a main rod or a side rod, but with modern power better facilities

#### Present Terminal Facilities Inadequate

to a reduction in cost. At the present time there are too many specifications, and regardless of what they call for, the manufacturer will quote a higher price for specification material than for the materials which we would furnish to his own specifications or to the American Society of Testing Materials' Specifications.

"If all the engineering societies and mechanical organizations could agree to follow some one standard specification, it would probably accomplish the desired result. It does seem foolish to have specifications duplicated, as for example: specification for cast-iron wheels, where the American Railroad Association and the Wheel Manufacturers' Association have old specifications which are the result of years of experience and are probably the best of the kind that can be issued at the present time."

are needed and yet you still find a great many of these old enginehouses being used to take care of modern locomotives."

Except for a relatively few modern terminals, most engine terminals are badly in need of improved coal, ash and sand handling facilities. This fact was strongly pointed out in the article of June 10 and received favorable comment from railroad men. While in most cases money is not available for the construction of new engine terminals, the installation of hot water boiler washing and filling equipment together with modern machine tools designed to handle roundhouse work quickly and cheaply can be accomplished at relatively small expense and earn a large return on the investment. The practice of transferring to roundhouses the old machine tools practically worn out and too antiquated for back-shop use may be justified in a few special cases but as a rule is false economy. This fact is testified to by many roundhouse foremen who have to get along with the old machines.

One of the important points brought out in connection with engine terminals was the need for greater co-operation between road men and roundhouse forces.

To quote from one mechanical officer, "Outside of legacies left by the Railroad Administration during the period of federal control which will excessively handicap the mechanical department until their elim-

#### Improved Enginehouse Equipment Badly Needed

#### The Road Men Can Help





ination, one of the greatest obstacles today in the successful administration of the mechanical department is the seemingly non-correctible misuse of equipment by road men. Hundreds of dollars are expended uselessly and hundreds of locomotive out-of-service hours are experienced through either negligence, ignorance or carelessness on the part of the engineer in not placing in the hands of the enginehouse foreman the proper information in connection with the locomotive. It is common to see on reports of enginemen, 'Engine blows left side,' or 'Engine pounds left side.' Embraced in these two complaints are a dozen and one locations where the trouble might occur. This burden is placed entirely on enginehouse forces and their time is expended in locating something that should be stated plainly on the report." While this is a somewhat severe arraignment of the road men and in reality would probably apply to only a few of them, it is felt that there can be a much closer co-operation between road men and roundhouse forces. Railroad men in all branches of the service must be taught that the careful, efficient use of equipment is necessary to increase the ratio of operating income to operating expense. This will benefit in the end not only investors in railroad securities but railroad men and the general public as well.

The designer also has the opportunity to assist in locomotive maintenance by designing locomotive parts requiring roundhouse attention so that they will be as simple, rugged, and accessible as possible. The fact should be remembered that locomotive running repairs are made at terminals where the equipment and machinery is limited as compared to that at back shops. The importance, therefore, of designing parts so that they will be readily accessible can hardly be overestimated. Maintenance expense will be greatly reduced by the simple, rugged design of locomotive parts which should be standardized wherever possible. In cases where parts are made in pairs, it is also a great advantage to have them interchangeable, right and left. This will result in carrying fewer parts in stock and by having these parts always available, many locomotive terminal delays will be prevented.

In reorganizing railroad shops and roundhouses, probably the most essential need is for accurate facts on which to base new policies. To quote from a letter recently received, "There never was a time in railroad history when facts were more necessary than at present to determine policies and practices which shall govern the reorganization of the altogether shot-to-pieces mechanical departments of most of the railroads. The

total disruption brought about by the events of the past few years in morale and the product per man on the railroads, be he laborer, apprentice, mechanic, foreman or big boss, leads one to question whether the effort should be to line up say 'pre-war' on all policies or whether the signs of the times point to departures in practice—what is basically right when the facts are known may be basically wrong if they are not." Here again questions of policy and practice must be decided by what has been so well called, "the acid test of shop costs."

The same writer goes on to say, "I find by my personal contact with the average mechanical department man that he is a progressive fellow and endeavors to render to his company the most economic service that he can. He is continually looking for improvements, asking for them, praying for them, and seeking for them. The greatest trouble is to get the money necessary for these up-to-date labor saving, time saving devices and facilities." The answer to this statement is found in the last paragraph of the article of June 10 which quotes the superintendent of motive power as saying that in his experience recommendations based on facts are usually acted upon both favorably and promptly.

The question is how can a railroad executive differentiate between facts and mere expressions of opinion. It is surprising how wide a diversity of opinion may be found regarding almost any question of railroad shop or roundhouse practice. In a way, however, it is not so surprising since for many minor operations there are several, perhaps equally good ways of performing them. Before any important change in method or installation of new machinery, however, a carefully prepared statement should be made, setting forth the facts and advantages in the case. The care with which this report is prepared and the inclusion of all contributing factors will make evident at once to any railroad manager whether the report is really based on a careful study of the situation or whether it is simply an expression of individual opinion. In the latter case, it should be turned down, and in the former, it will probably receive favorable action.

If necessary certain parts of the statement, selected at random, can be checked for accuracy. For example, before installing a shop turret lathe or water ash-pit, it is possible to balance accurately all details of cost of application against the resultant savings when it becomes a matter of simple arithmetic as to whether or not it will pay to make the installation. If railroad mechanical men are as anxious for needed improvements as would be indicated by the last quoted statement, they should submit the facts in the case to those in authority. "Recommendations based on facts" will in most cases receive prompt and favorable attention.



# Railroad Funding Bill Reported Favorably to Senate

## Committee Votes 7 to 2, to Refer Bill to Senate—Refuse to Hear Testimony of Labor Leaders

WASHINGTON, D. C.

THE ADMINISTRATION'S railroad funding bill was ordered favorably reported to the Senate on August 17 by the Interstate Commerce Committee by a vote of 7 to 2. Senator LaFollette, Republican, of Wisconsin, voted with Senator Stanley, Democrat, of Kentucky, against reporting the bill, while Senator Pomerene, Democrat, of Ohio, voted for it. The amendments agreed upon by the committee on Tuesday were incorporated in the bill, including a provision to extend the life of the War Finance Corporation to July 1, 1922.

The bill would authorize the War Finance Corporation to use no more than \$500,000,000 to purchase the securities of the railroads from the Railroad Administration and to prescribe interest rates upon securities hereafter accepted from the carriers. It developed during consideration of the bill on Wednesday that the War Finance Corporation now is attempting to form a syndicate to purchase government holdings of railroad securities and relieve the government of further railroad funding operations.

Republican leaders in the House predicted on Wednesday that the House would pass the funding bill early next week. Members of the Interstate and Foreign Commerce Committee of the House said the bill would be reported out on Thursday with the expectation that it would be sent to the Senate before the recess of Congress on August 24.

Representative Huddleston, Democrat, of Alabama, a member of the House committee, urged that other witnesses, particularly Secretary of the Treasury Mellon and B. M. Jewell, representing the railway group of the American Federation of Labor, be heard. He charged that the Erie had created a fictitious corporation to handle its shops at Marion, Ohio, for the express purpose of evading the labor section of the Transportation Act. He stated that the carriers generally had evaded orders of the Railroad Labor Board and that the Pennsylvania in particular had refused to comply with the findings of that body.

### Early Recess Expected

The Senate on the motion of Senator Lodge passed a resolution on August 16 calling for a recess from August 24 to September 21. The resolution has been referred to the House for its approval. In view of the opposition to the Townsend bill as it now stands which has been voiced by minority members of the Senate Committee on Interstate Commerce who were not permitted to prolong the hearings by introducing other witnesses, considerable opposition on the floor of the Senate is expected. Under the circumstances, passage of the bill before the recess is not generally expected.

### Committee Refuses to Hear Labor Representatives

Hearings on this bill were held up to August 12 when the failure to secure a quorum brought about their postponement until August 16 on which day they closed. L. E. Sheppard, president of the Order of Railway Conductors, and W. H. Johnston, president of the International Association of Machinists, made an effort to testify at the hearings on August 16, but the committee refused to hear them. The move to admit the testimony of these men was made by Senator LaFollette, whose request that Messrs. McAdoo and Hines be called was likewise rejected. A statement upon the refusal of the committee to hear them was issued by L. E. Sheppard and W. H. Johnston which said in part: "The action today of the majority of the Senate Committee

on Interstate Commerce . . . is a procedure of the most un-American, tyrannical and autocratic nature it has ever been our experience to meet with in appearing before Congressional committees.

"We wish to protest to the American people against this action of these Senators. This is only one more evidence of 'railroad ownership of government,' as contrasted with our demand for public ownership of railroads."

A motion to close the hearings was made by Senator Watson on August 16 and this motion was carried by a vote of 6 to 4. Senators Townsend, Frelinghuysen, Kellogg, McLean, Watson and Poindexter voted for the motion and Senators LaFollette, Pomerene, Pittman and Stanley against it.

### Mellon Urges Favorable Action

Urging early and favorable action by Congress on the bill, Secretary Mellon in a letter to Chairman McFadden of the Banking and Currency Committee of the House on August 11 said that the War Finance Corporation had no available funds at present, except a credit balance of approximately \$400,000,000 with the Treasury. He expressed the belief that the bill offered a helpful and practicable plan for financing the settlement of matters growing out of federal control.

"Withdrawals by the War Finance Corporation," Mr. Mellon stated, "would involve cash expenditures by the Treasury, but it is the understanding between the War Finance Corporation and the Treasury that the corporation will finance its proposed purchases from the Director General of Railroads by the sale of railroad securities to the public, or, if necessary, by the sale of the corporation's own bonds to the public."

"Under this plan withdrawals by the War Finance Corporation would result temporarily in a corresponding draft on the Treasury, but the balance would be replenished by the deposit of proceeds of sale of railroad securities or the corporation's own bonds. I understand that the railroad securities which it is proposed that the War Finance Corporation purchase from the Director General of Railroads and subsequently sell to the public would consist not only of securities resulting from the funding of additions and betterments, but also railroad securities already acquired by the Director General of Railroads under authority of the federal control act, approved November 19, 1919, which provides for the reimbursement of the United States for equipment, and section 207 of the transportation act as amended."

On August 12, after considerable dispute and an unsuccessful attempt to obtain a quorum, the Senate Committee on Interstate Commerce postponed until August 16 further action on the bill. Senator Townsend of Michigan, acting chairman of the Senate committee, told President Harding on August 11 that he did not see how it was possible to pass the bill before the Senate recessed. Senator Townsend said that President Harding had insisted that the bill should not be tabled until the December session, as had been suggested.

### Senator LaFollette Attempts to Extend Hearings

Senator LaFollette said he had ascertained that former Director General McAdoo would be willing to appear before the committee this week and he stated that he had also cabled to Walker D. Hines asking when he would return to this country. He stated that he had received information to the effect that Mr. McAdoo was opposed to the pending legislation. In support of his motion for taking more testi-

mony, Senator LaFollette called attention to the fact that the Interstate Commerce Commission has been taking testimony to discover whether the railroads, since they were returned to private control, had been squandering their resources by paying excessive prices for the repair of their rolling stock and increasing salaries of their officers.

"That inquiry will show," he said, "that at the very time the railroads claim to be reimbursed they were increasing salaries enormously. The New York Central claimed it was not able to meet its shortage of equipment because of lack of funds. When the Interstate Commerce Commission called for the minutes of the meetings of the directors of that road during October and November, 1920, at which the situation was discussed, the road put off complying with that request and finally asked to have stricken from the record that part of the testimony showing that they were in financial straits. At the same time the New York Central was putting up claims for government assistance it was adding \$25,000 a year to the salary of President Smith and also raising the salaries of its other officers. The facts seem to show that since the roads were taken under private control they have squandered their resources.

"In view of the fact that former Directors General McAdoo and Hines have been criticised regarding their management of the roads, their view should be ascertained on these matters. I want to show that the roads have no equitable right, in view of their present management, to seek assistance from the government. If that testimony is not taken here, I will compel its production on the floor of the Senate and that will delay passage of this bill."

Senator LaFollette said that last June the committee had taken testimony of the railroad executives at which they had laid the foundation for their claims against the government and that it had been spread before the country by "organized propaganda." He said that when the railroads had presented their side of the case a recess had been taken and the other side had not been heard. He said that he expected to subject Julius Kruttschnitt, chairman of the board of the Southern Pacific, and some other railroad officers to cross examination on several of the statements which they made at that time.

"I expect to get light also from the records of the Interstate Commerce Commission," said Senator LaFollette, "on the New York Central and disclose some of its nefarious transactions."

Senator McLean suggested that even if all that Senator LaFollette had stated was true, it had no bearing on the present bill. Senators McLean and Kellogg protested against the waste of time in calling McAdoo and Hines. Senator Watson directed attention to the fact that when McAdoo was before the House committee he had admitted that his time was so taken up with his duties as Secretary of the Treasury and in other matters that he had not been able to give all his attention to the railroad directorship. Senator Watson also recalled that Mr. McAdoo had specifically stated at that time that he had no suggestion to offer except to continue government operation of the roads for another five years. It developed that a quorum of the committee could not be obtained and the matter went over until August 16.

### Liquidation of Federal Control

#### Accounts in Sixteen Months

Liquidation of federal control of the railroads will be completed by December 31, 1922. Director General of Railroads Davis testified before the Senate Committee on Interstate Commerce on August 11 when urging the enactment of the railroad funding bill. The settlement of railroad claims growing out of federal control would be completed before that date, he said. The Railroad Administration now has about \$149,000,000 on hand to settle these claims and the Director General estimated that an additional appropria-

tion of \$200,000,000 from Congress would be required to complete the settlements.

### A. H. Smith Calls on the President

A. H. Smith, president of the New York Central, conferred with the President at the White House on Monday, to whom he stated that the transportation situation throughout the country is showing a general improvement. He emphasized, however, that the railroads still are struggling with their financial difficulties.

"There is no doubt that if Congress passes the necessary legislation authorizing the War Finance Corporation to turn over to the railroads \$500,000,000, much will have been accomplished in enabling them to meet their current obligations and thereby speeding them toward a complete recovery."

The decision of the Ways and Means Committee to abolish all transportation taxes no doubt will result in increased travel, said Mr. Smith, and will materially assist the roads through the encouragement of increased travel for pleasure. He urged, however, that Congress should give particular attention to rebuilding of freight traffic, as it is from that source that greater part of the revenue of the carriers is derived.

## Two Roads Adopt Heavier Rail

THE BALTIMORE & OHIO and the Pittsburgh & Lake Erie have purchased heavier-than-100-lb. rail this season for the first time buying 130-lb. and 115-lb. sections respectively for their high speed tracks. The B. & O.'s new rail, of which 12,000 tons have been purchased, is of the R. E. section and is being used to replace 100-lb. A. R. A. on the Philadelphia division between Philadelphia and Baltimore and on the 17-mile grade between Cumberland and Grafton on the Cumberland division. This rail is 6¾ in. high, 6 in. wide at the base and 21/32 in. thick in the web as compared with the corresponding dimensions of 5 41/64 in., 5 9/64 in. and 9/16 in., for the 100-lb. A. R. A. rail. The difference



The B. & O. 100 lb. and 130 lb. Rails Compared

in the size of the two rail sections is well brought out in the accompanying illustration. Angle bars for the new rail are of the four-hole type as compared with the six-hole standard for the 100-lb. rail and are 25 in. long, this length being three inches less than that of the other bar. A further comparison in the equipment is afforded in the dimensions of the bolt, the 130-lb. rail taking 1 1/16 in. bolts whereas the 100-lb. rail was designed for one inch.

The 115-lb. rail which has been made standard for the Pittsburgh & Lake Erie is of the Dudley section. It is 6½ in. high, has a 5½ in. base, a thickness of web of ¾ in. and is designed to take a 36-in. six-hole angle bar fitted with one-inch bolts. This rail was adopted by the P. & L. E. in the belief that the 100-lb. American Railway Association series B rail joints were not adequate to support actual loads greater than about 50,000 to 55,000 lb. due largely to the inadequate fishing depth available for the design of suitable anchor bars.



Night View of Yard Illuminated by High Mounted Units

## Correct Illumination for Yards and Scalehouses

Good Lighting Is Not Difficult to Obtain if Lighting Units Are Hung at the Proper Height

By J. H. Kurlander

Lighting Service Department, Edison Lamp Works

AS APPROXIMATELY 75 per cent of the revenue of railroads of the country is derived from the transportation of freight, anything tending to expedite the rapid handling of shipments should receive careful consideration. Operation is continuous and the lighting installation plays no small part as one of the deciding factors in facilitating rapid shipment of freight.

There are two main applications of light; these are the

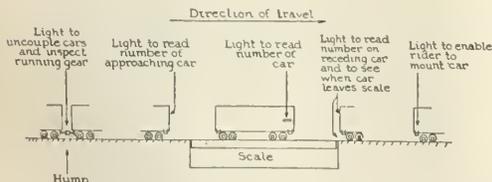


Fig. 1.—Requirements for Proper Scale Lighting

scalehouse and its immediate vicinity and the classification and receiving yards. Both require careful consideration since the requirements are rather exact.

The tendency today is to use multiple lamps in both cases to avoid running high voltage lines around the yard. The principal requirements for scale lighting are shown diagrammatically in Fig. 1.

### The Scalehouse

In the scalehouse the beam and counterpoise must be clearly visible and at no point should glaring light sources or reflections be present, and particularly from the scale master's stand. The lighting installation of the scalehouse

serves two primary purposes; first, to illuminate the cars as they approach, mount and leave the scale, and second, to light the beam and counterpoise of the scale and the scalehouse itself. Where a slight error in weighing will interrupt the operation of the entire movement of the cars across the scale, it can be easily seen that the lighting installation must be of the first order. In Fig. 2 is shown a method of scale lighting which has worked out satisfactorily in practice and is to be recommended for average conditions. In cases where the scalehouse has no extensions to permit the hanging of units from the side of the house a framework of iron piping could be erected at a very small expense for supporting these units.

The hanging heights of the units shown in this illustration were calculated for the conditions of the scalehouse location and scale length, as shown. Where these dimensions vary greatly from those assumed in this case, it may be necessary, when installing the units, to adjust them as to direction of throw and height to obtain the desired intensity on the sides of the cars during the weighing operation.

For lighting the scale beam and counterpoise a method which has given good results makes use of three low wattage mazda lamps placed in deep bowl metal reflectors, so that the skirt of the reflector entirely shields the lamp from the scalemaster's vision. These units, which are pendant, are hung 7 ft. above the floor and approximately 12 in. to the front of and in a line parallel with the beam. The distance between units is approximately half the length of the scale beam.

### The Yard

The lighting of the yard proper is a problem, the known quantities of which are always variable. No specific set of rules can be given for even its growth is in many cases somewhat difficult to predict. In its infancy it may be a side

and as the demands increase it is added to from time to time until a full fledged yard is the result.

Practically every outdoor illuminant has been applied to the lighting of these yards. Some of the factors which have placed the incandescent lamp at the head of the list of available light sources are low maintenance requirements, easy replacement, comparatively fool-proof construction and simple operation, together with its high efficiency.

Two methods of applying the incandescent lamp for yard lighting have been developed; one makes use of refractor

lighting lamps are used in projectors with a spread of approximately 50 deg. The units are spaced 300 ft. apart and should be mounted not less than 30 ft. high. High mounting is always preferable in order to reduce glare to a minimum and keep shadows short. The 500-watt unit is applicable in yards of from 200 ft. to 400 ft. in width. Above 400 ft. the 1,000-watt mazda C multiple lamp should be employed in floodlighting projectors with suitable spacing and mounting height.

Data pertaining to these three types of installation is given

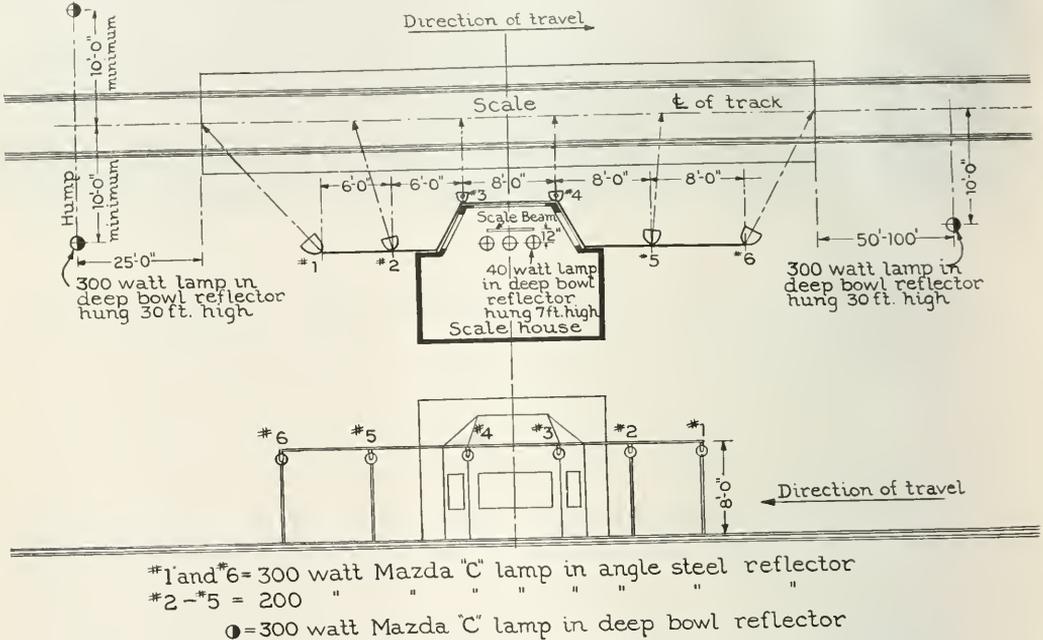


Fig. 2.—Method of Scale Lighting in Common Use

units and the other, floodlighting projectors. Each has its advantages and disadvantages, and each system has its adherents. One of the most serious objections to the use of floodlighting, when not properly employed, is the ever present glare evil. Where these units are mounted high, however, and their direction of throw is with or across the tracks and not opposite to the movements in the yard, their use for lighting large yards is recommended. For small yards the refractor units are to be preferred. In Figs. 3 and 4 are shown two methods of yard lighting. The first makes use of 300-watt mazda C multiple lamps in prismatic glass refractor units mounted not less than 30 ft. high, in the case of narrow yards, and spaced approximately 200 ft. apart. This system is particularly applicable to long, narrow yards whose width does not exceed 200 ft.

Where the width of the yard is greater than this and there is no opening in the center of the yard to permit the placing of another line of similar units, floodlighting projectors should be resorted to in order to secure a desirable intensity. A method of floodlighting employed for the same yard is shown in Fig. 4, the direction of throw of each floodlight being indicated by the arrows. It will be noticed that the units are staggered so that the individual cone of light from each floodlight fits into the neighboring ones, thus covering the entire yard. For this system 500-watt mazda C flood-

lighting projectors. Each has its advantages and disadvantages, and each system has its adherents. One of the most serious objections to the use of floodlighting, when not properly employed, is the ever present glare evil. Where these units are mounted high, however, and their direction of throw is with or across the tracks and not opposite to the movements in the yard, their use for lighting large yards is recommended. For small yards the refractor units are to be preferred. In Figs. 3 and 4 are shown two methods of yard lighting. The first makes use of 300-watt mazda C multiple lamps in prismatic glass refractor units mounted not less than 30 ft. high, in the case of narrow yards, and spaced approximately 200 ft. apart. This system is particularly applicable to long, narrow yards whose width does not exceed 200 ft.

### Hanging Height of Lighting Units

One of the most important factors controlling the success of yard lighting installations is the hanging height of units.

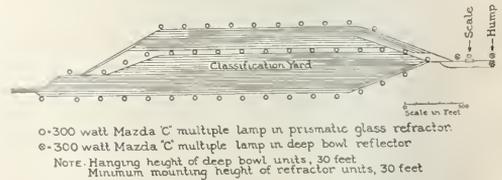


Fig. 3.—Plan Showing Method of Lighting Yard with Refractor Units

The two most exacting requirements of yard lighting can be satisfactorily met if the proper hanging height is obtainable. The two requirements referred to are as follows: Illumination of every track, irrespective of the position of adjacent cars, and illumination of every car in the yard.

A chart which shows at a glance the relation between

proper hanging height and width of yard is given in Fig. 6. At the bottom of this diagram is shown probably the worst condition to be met with in yard lighting; a coal car standing approximately in the center of the yard flanked on one side by a box car and on the other side, two tracks away, by

hanging heights for yards up to 28 tracks in width. It is exceedingly doubtful whether yards having greater widths than this will not have openings in them which will permit running another line of units, thus picking up the area not covered by the other units. For example, suppose a 14-track yard (180 ft. in width) is to be illuminated; at half the width, seven tracks (or 90 ft.) will be found a dotted line running to 38 ft.; similarly for a 20-track yard, the height is seen to be 53 ft. These hanging heights will evidently



Fig. 4.—Plan Showing Method of Lighting Yard

another box car. By the simple projection of light rays (shown by dotted lines) to these cars from various heights at the side of the yard the correct hanging height at which these cars will all be illuminated can easily be determined.

Another bad condition is that of lighting the area between box cars on adjacent tracks. No direct light from units strung along the sides of the yard can be expected to light this area. However, with a fairly high mounting height, depending upon the width of the yard, direct light striking the upper edge of the box cars will be reflected and some light will

300 WATT MULTIPLE LAMP IN PRISMATIC REFRACTOR UNIT		500 WATT FLOODLIGHT LAMP IN FLOODLIGHTING PROJECTOR SPREAD OF BEAM 50°		1000 WATT MULTIPLE LAMP IN FLOODLIGHTING PROJECTOR SPREAD OF BEAM 30°	
WIDTH OF YARD	SPACING	WIDTH OF YARD	SPACING	WIDTH OF YARD	SPACING
30-200 FT.	200 FT.	200 FT.	200 FT.	500 FT.	275 FT.
		250	230	600	330
		300	280	700	380
		350	330	800	430
		400	375	900	480
				1000	540

Fig. 5.—Installation Data Covering Refractor Units and Projector Units

meet the most extreme conditions and other less exacting requirements will be adequately provided for.

It will be noted from the diagram that narrow yards require hanging heights below 30 ft., but to avoid confusing

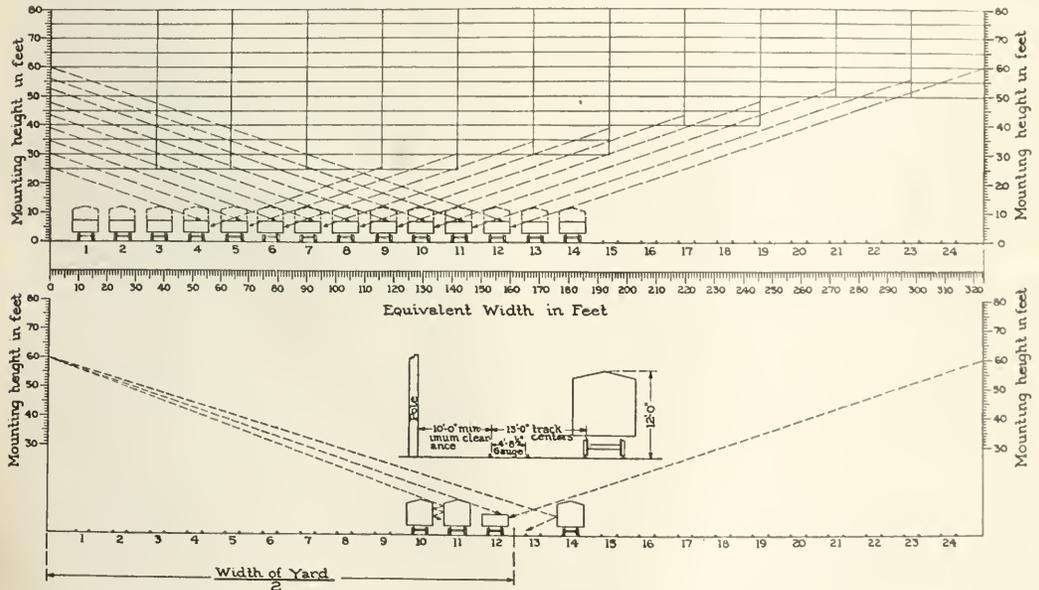


Fig. 6.—Chart Showing Correct Hanging Heights of Units for Proper Yard Lighting

reach the ground. These conditions applied to yards of widths ranging from that of four-track yards to twenty-four-track yards are illustrated at the top of the diagram. The equivalent width of yard is given in feet directly below so that in cases where the symmetrical arrangement as shown is not in effect, the yard width can be used directly for determining the correct mounting height of the units. This diagram is directly applicable to yards up to and including a 24-track yard, but for yards exceeding this width lines can be drawn parallel to the ones already shown, thus obtaining

engine men and also to reduce glare to a minimum, hanging heights of units should, in no case, go below 30 ft.

In cases where mounting heights as shown cannot be obtained, the height nearest to this should be resorted to, but at heights less than those specified, it is evident that some of the worst conditions will not be satisfactorily met. In any event the roofs of all of the box cars must be illuminated to permit riders coming down the yard to distinguish cars and couple them with minimum danger of breakage to either car or cargo. To facilitate this, it is suggested that a narrow

strip be painted in white on each end of the box car, both on the roof and on the end of the car. This simple practice will prevent a considerable amount of breakage.

In one case where special consideration was given to this



Fig. 7.—Night View of Yard Lighted by 600 c. p., 6.6-20 Ampere Series Mazda C Lamps in Dome Reflectors and Rippled Globes, Mounted 22 Ft. High and Spaced Approximately 175 Ft. Apart

problem and the lighting installation was designed to take this into account, a saving of fully 60 per cent was effected in breakage of rolling stock due to bumping of cars with attendant increased safety to workmen.



Fig. 8.—Day View of Yard Illustrated at Beginning of This Article

Night pictures of yards showing the results obtainable with these two methods of lighting are shown in Fig. 7 and in the illustration at the head of this article. In Fig. 7 the

units are mounted very low, about 22 ft., and the resulting glare is naturally objectionable. As has been stated elsewhere, the hanging height should in no case be less than 50 ft.

That high hangings are practical is proven by Fig. 8, which shows a close-up of the poles used for supporting the units used in the first illustration.

## How Henry Can Afford Reduced Rates on His Little Railroad

**I** AM LED to take issue with the press assertions that Mr. Ford in railroad operation has worked a miracle," says a communication from Frank Tiebout of New York which appeared in the New York Tribune of August 17, 1921. "To say that any new-found methods of efficiency in railroad operation, chief of which are reported to be the raising of wages, the reduction of rates and the suspension of all traffic on Sundays, have resulted in turning a deficit into a profit is equivalent to saying that water has been made to run uphill when Ford orders it, and that all the life-long students of railroad operation like myself have been imbeciles or idiots.

"At the present critical juncture in railroad affairs, while the railroads are recovering from the damning effects of war service and government control, confronting motor truck competition which is supported by public taxation, and in a period of acute business depression, it would be a calamity if the general public were to believe the untruth, i. e., that Mr. Ford's experiment with the little Detroit, Toledo & Ironton Railroad had demonstrated inefficiency on the part of the whole army of railroad operators.

"The simple fact is that Mr. Ford has switched all of his own vast tonnage to this 400-mile line from Detroit to Toledo, turning about \$2,000,000 a year into the treasury of this railroad which it never had before, taking this money away from all of the other railroads which previously shared his business. His big shipments arriving at Toledo may be handed over to any one of several competing lines, all of whom are anxious to get it, and he is able to swap this tonnage for a similar large new tonnage for the return trip from Toledo to Detroit.

"Mr. Ford is much bigger as a shipper than as a carrier. His Detroit, Toledo & Ironton Railroad is really a mere plant facility or by-product. He is able to use it as a club to secure return tonnage from even the really great railroads and at the same time make the little 400-mile road show a profit.

"The Detroit-Toledo trip of Ford's vast shipments is but a mere fraction of the mileage of their entire journey, and if he were able, by holding forth that this railroad is a big profit maker with reduced rates, thereby to beat down the freight rates all over the country he could afford to lose a vast sum on his little Detroit, Toledo & Ironton and still be a gainer. His railroad investment would be trifling compared to what he would save on his shipments over the tens of thousands of miles of other roads.

If Mr. Ford had secured ownership of a big trunk line with long hauls he could not have offered a 20 per cent reduction in freight rates without inviting immediate bankruptcy. But with this little road he can handle the play, and apparently he and his publicity men will use it with some success to exalt Mr. Ford.

"Only the ignorant and unlearned will fail to understand the Ford railroad operation if all the facts are given fairly by the public press. But if in the interest of sensationalism the newspapers are willing to picture his simple process and the natural results as something wonderful—a miracle—a great deal of mischief may be done."

# Britain's Plans for Solution of Labor Problems

## An Outline of an Agreed Method Between the Railways and the Unions for Handling Labor Questions After August 15, 1921

LONDON

IT IS TO BE NOTED in the English Railway Bill which was introduced in Parliament in May (see *Railway Age*, May 27, page 1209) that contrary to expectation, labor was not given representation on the boards of directors of the proposed railway groups. Just prior to the presentation of this bill, the railway labor unions made known their desire not to be included on the boards of directors. They claimed that without complete nationalization of the railways such representation would be of no decided value to them and they said that they did not care to share the responsibility of control and management of the railways unless the lines were nationalized. The labor unions have, however, used the opposition of the railway owners to the government's proposed inclusion of labor representation on the boards of directors to drive a bargain with the railway owners for an agreement by which all labor matters should be handled. Events have shown that labor has given up its representation on the boards in spite of the government's advice to the contrary. Sir Eric Geddes, Minister of Transport, having remarked in Parliament that the government considered labor was making a serious mistake.

Soon after the railway bill had been presented, the railway unions and the railways agreed, in principle, to a method of handling all labor problems which will take effect when the government relinquishes control of the railways. This agreement arrived at between the National Union of Railwaymen (N. U. R.), the Associated Society of Locomotive Engineers and Firemen (A. S. L. E. & F.), and the Railway Clerks' Association (R. C. A.) on the one hand and the railways on the other, involves a national wages board which is a board of final appeal, a central wages board, railway councils, sectional railway councils, and local departmental committees.

The official organ of the N. U. R., the Railway Review, has published a draft of a scheme which, although it is not finally agreed to in detail, represents the principle upon which this agreement is based. The following is taken from this article:

The plan is applicable to all employees in the transportation department from stationmasters and freight agents down, also to engineering and signal employees, and rolling stock department inspectors, foremen and employees outside of shops. It does not, however, apply to the shopmen.

### National Wages Board

The National Wages Board is to deal with subjects relating to rates of pay, hours of duty and conditions of service, referred to it by the Central Wages Board when that board has failed to agree. The National Wages Board is to be composed of six representatives of the railway companies, six representatives of the railway employees and four representatives of the users of railways with an independent chairman appointed by the government.

The National Wages Board is called upon to publish the result of any investigation it is working on within 28 days of the time the matter was first referred to it. In the meantime "no withdrawal of labor shall take place nor shall there be any attempt on the part of any section of the employees to hamper the proper working of the railway on account of any unsettled matter falling within the purview of the Central Wages Board before the expiration of one month after such matter has been referred by that board to the National Wages Board."

### Central Wages Board

The function of the Central Wages Board is to deal with subjects relating to salaries, wages, hours of duty and conditions of service, or any question relating to those subjects referred to it by any railway council. This board is to be composed of eight representatives of the railway companies, and eight representatives of the railway employees, four of the latter to be nominated by the N. U. R., two by the A. S. L. E. & F., and two by the R. C. A.

It is upon this board that the heavy work really falls and it is only when a decision cannot be arrived at by agreement between the two sides that the matter will be referred to the National Wages Board. Any question raised by any of the men's unions, such, for instance, as the interpretation of the national agreement, is to be taken up directly with this board.

The expenses of the proceedings of both this and the National Wages Board are to be shared equally by the railway companies and the railwaymen's trade unions.

### Railway Council

A Railway Council is to be established for each railway (or group of railways) composed of not more than 10 representatives each of the employees and the railway (or group of railways) concerned. The employees' representatives are to be composed of two nominated members from each of the five Sectional Councils described below.

The function of the Railway Council is to deal with the undermentioned subjects which are of common interest to the employees in two or more sections, as follows:

- (a) The local application of national agreements relating to salaries, wages, hours of duty and conditions of service of the classes of employees embraced within this scheme, so far as the individual railway (or group of railways) is concerned, apart from subjects to be submitted directly to the National Wages Board.
- (b) Suggestions as to operating, working, and kindred subjects.
- (c) Other matters in which a company and its employees are mutually interested, for example, co-operation with a view to securing increased business, greater efficiency, and economy; the well being of the staff; general principles governing recruitment, discipline, and tenure of service.
- (d) Subjects referred to the Council by a Sectional Council.

### Sectional Railway Councils

Five Sectional Railway Councils are to be formed on each railway (or group of railways) for the consideration of general departmental subjects. Each of these Councils will have not more than 12 representatives of the employees and a like number of officers of the railway concerned. The 12 representatives of the employees shall be divided among the various grades of the employees in each section in proportion to the number of employees in those grades.

These five Sectional Councils are in effect councils made up of groups of grades having a common interest. For instance, one of the councils will represent stationmasters, freight agents, clerical staff, traffic and freight department inspectors and foremen, engineering, signal, locomotive and car inspectors and foremen. Another council will represent enginemmen and firemen, motormen, engine-house foremen etc. A third council will represent signalmen, passenger and

freight conductors, trainmen, porters, car inspectors, etc. A fourth council will represent the freight house employees, yardmen, etc. The fifth council will represent maintenance of way employees, signal and telegraph linemen, etc.

The functions of the Sectional Railway Councils will be to deal with all questions relating to the employees represented in their particular grades. In case of no agreement being obtained, the question is to be referred to the Railway Council and from there, in case of no agreement, to the Central Wages Board.

To facilitate the election of employee members to the Sectional Railway Councils, the railway or group of railways, is to be divided into five electoral districts, the elections to be conducted jointly by representatives nominated by the trade unions and by the railway company concerned. The employees' representatives are to hold office for three years.

**Local Departmental Committees**

These committees are to be formed at points at which the number of regular employees in a department exceeds 100. The committee will consist of four elected employees in that department and four representatives of the railway concerned. At smaller points it is the scheme for the employees to discuss local matters with the companies' local officials. The purpose of this local committee is to provide a recognized means of communication between the employees and the local officials of the railway companies, and to give the employees a wider interest in the conditions under which their work is performed.

The matters to be considered by a local committee include the following:

- (a) Suggestions for the satisfactory arrangement of working hours, breaks, time recording, etc.
- (b) Questions of physical welfare (safety appliances, accidents, first aid, staff accommodation, etc.).
- (c) Holiday arrangements.
- (d) Time keeping, publicity in regard to rules, etc.
- (e) Suggestions of improvements in method and organization of work, and labor-saving appliances.
- (f) Investigation of circumstances tending to reduce efficiency or in any way to interfere with the satisfactory working of the railway.
- (g) The correct loading of traffic to insure:
  - (1) Safe transit.
  - (2) Reduction of claims.

A local committee shall not introduce any arrangements inconsistent with the powers or decisions of the Railway and Sectional Railway Councils, or Central and National Wages Boards.

In case any local committee is not able to agree on any question it is to be referred to the Sectional Railway Council.

**Discipline**

Matters of discipline are to be governed by the arrangements suggested in the report of the Royal Commission appointed to investigate and report on the working of the Railway and Conciliation and Arbitration Scheme of 1907, which is as follows:

"Offenses Against Discipline, etc.—Men charged with misconduct, neglect of duty or other breaches of discipline, should be permitted to state their defense, to call witnesses, and to advance any extenuating circumstances before their officers, prior to a final decision being arrived at. Where doubts arise, or where serious results to men are likely to follow, the cases should, we think, be placed before the higher officials of the company. Appeals after punishment lead to a difficult position, and the necessity for them should be avoided.

"If after such investigation of a charge against an employee he is adjudged guilty, and is to be punished for the offense, he shall have the right of appeal to a superior officer for a reconsideration of his case, provided that such right of appeal shall not extend to cases of a trivial character. Any such appeal must be made in writing within seven days. If the employee so desires, he may be heard in person, and in that case he may be accompanied at the interview with the superior officer by a spokesman, who may be either a fellow workman or a headquarter's official of the Railwaymen's Trade Union."

It is provided that this scheme shall remain in operation until otherwise determined by 12 months' notice on either side, such notice not to be given before January 1, 1922.

**Freight Car Loading**

**A** REDUCTION of 11,789 in the number of cars loaded with revenue freight during the week ending August 6 when compared with the previous week was shown in reports of the Car Service Division of the American Railway Association. The total for the week was 784,781 cars, a decrease of 150,949 when compared with the corresponding week of 1920 and of 87,292 when compared with the corre-

**REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS**

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, JULY 30, 1921

Districts	Year	Total revenue freight loaded										Received from connections				
		Grain products	Grain and grain	Live stock	Coal	Coke	Forest products	Ore	Merchandise	Miscellaneous	This year	Corresponding year	Corresponding year	This year	Corresponding year	Corresponding year
Eastern	1921	16,447	2,624	41,413	842	4,851	2,367	36,094	74,962	193,354	1921	1920	1919	191,420	1920	1919
	1920	6,391	2,506	55,174	3,704	8,280	9,745	44,661	103,161	233,622	226,903	226,903	226,903	269,282	244,850	244,850
Allegheny	1921	4,568	2,793	42,912	2,085	2,480	6,593	42,685	50,833	154,949	154,949	154,949	154,949	105,513	105,513	105,513
	1920	2,828	3,366	58,809	5,415	3,304	11,306	35,876	67,422	188,326	188,326	188,326	188,326	140,455	140,455	142,328
Poehontas	1921	273	171	17,437	24	1,276	.....	231	494	26,944	26,944	26,944	26,944	13,275	13,275	13,275
	1920	249	161	24,020	750	1,887	187	168	9,124	36,526	35,950	35,950	35,950	20,197	18,259	18,259
Southern	1921	5,555	1,977	20,615	302	14,096	197	35,122	34,662	112,526	112,526	112,526	112,526	66,064	66,064	66,064
	1920	3,728	1,887	21,641	1,737	17,028	3,118	33,669	44,797	127,605	127,605	127,605	127,605	81,744	64,646	64,646
Northwestern	1921	13,393	6,662	6,812	446	11,569	19,548	33,681	120,353	233,622	226,903	226,903	226,903	44,668	44,668	44,668
	1920	8,244	7,024	9,392	1,048	17,502	46,436	33,186	48,142	160,968	159,163	159,163	159,163	62,930	61,328	61,328
Central Western	1921	23,323	8,567	17,271	199	4,623	658	29,937	41,144	123,992	123,992	123,992	123,992	52,671	52,671	52,671
	1920	13,633	8,466	12,099	484	6,553	4,910	33,217	44,627	123,989	127,200	127,200	127,200	69,316	67,866	67,866
Southwestern	1921	8,833	2,564	4,399	213	6,123	743	15,469	25,903	64,452	64,452	64,452	64,452	46,590	46,590	46,590
	1920	4,779	2,655	4,657	218	8,648	663	18,018	25,697	65,330	64,820	64,820	64,820	50,864	49,413	49,413
Total, all roads...	1921	66,416	25,358	151,089	4,111	44,712	30,103	240,367	264,414	796,570	796,570	796,570	796,570	520,201	520,201	520,201
	1920	39,852	25,065	185,792	13,336	63,202	76,359	188,795	341,965	936,366	936,366	936,366	936,366	694,788	694,788	694,788
Increase compared 1920	1919	57,115	27,942	181,507	9,109	63,872	71,837	133,276	369,639	.....	.....	.....	.....	925,195	925,195	925,195
Decrease compared 1920	1920	26,504	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared 1919	.....	707	34,703	9,225	18,490	46,256	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decrease compared 1919	.....	1,877	30,418	4,998	19,160	41,734	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

L.C.L. merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

Year	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919
July 23	64,919	24,689	152,142	3,928	43,126	33,655	308,316	259,574	790,348	938,418	909,682	503,926	673,219	628,308	484,500	681,684	627,841	
July 16	56,991	24,802	152,116	3,737	44,037	31,484	208,679	255,066	776,252	942,851	902,296	434,929	633,997	554,129	434,929	633,997	554,129	
July 9	38,015	21,067	126,331	3,830	34,356	26,312	180,638	209,122	639,498	796,191	809,845	311,035	633,997	554,129	311,035	633,997	554,129	
July 2	40,547	24,923	157,265	4,354	47,542	30,335	215,887	253,955	774,808	891,621	743,226	511,035	633,997	554,129	511,035	633,997	554,129	

\*Detail for Mich Cent not included for 1919.

ponding week of 1920. The decrease was due principally to a falling off in the loading of grain, grain products, coal, merchandise and miscellaneous freight.

The loading of grain and grain products totaled 58,622 cars which was 7,794 cars below the total for the week before, but it was 21,478 cars in excess of that for the corresponding week in 1920. A tapering off in the movement of grain and grain products, however, is to be expected from now on in view of the fact that the harvest season is rapidly drawing to a close in the Middle West.

A reduction of 3,816 cars was also reported in the number loaded with coal during the week compared with the week before the total being 147,273 cars. This was 51,456 cars less than were loaded during the corresponding week last year. Loadings of merchandise and miscellaneous freight were 472,540 cars or 2,241 cars less than were loaded during the previous week and 49,693 cars below the total for the same week in 1920. An increase of 1,252 cars was reported in the loading of live stock which totaled 26,610 cars while coke loadings were 4,218 cars, an increase of 107 cars over the week before. Reports showed 32,058 cars loaded with ore which was an increase within a week of 1,955 cars. A total of 43,460 cars were loaded with forest products, which was a decrease of 1,252 cars compared with the week before.

Except for grain and grain products and live stock, decreases were reported in the number of cars loaded with all classes of commodities during the week compared with the corresponding week in 1920. The Pocahontas and North-western districts were the only ones to show an increase in the loading of all commodities compared with the previous week while the Southwestern was the only district to show an increase over the corresponding week last year.

#### Car Surpluses and Shortages

A decrease of 13,137 in the number of freight cars temporarily out of service on August 8 because of the business depression (surplus cars plus bad order cars in excess of 7 per cent of the total), compared with the total on July 31, was shown by reports from the railroads of the country just received by the Car Service Division of the American Railway Association. On August 8, 513,040 were reported as being idle compared with 526,177 at the end of last month.

Of the total, 297,784 were serviceable freight cars which

American railroads while on July 15, it was 365,092 or 15.9 per cent.

With a slackening in the demand for grain cars, a reduction in the car shortage which has been reported in certain localities was shown by the reports. The total shortage on August 8 was 3,364 cars which was a decrease of about 540 cars compared with the shortage at the beginning of the month. A reduction within that time of approximately 500 was reported in the shortage of box cars.

Bad order cars on August 1 totaled 376,417 or 16.3 per cent of the total. On July 15, cars in bad order numbered 15.9 per cent of the total.

## Work on Detroit River

### Bridge To Begin in 1922

**A**SSURANCE of the actual construction of a great highway and railway bridge across the Detroit river at Detroit has been presented recently in the form of definite arrangements for the preliminary work. Two corporations have been organized to carry out the project, namely, the American Transit Company of New York City and the Canadian Transit Company, chartered by the Canadian Parliament, and a contract has been signed between them for joint action in financing and building the bridge. The American company has obtained authority from Congress to span the river. Plans for the structure are now assuming definite form and it is expected that actual construction will be started in 1922.

The bridge, which is estimated to cost \$30,000,000, will be a suspension span 1,803 ft. center to center of piers and 110 ft. clear above the water in the river. Provision is made for an upper deck embracing two street car tracks, two 28-ft. roadways and two 7-ft. walks, together with a lower deck providing for four railway tracks and space for public utility cables or conduits. The railway approaches will have 1.5 per cent grades and it is planned to handle trains with 120-ton electric locomotives. About 20 miles of electrified tracks will be required for the bridge, approaches and connections.

The main supporting members will comprise eight cables,



An Artist's Drawing of the Detroit River Bridge

were not needed, however, to meet current freight requirements while the remaining 215,256 were freight cars in need of repairs. Surplus box cars in good order on August 8 numbered 88,593 or a reduction of 11,614 cars since the first of the month while surplus coal cars in good repair, totaled 152,774 or 8,949 less than were reported on July 31. A reduction of 2,130 was reported in the number of surplus stock cars, which brought the total down in slightly more than a week to 12,337 cars.

Reports received by the Car Service Division showed an increase of 11,325 in the number of freight cars needing repairs on August 1 compared with the total on July 15. At the beginning of this month, the total was 376,417 or 16.3 per cent of the total number of freight cars owned by

of which six will be 21 in. in diameter and two 18 in. in diameter, the maximum tension under load in the larger cable being 19,700,000 lb., for which an effective area of 232 sq. in. will be provided. These cables will be arranged in four pairs with one cable of each pair directly below the other, the suspenders from the two cables of each pair to be connected by an equalizer so that each cable will receive its proper proportion of the load.

The approach spans will be carried on viaducts 925 ft. long rather than by the backstays of the cables. This is done to allow the approaches to turn out of the bridge tangent as well as to reduce the live load deflection in the main span. There will be four lines of two-hinged stiffening trusses which will be of the double intersection Warren type. The

two hinged construction has been adopted because it is more economical and also stiffer for railway loading.

The towers will be 330 ft. high and will consist of rocker bents of four columns each. They are to be hinged at the bottom through the use of curved roller nests. Each column will consist of a double box section containing from 999 to 1,191 sq. in. of sectional area. They will be erected with the use of a temporary erection base or with the aid of struts made of material fabricated for use in the stiffening trusses. The bridge piers will be sunk to a depth of about 100 ft. below water level by the pneumatic process.

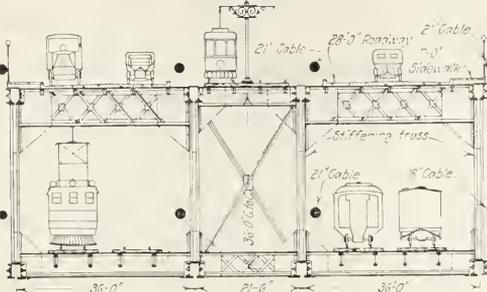
One interesting feature of the plans for this bridge is the arrangement whereby it will be possible to build the bridge initially for highway and street car traffic alone if this should

in crossing the tracks failed entirely to either look, listen or take any precautions.

Continuing Mr. Davis said: "The size of our country and the volume of its railroad traffic require that heavy trains be run at high speed. By law and by common consent and desire, these trains are given the right of way over highway traffic. Grade crossings have been in the past and for a considerable period in the future will be a necessity. There is at least one for every mile of railroad in the United States, and it costs around \$50,000 to construct an underpass. At the present time, railroad treasuries are exhausted and the same condition obtains in connection with the operations of our municipalities and the state and federal governments. Extensions and additions to existing railroad facilities will absorb all surplus revenues for some time to come, and all will agree that their relative importance as compared with grade crossing elimination is such as to make it right and proper that the latter be deferred for the time being. No general campaign of grade crossing elimination can be carried on under existing conditions.

"Large numbers of crossing gates are broken down each year; flagmen are run over and killed or injured. On one railroad, during the last 15 months, 150 automobile accidents occurred of which 48, or about 30 per cent were the result of the automobile running into the side of the engine or train. On all railroads the proportion of the number of cases where the automobile runs into the side of the engine or train is astonishingly large. Railroad engineers are constantly complaining that their nerves are being shattered by near-accidents. One engineer of a large railroad resigned the other day because he said he could not stand the strain any longer. On account of the wide-spread practice of driving cars at a speed of 20 to 25 miles an hour right up to the railroad and then bringing them to a sudden stop, the engineer is unable to tell until the last second whether the driver sees the train or not, and great numbers of accidents occur by reason of the fact that the driver tries to beat the train. In fact, our experience is that the great majority of accidents occur at crossings where the view is perfectly open and unobstructed. In accordance with the law of Illinois, the State Public Utilities Commission has designated a large number of crossings as extra hazardous. But every crossing is hazardous. At the crossings so designated "Stop" signs have been erected, and the law provides that upon approaching any railroad crossing the person controlling the movement of any self-propelled vehicle shall reduce speed to ten miles an hour and shall stop at points where stop signs are erected. Failure to stop is punishable by fine. If public opinion could be aroused, laws on this subject would be unnecessary, but sympathy is always with the injured person, and local papers seldom explain that the cause of an accident was gross carelessness on the part of the driver.

"There is but one rule to follow when about to pass over a railroad track and that is not to do it unless you are absolutely sure that no train is approaching from either direction or on either track. One does not need a book of instructions as to how to do this, because ordinary common sense shows what to do in any particular case. A railroad track should be a sign of danger to everyone. It should galvanize him into action at once. He should make it a habit to slow down, regardless of how smooth the crossing or how unobstructed the view; and regardless of whether the crossing is protected by gates, or other safety devices; for these may fail to work. Furthermore, the practice of slowing down and looking at the so-called protected crossing helps you to acquire a valuable habit. The Santa Fe slogan, the mandatory phrase "Get the Safety Habit" has always seemed to me most appropriate. A chain is no stronger than its weakest link and even though you practice habits of safety you cannot be assured of immunity unless others do likewise. Consequently our own personal interests require us to exert our efforts to pass along safety habits to others."



Cross-Section of the Proposed Bridge at Mid Span

be found necessary because of a failure to perfect arrangements for the use of the bridge by the railways by the time construction is to begin. This will be done by leaving off the lower deck and the lower tier of cables as well as one set of diagonals in the stiffening trusses and some of the metal in the bottom and top chords of these trusses.

The estimated dead load of the bridge is 37,700 lb. per ft. and the designing live load for the railway tracks is Cooper's E 60. The design stresses are given in the table below:

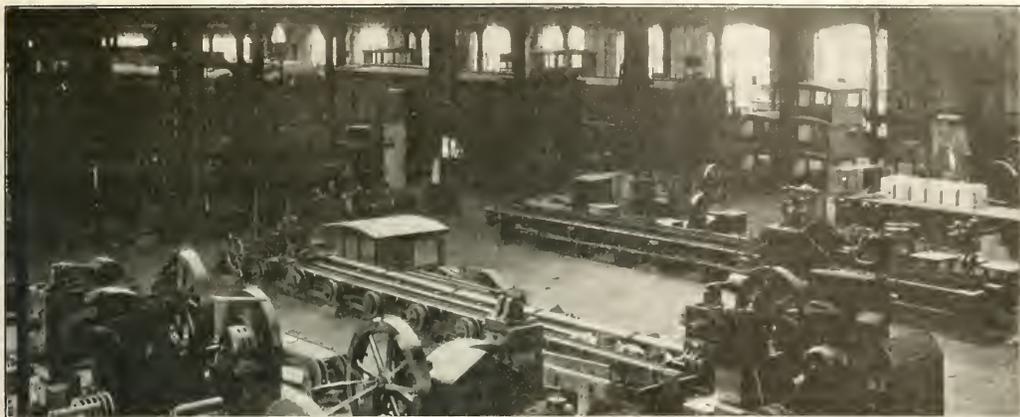
TABLE OF UNIT STRESSES IN LB. PER SQ. IN.

	For D.L. + L.L. + Temp. or D.L. + Temp. + Wind.	For D.L. + Congested L.L. + Temp. or D.L. + L.L. + Temp. + Wind.
Wire—Main cables	85,000	160,000
Suspenders	40,000	50,000
Alloy steel	30,000 (—120 1/r)	45,000 (—150 1/r)
Structural steel	20,000 (—80 1/r)	20,000 (—80 1/r)

The design and construction of this bridge is under the direction of Charles Evan Fowler, consulting engineer, New York City, who is chief engineer. A board of consulting engineers has also been organized with Mr. Fowler as chairman, the other members being George H. Pegram, chief engineer, Bureau of Rapid Transit Company, New York City; William H. Burr, consulting engineer, New York City; Professor C. R. Young, University of Toronto, and Colonel C. N. Monsarrat, consulting engineer, Ottawa, Ont., who was a member of the Board of Engineers of the Quebec bridge.

### "Get the Safety Habit"

NEARLY FIVE THOUSAND persons were killed or injured in the year 1919, in automobile accidents at highway grade crossings in this country (1,232 killed, 3,558 injured) and it is estimated that the total for 1920, when it comes out, will be close to 8,000. These and other significant statistics were given in an address at Chicago on May 17 by Homer W. Davis, general attorney of the Atchison, Topeka & Santa Fe, before the Chicago Safety Council. The Baltimore & Ohio in the month of April at its Chicago crossings found 550 instances where the driver of an automobile



## Should the Railroads Repair Their Equipment?

Because of Accounting Methods, Many Important Factors Are Not Taken Into Consideration

**T**HE QUESTION of whether or not a railroad should make heavy repairs to its rolling stock and equipment is attracting much attention. The business of a railroad is to provide transportation and its accounting system is arranged to show the cost of producing transportation rather than to disclose the cost of performing any incidental service. For this reason it is almost impossible to make any fair comparison between the cost of repairing equipment in a railroad shop and in an outside contract shop from the records usually kept by the roads. There are certain contract shops which have been designed to make locomotive and car repairs and it is necessary in order that the railroad management may intelligently decide the question of where the repairs may best be made to have a thorough understanding of the various factors which are involved in a correct determination of the costs. If these factors are known and understood, then undoubtedly, even though it may not be possible to secure detailed costs, a far better approximation of the cost of doing the work in railroad shops can be had than is now possible.

The cost of repairing a piece of equipment includes, (1) the cost of materials used in the work, (2) the cost of the labor performed in doing the work, and (3) the overhead costs or burden, which includes the cost of providing and maintaining an organization and facilities by the use of which the work is done.

It is fairly easy to secure a reasonably accurate distribution of the material and labor costs. The material costs to be strictly accurate must, of course, take into consideration the wastage of material and credits for the recovery of salable scrap material. Even in a manufacturing concern with exceptional facilities for cost accounting there may be great difficulty in securing a proper distribution of some of the detailed costs; this is ordinarily covered by absorbing this part of the materials cost in the overhead and distributing it on such a basis as to secure substantially accurate results.

In a contract shop a large part of the labor can be distributed accurately to the different jobs by the use of time cards or the presence of checkers. In spite of this a large part of the labor including such operations as cleaning the

plant, handling the material, etc., cannot be assigned directly but is included in the overhead and distributed as accurately as possible. Unfortunately, so many different kinds of jobs are ordinarily handled in a railroad shop that many of these indirect labor costs are not even considered or are not given the weight that they should have in determining the cost of any particular job.

### The Surcharge or Overhead Expenses

The greatest difficulty with accounting in the railroad repair shop is that it does not afford any real basis upon which to determine the overhead with even approximate accuracy; on the other hand, a contract shop goes into these details with the greatest degree of accuracy. For instance, repair jobs on a railroad are ordinarily not charged with any of the expense of the executive and administrative officers and offices. Usually no attempt is made to distribute the cost of management and superintendence to individual repair jobs. No part of the cost of maintaining and operating the plant is normally charged to the individual repair job and some of it is even charged to maintenance of way of structures or to the transportation accounts. No attempt is made to charge against individual repair jobs certain losses and costs in the handling of materials and supplies. Labor costs in railroad accounting are normally made up by trades or occupations rather than according to performance and the assignment of such costs is therefore inaccurate. The railroads do not normally charge against the work the full cost of the transportation of materials and fuel over their own lines.

To repair railroad freight cars, for instance, requires an establishment in the form of a plant equipped with much costly machinery, furnaces, air compressors, power generating and distributing machinery and a large investment in consumable tools and in small equipment. To house such machinery and equipment buildings of an extensive character are required. Also large areas must be made available for storage, erection and shipping yards having adequate trackage and other facilities for receiving and handling materials and for the movement of the cars being repaired. Such an establishment is necessary for economical freight car

repair work whether done by a railroad or by a contractor specializing in the field.

If is self-evident that the maintenance of such an establishment entails labor and expense, the benefits of which do not appear directly in the output of the plant. The machinery must be repaired or replaced when worn out, power must be supplied to operate it, and labor must be employed to maintain and keep in repair the buildings, tracks, fences and other facilities, to keep the establishment clean and ship-shape and to receive and handle the materials and supplies incident to the operation of the establishment. Clerks must be employed to record the transactions involved, to keep the time of the labor employed, to maintain proper inventories and to conduct correspondence. Superintendents and foremen must be employed to supervise and direct the work, managers are required to co-ordinate the activities of different departments, purchasing agents are necessary in the procurement of materials and supplies, and other officials and employees are concerned with the fiscal, selling and operating problems of the business. All such elements of cost as these go to make up the total of overhead or operating expense of the concern.

All or many of such expenses or so-called "overhead" would be extravagant and ill-advised were it not for the fact that experience teaches that establishments so organized and so equipped can, because of their superior organization and elaborate labor saving equipment, produce a given output of repair work at a lower net cost than simpler and less efficient establishments which must depend more largely upon manual labor assisted only by more simple tools and machinery. Within certain measurable limits and under normal operating load, therefore, the best equipped establishments, or those having the largest aggregate overhead expenses, are usually the most economical; that is, the overhead arising from the presence of an expensive machine may be less than the cost of the labor it supplants.

### Overhead in a Contract Shop

A contract shop keeps an accurate record of overhead costs, which is usually arranged to include such items as the following:

1. Plant management and superintendence
2. Assistant superintendents and foremen
3. Shop accounting and timekeeping
4. Shop clerical and office expense
5. Engineering and drafting
6. Stores department
7. Depreciation
8. Repairs
9. Replacements
10. Heat, light and power
11. Fuel
12. Lubrication
13. Over, short and damage
14. Shipping freight and express
15. Receiving freight and express
16. Traffic expense
17. Yard switching expense
18. Inspection
19. Fire protection
20. Police protection
21. Employment expense
22. Welfare expense
23. Pensions
24. Safety first expenses
25. Insurance
26. Taxes
27. Unloading and handling material
28. General yard labor
29. Sorting and reclaiming materials
30. Dies and formers
31. Patterns and templates
32. Water
33. Telephone and telegraph
34. Inventory
35. Office supplies
36. Hand tools and shop supplies
37. Scrap
38. Clean-up expense
39. Royalties
40. Rent
41. Miscellaneous shop expense

### ADMINISTRATIVE EXPENSE

1. Salaries and expenses of general officers and general office employes
2. Legal expense—general office
3. Purchasing department
4. Depreciation
5. Repairs
6. Insurance
7. Engineering and estimating

It will be noted that many of these items are made up solely or largely of labor which cannot be assigned directly to any one job.

To secure the best results from any plant it is necessary that it be operated to capacity. It is probably easier to do this with a contract shop which serves a number of railroads than where a plant is operated by a single road. This, of course, will reduce the amount of overhead per job.

With a possible few minor exceptions all of the elements of costs which accrue in the case of a contract shop accrue also in the railroad shop. That the railroad leaves entirely out of consideration many of these items is no reason that they do not exist; they are simply overlooked or not recognized, but the work costs just as much as if they were. It is often said that the administrative overhead does not amount to anything on a railroad. This is begging the question for surely with the amount of repair work which is being done and the many decisions which must be made of problems respecting it, the repair work should carry its proper share of the burden.

Every physical feature of a railroad shop plant like a contract plant is subject to depreciation. In general, it is believed that the rates of depreciation employed by the railroad are much lower than they should be. The instructions of the Interstate Commerce Commission permit accounting for depreciation and other similar items to be made not on a basis of accruals but upon a basis which permits the charging of the ledger values less salvage direct to operating expense at the time the property is retired for replacement. It is obviously impossible, therefore, to determine the expense due to depreciation to any given order or any given class of work.

Then there is the matter of obsolescence. It has been said that this country is dotted with the sites of abandoned railroad shops but the losses have never found their way into the cost of maintaining equipment. When a facility of this type is abandoned its book value is usually written off to operating expense.

Costs of incidental shipping of materials in yards by locomotives in regular switching service is, according to the rules of the Interstate Commerce Commission, chargeable to transportation accounts and therefore does not appear in the shop costs. In like manner the rules of the Interstate Commerce Commission treat the cost of repairing the buildings, tracks, fences and similar structures as an element of the expenses of maintaining the roadway and roadway structures.

The factors above noted do not cover all of those things which might be considered in an article of this sort, but they are sufficient to indicate that greater care must be given by practically all railroads to determine whether it is better to assign heavy repair work to contract shops or to do it themselves. It will be noted that the term heavy repair work has been emphasized throughout this article. For various reasons it will be obvious that the so-called running repairs can best be made by the railroads themselves.

GOVERNOR NATHAN L. MILLER of New York, making a tour of the State Canal, makes speeches along the way, and at Schenectady he said:

"Here is a capital investment of \$165,000,000, with probably ten millions more to be spent in the completion of the terminals and with two millions and more a year required for maintenance, yet the people do not seem to know they have it. We must devise some way of selling this proposition over again."

# Water Treatment---Intermittent or Continuous

## A Discussion of the Comparative Advantages and Disadvantages of Each System

By W. R. Toppan

Manager, Railroad Department, The Graver Corporation, Chicago

THAT THE USE of purified or softened water produces great savings in railroad operation is almost universally realized, but there is not quite such a clear understanding of what is the most economical type of plant for this purpose. Two general types are used—the continuous softener and the intermittent softener. The purpose of this article is to discuss the comparative costs and comparative advantages of these two types, including a study of the operation and maintenance costs and the comparison of the average results obtained from each type.

At the outset it is well to call attention to the fact that in the present stage of water softening no comparison can be

ously and the energy of the flow of the water as it enters the plant is usually utilized to operate mixing applications. On the other hand there are intermittent plants so designed that the water is first passed into the plant without chemical, after which the chemicals are added in a batch and the mixture thereupon agitated for a short period by power furnished from an outside source. There are estimated to be approximately 650 treating plants in railroad service. About 30 per cent of these are of the intermittent type and the greater portion of these in turn conform to the above design. A comparison between the two types of softeners as thus represented therefore is the basis for the study of this subject. As the company represented by the writer handles practically all types of water softening plants or equipment, and practically all companies selling to the railroads handle the continuous type of softener, this article cannot be construed as a criticism of any particular make of machine.

### Ground Space

Naturally, among the first points to be considered in the installation of any water softening plant, are the ground space available and the foundations which are necessary. Too many times these features, especially the foundations, are not thoroughly considered before the design of plant is adopted, and this frequently leads to a higher first cost than was originally figured. Even though there was no choice between the two types of machines, the amount of ground space available for a softening plant many times requires an installation which will take up the least area. This feature becomes of especial importance at locations where large capacity plants are required, such as at division and terminal points. At such points, ground rentals or purchase prices are high. The right of way grounds are valuable and it is very seldom that the railway considers it advisable to purchase space for the installation of a water softening plant. It is of utmost importance, therefore, to have an accurate idea of the comparative amount of ground space necessary for a continuous plant, as compared with an intermittent plant.

A convenient comparison may be made between two plants each of 10,000 gal. treating capacity per hour. The continuous type of plant, designed to afford five hours' settling time and to permit the treated water to flow by gravity to the roadside tank, is provided with a tank 14 ft. in diameter and 35 ft. high. The chemical proportioning tank may be installed on the top of the settling tank, in which case it will require no additional ground space. If it is located on the ground level, it will require housing approximately 12 ft. by 14 ft. for protection to the chemical tank, piping, etc. The entire ground space occupied will be 154 or 322 sq. ft., according to the location of the chemical proportioning outfit.

An intermittent plant of the style represented and of the same hourly capacity will require two tanks, each holding 60,000 gal. This is necessary because about two hours must be allowed for filling and it is generally agreed that four hours should be allowed for the settling process. This means a six-hours' holding capacity for each 10,000 gal. of delivery capacity. A 60,000 gallon tank is 24 ft. in diameter by 20 ft. in height, and two of them are required. Where a filter is used, space approximately 10 ft. in diameter will be required and a chemical tank about 5 ft. in diameter.



A 10,000 Gal. per Hour Continuous Softener

made which will apply exactly in all cases for the reason that much variety exists in plants of the same type. Not only is this true but there is a similarity between some plants of different types now in use to a degree where scarcely nothing remains to distinguish one type from the other, but the fact that in the one, treated water already settled and ready for use is being produced at the discharge end of the plant at the same time as the softening process is being carried on at the inlet end, while in the other, the two operations are carried on at different times.

There are, however, numerous features which though perhaps not limited to, are nevertheless typical of continuous softeners while other features are peculiar to the intermittent type. For instance, in the continuous type a definite quantity of chemical is added to a definite quantity of water while the water is flowing into the plant, the reaction between the chemicals and the water is made to take place continu-

The housing then, in addition to the space occupied by the two tanks, will occupy approximately 18 ft. by 24 ft. The total ground area for the intermittent plant will be about 1228 sq. ft. or three or more times the space required for a continuous plant of the same capacity. The comparative difference between the two designs is clearly shown in the ground plan illustrations.

### The Foundation

Because of the fact that foundations for water softening plants are usually installed by the purchaser, and not by the contractor who puts in the water softener, the comparative costs of foundations are sometimes overlooked, or given only superficial attention. Buyers are sometimes led to purchase plants on the cost of the equipment alone. It requires only a glance at the foundation plans to show that the assumption that the foundation costs of the continuous and intermittent plant will be the same is far from correct. In figuring the cost of the intermittent plant, there must be added the difference in cost of the foundations for the continuous type softener. A single foundation for the settling tank is required and this foundation consists of a panel of concrete one foot larger in diameter than the main settling tank. In the continuous plant a concrete foundation 15 ft. in diameter and 4 ft. deep is the usual practice. The foundation is cored out in the center, the core being about 7 ft. in diameter and 3 ft. deep. The foundation for the main settling tank and for the housing and sludge pit will require about 30 cu. yd. of concrete which, at \$13 per cu. yd., would make the cost of the foundations \$490. Very little form work is required in building these foundations.

The intermittent softener requires two tanks 24 ft. in diameter by 20 ft. high. The practice is to install 12 piers under each of these tanks, each pier being approximately 6 ft. deep with a top 2 ft. square and a bottom 4 ft. square. Two of these tanks will require 24 of these piers and in order that the proper head of water may be obtained it is the practice to elevate this tank high enough to get all of the water out of the settling tanks. This means that it will necessarily have to be several feet above the ground. The foundations for the intermittent softener, therefore, will require approximately 70 cu. yd. of concrete, and, owing to the form work necessary, they will probably cost \$15 per cu. yd. or a total of \$1,050, including foundation for filter and housing. Besides this, there is an additional expense for this foundation work on account of the necessity of using large main sills, which are usually 10 in. by 12 in., and chime joints which are usually 3 in. by 10 in. or 12 in. These additional joints will run the cost of the foundation up another \$500 or \$600. Thus, the cost of the foundation work for the intermittent plant will run between \$1,550 and \$1,660, while the cost of the foundation for the continuous softener of the same capacity will be only \$490.

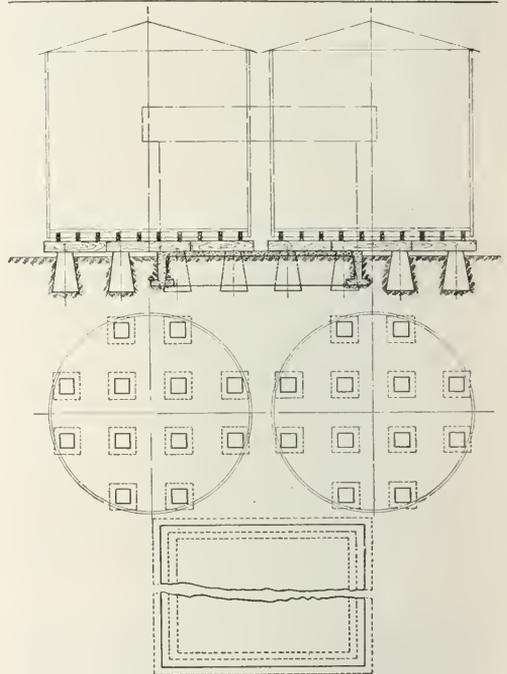
### The Pumping Equipment

In the case of the intermittent type of plant, two pumps are required where it is necessary to have storage while with the continuous type plant only one pump is required. By the definition of a continuous plant—the admission of water and chemicals at the same rate at which water is withdrawn—the requirement for pumping will be a pump of 10,000 gal. per hour capacity. Water is pumped directly to the top of the settling tank and thence flows by gravity to water cranes or roadside tanks from which locomotives take their supply. In the case of a pumping station already in existence, the same deep well pump would be sufficient to supply a continuous plant. No second pumping is required.

The requirement for the intermittent plant under consideration is a pump of a capacity to fill a 60,000 gal. tank in two hours, or 30,000 gal. an hour. In addition, a pump of 10,000 gal. capacity is required to lift water from the set-

ting tank to the roadside storage tank after the water has been discharged from the larger capacity pump into the settling tank. The storage tank is elevated at a sufficient height so that water flows by gravity to the locomotive tenders. The intermittent plant, therefore, in addition to requiring two 60,000 gal. tanks in place of one 50,000 gal. tank for the continuous plant, also requires two pumps, one of 10,000 gal. hourly capacity in place of the single pump of 10,000 gal. hourly capacity required by the continuous plant. It is also perfectly plain that the amount of piping and valves required will be much greater in the intermittent plant than in the continuous.

In figuring then on the comparative costs of an intermittent and a continuous plant careful consideration should be



Foundation Plan, Intermittent Softener

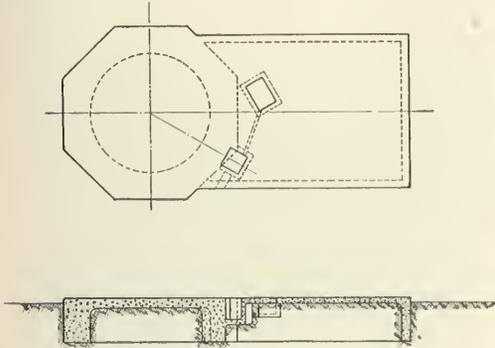
given to the overhead depreciation and maintenance and operating cost of the additional pump required together with its extra piping, valves, etc. Pumping costs are a never-ending charge against the water softening plant and any excess cost in pumping means a charge which will be multiplied over many years. The following figures furnished by one of our leading Western railroads indicates how these costs may pile up during a short time with an intermittent pumping plant.

1. Pumping—\$400 per month—(necessary for either a continuous or intermittent plant).
2. Pumping—\$300 per month—(Not necessary with a continuous softener).

The cost of \$300 per month is equivalent to \$3,600 per year, which is equivalent to a 10 per cent interest and depreciation charge on a \$36,000 investment. Therefore, a greatly increased capital expenditure would be justified in order to eliminate this extra pumping. Yet with the continuous machine, which does this, the actual cost is lowered.

### Housing

For the intermittent softener with chemical tank and pumping equipment it is evident that a larger housing is required than is necessary for the continuous machine. The intermittent softener housing must contain one or two unit pumping outfit and a chemical tank and ample room must be provided for the operation of all valves and for the storage of chemicals. It is also evident that two roofs are required for the intermittent softener, one over each of the settling tanks, where only one room is required on the continuous softener. In the continuous type the upper housing is made



Foundation Plan, Continuous Softener

just large enough to house the necessary equipment located there. In some cases this requires nothing except a room and a lower housing large enough for a chemical tank with the necessary storage space for lime and soda ash. Thus the expense of the housing and roofs in the intermittent softener is about double that of the continuous softener. Since the railway usually furnishes the buildings and housing it is evident that these figures are not usually included in the contract for a water softener, but it is also perfectly evident that they cost money, and this cost should not be overlooked.

One of the indirect effects upon operation of the greater initial cost of site and construction of the intermittent type of plant, is a tendency to construct a plant adequate only for normal requirements, neglecting the consideration of the effects of extraordinary demands upon the capacity. At railroad terminal points it is not an unusual occurrence for sudden and heavy extra demands to exceed normal consumption. The more closely the capacity of the plant has been proportioned to ordinary demands, the greater is the likelihood of its capacity being frequently overtaxed. In the continuous machine the flow of water is limited only by pump capacity and ordinarily, the plant may be operated for short periods up to considerably above its rated capacity without the probability of causing trouble from foaming. In the case of plants of the intermittent type, this is not the case and the usual recourse in practice is to take water from the second settling tank before the expiration of the time essential for complete reaction and precipitation. This is certain to result in foaming of a more or less serious nature, besides putting the treating plant out of commission temporarily so that no further supply of treated water is available. This also accounts for some of the deposits commonly found in pipe lines leading from intermittent softeners.

### Operating the Plant

A primary requirement of an efficient water softener is that the chemicals shall be accurately proportioned to the water treated. In the continuous softener this is usually

accomplished automatically, where in the intermittent softener under consideration the quantities, both of the water and chemical for each treatment, are measured out by the operator. Theoretically, there should be no practical difficulty in introducing into a tank of water, the amount of chemicals necessary to reduce that water to a certain minimum of degrees of hardness. In practice, however, one cannot always be sure that the reaction chamber of the intermittent plant will always be filled accurately with the number of gallons of water to which the chemical charge has been proportioned. Furthermore, the water is not always drawn off to the same level so that there is always a possibility of a charge of raw water being put into the tank to bring it up to the correct level which is not the exact charge required.

It has sometimes been stated with reference to softeners of the continuous type that there is no absolute measurement of the amount of water going through it nor any absolute measurement of the quantity of chemicals introduced. But this is erroneous as it is not difficult to estimate or control the flow of water through a measured orifice under a given head and the fact that softeners have been operated so as to run with a range of variation of one-half grain for weeks at a time indicates that both water and chemicals were fed and proportioned accurately.

The comparative methods of preparing the chemicals is also an important item in this connection. In the continuous plant under discussion the chemical charge is prepared once in 12 hours. In the intermittent machine a new charge is made every 4 hours. There are, therefore, three times the number of opportunities for error. The indicator of the continuous machine affords information by which a change in charge can be made at any time. In the intermittent plant, once an overcharge is made there is no means of rectifying it, since the water to which the chemicals are added is constantly in a state of agitation. If an undercharge is made, it is, of course, possible to add more lime and soda



A 10,000 Gal. per Hour Intermittent Softener

ash. This, however, necessitates re-agitation and re-settlement of the whole contents of the tank and would ordinarily require from two to three hours time, thus reducing the capacity of the plant 10,000 to 20,000 gal. for this length of time. In the continuous machine, if a test of a sample of water from the settling chamber shows too much or too little of the chemicals, addition or subtraction may be made at once to correct the charge while the plant continues in operation.

Regarding the agitation of chemicals, one well-known authority on water treatment for railroad uses has said:

"I consider the type of machine which adds the chemicals

to a continuous stream as always preferable. One has there the question of agitating 100 gal. as against agitating 100,000 gal. The average continuous machine gives as much agitation to the individual cubic foot of water as any reasonable amount of compressed air could possibly give. Also, if desired, this can be increased easily if the water should demand it by speeding up or adding more paddles, a point often valuable under changing water conditions. Regarding the length of time of contact of water and reagents, this is a matter of design and can be made perfect in a continuous machine by proper engineering skill.<sup>17</sup>

That chemical reaction and precipitation are more complete in continuous systems than in plants of the intermittent type appears to be demonstrated by the frequency with which clogging pipe lines is found associated with the latter systems. An illustration of this is to be found in an article by C. R. Knowles, superintendent of water service of the Illinois Central, which appeared in the May issue of the Railway Maintenance Engineer, inquiry having developed the fact that in both cases of the serious clogging of service lines referred to the water had been treated in an intermittent softening plant.

### The Cost of Maintenance and Operation

Additional features of importance to be considered in the determination of the type of water treating plant to be installed under any given set of conditions are the relative costs of maintenance and attendance. The cost of maintenance of an intermittent plant considered must necessarily be greater than the cost of maintenance of the continuous plant, there being two tanks in the intermittent and only one for the continuous, and thus almost double the exposure of the equipment to the weather. A 10,000 gal. continuous plant similar to that discussed would have 1,540 sq. ft. of surface under exposure to the weather, while the two tanks and appurtenances of the intermittent machine would expose about 3,000 ft., or almost double the amount which would have to be protected by painting.

Furthermore, intermittent plants ordinarily have wooden tanks while the continuous have steel tanks. Whatever might be said in favor of the wood tank it is generally agreed that the life of the steel tank, if painted at the regular intervals at which painting should be required of either type of equipment is practically indefinite. It is the corrosion from the outside which destroys the steel tank, there being no serious corrosion on the inside of a water softener using the lime-soda ash process.

Another item which may readily add to the cost of maintenance is the equipment for agitating the water following the addition of the chemicals. The intermittent type of plant under consideration requires additional power for this purpose. In the continuous plant the power for agitating the water and chemicals may be furnished by the flow of water entering the softener for treatment.

There is also the question of chemicals to consider in any discussion involving the subject of maintenance and operating costs. Theoretically, there should be no difference in the actual cost of chemicals required for treating a given quantity of water between the intermittent and continuous plants. Practically, however, there is often a saving of chemicals in the continuous plant, due to the fact that the chemicals are measured and added automatically, and also because there is a better and more uniform agitation possible in the small mixing chamber of the continuous plant than is possible in the large diameter tank in the intermittent plant where the agitation takes place. The results of adding a definite proportion of chemicals to the water in either type of plant would be the same provided the proper mixture and agitation are obtained.

Finally, there is the important question of attendance to consider and here indeed, attention may well be called to

the fact that little or no additional labor need be required for the operation of a continuous plant over that required for an ordinary pumping station where there is no water treatment. This is because the apparatus of the continuous type of plant is largely automatic in its operation and also because there is not as much apparatus as is required in an intermittent plant. If a continuous water softening plant is installed in connection with a pumping plant or coaling station no additional labor whatever is required. It is necessary to make a chemical charge and discharge the sludge only once in 12 hours and this requires no more than an hour of one man's time. In case of an intermittent plant, practically the entire attention of one man is required for attendance, and as attendance is required night and day, the services of three men eight hours each are essential.

Only when the continuous plant is in an isolated position or located some distance from any other plant on the road, is it necessary to have anything like constant attendance. It is, of course, essential that the man in charge be so situated as to be able to make the charges at the required time, but this is only once in 12 hrs. Most of the continuous softeners used in connection with pumping plants require the services of only one man for all operations.

The above data and information make it possible for the railway officer to decide for himself as to the comparative merits of the intermittent and continuous types of water softeners. It would seem that the facts overwhelmingly favor the continuous type of machine. Certainly, the test of usage has given conclusive evidence in favor of the continuous type of plant for railway use. The percentage of continuous plants in railway use is far above that of the intermittent type and on roads having both types in operation, the continuous type has shown its superiority in records kept over a period of years.

THE RANK-AND-FILE of the American business world have not yet grasped the essential fact that all trade is in the nature of barter. Anyone who offered to exchange a pair of good new boots for a worn-out pair of rubbers would be deemed a fool or a philanthropist, but the average American citizen has not yet realized that to export on credit and to place every obstacle in the way of imports in return is an equally futile proceeding in the case of a creditor nation which has no inclination to make investments abroad.—*Times (London) Trade Supplement.*



Photo by Keystone

American Members of the Rotary Club Arriving at Edinburgh, Scotland, for the Annual Convention

# Railroads Complete Testimony on Piece Work

## Labor Board Closes Hearings on Rules—Other Developments in the Labor Problem

HEARINGS before the Railroad Labor Board on the question of piece work in railroad shops, the opening sessions of which were described in the *Railway Age* of August 13 (page 297), were closed on April 12, and the controversy is now in the hands of the Board for decision. The hearings on August 10 and 11 were devoted to the presentation of testimony by general chairman representing the shop employees on the various western and southeastern carriers involved in the dispute and to the presentation of an exhibit by Leland Olds on behalf of the Railway Employees' Department of the American Federation of Labor. This exhibit, entitled "The Problem of Piece Work," dealt at length upon the "fluctuation" in earnings of shop employees under the piece work system of pay. The attempt was made to attribute this "fluctuation" to conditions other than the workers' willingness or ability to produce by reference to disparities in the amounts earned by the same workers during various periods. The exhibit was divided into three parts, the first part of which is devoted to refutation of the evidence presented during the hearings on national agreements by the Conference Committee of Managers; the second part to a description "of what piece work is in railroad shops," and the third part to the "comparative economy possible under the two systems." The exhibit opposed the reestablishment of piece work because of the fact that the employees may not be able to determine what their earnings are going to be at the end of the month, or what they are going to be at the end of the succeeding month. In commenting upon this point Mr. Olds said: "If piece work as a method of payment were strictly interpreted in terms of railroad jobs, the railway employee would lack any sense of security, and psychology today tells us that that is one of the most fundamental things, not only having enough to eat from day to day, but the assurance that tomorrow they will have enough to eat." Mr. Olds, in summarizing the exhibit, pointed out that this "fluctuation" in earnings leads to an effort on the part of the worker to adjust his earnings, developing from this the charge that the piece work system of pay creates dishonesty among the employees. Other charges made against the piece work system in the exhibit are that its existence causes the employee to overwork; that under it it is impossible to establish and maintain adequate wages; that its existence necessitates the creation of "an infinite number" of rates which could not possibly be supervised by the Labor Board in a just and reasonable way; and that it destroys the morale of the employees.

Samuel Higgins, railroad representative on the Board, in questioning Mr. Olds, brought out the fact that although the latter had entire charge of the preparation of this exhibit he is not a graduate of a technical school nor had he had any experience in railroad shops. Mr. Olds stated that he had depended for his experience upon the experience of the railroad employees who had supplied the material and arguments contained in the volume.

### J. G. Walber Opens Railroad's Case

On April 12 John G. Walber, representing the eastern carriers, opened the testimony on behalf of the railroads by telling the Board in substance that if the final decision of the Board in this controversy results in preventing the carriers from doing work in their own shops except at excessive costs they will be forced to give their repair work to outside plants.

Mr. Walber in his opening statement said in part:

The continuation of national agreements by Addendum No. 2 to Decision No. 119 carries with it the obligation to pay only on the hourly basis. This circumscribes the initiative of managements and discourages and impedes progress. The railroads believe that this restriction upon their methods of obtaining results is unwarranted and that, as shown by record of the correspondence of the Railroad Administration filed in the hearings on the national agreements, there is every justification for the belief that if it had not been for the discrimination against piece-workers in the wage orders, the opposition to working piece-work could not have been solidified even during federal control.

The managements alone are charged with the economical and efficient operation of the railroads. Therefore they must select methods for the performance of the work which will yield the best results from the standpoint of economy and proper performance. Should the final decision of the Board result in preventing the railroads from doing the work in any case in their own shops or repair points on account of the cost of such work being excessive as compared with the cost of getting the same work done outside, there will be no alternative for the managements except to arrange for the work to be done outside. The managements would regret such action as deeply as would anyone else, but it simply would be forced upon them. The managements could have no justification whatever for continuing or adopting methods of performance of work which result in excessive costs. No good interest of the employees can be furthered by insistence upon methods which on account of excessive costs would leave but one way open for the managements to pursue.

Of all the charges of abuses and improper conditions under the piece-work system of pay there is none which cannot be corrected, if justified. The frequent charge that it is possible for employees to do inferior work and even fail to do work cannot properly be considered an argument against the system, as such a charge cannot be confined to piece-work and is equally possible under any other system of pay. If employees will neglect their work when paid on the piece-work basis, they will do the same on the hourly system, as the controlling element is the character of the individual.

Whether or not the piece-work system of pay yields proper compensation for the work performed depends primarily upon the prices set for the jobs. With the prices properly set, we are unable to see what sound objection can be made to the system, if employees are willing to render adequate and proper services. The hourly system of pay allows no consideration for the industrious employee. All are on a common basis. It is the ambition of most energetic men to profit by their work; many have the ambition to engage in business for themselves. The piece-work system gives the employee this advantage and the ambitious, energetic employee receives compensation in proportion to his contribution to the output.

After urging the reestablishment of piece work and the revision of piece work rates to conform with changed conditions, Mr. Walber said:

In such revisions, prices should be fixed which shall not impose excessive application of the employees in order to perform the jobs within the time used in fixing the unit prices, but if controversies arise as to the results of the unit prices, and it is not possible to amicably adjust them between the managements and the representatives of the employees, they can be referred to the Labor Board in accordance with the provisions of the Transportation Act. That act has come into existence since the piece-work system of pay was discontinued, so that today the employees have a Board to which they can appeal in the event any complaints against improper results cannot be adjusted on the home roads.

### Carriers Reply to Employees' Witnesses

With reference to the testimony of the employees' witnesses for the eastern railroads, Mr. Walber said in part:

Several witnesses stated that it is not possible to make reliable unit allowances because of the variable conditions, such as the availability of material, tools, facilities, etc. The

railroads deny this statement. In the vast majority of instances reasonably accurate unit prices have been set for specific performances under prevailing conditions, which took into consideration the kinds of jobs, shop equipment, methods, nature and volume of work, availability of material, time lost in changing from one job to another, etc. A comparison of the average hourly piece-work earnings with the hourly rates shows that the average hourly earnings have exceeded the rates from 30 to 60 per cent. With such a pronounced earning capacity under the piece-work system it would appear to be a complete refutation of the charges that employees are compelled to lose time because of these varying conditions, and that they are not compensated therefor.

The objection of several witnesses to piece-work was that it requires over-exertion in order to obtain reasonable earnings. Other witnesses told the Board that under the day-work system the men are today producing a greater output than they did under the piece-work system. We wish to call attention to this contradictory testimony of the witnesses and believe the Board will be just as unable as we are to reconcile such representations.

Several witnesses spoke of the peace and harmony prevailing today in the railroad shops as due to the men working on the hourly system of pay. If the increased output today, upon which the men lay so much stress, is due to this basis of pay, it would appear that the Board is entitled to an explanation as to why there was not this measure of output from the time that the Railroad Administration applied the guaranteed minimum hourly rate to all piece workers, which had the practical effect of placing them on the hourly basis, and also during the period when piece-work was absolutely abolished. If the hourly rate was the panacea for all the ills encountered in the operation of the shops, the question naturally arises as to the reason for its taking so long to take effect.

### The Problem of Piece Work

In the volume entitled "The Problem of Piece Work," submitted in this case by the employees, it is charged that the railroads deliberately hired excessive numbers of men in order to increase the cost of operation and prejudice federal operation of the railroads. When it is considered that the organizations which stand sponsor for these reflections upon operation of the railroads under federal control were instrumental in compelling the payment of journeymen rates to these same employees, who they now admit were inefficient and criticize the federal railroad officials for hiring them, we feel that the charge is positively absurd.

The exhibit also ignores another change made by the Railroad Administration which necessitated increasing the forces—the uniform adoption of the eight-hour day. The compilers of this exhibit apparently would have the Board understand that with the reduction in the hours constituting a day there was no justification for the railroads increasing forces and that it was in fact dishonest to increase the forces to offset the reduced working hours per day, the provisions for arbitrary starting and quitting time, allowance of time for meals under pay, etc.

In this exhibit it is also claimed that the bringing in of these inexperienced men was the cause of the falling off in production. Through the reduction of forces according to the seniority provisions it follows that the junior men have been laid off and that the remaining forces today are in the main composed of experienced men. Is it not a thoroughly reasonable and justifiable assumption, if the deductions in the exhibit are correct, that the explanation for the improvement in the output today is traceable to the fact that the remaining men are the older and more experienced and that the elimination of the volume of work formerly performed by the inexperienced men leaves the output of the experienced men today on practically the same basis as it was when the forces included these inexperienced men?

Referring to conditions on various carriers involved in this dispute, Mr. Walber cited numerous instances showing the falling off in the production of the individual employees following the abolition of piece work.

### Mr. Walber Attacks Testimony of Frank McManamy

Mr. Walber also attacked the testimony of Frank McManamy, formerly assistant director of the Mechanical section of the Railroad Administration, given during the progress of hearings on national agreements, stating in criticism of Mr. McManamy's testimony:

In view of the order of the Director General in December, 1918, to leave the decision as to whether piece-work should be continued or discontinued to the vote of the men, having

been based upon the results of investigations and recommendations of the Mechanical Section of the Railroad Administration, and the further fact that the claims referred to were pending before the Division of Liquidation, now in charge of Mr. McManamy, could it reasonably be expected that he would give any testimony which would reflect upon his recommendation as to piece-work or that might affect to any extent whatever the handling of the claims in his division? With all due respect to Mr. McManamy, he is only human, and we believe that the Board will be able to apply the general rules of the courts for judging as to the disinterestedness of the witness.

In closing his presentation, Mr. Walber said:

We have refrained from mentioning certain developments during this hearing as to what the employees would or would not do under certain circumstances. The railroads for whom I am speaking feel that this tribunal, created by Congress, was intended to be the agency for disposing of all disputes between railroad managements and their employees upon the basis of justness and reasonableness, and that it was the intention of Congress that this tribunal would be uninfluenced by intimidation or any other conditions which would interfere with the orderly and conscientious disposition of controversies upon their merits. We believe when Congress created this tribunal it intended that it should have the dignity and respect commensurate with the magnitude of the problems which the law provides it shall decide. We further believe that the Board will decide these questions without bias or prejudice and strictly upon their merits.

J. W. Higgins, testifying in behalf of the western roads, offered as evidence in this case the testimony presented to the Board by the Conference Committee of Managers during the course of hearings on national agreements. Mr. Higgins also asked for opportunity to reply to the material contained in the employees' exhibit on piece work, and this request was granted. Dr. C. P. Neill, representing the southeastern roads, made a similar presentation.

The hearings were closed with a statement by B. M. Jewell on behalf of the employees in which he summed up the employees' objections to the reestablishment of piece work. He also defended the statements made by the various general chairmen, stating: "I take it that this Board does understand that the employees do not desire to threaten nor to intimidate this Board."

### Pennsylvania Explains Request for 15 Days of Grace

Subsequent to the request of Samuel Rea, president of the Pennsylvania, for an additional 15 days in which to arrange the conference ordered in the Labor Board's recent decision in the Pennsylvania controversy, the following notice was issued by General W. W. Atterbury, vice-president of the Pennsylvania, to its employees:

The purpose of this request was to enable the company to take such steps as may be necessary in the interest of all its employees. Announcement was made on May 20, 1921, that all employees would be given an opportunity to have a voice in the management in matters affecting their welfare through employee representatives of their own selection, whether union or non-union men. A majority of our employees want to deal with the management through employee representatives.

About 175,000 employees are interested in rules covering working conditions. About 117,000 of these employees have expressed a desire to negotiate rules through employee representatives.

The employee representatives who have been elected have acted in good faith with the management. The management has acted in good faith with them. The rights and interests of these representatives and the employees whom they represent must be recognized and protected. Inasmuch, therefore, as this decision (No. 218) of the Labor Board vitally affects the welfare of all our employees, and in accordance with the announcement made by the company on May 20, 1921, the management will confer with representatives of all classes of employees on the Pennsylvania System.

A meeting for this purpose is being arranged for all classes of employees.

### Board Blocks Effort to Continue National Agreements

The effort of labor leaders to bring about indefinite continuation of national agreements by demanding hearings

upon every point upon which the carriers and the employees could not agree in the negotiations being conducted under the Board's Decision No. 119 were blocked by a ruling of the Labor Board which stated that to grant the employees the right again to be heard on each point in dispute "would result in unjustifiable and unnecessary delay and be a great injustice to the parties interested." In special cases where further information is needed the Board announced it will open further hearings.

#### Erie Leases Marion Shops and Roundhouse

The Erie on August 15 announced that its local shops and roundhouse at Marion, Ohio, had been leased to the Railway Service Company of Marion, an organization of local manufacturers and capitalists, and that their operation by the new company would begin immediately. The announcement of the new plan which follows was made by W. A. Baldwin, manager of the Ohio region of the Erie:

The Erie Railroad has long been of the opinion that the most favorable result to both the railroad and the community it serves can best be obtained by the fullest co-operation and amalgamation of interests so far as possible. It recognizes that its duty to the public and the communities along its line is that of furnishing transportation and that all the energies of its employees and officers should be directed so far as possible solely to this end.

It has therefore in the past, under favorable conditions, contracted much of the work of maintenance of roadbeds, buildings, structures, etc., as well as the maintenance of its cars, engines and other equipment, to local companies, whose stockholders, officers and employees are citizens of the community, and where favorable results bring profits and assist in the prosperity of the neighborhood.

Local conditions can best be appreciated and most intelligently met by the knowledge and interest of local supervision and support. The Erie Railroad has here shown its appreciation for the interest in its welfare indicated by citizens of Marion, and now that there is opportunity, desires that its activity shall be even more in common with the interests of the citizens.

The Erie has accepted an opportunity to lease its shops and roundhouses to the Railway Service Company, of which the stockholders are all substantial and respected citizens of Marion and whose interests are those of the community. These men, headed by John D. Owens as president, have ample experience in the character of work to be performed, and have made a success of previous undertakings. The railroad feels fortunate in having its work of repairs conducted by such a local company, and the employees of the Railway Service Company are assured of fair treatment in accordance with the practice of the extensive manufacturing concerns of Marion.

A member of the Labor Board, in commenting on the Erie's action, indicated that if this procedure is followed to such an extent as to appear to be an evasion of the Transportation Act, the Board would probably take some action.

The Erie's announcement, together with the announcement that the Indiana Harbor Belt had leased its shops at Gibson, Ind., to the United Boiler Heating and Foundry Company and unconfirmed rumors that similar action would be taken at the Silvis, Ill., shops of the Chicago, Rock Island & Pacific and other points on various railroads created considerable excitement among labor leaders, some of whom stated that this action "looked like a subterfuge to evade the rulings of the Labor Board as to wages and working conditions." It is reported as a result that railroad labor leaders are planning an appeal to the Labor Board.

#### President Underwood Explains Erie's Attitude

The Erie is not planning to put all its shops under private management, it was announced on August 17 by President Frederick D. Underwood in a formal statement explaining the action of the company in leasing its shops at Marion, Ohio, to a private concern, the Railway Service Company, organized by local business men to do all repair and other work heretofore done by employees of the railroad. Mr. Underwood explained that the offer at Marion was made

voluntarily and gladly accepted by the railroad, which was not acting in concert with any one as to the carrying out of its local affairs.

Mr. Underwood deplored the "inclination to make a tempest out of a squall," in commenting on the situation growing out of the refusal of some of the men to accept employment under the existing rules, particularly those which required work on Sundays and holidays without penalized overtime.

The entire situation, as described by Mr. Underwood, was given out in the following statement:

It is not now contemplated that the shops as a whole on the Erie Railroad will go under private management. It is a misnomer to call the plant at Marion a shop in the sense that word is commonly used. The actual shop is at Galion, twenty miles east of Marion. Marion is purely a transfer point, with a roundhouse force, which in normal times is over 600 men, and with the reduced business about 400.

At Marion an association of business men voluntarily offered to undertake the work at that point, and their assistance was gladly accepted by the Erie Railroad. The Erie is not acting in concert with any one as to the carrying out of its local affairs.

Under the stress of war and during the period of Federal Administration men were taken on without physical examination and without examination as to their capacity. With the return to normal conditions the Erie reinstated rules requiring certain classes of its employees, including shop crafts, to take a physical examination, and, when necessary, to work Sundays and holidays without penalized overtime.

Some shopmen objected to the conditions and declined to take physical examinations or report for Sunday work without penalized overtime. They were given time to reconsider. When the time given elapsed, their places were filled. Men at Marion failed to respond when called on for Sunday duty for three Sundays last past. Manifestly, so long as the interests of the public require the moving of Sunday passenger trains and continuous service for perishable freight it will be imperative for a small force of men to work Sundays and holidays. Sunday work is generally shifted around the whole force.

#### Shop Employees Apparently Expect to Be Given Preferential Treatment

As a comparison, engine and trainmen are called on to run Sunday and holiday trains for the convenience of the public. They respond and make their trips for the same compensation as is paid during ordinary days. Why railway shop men should put themselves in a separate class is not for me to determine. The Sunday and holiday dollar earned by Erie Railroad is no larger than the week-day dollar. Erie Railroad cannot recognize the right of one class of employee to a penalized overtime against others who are not paid it. Every man who enters railway employ fully understands and tacitly agrees that there will be more or less Sunday and holiday work.

The loyal efficient mass of Erie employees have been in its service many years. Those who are inviting the controversy relative to physical examination and penalized overtime are mostly those who have come into the Erie service since Jan. 1, 1918. Every right-minded person will support a plan that will require railway employees to be physically and mentally good. The safety of persons and property is in their hands. This requires a force physically and mentally alert. Railroad men may be compared to men in the paid fire department of a large city, who are required to turn out when an alarm comes in.

#### Another "Outlaw" Organization Formed in Chicago

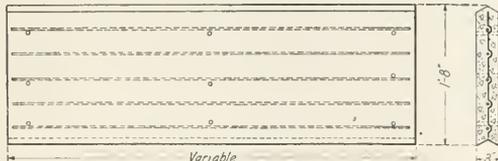
Another "outlaw" organization has been formed in Chicago by W. B. Scales of Gary, Ind., a former member of the Brotherhood of Railroad Trainmen. The new organization, called the "Yard, Engine and Trainmen's Association," is opposed to the attitude and actions of the "Big Four" Brotherhoods on wage reductions and other recent developments in the railroad labor situation. Press reports of the meetings of the new organization indicate that it is developing similarly to the "outlaw" switchmen's union which conducted the "outlaw" strikes of April, 1920. In this connection John Grunau, leader of the last "outlaw" strike and now head of the United Association of Railway Employees

of North America which succeeded the Chicago Yardmen's Association, recently predicted a series of "outlaw" strikes if the recent wage cut is accepted by the older brotherhoods, saying that "a strike is absolutely certain if the Labor Board removes the ban on piece-work and takes away punitive overtime for work after eight hours." Mr. Scales later denied that his organization was contemplating calling a strike, adding that its purpose was to destroy the older brotherhoods which he said constituted a "labor trust for the benefit of national officers."

## A Coaling Station of Pre-Cast Concrete Construction

**I**N RECENT YEARS pre-cast concrete construction has experienced a marked increase not only in the amount of work of this kind undertaken, but also in the scope of its application. That such should be the case is not surprising in the light of the possibilities it has presented along the lines of centralization in production, standardization in equipment, economy in construction and salvagability in materials, etc. These things were much to be desired in many classes of work and once introduced, it was not long before this form of construction became an established one. The railroads in particular have made considerable use of it, the conditions under which much of their work is done falling in a class for which pre-cast methods are peculiarly adapted; so well adapted in fact that the railroads themselves may be said to have been largely responsible for its development. However, they have confined their activities in this direction largely to piling and bridge slab construction of which large quantities are used annually. It is entirely possible, however, that pre-cast methods may be applied advantageously to other railroad work and it is of interest, therefore, to observe the progress which has been made by one railroad in applying such methods to coaling station construction.

In the past few years the Chicago, Burlington & Quincy has built five coaling stations in which pre-cast concrete in the form of slabs or planks constitutes the coal pockets, the remainder of the structure consisting of timber framing.



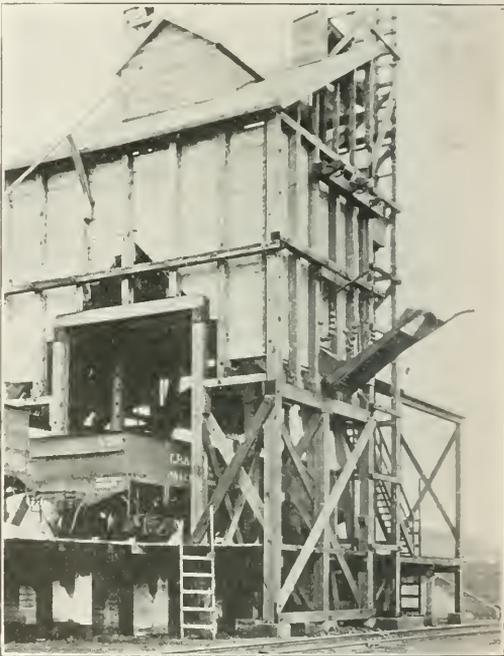
Detail of a Slab Unit. The Size and Spacing of the Bars Are Variable

Ellsworth, Oxford and Broken Bow, Neb., and Crow Agency, Mont., are stations at which these plants are located, the coaling plant at Broken Bow still being in the process of construction.

The conditions which led to the development of this form of construction were several, chief among which was the need of providing protection in these plants from the effect of spontaneous combustion in the coal, a hazard of considerable prominence where quantities of lignite coal are used. It so happened that the previous coaling stations at these points had burned down wholly or partially, the cause as it appears being spontaneous combustion. Economy in construction was also an important item. The coaling plants for which the pre-cast concrete was designed were also of the knock-down type, permitting ready dismantling or if need be of remodel-

ing the plant to meet new conditions. Thus the element of flexibility also called for some attention.

To meet the several conditions imposed, therefore, it was decided to build timber structures in which the coal pockets were made of pre-cast concrete slabs. The slabs used were made in various sizes, depending upon the position each was to occupy in the structure. All slabs, however, are reinforced with five-in. square rods running lengthwise and separated at equal distances by special reinforcing bars which also serve to strengthen the slabs in the crosswise direction. As shown in the sketch the edges are cast V-shaped, thus securing a comparatively tight joint which prevents rain from beating in or coal dust from sifting out. The slabs are

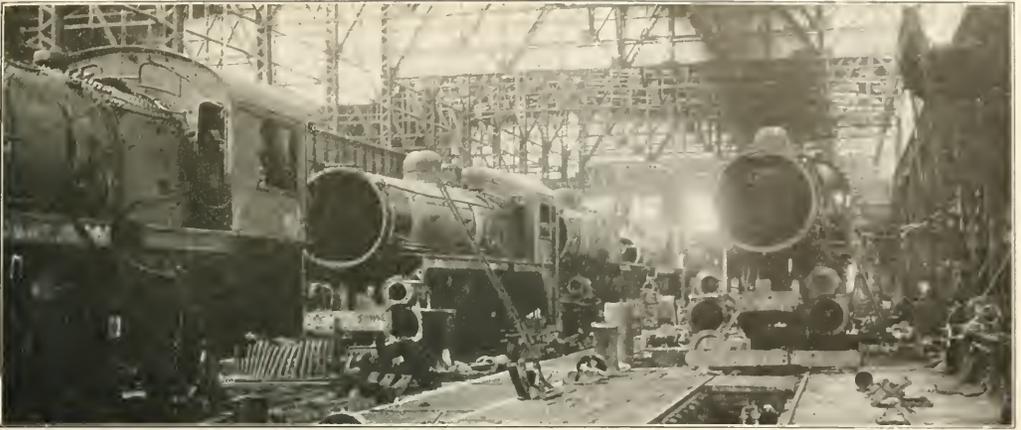


Precast Concrete Coaling Station at Crow Agency, Mont.

fastened to the studding and floor sills of the structure by means of lag screws which extend through holes provided in the slabs at the time of pouring. They are of a size that can be handled without difficulty and give every evidence of meeting the several conditions encountered at these points satisfactorily.

We are indebted for the above information to W. T. Krausch, engineer of buildings, Chicago, Burlington & Quincy, under whose direction the several coaling plants of this type have been designed and erected and the pre-cast slab construction developed and patented.

ACCORDING TO CUSTOM, a pay clerk of the Great Indian Peninsula Railway, accompanied by a peon, left Bombay on July 20 with the pay chest to pay the staff employed on the various stations of the line. Both men were found dead in a compartment of the train on the following morning with the pay chest missing. The amount of money remaining in the chest after the various payments which had been made en route is not yet known.—*Railway Gazette* (London).



Erecting Shop of Canadian Pacific, Angus, Montreal

## No Meeting of Mechanical Division This Year

Reports of Eight Committees Submitted to Letter Ballot of the  
Members by General Committee

**T**HE INDEFINITE postponement of the business meeting of Mechanical Division, American Railway Association, to have been held at the Blackstone Hotel, Chicago, June 29 and 30, has been made permanent for this year. This action was taken after the adoption of the following resolution by the Association of Railway Executives at a meeting held at New York on July 1, 1921:

"Whereas, in view of the imperative need for the exercise of all possible economy, it is

"Resolved that annual or special meetings or conventions

of all organizations under the supervision of this body be indefinitely postponed or curtailed in every possible way."

Following the decision of the General Committee of the Mechanical Division not to hold a meeting of the division this year it was decided to submit to a letter ballot of the members the recommendations of the various committees, the reports of which were to have been presented at the meeting of the division. The letter ballot will close at noon, central time, on Tuesday, September 20.

Abstracts of the reports follow.

### Specifications and Tests for Materials

Sub-committees have been appointed and are now actively engaged in work on the subjects assigned.

(a) Co-operation with the Rubber Association of America on the preparation of Specifications for Mechanical Rubber Goods.

(b) Co-operation with the Equipment Painting Section in the preparation of specifications for paint and painting materials.

(c) Specifications for welding wire.

(d) Specifications for water gage and lubricator glasses.

(e) Revision of present specifications for galvanized sheets.

In addition to the above the chairman has had some correspondence with the chairman of the Train Brake and Signal Committee on the subject of tolerances for air brake and signal hose gaskets and gages for gaskets and couplings, with a view to improving present practice in these particulars. Further work should be done on these subjects during the coming year.

#### Subjects Referred to the Committee

##### By the General Committee

(a) "The proper fibre stress to be employed in the design of helical springs of different diameters of steel wire from

$\frac{1}{2}$  in. to  $1\frac{1}{2}$  in. in diameter. The original spring table calls for 80,000 lb. per square inch throughout for all sizes, but it is well known that this is not the manufacturers' practice, and, in fact, in many cases it is impossible to obtain a proper spring with the smaller sizes of wire."

A sub-committee was appointed to report on this question, and after investigating the available data on spring design and manufacture, has reported that in its opinion tests should be made to develop information on various grades of steel and different heat treatments. It has not been practicable for your committee to arrange for such tests, nor does it seem at all feasible to make any such arrangements under the present conditions or in the near future. The number of variables affecting spring design, in addition to that of variation in diameter of wire such as quality of steel, workmanship and heat treatment, makes the whole subject a very indefinite one and one that would require long and expensive investigation, probably without satisfactory results.

The committee will keep this matter before it and will take such action as may be possible.

(b) "Heat Treated Axles and Crank Pins. Has the process of heat treatment decreased the number of failures to any appreciable extent?"

The committee feels that it does not have sufficient in-

formation to reply to this question, and is endeavoring to obtain the views of other members of the Association by means of a questionnaire.

(c) "Revision of Specifications for Lumber, if such revision is needed. Representatives of the Purchases and Stores Division to be requested to co-operate with the Committee on Specifications and Tests."

No action has been taken on this subject. The committee desires the benefit of advice from all interested members on: (1) What use, if any, is being made of the present Lumber Specifications? and (2) Suggestions for revising the specifications so that they might be of greater use.

#### Co-operation with the Car Construction Committee

In its report to the Association in June, 1920, the Car Construction Committee made certain recommendations regarding the desired quality of steel for forgings and castings for railroad use, and gave an outline of what, in its opinion, constituted certain fundamental requisites for specifications. Chief among these was the requirements of the elastic limit as a base determination and specifying the elongation in 2 in. and the reduction of area to be controlled by the elastic limit and given constants. Other requirements covered chemical composition and annealing and the recommended constants for tensile properties of two grades of steel with 26,000 and 32,000 lb. per sq. in. elastic limits, respectively.

The committee has spent most of its time at recent meetings in the endeavor to satisfactorily carry out these recommendations of the Car Construction Committee, which have been approved by the Association, and regrets that it has not been entirely successful, partly because of the large amount of work involved in revising the specifications, and partly because of differences of opinion that have arisen between members of our committee and representatives of the Car Construction Committee as to the practicability of certain of the latter's recommendations.

The question of standardizing methods of tests so that results obtained in different laboratories will be comparable is one that is engaging the attention of your committee at this time, and will require its best efforts for some time to come, and also the assistance of all members with laboratories who may be willing to help with the work.

#### Supplementary Report—Specifications for

##### Chrome Molybdenum Steel Springs

The unsatisfactory condition of Class D bolster springs for trucks of 100,000 lb. capacity cars has been brought to the attention of the Committee on Car Construction, which has prepared designs for alternate springs *L*, *M*, *N* and *O*, to be substituted for present standard springs, classes *B*, *C*, *D* and *H*. The Committee on Car Construction has requested that this committee prepare specifications covering their alternate special springs.

The committee has prepared tentative specifications for chrome molybdenum steel springs, as requested. The committee has not been able to develop any satisfactory information regarding what service may be expected from springs made of chrome molybdenum steel but agrees with the Committee on Car Construction that such springs should be made and tested out in service in order to develop whether they are an improvement over the present carbon steel springs, which have been found to give very unsatisfactory service.

#### Recommendations

##### TENTATIVE SPECIFICATIONS

As a result of conferences with representatives of the Car Construction Committee, your committee offers the following specifications and recommendations:

*Exhibit A.*—A revision of the Standard Specifications for Carbon Steel Axles for Cars, Locomotive Tenders and Engine Trucks.

*Exhibit B.*—A revision of the present Specifications for Steel Castings for Cars and Locomotives, combining these two into one specification.

It is recommended that the present Specifications for Axles and Steel Castings be retained without change and that both of the above proposed specifications be printed in the proceedings as tentative specifications until further action is justified by the experience of the members in working to them. Your committee feels that this action is warranted by the newness of the proposed method of expressing physical properties, as shown in the Steel Casting Specifications, and the many changes that have been made in the Axle Specifications, as well as by the necessity of having both the consumers and manufacturers become thoroughly familiar with these specifications before they are made obligatory.

*Supplementary Report, Exhibit D.*—The committee recommends that this specification for Chrome Molybdenum Alloy Steel Helical Springs be adopted as tentative for one year or until further action is recommended by the committee.

#### CHANGES IN STANDARD SPECIFICATIONS

*Exhibit C.*—Standard Specifications for Heat Treated Knuckle Pivot Pins to be revised as shown. This increase in the range of both carbon and manganese is recommended to cover the usual grade of steel used for this purpose, as it has been found by experience that the present limits are unnecessarily close.

#### RECOMMENDED PRACTICE SPECIFICATIONS

The committee does not recommend advancing any of the present Recommended Practice specifications to Standard, for the reason that some changes may have to be made in a number of these if the proposed changes in the method of expressing tensile test requirements develop satisfactorily.

#### LIMITING THE REVISION OF SPECIFICATIONS

The frequent revision of specifications has been severely criticized by both purchasers and manufacturers, and is clearly an undesirable state of affairs. Therefore, it is recommended that the Association should give serious consideration to establishing a definite time limit for revisions of specifications and other standards which will appear in the Manual, this limit to be preferably three years, during which no changes should be allowed except for reasons important to the interest of the Association and then only if the proposed changes receive at least two-thirds vote at the annual meeting of the Division.

The report is signed by F. M. Waring (chairman), Pennsylvania System; J. R. Onderdonk, Baltimore & Ohio; Frank Zeleny, Chicago, Burlington & Quincy; A. H. Fettes, Union Pacific; H. G. Burnham, Northern Pacific; H. E. Smith, New York Central; J. C. Ramage, Southern Railway; J. H. Gibboney, Norfolk & Western; H. P. Hass, New York, New Haven & Hartford, and G. M. Davidson, Chicago & North Western.

#### Exhibit A—Proposed Tentative Specifications for Carbon Steel Axles for Cars, Locomotive Tenders and Engine Trucks

1. *Scope.*—Same as Standard Specifications except that paragraph (b), requiring annealing of all axles over 6 in. in diameter at the center, has been omitted.

##### I—MANUFACTURE

2. *Process.*—(a) Steel shall be made by the open hearth or electric process.

(b) All axles over 6 in. in diameter at the center and axles with 0.52 per cent or more carbon shall be annealed by allowing the finished forgings to become cold after forging, then uniformly reheating to the proper temperature to refine the grain and allowing to cool uniformly.

##### II—CHEMICAL PROPERTIES AND TESTS

3. *Chemical Composition.*—The steel shall conform to the following requirements as to chemical composition:

	Per cent
Carbon, maximum	0.58
Phosphorus, not over	0.05
Sulphur, not over	0.05

4. *Ladle Analyses*—Same as Standard Specifications.
5. *Check Analyses*—Same as Standard Specifications.

III—PHYSICAL PROPERTIES AND TESTS

6. *Drop Tests*—(a) Same as Standard Specifications.

(b) The permanent set produced by the first blow shall not exceed that given by the following formula, in which L=length of axle in inches and d=diameter of axle at center in inches.

$$\frac{L}{1.9d} - \frac{d}{2} + \frac{1}{2} \text{ in.}$$

(c) The requirements for five standard sizes of axles based on the above formula are given in the following table:

Classification of axle	Size of journal, in.	Diameter of axle at centre, in.	Length of axle, in.	Height of drop, in.	Number of blows	Maximum permanent set, in.
A	3½ by 7	4¼	83¼	18	5	8¾
B	4½ by 8	4¾	84¾	22½	5	7¾
C	5 by 9	5¾	86¾	29	5	6¾
D	5½ by 10	5¾	88¼	34½	5	5¾
E	6 by 11	6¾	90¼	41½	5	4¾

- (d) Same as Standard Specifications.
- (c) Same as Standard Specifications.
7. *Drop-test Machine*—Same as Standard Specifications.
8. *Number of Tests*—Same as Standard Specifications.

IV—WORKMANSHIP AND FINISH

9. *Workmanship*—(a) and (b) Same as Standard Specifications.
10. *Finish*—Same as Standard Specifications.

V—PERMISSIBLE VARIATIONS AND WEIGHTS

11. *Permissible Variation*—Same as Standard Specifications.

VI—MARKING AND STORING

12. *Marking*—Same as Standard Specifications.
13. *Storing*—Same as Standard Specifications.

VII—INSPECTION AND REJECTION

14. *Inspection*—(a), (b) and (c) Same as Standard Specifications.
15. *Rejection*—Same as Standard Specifications.
16. *Rehearing*—Samples tested in accordance with Section 5, which represent rejected material, shall be preserved fourteen days from date of test report. *In case of dissatisfaction with results of test, the manufacturer may make claim for a rehearing within that time.*

Exhibit B—Proposed Tentative Specifications

For Carbon Steel Castings

1. *Scope*—(a) These specifications cover annealed and unannealed carbon steel castings for locomotive and car equipment, and for miscellaneous use.

(b) The purposes for which the two grades are generally used are:

*Grade A*, for castings designed for a low stress.

*Grade B*, for castings designed for unit stresses of 12,500 to 16,000 lb. per square inch such as truck side frames, bolsters, couplers and coupler parts, locomotive frames, locomotive driving and trailer wheel centers.

I—MANUFACTURE

2. *Process*—The steel may be made by the open-hearth or any other process approved by the purchaser.

3. *Annealing*—(a) *Grade A* steel shall be annealed if the carbon content exceeds 0.30 per cent, or if the manganese content exceeds 0.75 per cent. *Grade B* steel shall be annealed if the carbon content exceeds 0.22 per cent, or if the manganese content exceeds 0.65 per cent.

(b) Castings of both Grades "A" and "B" of irregular section, and of less carbon or manganese content than specified in paragraph (a), where shrinkage or other internal stresses may be expected, should be annealed.

(c) Castings that require annealing shall be allowed to become cold. They shall then be uniformly heated to the proper temperature to refine the grain and allowed to cool uniformly.

(d) *Annealing Lugs*.—For the purpose of determining the quality of annealing, at least two and not more than four annealing lugs shall be cast on all castings 150 lb. and over, and on such castings less than 150 lb. as required by the purchaser. The locating of the annealing lugs shall be agreed upon by the inspector and the manufacturer. The standard annealing lug shall be 1 in. in height and 1 in. in width and 5/8 in. in thickness where it joins the casting. The inspector may remove one-half and the manufacturer one-half of the number of annealing lugs.

(e) If, in the opinion of the purchaser or his representative, a casting is not properly annealed, he may at his option reject the casting to be reannealed.

II—CHEMICAL PROPERTIES AND TESTS

4. *Chemical Composition*—The steel shall conform to the following requirements as to chemical composition:

Phosphorus, not over	0.05 per cent
Sulphur, not over	0.05 per cent

5. *Ladle Analyses*—An analysis of each melt of steel shall be made by the manufacturer to determine the percentage of carbon, manganese, silicon, phosphorus and sulphur. This analysis shall be made from drillings taken at least 1/4 in. beneath the surface of a test ingot obtained during the pouring of the melt. The chemical composition thus determined shall be reported to the purchaser or his representative, when requested, and shall conform to the requirements specified in Section 4.

6. *Check Analyses*—A check analysis may be made by the purchaser from the broken tension test specimen or from a casting representing each melt. The phosphorus and sulphur thus determined shall conform to the requirements specified in Section 4. *Determination of carbon and manganese should be made as information to ascertain whether the annealing was in accordance with Section 3 (a).* Drillings for the analysis shall be taken not less than 1/4 in. beneath the surface, and if from a casting shall be taken in such a manner as not to impair its usefulness.

III—PHYSICAL PROPERTIES AND TESTS

7. *Tension Tests*—(a) The steel shall conform to the following minimum requirements as to tensile properties:

	Grade A	Grade B
Elastic limit, lb. per sq. in.	26,000	32,000
Yield point, lb. per sq. in.	29,250	36,000
Product of elastic limit and per cent elongation in 2 in.	790,000 (not less than 22%)	850,000 (not less than 18%)
Product of yield point and per cent elongation in 2 in.	788,000 (not less than 22%)	956,000 (not less than 18%)
Product of elastic limit and per cent reduction of area	975,000 (not less than 33%)	1,200,000 (not less than 27%)
Product of yield point and per cent reduction of area	1,100,000 (not less than 33%)	1,350,000 (not less than 27%)

(b) The ultimate tensile strength shall be reported as information.

(c) Either the elastic limit or the yield point, but not both, shall be determined. The elastic limit called for by these specifications shall be determined by an extensometer reading to at least 0.0002 in. The extensometer shall be attached to the specimen at the gage marks and not to the shoulders of the specimen nor to any part of the testing machine. When the specimen is in place and the extensometer attached, the testing machine shall be operated so as to increase the load on the specimen at a uniform rate. The observer shall watch the elongation of the specimen as shown by the extensometer and shall note for this determination the load at which the rate of elongation shows a sudden increase. The extensometer shall then be removed from the specimen, and the test continued to determine the tensile strength.

(d) The yield point, or the elastic limit, shall be determined at a crosshead speed not to exceed 1/8 in. per minute and tensile strength at a speed not to exceed 1 1/2 in. per minute. The yield point shall be determined by the drop of the beam of the testing machine.

8. *Alternative Tests to Destruction*—In the case of orders including only castings not exceeding 150 lb. in weight, a test to destruction on one casting for each 100 castings or smaller lot may, at the option of the purchaser, be substituted for the tension tests. This test shall show the material to be ductile, free from injurious defects, and suitable for the purpose intended. *Castings of minor importance may be accepted on surface inspection.*

9. *Test Specimens*—(a) Same as both Standard Specifications.

(b) An adequate number of test coupons shall be cast with and attached to castings weighing over 150 lb. from each melt when presented for inspection; coupons shall be cast attached to each end of each locomotive frame, to each locomotive cylinder and to each wheel center. If the design of the casting is such that the test coupons cannot be attached, the test bars shall be cast in runners outside of the casting, but attached to it to represent each melt. The location of the test coupons or bars, as well as the method of casting such coupons or bars, shall be subject to mutual agreement by the inspector and manufacturer. In the case of any orders for castings weighing under 150 lb., the physical properties as required in Section 7 may be determined from an extra or spare test bar cast with and attached to some other casting from the same melt.

(c) When sufficient coupons have not been cast, a test specimen

may be cut from a finished casting at a location mutually agreed upon by the inspector and manufacturer.

10. *Grouping Melts*—(a) After 15 consecutive melts, which may contain any of all kinds of castings (except frames, wheels centers and cylinders) covered by these specifications on one or more orders, have been tested and accepted, the manufacturer may group the succeeding melts in lots of five melts each, but each lot not to exceed 40 tons; the entire group to be accepted if the test specimen selected from the lot fulfills the chemical and physical requirements herein specified. If this test fails, a rehearing will be granted on the melt that the failed bar represents, and the other four melts of the group shall be tested individually.

(b), (c) and (d) Same as in Standard Specification for Car Castings.

11. *Number of Tests*—(a) One tension test shall be made from each locomotive frame. One tension test may be made from each wheel center and each locomotive cylinder casting, but at least one of each kind of such castings in each melt shall be tested. For miscellaneous castings from melts which do not include frames, wheel centers or cylinders, one tension test shall be made from each melt except as provided in Section 10 (a).

(b) If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

(c) If the percentage of elongation of any tension test specimen is less than that specified in Section 7 (a) and any part of the fracture is more than 3/4 in. from the center of the gage length as indicated by scribe scratches marked on the specimen before testing, a retest shall be allowed.

(d) If the results of physical tests do not conform to the requirements specified, the manufacturer may reanneal the castings but not more than twice. A retest shall be made as specified in Section 7.

(e) No part of these specifications shall operate to cause any one tension to apply to more than 40 tons of castings that are offered for inspection.

IV—WORKMANSHIP AND FINISH

12. *Workmanship*—Same as both Standard Specifications.

13. *Finish*—(a) and (b) Same as both Standard Specifications.

V—MARKING

14. *Marking*—The manufacturer's name or identification mark and the specified pattern number shall be cast on all castings. In addition, the month and the year when made shall be cast on all bolsters, truck sides and similar castings. The location and size of numbers shall be agreed upon by the manufacturer and the inspector. In accordance with the standard practice of the individual foundry, to identify individual castings, a serial number may be cast or the melt number may be stamped on bolsters, truck side and similar castings as agreed upon by the manufacturer and the inspector. The melt number shall be legibly stamped on all other castings weighing over 150 lb.

VI—INSPECTION AND REJECTION

15. *Inspection*—Same as both Standard Specifications.

16. *Rejection*—(a), and (b) Same as both Standard Specifications.

17. *Rehearing*—Samples tested in accordance with Section 6, which represent rejected castings, shall be preserved for two weeks from the date of test report. In case of dissatisfaction with the results of tests, the manufacturer may make claim for rehearing within that time.

Exhibit C

It is recommended that the following changes be made in Section 3 of Standard Specifications of Heat Treated Knuckle Pivot Pins.

3. *Chemical Composition*—The steel shall conform to the following requirements as to chemical composition:

	Proposed change	
	Present Per cent	Per cent
Carbon .....	0.55-0.70	0.55-0.75
Manganese, not over.....	0.60	0.70
Phosphorus, not over.....	0.05	0.05
Sulphur, not over.....	0.05	0.05

Exhibit D—Proposed Tentative Specifications for Chrome Molybdenum Alloy Steel Helical Springs

(Classes L, M, N and O, to be substituted for present standard classes B, C, D and H.)

I—MANUFACTURE

1. *Process*—The steel may be made by the open-hearth, crucible or electric furnace process.

II—CHEMICAL PROPERTIES AND TESTS

2. *Chemical Composition*—The steel shall conform to the following requirements as to chemical composition:

Carbon, per cent.....	.40— .50
Manganese, per cent.....	.40— .60
Chromium, per cent.....	.80—1.10
Molybdenum, per cent.....	.30— .50
Phosphorus, maximum, per cent.....	.04
Sulphur, maximum, per cent.....	.045
Silicon, maximum, per cent.....	.25

3. *Check Analyses*—An analysis may be made by the purchaser from a sample representing each 20,000 lb., or fraction thereof, of each size of spring steel involved. The chemical composition thus determined shall conform to the requirements specified in Section 2.

4. *Sample for Analysis*—(a) If the section is large, a specimen weighing about 1/2 lb. shall be cut from any part of the spring, or if the spring is small, the entire spring may be taken. If the sample is cut off hot, it shall be cooled in such a way as not to harden it. The inspector shall stamp the sample with his private mark as soon as it is cut off.

(b) The drillings for check analysis shall be made from the sample so selected; the drill to be approximately one-half the diameter of the wire. The drillings shall be mixed from the total drillings obtained by passing entirely through the section of the wire.

III—PHYSICAL PROPERTIES AND TESTS

5. *Physical Tests*—(a) The properties specified in paragraphs (b), (c), (d) and (e), shall be determined in the order specified. The spring shall not be rapped or otherwise disturbed during the test.

(b) *Solid Height*—The solid height is the perpendicular distance between the plates of the testing machine when the spring is compressed solid with a test load of at least one and one-quarter times that necessary to bring all coils in contact. The solid height shall not exceed that specified by more than 1/16 in.

(c) *Free Height*—The free height is the height of the spring when the load specified in paragraph (b) has been released, and is determined by placing a straight-edge across the top of the spring and measuring the perpendicular distance from the plate on which the spring stands to the straight-edge at the approximate center of the spring. The free height shall not exceed that specified by more than 1/8 in.

(d) *Loaded Height*—The loaded height is the difference between the plates of the testing machine when the specified working load is applied. The loaded height shall not vary more than 1/32 in. under that specified.

(e) *Permanent Set*—(1) The permanent set is the difference, if any, between the free height and the height after the spring has been compressed solid three times in rapid succession, with the test load specified in paragraph (b), measured at the same point and in the same manner. The permanent set shall not exceed 1/32 in.

(2) If there is any permanent set not exceeding 1/32 in. the difference between the free height and the height after the test load of 1 1/2 times the specified working load has been applied and fully released two additional times, shall not be greater than the permanent set first measured.

6. *Number of Tests*—(a) A lot for physical test shall consist of not more than 500 individual coils, regardless of the grouping.

(b) From each lot of springs which has met the requirements of Sections 8 and 9, the purchaser or his representative may select for physical test at least 10 per cent, to be tested in accordance with the requirements of Section 5.

7. *Retests*—If any of the springs representing a lot fail to meet the requirements as to physical properties specified in Section 5, but at least one-half of the springs representing a lot do meet these requirements, each spring of the lot shall be tested, and those which meet the requirements shall be accepted. If more than one-half of the springs representing a lot fail to meet the requirements specified in Section 5, the lot will be rejected.

Footnote—A suggested heat treatment is as follows:

(a) The coiling should be done at temperatures between 1,700 degrees F. and 1,800 degrees F., and the steel shall be cooled slowly in air, not quenched from the coiling heat, until black.

(b) Springs should be reheated after coiling to a temperature of 1,525 degrees F. to 1,575 degrees F., and quenched in oil.

(c) Springs should be removed from the oil when at a temperature of about 300 degrees F., and either allowed to cool slowly in air or immersed immediately in the drawing bath. The springs should be drawn as soon as possible after quenching.

(d) The drawing should be done in a salt bath at a temperature of 940 degrees F. to 960 degrees F., and the springs should be allowed to remain in the bath and at that temperature for at least one hour.

IV—PERMISSIBLE VARIATIONS

8. *Bars*—The gage of the bars shall be within the limits as specified in A. R. A. Specifications for Carbon Steel Bars for Railway Springs.

9. *Springs*—The outside dimensions of the springs, excepting the height, shall not vary more than 1/16 in. from that specified.

#### V—WORKMANSHIP

10. *Workmanship*—(a) The springs shall be of a uniform pitch. The ends shall be tapered to present a flat bearing surface of at least two-thirds the circumference, at right angles to the axis of the springs within a tolerance of 1/8 in. to the foot.

(b) The spring bars shall be free from seams, excessive scale, roll marks or scratches which may constitute injurious defects.

#### VI—MARKING

11. *Marking*—(a) The name or brand of the manufacturer, the year and month of manufacture and, if specified, the purchaser's class number, shall be legibly stamped on each spring at a place not detrimental to the life of the spring.

(b) Any stamping by the inspector shall be so placed as not to be detrimental to the life or service of the spring.

#### VII—INSPECTION AND REJECTION

12. *Inspection*—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the springs

ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities and necessary assistance to satisfy him that the springs are being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

13. *Rejection*—(a) Material represented by samples which fail to conform to the requirements of these specifications will be rejected.

(b) Individual springs which, subsequent to the above tests at the mills or elsewhere and their acceptance, show defects or imperfection will be rejected and shall be replaced by the manufacturer.

14. *Rehearing*—Samples tested in accordance with Section 3, which represent rejected material, shall be held for two weeks from the date of test report. In case of dissatisfaction with the results of tests, the manufacturer may make claim for a rehearing within that time.

15. *Reworking*—Any springs which fail to meet the requirements of the physical tests or conform to the specified dimensions may be again submitted after being reworked.

## Joint Committee on Joint Inspection of Standard Materials

A joint committee, representing the Mechanical and Purchases and Stores Sections, took up the question of co-operative inspection of standard materials at a meeting in Chicago on February 24, at which two methods of handling such a scheme were brought out: First, a regional plan whereby the roads with inspection forces would handle all inspection for other roads in certain regions; second, a central bureau of inspection organized and operated by the American Railway Association but without testing laboratories.

With either plan the roads interested must necessarily agree on uniform material specifications which would naturally be those of the association covering such standard materials as air-brake and signal hose, air coupling gaskets, couplers and coupler parts, axles, springs, wheels, side frames, bolsters, brake beams and journal bearings.

The majority of the committee is of the opinion that the regional plan of inspection by certain roads for others would not work out satisfactorily, primarily because the sources of material are largely confined to a restricted area and the burden would fall upon a comparatively few roads operating in that area. These roads would have to increase their in-

spection and testing facilities, and, further, such an increase in their work might result in discrimination in favor of their own material under certain conditions of pressure for material.

The central bureau of inspection under the control of the association appears to possess the greatest practical value, provided always that the railroads now purchasing material without inspection can be brought into the organization and made to stand their pro rata share of the expense. The manager of such a bureau should have authority to rule on all disputes between his inspectors and manufacturers, and there should be no appeal from his decision.

The roads now inspecting their own standard parts would have to agree to turn this part of their work over to the central bureau and stand their share of the expense, continuing their own inspection forces on other material. For certain large railroads this would indicate additional expense without benefit, but experience may prove otherwise.

It is recommended that the association sound out its members to ascertain their willingness to co-operate on either of the two plans outlined above.

F. M. Waring was chairman of the committee.

## Report of Arbitration Committee

During the year Cases 1167 to 1183, inclusive, have been decided and copies sent to the members. These decisions are made part of this report. A vote of concurrence is requested.

With the approval of the General Committee, this committee has continued the rendering of interpretations of such questions as have been asked by the members regarding the Rules of Interchange. The more important of these interpretations have been issued to the members in Supplement No. 1 to the 1920 Rules of Interchange.

All recommendations for changes in the Rules of Interchange submitted by members, railroad clubs, private car owners, etc., have been carefully considered by the committee and, where approved, changes have been recommended.

### RECOMMENDED CHANGES IN THE RULES OF INTERCHANGE

#### PREFACE

In order to more clearly indicate the spirit and intent

of the Rules of Interchange the committee recommends that the preface to the rules be modified in accordance with the proposed form shown below:

These rules are formulated as a guide to the fair and proper adjustment of all questions arising between car owners and handling company with the intent of:

1. Making car owners responsible for, and therefore, reimbursable with the repairs to their cars necessitated by ordinary wear and tear in fair service; by the Safety Requirements and by the Standards of the American Railway Association.

2. Placing responsibility with and providing a means of settlement for damage to any car, occurring through unfair usage or improper protection by the handling company.

3. Providing an equitable basis for charging and settling repairs and damages.

Inspection of freight cars for interchange and method of handling will be in accordance with the Code of Rules and the Specifications for Tank Cars and Loading Rules issued by this Association.

RULE 2

The committee recommends that the fourth paragraph of Section (b) of this rule be modified in accordance with the proposed form shown below in order more definitely to cover the intent of the requirement:

Cars using lighting outfits operated by engines using inflammable liquids with flash point 80° F. or lower, such as gasoline, motor fuel and alcohol, will not be accepted in interchange. This will not apply to lighting outfits operated by petroleum oils with flash point above 80° F., such as kerosene or illuminating oil.

RULE 3

The committee recommends that the second paragraph of Section (h) of this rule be eliminated.

The committee recommends that the effective date of Section (i) be extended to October 1, 1923.

The committee recommends that Section (1) be modified to correspond with the Loading Rules for maximum spacing dimension for side stake pockets on flat cars and that the effective date of this requirement be extended to January 1, 1923, as follows:

All flat cars that can be used for twin or triple shipments of lading, built after January 1, 1918, must have side stake pockets spaced minimum 2 ft. 0 in. and maximum 4 ft. After January 1, 1923, no flat car that can be used for twin or triple shipments will be accepted in interchange unless the side pockets are so spaced.

RULE 9

The committee recommends that the following paragraph be omitted from Rule 9 as this requirement is already provided for in the item of "Air Brakes Cleaned":

When triple valve and cylinder are cleaned, the initial of road and date of last previous cleaning must be shown.

The committee recommends that requirement for showing location be added to item covering metal brake beams R. & R., making this item to read as follows:

Metal brake beams, R. & R. ... { New or second-hand, applied. If A. R. A., and number of same, or non-A. R. A. Make or name. Cause of removal. Location number (see Rule 14).

RULE 14

The committee recommends that the following be added to the second paragraph of this rule:

The same order of numbers shall be used for designating corresponding location of brake beams. In any case where a right or left side is designated on defect, billing repair or joint evidence cards for other parts of cars, the same uniform order of location shall govern.



Illustration of Method of Designating the Location of Parts on Car Specified in Rule 14

The committee recommends that the accompanying figure be added to this rule.

RULE 19

The committee recommends that the following paragraph be added to Rule 19:

Plain cast-iron brake shoes should not be used. New reinforced back brake shoes must be used to justify bill.

RULE 22

In order to define the intent of this rule more clearly, the committee recommends that the second paragraph be modified to read as follows:

Longitudinal sills may be spliced at both ends; intermediate or side sills on either side of the body bolster. The nearest part of the splice must not be less than 12 in. from edge of body bolster. Intermediate sills, spliced between body bolster and cross-bearer, must be reinforced as per Figs. 11 or 11-A. Intermediate sills, spliced between bolster and end of car, and side sill, spliced on either side of bolster, must be in accordance with Figs. 10 or 10-A, preferably the latter.

RULE 23

It is evident from the questions referred to the committee that Section IV of this rule is more or less confused. In order to clarify the intent of this rule, the committee recommends that Section IV be modified in accordance with the proposed form shown below:

- Welding cracks or fractures will be permitted on the following: Car and roof sheets. \*Cast steel truck sides. \*Pressed and structural steel truck sides, bolsters and transoms. \*Cast steel bolsters. Draft castings. \*Brake beams. \*Cast steel coupler yokes. Car sills, posts, braces, stakes, carlines, side plates and end plates.

Other car parts subject to compression only, and those not subject to high tension strains, except as otherwise prohibited.

\*Welding is permitted only when the area of the crack is less than two-fifths, or 40 per cent, of the total area through the section at the point of fracture, but it is not permissible to weld any crack located within 6 in. of an old weld.

RULE 49 (Owners Responsible)

The committee recommends that Rule 49 be modified to read in accordance with the proposed form shown below:

- All steel cars not equipped with cardboard for defect cards and joint evidence cards. Same to be located either on cross tie under car or inside of side sill at end of car, or on center sill of cars equipped with center sills only. Size of card to be not less than 5 1/2 by 9 in.
- All steel cars not equipped with cardboards for Bad Order cards, routing cards, return cards, etc. Same to be located on each side of car, near bottom at left hand end, or on end of end sill, and on center sill on cars equipped with center sills only. Size of cardboard to be not less than 5 1/2 by 9 in.
- Steel box cars not equipped with cardboards for special explosive and other placards, as required by the I. C. C. Same to be located on side doors and both ends of car. Size to be not less than 12 by 12 in.
- All cardboards on steel cars must be secured with rivets or bolts with ends riveted over nuts.

RULE 56

In view of the fact that cars will not now be accepted in interchange unless equipped with all metal brake beams, it is recommended that Rule 56 be eliminated from the Rules of Interchange.

RULE 57 (Delivering Company Responsible)

The committee recommends that Rule 57 be modified to read in accordance with the proposed form shown below:

- Cars not equipped with A. R. A. standard 1 3/8-in. air brake hose. For label, see page 71. The use of a rectangular label in addition to the band label is optional with any railroad, providing space, preferably 2 in., is allowed between the two labels.

RULE 59 (Delivering Company Responsible)

The committee recommends that a new rule be added to the Rules of Interchange to be designated as Rule No. 59 to read as follows:

Cars offered in interchange with missing dirt collectors where cars are stenciled that they are so equipped.

RULE 60

The committee recommends that the following be added to the last paragraph of this rule:

The stenciling showing air brakes cleaned must not be changed unless all work is properly performed as required by the standard instructions for Annual Repairs to Air Brakes on Freight Cars.

RULE 62

The committee recommends that the second paragraph of Rule 62 be modified to read in accordance with proposed form shown herewith.

PROPOSED FORM

In replacing brake shoes on foreign cars, new reinforced back shoes must be used to justify bill.

RULE 66

The committee recommends that this rule be changed to provide that the expense of periodical repacking of journal boxes shall be assumed by the handling line and that item of lubrication be restored in Rules 1 and 108.

RULE 86

The committee recommends that the effective date of fourth paragraph of Section (b) of this rule be extended to October 1, 1922.

RULE 87

In order to show clearly the intent of this rule, the committee recommends that reference to Rule 70 be eliminated in the first paragraph and that the second paragraph be changed to read as follows:

The company making such improper repairs must place upon the car, at the time and place the work is done, an A. R. A. defect card, which card must state the wrong repairs made, and which will be authority for bill for both material and labor for correcting the wrong repairs.

RULE 88

In order to clearly show the intent of this rule, the committee recommends that the first paragraph be modified as shown below:

In order that repairs of owners' defects may be expedited as fully as possible, foreign or private line cars may be repaired by the handling line by using material from their own stock instead of ordering from owner special material not specified in last paragraph of Rule 122, in which event the repairing line must issue its defect card for the labor only of correcting such improper repairs, and defect card should be so marked.

RULE 112

Upon recommendation from the Committee on Car Construction the Arbitration Committee recommends that a fourth paragraph be added to Class E under the table showing reproduction cost per pound for freight equipment, reading as follows:

All wood, equipped with metal draft arms, extending 24 inches or more beyond center line of body bolster and with body bolster of sufficient strength to transmit buffing and pulling shocks to all longitudinal sills.

The reference to draft arms in Note 1 should be eliminated. Section (d), which was intended to provide for settlement covering so-called rebuilt cars, has been found to be impracticable of application. The committee recommends the abrogation of this provision and the substitution of a new Section (d) reading as follows:

If construction of car has been altered to the extent of placing it in a higher class for which a higher rate per pound is allowed under section (b), settlement shall be made at such higher rate per pound and according to the stenciled lightweight on car at date of destruction, and the depreciation shall be figured from date car was originally built at the rate applying to car as destroyed. This provision shall be retroactive in application to unsettled cases under the 1920 Rules.

All references to rebuilt cars in this rule should be eliminated.

RULE 114

In view of the adoption by special letter ballot of the proposition of replacing ends of cars when broken out, the committee recommends that this rule be modified in accordance with proposed form shown below:

If the company on whose line the car is destroyed elects to rebuild the car, the original plan of construction must be followed, and the original kind and quality of materials used, except that metal draft arms extending beyond body bolster, steel draft members extending full length of car, transom draft gear, steel center sills or steel underframe should be applied and be of such design as will meet the recommended practice of the Division for reinforcing existing cars.

On house cars (other than refrigerator cars) with steel underframes or steel center sills, having a center sill area of not less than 24 sq. in., when an end requires repairs consisting of new posts and braces, the ends shall be replaced with ends specified for new cars, this to be done by or under the direction of the car owner. No allowance shall be made for betterments not authorized by car owner.

NOTE.—See Per Diem Rule 8.

RULE 120

The committee recommends that the following changes and additions be made in this rule:

Add the following item in the table under "Flat Cars," Section (b):

All steel or steel underframe.....\$150.00

Change Section (c) to read as follows:

(c) The owner shall authorize repairs or destruction of car within 30 days from date of notification.

Add the following paragraph to Section (e):

At the time of authorizing destruction the owner shall furnish handling line statement showing estimated weights of material in car for which credit is due to assist handling line in arriving at proper credit. Couplers, wheels, axles and journal bearings shall be credited on basis of scrap prices shown in Rule 101 for such items.

Insert the following paragraph between the present first and second paragraphs of Section (f):

On house cars (other than refrigerator cars) with steel underframes or steel center sills, having a center sill area of not less than 24 sq. in., when an end requires repairs consisting of new posts and braces, the ends shall be replaced with ends specified for new cars, this to be done by or under the direction of the car owner.

PASSENGER CAR RULES

RULE 2

The committee recommends that Section (b), Rule 2, be modified as shown below, in order to more clearly define the intent of this requirement:

Cars, loaded or empty, using lighting outfits operated by engines using inflammable liquids with flash point 80° F. or lower, such as gasoline, motor fuel and alcohol, will not be accepted in interchange. This will not apply to lighting outfits operated by petroleum oils with flash point above 80° F., such as kerosene or illuminating oil.

RULE 12

The committee recommends that Section (b) of this rule be modified as shown below:

The billing repair card must specify for journal bearings applied and removed, whether solid, filled or other kind, length of journal and box number as marked on truck.

The report is signed by T. H. Goodnow (Chairman), Chicago & North Western; J. J. Hennessey, Chicago, Milwaukee & St. Paul; J. Coleman, Grand Trunk; F. W. Brazier, New York Central; J. E. O'Brien, Missouri Pacific; T. W. Demarest, Pennsylvania System, and G. F. Laughlin, Armour Car Lines.

## Prices for Labor and Material

During the past year the committee has made certain investigations, and submits the following report on freight car Rules 101, 107, 111 and 112, and Rules 21 and 22 of the passenger car code.

The material prices set forth in the accompanying recommendations for 1921-22 rules are based on the average prices paid by five large representative roads during 1920, supplemented by numerous current quotations from several large railway supply houses. As in the present code, all material prices include suitable allowances to cover freight transportation charges, direct and indirect store expense, fabricating labor when involved, and interest on stock investment, based on average monthly inventory balance multiplied by interest rate and result divided by total annual material disbursements.

In recommending many of the material prices, due consideration was given to the fact that the roads had stocked up on materials at prices effective before the decline, and therefore the full effect of the recent decline in prices will not be represented in the prices recommended for next year.

In establishing prices for practically all second-hand materials, the same percentage of cost new as prevails in the present rules was used. Scrap materials were averaged and current market prices less transportation charges to scrap plant were set up as credits.

Labor allowances shown in hours and tenths are substantially the same as those in the present code, which were based on time studies in 1915 and 1916, one of the most important exceptions being the fact that certain allowances for sills, bolsters, etc., which in the present code include jacking of the car, have been modified so that the jacking cost is omitted and is to be added as a separate operation where consistent. It is felt that this will be of considerable advantage to bill clerks throughout the country in that there will be removed the necessity for deducting under certain combinations the jacking price heretofore included in two or more of the operations in the combination.

The principal labor rate per hour (Item 172, Rule 101), is recommended at \$1.20; the same as authorized in the existing rules. As noted above, no changes have been made in the labor allowances as a whole nor in the rates per hour, this

for the reason that overhead studies made on six representative roads during October and November, 1920, also investigations made in February and March, 1921, as to actual time consumed on these roads in performing the work as compared to the arbitrary allowances authorized under the rules, indicate that the roads of the country, on the average, are being fairly compensated under the rules for the work performed by them on foreign cars.

The report is signed by A. E. Calkins (chairman), New York Central; Ira Everett, Lehigh Valley; T. J. Boring, Pennsylvania System; I. N. Clark, Grand Trunk; H. G. Griffin, Morris & Company; J. H. Milton, Chicago, Rock Island & Pacific; C. N. Swanson, Atchison, Topeka & Santa Fe; E. H. Weigman, Louisville & Nashville, and A. E. Smith, Union Tank Car Company.

### RULE 101

[The important changes in this rule are increases in most of the prices for air brake material, decreases in the prices for couplers and coupler parts and the discontinuance of price for the periodical repacking of journal boxes.—EDITOR.]

### RULE 107

The committee recommended the change of the first paragraph of Rule 107 to read as follows:

The following table shows the labor charges which may be made for performing the various operations shown. The labor allowances include all work necessary to complete each item of repairs, unless the rules specifically provide that in connection with the operation additional labor may be charged for the R. & R. or R. of any item which must necessarily be R. & R. in connection therewith.

[The changes in time allowances are largely confined to reductions due to not including jacking of the car in operations which generally require the car to be raised.—EDITOR.]

### RULE 111

[The principal change in this rule is the elimination of item 8, tightening cylinder and reservoir when loose.—EDITOR.]

### PASSENGER CAR RULES 21 AND 22

[Item 3A was added to Rule 21, allowing one hour for slackening buffer in order to R. & R. or R. coupler knuckle, lock or pin. A number of adjustments in material prices are shown in Rule 22.—EDITOR.]

## Report of Car Construction Committee

### Salt Water Drippings

Conference has been held with representatives of the principal interests using brine valves and it is the opinion that the various devices now used will, with proper maintenance, perform their functions, that the users of such devices are fully advised as to their necessity and should be notified that they must have all cars with brine tanks equipped by January 1, 1922, and that no further extension of time will be granted after that date. It is recommended that paragraph "F" of Interchange Rule 3 be modified to correspond with the above.

### End Doors for Box Cars

In the report of 1920 the following recommendation was overlooked when preparing the sheet for letter ballot:

In 1913, the Master Car Builders' Association adopted as recommended practice, that end doors must be so constructed that, when closed, they lock automatically by means of a lock accessible from the inside of the car, thus avoiding the necessity of taking seal records. Sheet 30 shows a design of inside fastening which is not automatic, and your committee recommends that recommended practice adopted in 1913 should be advanced to standard, and that the design of inside latch shown on Sheet F should be

removed, and a note substituted that the fastening should lock the door automatically from the inside of the car.

It is recommended that this be now submitted to letter ballot.

### Minimum Thickness for Backs of Journal Bearings

Requests to fix a minimum thickness, because, at times, too much wear is allowed before removal, led to issuing Circular No. S 111—108, asking whether such limits are necessary, and, if so, what the limits should be.

According to the majority of replies received, it is desired to fix a standard minimum thickness for backs of journal bearings, as follows:

Class of Bearing	A	B	C	D	E	F
Size of journal, in.	3¾ by 7	4¼ by 8	5 by 9	5½ by 10	6 by 11	6½ by 12
Min. Thickness of back, in. ....	⅜	⅝	¾	⅞	⅞	⅞

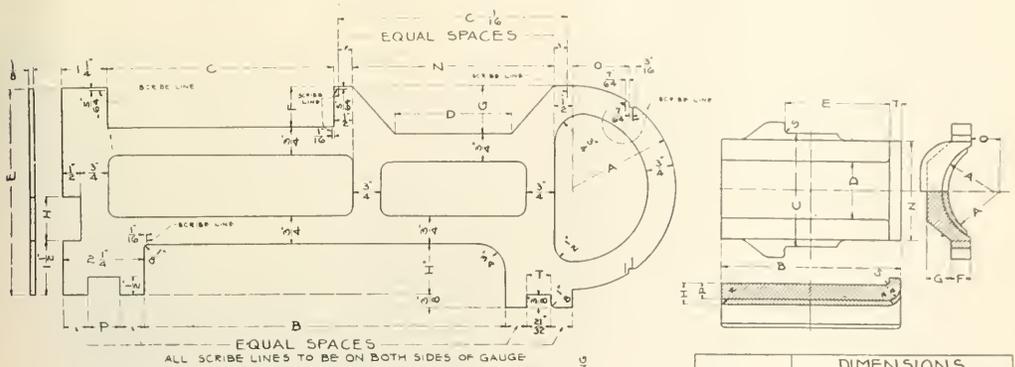
It is suggested that this be adopted as recommended practice.

### Gages for Bearings and Wedges

Attention was directed to a growing demand for these

gages and that standards should be provided. The committee's recommendations for such gages are shown in Figs. 1 and 2 and it is suggested that these be adopted as recom-

general use, it is advisable, in order to avoid duplicating reserve stock for repairs, to make the bottom of all dust guards semicircular. Such dust guards can be used in boxes



A.R.A. CLASSIFICATION	SIZE OF JOURNAL	DIMENSIONS—INCHES										
		A	B	C	D	E	F	G	H	N	O	P
A	3 3/4 x 7	1 57/64	6 53/64	4 17/32	2 31/32	3 29/32	1 1/8	1 1/16	3 53/64	3 7/64	3 3/4	1 1/8
B	4 1/4 x 8	2 3/64	7 53/64	4 53/32	3 1/2	4 5/8	1 1/8	1 1/16	4 33/64	3 3/64	4 3/4	1 1/8
C	5 x 9	2 33/64	8 53/64	5 33/32	3 5/8	5 5/8	1 1/8	1 1/16	4 53/64	3 7/64	5 1/4	1 1/8
D	5 1/2 x 10	2 39/64	9 53/64	6 5/32	3 5/8	6 1/8	1 1/8	1 1/16	5 53/64	3 11/64	6 1/4	1 1/8
E	6 x 11	3 1/64	10 53/64	7 5/32	3 3/4	7 1/8	1 1/8	1 1/16	6 53/64	3 13/64	7 1/4	1 1/8
F	6 1/2 x 12	3 17/64	11 53/64	8 1/32	4 1/32	8 1/8	1 1/8	1 1/16	7 53/64	3 15/64	8 1/4	1 1/8

Fig. 1—Journal Bearing Gage

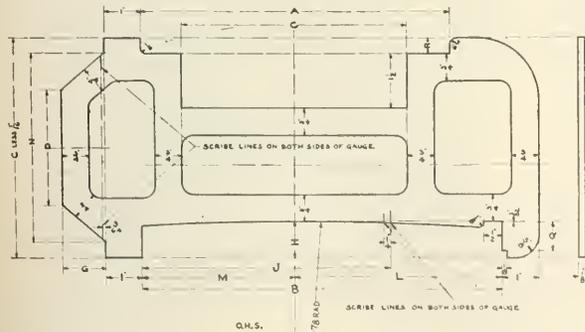
mended practice, the present separate gages to remain as standard.

Dust Guards

Since pressed or cast steel and malleable iron journal boxes with round bottom dust guard cavities have come into more

with either square or round bottom dust guard cavities.

The committee recommends that the dust guard shown in Fig. 3 be made standard. The dust guards illustrated show the round bottom and otherwise were changed in dimensions to better fit the standard journal boxes.



A.R.A. CLASSIFICATION	SIZE OF JOURNAL	DIMENSIONS IN INCHES										
		A	B	C	D	G	H	J	L	M	N	Q
A	3 3/4 x 7	5 1/16	6 53/64	4 17/32	2 1/8	1 1/2	5 1/8	3 1/2	2 5/8	3 5/8	3 3/4	1 1/8
B	4 1/4 x 8	6 1/16	7 53/64	4 53/32	2 1/4	1 3/4	6 1/8	4 3/8	3 3/4	4 1/2	4 1/4	1 1/8
C	5 x 9	7 1/16	8 53/64	5 3/32	2 3/4	2 1/4	7 1/8	5 1/8	3 3/4	4 3/4	4 3/4	1 1/8
D	5 1/2 x 10	8 1/16	9 53/64	6 3/32	3 1/8	2 1/2	8 1/8	6 1/8	4 1/2	5 1/2	5 1/2	1 1/8
E	6 x 11	9 1/16	10 53/64	7 3/32	3 1/4	3 1/8	9 1/8	7 1/8	5 1/2	6 1/2	6 1/2	1 1/8
F	6 1/2 x 12	10 1/16	11 53/64	8 1/32	4 1/16	3 1/2	10 1/8	8 1/8	6 1/2	7 1/2	7 1/2	1 1/8

	DIMENSIONS																	
	A	B	C	D	G	H	J	K	L	M	N	Q	R	S	T	V	W	X
MAY BE GREATER BY	1/16	1/32	3/32	3/32	0	1/16	1/16	1/16	1/16	0	3/32	3/32	3/32	0	1/16	1/16	1/16	3/32
MAY BE LESS BY	1/64	1/32	1/32	1/32	0	1/64	1/64	1/64	1/64	0	1/64	1/64	1/64	0	1/64	1/64	1/64	3/32

V AND W MUST NOT DIFFER MORE THAN 0.001 IN ANY PLACE

Fig. 2—Wedge Gage

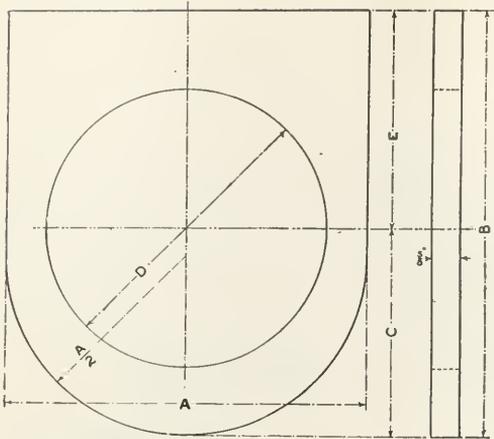
Journal Boxes

To meet various suggestions for change, and to increase uniformity of standards, we submit Fig. 4, showing journal boxes C, D, E and F, recommending that they be substituted for the present standards.

The bottom of dust guard pocket has been made semi-circular, to reduce the cost of box. The angle of lid face has been made the same for all boxes. Various minor, or unimportant, dimensions have been unified. No changes affecting interchangeability, or serviceability, have been made.

Springs

Complaints relating to the unsatisfactory results from standard springs have been increasing rapidly. The causes



CLASSIFICATION OF GUARD	SIZE OF JOURNAL	A	B	C	D	E
C	5 X 9	8	9½	4½	6½	4½
D	5½ X 10	8½	10	4½	6½	5½
E	6 X 11	10½	10½	5½	7½	5½
F	6½ X 12	11	11½	5½	7½	6½

Fig. 3—Recommended Form of Dust Guard

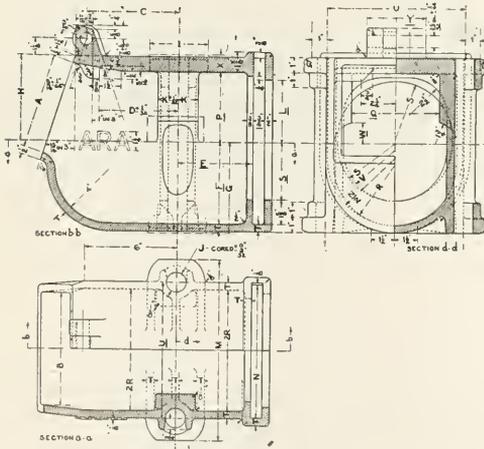


Fig. 4—Proposed Standard C, D, E and F Journal Boxes

Classification of Box	Size of Journal	A	B	C	D	E	F	G	H	I	J	K	L	M
C	5 by 9	6½	7½	6½	5½	4½	5½	5½	4½	11½	14½	4½	12	
D	5½ by 10	6½	7½	6½	5½	5½	5½	5½	5½	11½	14½	4½	12½	
E	6 by 11	7½	8½	7½	6½	5½	6½	6½	6½	11½	14½	4½	14½	
F	6½ by 12	8½	9½	7½	6½	6½	6½	6½	7	11½	14½	4½	14½	
		N	O	P	Q	R	S	T	U	V	W	X	Y	
C	5 by 9	8½	11½	4½	5½	4	3½	½	¾	9	3½	1½	1	3½
D	5½ by 10	9½	2	6½	4	4	½	¾	9½	3½	1½	1	1	3½
E	6 by 11	11½	2½	5½	7½	4½	4½	¾	10½	4	1½	1½	4½	4½
F	6½ by 12	11½	2½	6	7½	5½	4½	¾	11	4½	1½	1½	4½	4½

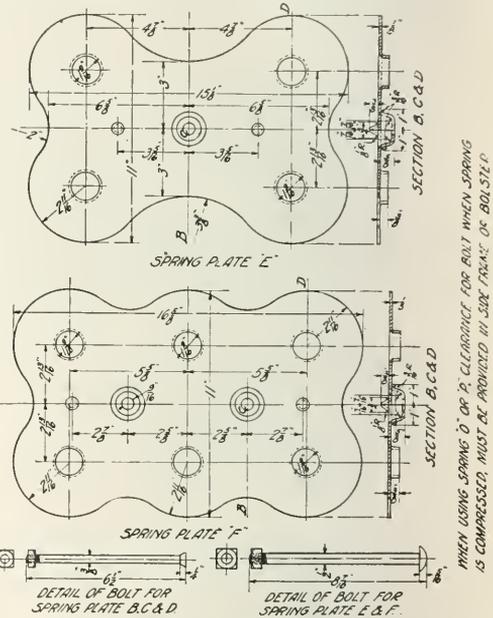


TABLE OF SPRING GROUPS

CLASS OF TRUCK SPRING	NO OF COILS	SPRING NO 1	SPRING NO 2	PLATE	HEIGHT	INCLINED	CAPACITY	FOR H-7½
2B	L	4	0	B	6½	6½	61900	30950
2C	M	4	2	C	8½	6½	70420	35210
2D	N	4	4	D	8½	6½	78940	39470
2E	O	5	5	E	9½	6½	98675	49338
2F	P	6	6	F	9½	6½	118410	59205

Fig. 5—Truck Spring Details

of the trouble, according to the analysis of your committee, are: (1) Unsatisfactory process of manufacture; (2) quality of material; (3) irregular surface of spring ends, and (4) improper application of shims under or over springs to raise the car body to normal height. The result is that many springs either break or take a permanent set.

The remedy recommended is: (1) To improve the method of manufacture by better control of heating and tempering for more uniform results, and to obtain greater uniformity of coiling; (2) to use alloy steel; (3) to grind the ends of the springs to present a flat bearing surface of at least two-thirds the circumference at right angles to the axis of the spring; (4) to prescribe that shims, placed under or over the springs, shall consist of metal plates with parallel surfaces,

and (5) to design the springs for a unit stress, when solid, of close to 100,000 lb. per sq. in., using the present diameters of bars, thereby materially increasing the capacity and range of deflection.

These changes should result in: (1) Material decrease in shock on side frames; (2) increased life of springs, and (3) decrease of maintenance cost and car delay.

It is recommended that the springs classified "L," "M," "N" and "O," as illustrated, in Figs. 5 and 6, be adopted as alternates for springs "B," "C," "D" and "H," and that alternate spring "P" be added for use with 2/F trucks.

The committee requests that railroads try out these springs thoroughly, in order to be in position later to vote on their

The tension and bearing area requirements, but not the shear area requirements, shall be governed by the value of the steel. For bearing area between surfaces of different grades of steel in contact, the value of the lesser grade of steel shall govern. For grade "A" steel, for which the product of elastic limit in pounds multiplied by the elongation in per cent is not less than 700,000, the areas given are required. For grade "B" steel, for which the designated product is not less than 850,000, the given areas may be reduced by 12½ per cent.

It was stated that the adopted height from rail to top of truck side bearings of 27½ in. would prevent the use of roller, ball or rocker side bearings. The dimension given refers only to flat truck side bearings.

The intent of the committee is to make designs that will establish fixed conditions, permitting the use of detail designs standardized by the Association, or the substitution of other parts preferred by the individual railroad, singly or in groups, provided these parts, or group of parts, are the equivalent in strength and safety of, and interchangeable with, the standard part or group of parts replaced. This will permit using any special detail such as top side bearing, which is interchangeable with, and equal in strength to, the side bearing that may be standard, or special top and bottom side bearings, which as a group are similarly interchangeable with the standard top and bottom side bearings as a group.

The standards should be made attractive for use by being as good or better than parts that may be substituted, rather than by making their use compulsory.

Truck Design

A subcommittee of the Committee on Car Construction, in co-operation with the Truck Committee of the Manufacturers Association, are engaged in the design of cast steel side frames and bolsters. They have considered the limits of dimensions fixed at the last meeting of the Mechanical Division and have given full consideration to the previously recognized dimensions of the M. C. B. Association, and to the designs that were put into effect by the United States Railroad Administration.

The manufacturers' committee has met with the subcommittee on two occasions, each time submitting for consideration designs in detail representing various ideas in view, but up to this time no single design has been brought out that could be presented as a recommendation for standard. It is possible that more than one design will have to be considered, with alternates.

Standard Car Design

Pending the development of complete A. R. A. car designs, freight cars according to the essential standards of the American Railway Association may be ordered from any car builder according to the following:

Type	U	S	St	N
Single sheath box	.....	.....	.....	.....
Steel box	.....	.....	.....	.....
55-ton hopper	.....	.....	.....	.....
70-ton hopper	.....	.....	.....	.....
70-ton gondola	.....	.....	.....	.....
50-ton gondola	.....	.....	.....	.....
40-ton truck	.....	.....	.....	.....
50-ton truck	.....	.....	.....	.....
70-ton truck	.....	.....	.....	.....

The height of center plates should be specified as 20¼ in., as more fully described in American Railway Association, Mechanical Division, Circular S III-189. This increased height of center plate introduces eccentricity as between the line of shock and the axis of the center sill sections, which changes the ratio of stress to end load, to offset which, it is necessary to add two bottom angles to the center sills if the sectional area of the center sill is desired to be 50 sq. in. This would add about 500 lb. to the weight.

The height of sides of car, A. R. A. standard, is 8 ft. 6 in.

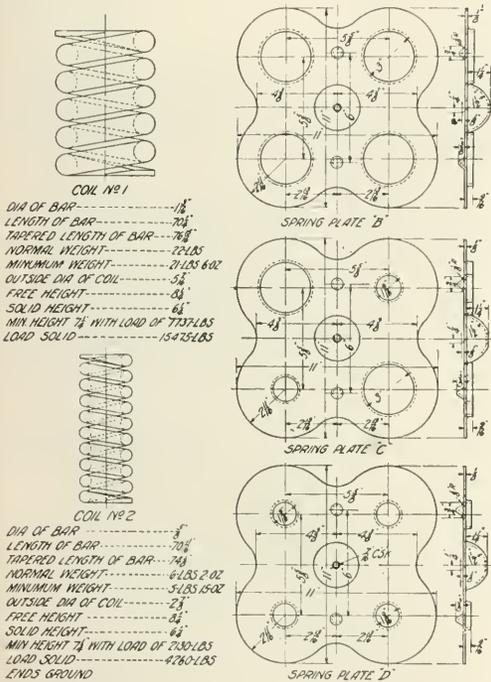


Fig. 6—Truck Spring Details

adoption as standard. It is recommended that interchange rules be formulated to protect the alloy steel springs against being replaced with ordinary springs.

The secretary has referred this to the Committee on Specifications and Tests for Materials, requesting preparation of specifications.

Fundamentals

Inquiry relating to fundamentals, and their meaning, indicated the necessity of describing those pertaining to minimum areas more in detail. The minimum area between rear followers of the center sill construction is the whole area in compression under end force, without deducting for rivet and other holes, which are filled with metal.

In the formulae on which former requirements were based, page 772, 1920 Proceedings, line "e," under heading "For center sills between rear followers," the word "tension" should have been omitted, making it read:

The minimum area = 2.5 T.

minimum inside. In event cars are ordered to the height shown in the drawings (9 ft.) no change in drawings is entailed. For the minimum height of 8 ft. 6 in., dimensions affected by the height, including the dimensions of box car doors, must be changed accordingly.

The report was signed by W. F. Kiesel, Jr. (chairman), Pennsylvania System; A. R. Ayers, New York, Chicago &

St. Louis; C. E. Fuller, Union Pacific; J. C. Fritts, Delaware, Lackawanna & Western; C. L. Meister, Atlantic Coast Line; J. McMullen, Erie; T. H. Goodnow, Chicago & North Western; John Purcell, Atchison, Topeka & Santa Fe; W. O. Moody, Illinois Central; J. A. Pilcher, Norfolk & Western; H. L. Ingersoll, New York Central; W. H. Wilson, Northern Pacific, and F. W. Mahl, Southern Pacific.

## Report of Committee on Loading Rules

During the past year conferences were held with the steel shippers, and also with the stone shippers of the Bedford, Indiana, district to consider suggestions offered by them for changes in the existing rules.

Trial shipments of twin loads of structural steel over five feet in height and having the center binder omitted were sent out at request of the steel shippers to determine the necessity for center binders. The information obtained through these trial shipments was not conclusive and the trial has been further extended.

### General Rules

The following detailed changes in the Loading Rules are submitted for approval:

#### RULE 5

Changed "80,000" to "60,000" in second and third paragraph. Revised table to show 95,000 lb. as total weight of car and lading for cars of 60,000 lb. marked capacity. *Explanation:* Rule changed to provide limits for 60,000 lb. capacity cars on basis of axle capacity, to conform with Interchange Rule 86.

#### RULE 23

Revised to read as follows: "If, in loading cars, it is impossible to clearly ascertain whether the restrictions given in General Instructions under paragraph 8 are complied with, the following table may be used." *Explanation:* Reference to General Rule 9 has been omitted, as this rule refers to twin or triple loads. Rule 23 and the accompanying table pertains to single loads only.

Table of weights revised. *Explanation:* Limits for 100,000 lb. capacity cars revised to make these limiting weights consistent for various lengths of cars. The word "average" added to heading of second column to clarify the meaning. Thirty and 32 ft. cars omitted from the table account of no longer being used. Thirty-six, 38 and 48 ft. cars added to the table to take care of existing cars.

### Group I—Lumber, Logs, Etc.

#### RULE 101

Add the following sentence to end of the rule: "Lumber or timber less than 12 ft. in length should not be loaded on flat cars or above the sides or ends of gondola cars."

### Group II—Structural Material, Castings, Etc.

#### RULE 201

Omit last sentence from the rule, to clarify the meaning.

#### RULE 202

Fourth sentence of third paragraph revised to read as follows: "Short material may be loaded on car floor, if equally distributed over entire floor; total weight of entire lading must not exceed the load weight as per General Rule 5." *Explanation:* Reference to "capacity" changed to "load weight" to conform with reference to "load weight" in third sentence of third paragraph.

#### RULE 213

Third sentence of rule changed to read as follows: "The blocking should never consist of less than one 3-in. plank

set on edge, or its equivalent, and must be secured from shifting by cleats nailed or bolted to the floor." *Explanation:* Revised to omit requirement for more than one plank for end protection.

#### RULE 217

First paragraph of rule changed to read: "When the lading consists of very flexible material, such as plates, no bearing-piece is required on the floor of the car, but blocking as prescribed by Rule 213 must be used to protect the end boards." *Explanation:* Revised to conform with Rule 213 for end protection.

#### RULE 227

Revised to read: "Material loaded on gondola cars with drop ends or on flat cars, as shown in Figs. 62 and 63, must have one hardwood bearing-piece not less than 10 in. by 10 in. for loads up to 65,000 lb. per bearing-piece, and not less than 12 in. by 12 in. for loads exceeding 65,000 lb. per bearing-piece. (See General Rule 31-A for light loads.)" *Explanation:* Requirement for  $\frac{7}{8}$ -in. bolts to secure bearing-pieces has been omitted. Bearing-pieces are secured by  $\frac{1}{4}$ -in. rods passing through bearing-piece and floor of car.

#### RULE 250

Second paragraph changed to read: "Wrought iron pipe should not be loaded inside of larger sizes of pipe unless below the ends or end gates of car."

#### RULE 260

Insert words "or gondola" after the word "flat" in marginal reference of rule. Insert words "or gondola" after word "flat" in first line of first paragraph.

#### RULE 265

Revised as follows and drawings changed to accord therewith:

"Metal sheets loaded in box cars should be secured in accordance with Figs. 90, 90-A, 91 and 92. Sheets in each pile should be preferably of uniform size and there must be at least two 2 in. by 4 in. uprights secured to inside of car at the end of each pile to provide a uniform bearing surface and to prevent the sheets from cutting through the end lining of car; also upright strips not over one inch thick should be used between the lading and sides of the car.

"The piles must be securely wedged apart at least at two points by braces consisting of 2-in. by 4-in. uprights against the piles, securely wedged apart at top and bottom by 2-in. by 4-in. pieces, as per Figs. 90, 90-A and 91. Each upright piece to be secured by two 2-in. by 4-in. cleats nailed to floor to prevent shifting, and tied together at top by less than 1-in. by 4-in. longitudinal strips to prevent shifting.

"The bracing at ends of piles toward center of car shall consist of one upright piece 2 in. by 4 in. against end of pile, backed up by one upright piece 2 in. by 8 in. against side of car, both to extend full height of load and be securely nailed to side of car as per Fig. 90; and, in addition, there must be one piece of 2 in. by 4 in. extending across doorway at top of load, securely wedged against bracing of load in opposite end of car, also one piece of 2 in. by 4 in. extending

from upright at end of pile to doorway and securely nailed to side posts and braces as per Fig. 90.

"Where height of load exceeds 30 in. it will be necessary to apply additional longitudinal bracing at center of load.

"Uprights to be secured at bottom by two 2-in. by 4-in.

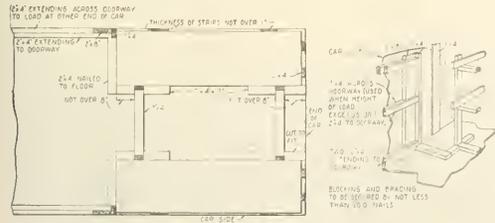


Fig. 90

pieces extending to doorway, and one piece of 2 in. by 4 in. extending full width of pile, securely nailed to floor as per Fig. 90.

"Wedges at bottom of load are optional; if used, they should conform to Fig. 91, and where width of pile exceeds 28 in. three wedges should be used.

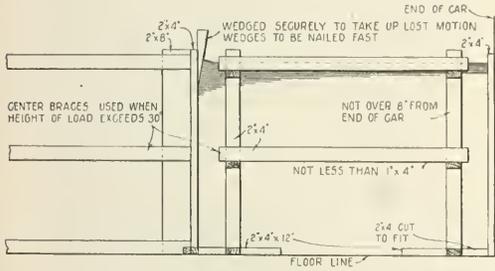


Fig. 90-A

"In all cases, where there is space between ends of sheets and uprights at top of pile, wedges must be used as per Fig. 90-A.

"When oiled sheets are loaded they should be placed on

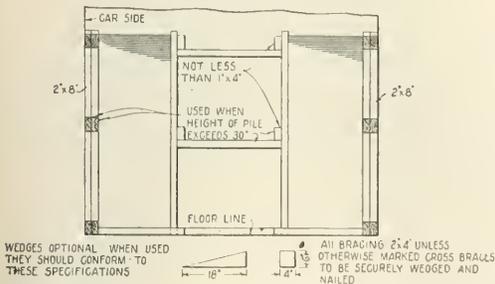


Fig. 91

suitable strips and heavy paper used to prevent oil stains on the floor of car.

"There may be more than one pile of sheets in each corner of car, provided there are at least two 2-in. by 4-in. pieces between ends of piles, secured in an upright position and extending from car floor to at least 2 in. above top of pile and each pile is braced against side of car.

"Bundled metal sheets loaded in box cars should be loaded in accordance with Fig. 92. After piling of sheets is completed, the center of pile should be compressed solid and top cross-piece X must be nailed and cleated to car sides. This cross-piece must also be further secured by having a

MANNER OF BRACING BUNDLED SHEET STEEL PLATES IN BOX CARS.

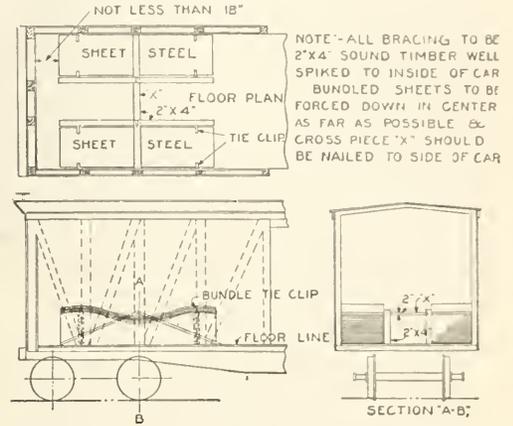


Fig. 92

2 in. by 4 in. placed against side of pile and nailed to floor of car and top of cross-piece.

"All blocking and bracing to be secured by not less than 20-penny nails."

*Explanation:* Rule and figures revised in conference with shippers to furnish more substantial blocking and bracing for this class of material, to better protect both lading and car.

**Group IV—Concrete Culvert Pipe, Brick, Stone, Etc.**

The following revisions of the stone loading rules are recommended as the result of conference with the shippers of stone:

**RULE 401**

Second paragraph revised to read as follows: "Where separating strips to keep lading clear of car floor are referred to in these rules, they should be sound wood, not less than 3 in. wide by 1½ in. thick. Such strips shall extend full width of stone and be placed approximately one-fifth the length of stone from each end. Where more than one strip is used to make the required thickness, the strips should be securely nailed together. In no case is it considered good practice to use more than two bearing-strips per length of stone. Stone longer than 10 ft. should, whenever practicable, be loaded over trucks." *Explanation* Revised to include increase in size of separating strips; definite location for strips; strips to be nailed together where necessary; not more than two strips per stone; stone over 10 ft. long to be loaded over trucks; sound wood specified in place of soft wood

**RULE 405**

First paragraph: Insert the following at end of second sentence: "See Rule No. 401 for minimum size of wood strips."

**RULE 405**

Insert the following paragraphs after second paragraph of rule:

"Where practical, the following method of loading should

be used for flagging, slabs or stone sawed on two sides. "Slabs 2½ in. thick and less, shipped in quantities, to be loaded on edge, lengthwise of car. Where a few pieces only of this group of sizes goes on a car, such few pieces may be loaded flat on top of slabs not less than 4 in., but not more than four pieces in any one stack.

"Three-inch slabs shipped in quantities loaded flat should have a slab not less than 4 in. under each pile. There should be no more than eight 3-in. slabs in any one pile, either loaded on a 4-in. slab, or on the floor of a car. Three inch slabs longer than nine ft. must be loaded on edge or flat on a slab not less than 4 in. in thickness or not more than two on top of any shorter stack.

"Four-inch slabs shipped in quantities loaded flat on car to be loaded not more than eight slabs high. Where 4-in. slabs are loaded on slabs 5 in. thick or over, then the same amount may apply on slab as flat on car. Four-inch slabs longer than 10 ft. should, wherever possible, be loaded on slabs thicker than 4 in.

"Five-inch slabs shipped in quantities loaded flat on car to be loaded not more than eight slabs high. Where 5-in. slabs are loaded on slab 6 in. or over, then the same amount may apply on slabs as flat on car. Five-inch slabs longer than 11 ft. should, wherever practicable, be loaded on slabs thicker than 5 in."

*Explanation:* To provide definite rules for piling slab stone.

#### RULE 405

Third paragraph, second sentence, revised to read: "If necessary, to prevent stone from shifting past the end stakes, a standard board should be securely nailed to the inside of the end stakes and extend full width of stone." *Explanation:* Revised to indicate when board protection is required.

#### RULE 408

Marginal reference revised to include "stone sawed on more than two sides." First sentence of first paragraph revised to read: "Curbing and stone sawed on more than two sides when loaded lengthwise of car should have two standard stakes opposite each outside piece." *Explanation:* Rule revised to include stone sawed on more than two sides.

#### RULE 409

Second paragraph, second line, word "soft" changed to "sound." *Explanation:* To permit use of various woods that may be available.

#### RULE 410

The first paragraph revised to read as follows: "Mill block loaded lengthwise or obliquely on car should be protected on the sides and ends by cleats not less than 2 in. by 4 in., in section, extending at least three-fourths of length or width of stone or by not less than two wedges 3 in. by 3 in. on sides and 4 in. by 4 in. on ends, wedges to be not less than 14 in. long and securely nailed to floor of car at right angles to stone. When the width of stone exceeds 3 ft. 6 in., or length of stone exceeds 10 ft., the side and end protection must consist of not less than three wedges. If stone is loaded crosswise of car and width of stone does not exceed 3 ft., only one wedge will be required for side protection. All side and end cleats of wedges must be sound, straight grained lumber secured to floor of car by not less than 40-penny nails. When the stone is loaded close together or wedged apart, cleats or wedges are required on sides and ends of outside stone only. When such stone is loaded in tiers, standard end and side protection must be provided." *Explanation:* Reference to height of stone omitted. Provision included for use of wedges in place of cleats. Sound lumber secured by not less than 40-penny nails is specified for cleats and wedges.

Second paragraph revised to read: "Mill block containing as much as 100 cu. ft. resting on channel or scabbled surface not less than 25 sq. ft. or proportional for increased sizes must be so loaded that the weight of total lading will be uniformly distributed over the floor of the car." *Explanation:* Requirement of a layer of sand, cinders or crushed stone for supporting the stone has been omitted. Not essential for uniform bearing.

Third paragraph revised to read: "Gondola cars are preferable for such shipments, but if flat cars are used, the lading should be placed at least 18 in. back of end of car. When car is equipped with end stake pockets and stone is loaded closer than 18 in. to end, standard stakes 6 in. high should be used. When the stone does not engage both stakes, wedges in addition to stakes must be used. Each block of stone loaded lengthwise, crosswise or obliquely must be protected against creeping as specified in first paragraph of this rule. When two blocks of stone are loaded parallel and close to each other, or wedged apart, they will be considered as one stone as to cleating or wedging." *Explanation:* Provision made for end stake blocking where car is equipped with end stake pockets and stone is loaded closer than 18 in. from end.

Fourth paragraph revised to read: "If stone is placed lengthwise of car and is 4 in. or closer to side of car, two standard side stakes 6 in. in height must be placed opposite such stone in lieu of cleats or wedges on that side of stone. Stone must not be loaded obliquely when it is possible to load it lengthwise or crosswise of car." *Explanation:* Reference made to wedges to conform with change in first paragraph of rule.

Fifth paragraph omitted from rule. *Explanation:* Covered by first paragraph of revised rule.

Sixth paragraph: The following words, "when used," inserted after the word "cleat" in first line. *Explanation:* To conform with first paragraph of rule.

New paragraph added as follows: "In no case shall the height of stone be more than two times the smallest dimension resting on the car floor." *Explanation:* This paragraph establishes a limit for the height of stone in proportion to the base in accordance with the practice which is generally followed in loading large stone.

#### RULE 411

First paragraph, second sentence: Change the words "one and one-half" to "two." *Explanation:* To conform with first paragraph of Rule 410.

### Group V—Automobile Loading

#### RULE 518

Rule revised to read: "The distance between any two vehicles, at the nearest point, loaded on a freight car must not be less than the following limits: 2 in. horizontally, 3 in. vertically with springs compressed and 4 in. vertically without springs compressed." *Explanation:* Revised to permit a 3 in. vertical clearance where cars are shipped with springs compressed.

#### End Stake Pockets for Flat Cars

In conference with stone shippers, the sub-committee of the Loading Rules Committee agreed to recommend to the Committee on Car Construction that end stake pockets be required on future flat cars. This subject is, accordingly, hereby referred to that committee.

The report is signed by R. L. Kleine (chairman), Pennsylvania System; J. J. Burch, Norfolk & Western; E. J. Robertson, Soo Line; J. E. Mehan, Chicago, Milwaukee & St. Paul; Samuel Lynn, Pittsburgh & Lake Erie; Ira Everett, Lehigh Valley; T. O. Sechrist, Louisville & Nashville; E. N. Harding, Illinois Central, and G. R. Lovejoy, Detroit Terminal.

## Brake Shoe and Brake Beam Equipment

The 1920 Brake Shoe and Brake Beam Committee in its report presented at the last annual meeting engaged for the 1921 committee to give attention to eight subjects. These subjects have been given careful consideration and are hereinafter reported on as follows:

### Gage for Determining Hanging

#### Heights of Existing Beams

The value of such a gage is insufficient to warrant the expense incident to its development and manufacture for general distribution. The old types of cars on which wide variations of hanging heights exist and which prompted the idea of such a gage are gradually being eliminated. There is an increasing demand and tendency to standardize brake beams and hangings, which will eliminate the necessity for such a gage.

### Code Governing Brake Beam Maintenance Practices

The committee recommends as the first progressive step the early adoption of a standard practice covering the reclamation of brake beams in such a manner that they will meet the standard specifications used in the purchase of new brake beams.

A sub-committee was appointed to submit a tentative standard practice and has submitted one which is deserving of the careful consideration of the association. It is submitted as a progress report and it is recommended that the report be submitted to the members of the association with the request that each submit his criticism to the committee to assist it in the final development of a standard practice that will satisfactorily meet the requirements. See Exhibit A.

### Advisability of Brake Head Strength Test

This subject was referred to a sub-committee of engineers of tests which conducted some laboratory tests on 21 different types and capacities of brake beams representing the products of seven different manufacturers, at the Collinwood laboratory of the New York Central Lines, and submitted the report which is incorporated herein as a progress report. The conclusions reached by the sub-committee read in part as follows:

Tests of brake-beam heads do not appear necessary if the load in service always comes upon the center lugs. However, if in the opinion of the Brake Beam Committee, the load is not always restricted to the center lugs, but is frequently carried principally on the toes, then a standard strength of head, and standard method of test for determining same, is desirable.

The committee believes that all of the stress on brake heads is frequently sustained by the top and bottom lugs and that brake head strength tests are a proper and reasonable requirement and should eventually be incorporated in the specifications. Accurate and practical methods of making such tests are, however, still obscure and will require further careful study and investigation by the committee. See Exhibit B.

### Increasing the Initial Brake Shoe Thickness

In view of the adoption as standards of the association, of brake heads of the A, B and C depths last year to take care of existing brake beam clearance conditions, the committee deems it advisable that no changes be made in the standard brake shoe thickness of  $1\frac{1}{2}$  in. at this time.

### Details of Top and Bottom Head Lugs

This subject refers to the recesses in the top and bottom brake head lugs which receive the top and bottom brake shoe lugs. The standard drawing does not show all of the dimensions and manufacturers were conferred with to determine the practice. It was found that the depth of the recesses is uniformly  $1\frac{1}{4}$  in. from  $17\frac{3}{4}$  in. radial line; the width at the

opening is in practically all cases  $1\frac{3}{8}$  in. and at the bottom varies from  $1\frac{1}{8}$  in. in the majority of cases to  $1\frac{7}{16}$  in.

The committee recommends that Section CC, Sheet M. C. B. 17, be revised to show the dimension  $1\frac{1}{4}$  in. as the width of the bottom of the recesses adjacent to the top and bottom brake head lugs.

### Brake Shoe Key Design and Fit of

#### Shoes, Head Face and Key

This subject was referred to a sub-committee for investigation and its report is submitted as a progress report. The investigation will be continued by the committee. See Exhibit C.

### General Brake Beam Hanging

This subject was referred to a sub-committee for investigation and its report was forwarded to the Committee on Car Construction which has the matter under consideration in connection with standard truck design.

### Reversible Strut

This subject is still under consideration and the committee has nothing to report at this time.

### Standard Depth of Brake Head

Last year there were adopted as standards three depths of brake heads designated as "A," "B" and "C" to meet clearance conditions obtaining on various cars. The committee recommends that heads "B" and "C" be removed from the standards and their use be permitted as alternates where the standard "A" head cannot be applied.

### Status of the No. 2 and No. 2

#### Plus Standard Brake Beam

The status of the No. 2 and No. 2 plus standard brake beams, as regards the weights of cars to which each should be applied, has received special consideration at different times during the year.

The Train Brake and Signal Committee and the Brake Shoe and Brake Beam Equipment Committee were requested by the Car Construction Committee to submit their joint recommendations on this subject. The joint meeting of the two committees referred to was held at New York on April 5, 1921, and the following motion was carried by a majority but not a unanimous vote:

The Brake Shoe and Brake Beam Equipment and the Train Brake and Signal Equipment Committees have considered the matter of No. 2 and No. 2 plus brake beams and recommended that these beams be used on cars of the following weights for four-wheel trucks:

BRAKE BEAM	CAR WEIGHT
2	35,000 to 48,000 lb.
2 plus	48,000 to 58,000 lb.
3	Over 58,000 lb.

In the case of six-wheel trucks, the above weights should be increased 50 per cent for the beams specified.

Report of this action was submitted to the Car Construction Committee.

### Formula for Brake Power on Freight Cars

The Car Construction Committee in its last year's report recommended a new formula for brake power on freight cars.

The association requested the Train Brake and Signal Equipment and the Brake Shoe and Brake Beam Equipment Committees to submit joint recommendations on this subject. The joint meeting was held November 18, 1920, and a proposal to change the brake ratio as suggested was unanimously disapproved. An abstract of the report submitted to the Car Construction Committee follows:

\*The purpose of the proposed change in braking power is to



**Brake Heads.**—All heads should be gaged with A. R. A. gage shown in Fig. 1. If the center lugs are worn sufficiently to take maximum center lug *B*, or if the thickness of metal between face of center lugs and part of key slots has worn sufficiently to take the minimum gage slot *D*, or if the toes

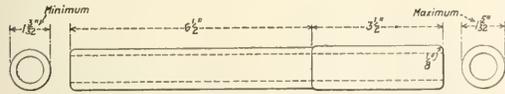


Fig. 2—Lever Pin Hole Gage

are badly worn, the brake head should be scrapped. Brake heads with slightly worn toes can be used again. Brake heads should be free of burrs, core sand, dirt or any other foreign matter.

**Struts.**—All struts should be gaged with lever pin hole

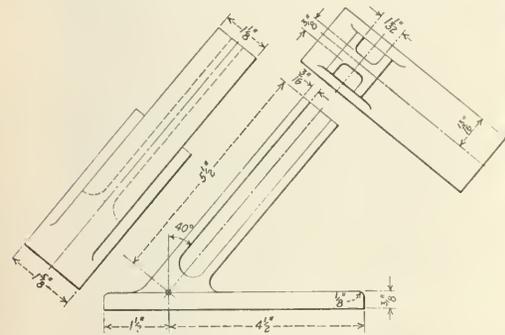


Fig. 3—Angle Gage for Strut

gage shown in Fig. 2, and if hole is badly worn so it will take the maximum end of gage it should be scrapped. Any strut having lever slot walls twisted or badly worn should be scrapped. Struts having slots set on an angle should be gaged with angle gages similar to Fig. 3.

Any strut not bearing the proper capacity of the beam it is to fit should be so marked.

**Tension Rods.**—Any tension rod that has been flange cut, badly rusted or threads badly damaged should be scrapped. Tension rods badly bent and twisted can be straightened by heating over their entire length.

**Compression Member.**—Any compression member that has badly worn places due to release spring or any other cause should be scrapped. Compression members badly bent or twisted should be heated uniformly throughout and then

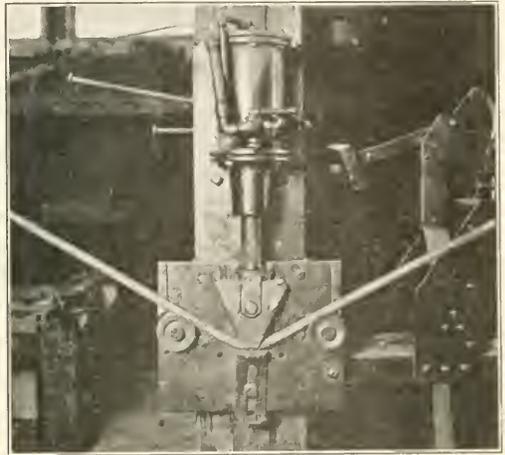


Fig. 4—Tension Rod Bending Machine

straightened. If they are only slightly bent or twisted they can be straightened without heating. All compression members should be straight before reapplying.

EQUIPMENT

The following equipment is recommended for use in connection with reclaiming brake beams:

Tension rod bending machine. Fig. 4 shows an air operated machine of this kind.

Assembling benches. Fig. 5 shows a bench of this kind now in use.

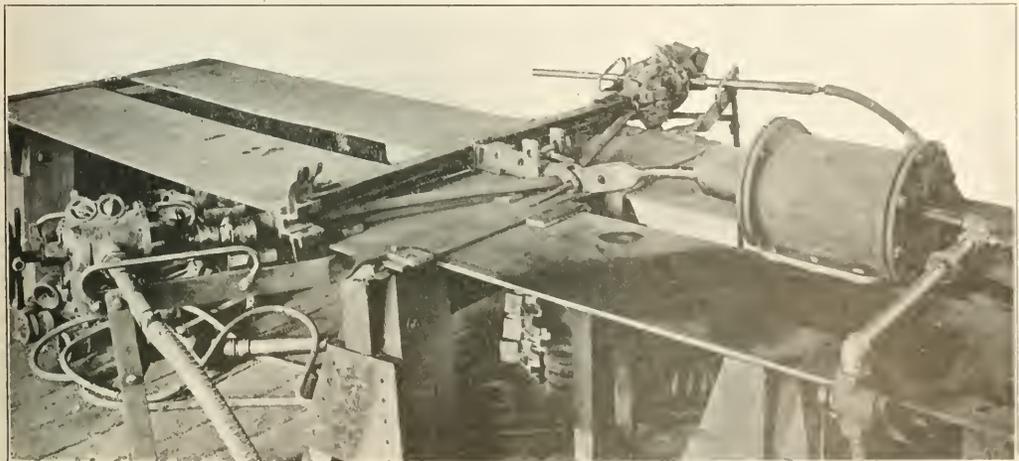


Fig. 5—Assembling Rack

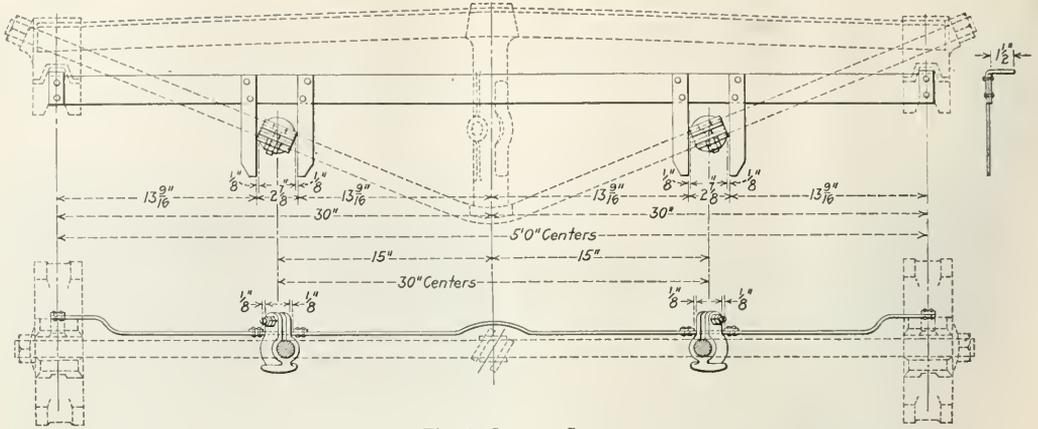


Fig. 6—Support Gage

Testing machine. Fig. 7 shows a 50,000-lb. testing machine and Fig. 8 a 75,000-lb. machine.

Suitable bins and racks for storing and caring for repair parts.

Air motor for applying nuts to ends of compression rods.

Fig. 5 shows one of these motors in use.

Annealing oven.

Miscellaneous. Hammers, wrenches, etc.

ASSEMBLING AND TESTING

Strut should be applied to compression member and properly keyed in place.

Safety clips should then be applied.

If additional support chairs are used they should be applied next, fastening them in proper place, using a gage similar to Fig. 6.

Heads or sleeves should be placed on one end of the com-

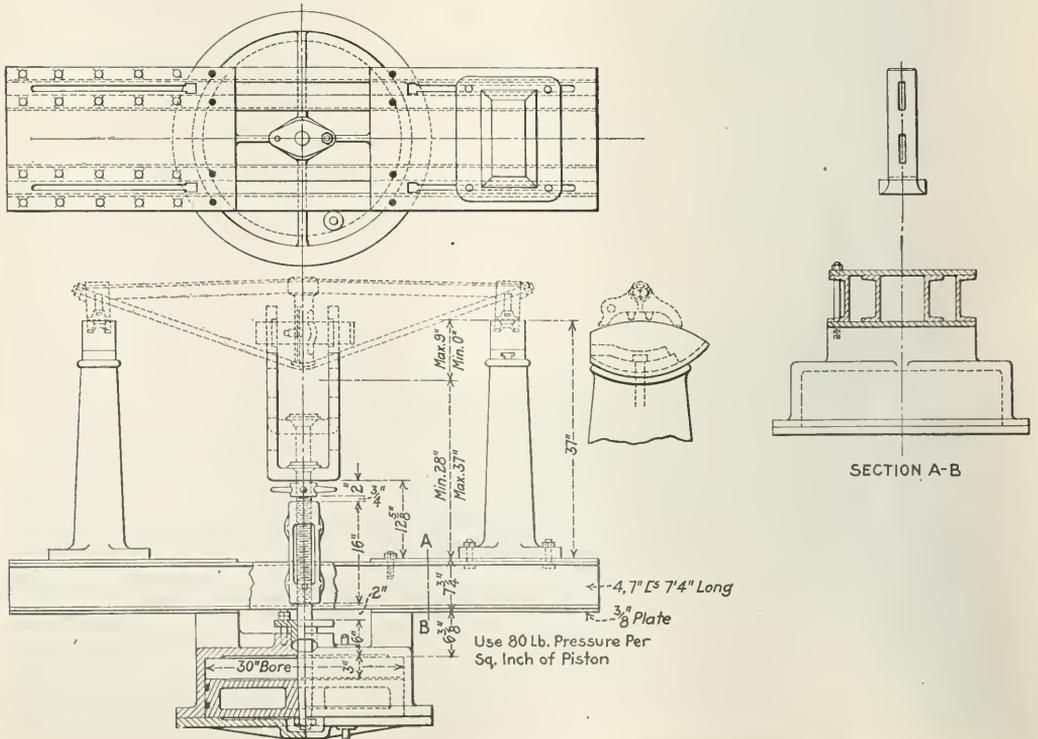


Fig. 7—Brake Beam Testing Machine, 50,000 lb. Capacity







they also show that it will be difficult to get a key that will fit old parts as well as new parts. However, the proposed key should be an improvement over the present standard and there will be only a few cases when it will be too large to be used. It is evident from experiments with brake heads or shoes which have been gaged that where the key projected over 4 in. from the brake head, the brake shoe or head is not within the limits of the standard gages.

When trying the proposed key on cars in service, the old

keys removed were measured at a point  $5\frac{3}{8}$  in. from the head. Taking the measurements at a uniform place did not always show the greatest wear. However, 63 per cent of all old keys were only  $5/16$  in. or less. It would appear that a good deal could be accomplished in keeping the brake shoes tight by putting in a limit on the thickness of key which should be allowed to remain in service. We therefore suggest for consideration a limiting thickness of  $\frac{3}{8}$  in. at any place within  $5\frac{3}{8}$  in. of the shoulder.

## Report of Committee on Tank Cars

During the past year the work of the committee has been mainly the continuation of its efforts to secure improvement in certain details of construction, principally the safety valve, bottom discharge valve, dome closure arrangement and anchorage of tank to underframe. In this work the Committee has had the benefit of the co-operation of the Bureau of Explosives, American Petroleum Institute and the National Petroleum Association.

### SAFETY VALVES

Additional tests have been made at Altoona of the experimental designs submitted by manufacturers of locomotive safety valves, which had been modified as the result of the tests referred to in the 1920 report; and also of other modifications of the standard design, including changes in the dimensions of the valve disks, non-corrosive seats, etc. The committee can only report progress for the reason that no valve has proved absolutely tight at pressures at or near the popping point (25 lb.). Observation of the leakage prior to popping has shown that the escape is always on one side, indicating a tendency of the valve disk to cock. Special guides have been tried and special springs have been made in an effort to secure true closure, but so far without success.

Some of the valve manufacturers are willing to make other modifications, but before asking them to do this the committee is endeavoring to get from the oil trade some definite information as to the extent of the losses which can be properly charged to the safety valve. The available data indicates that with straight refinery products the losses are not large; also that with insulated tank cars the loss with casinghead blends is slight, but the question of safety valve leakage assumes importance because the uninsulated car may carry very volatile products, some of which are constantly under pressure.

The tests have shown conclusively the large discharge capacity of the standard valve—about 31,000 lb., equal to 4,800 gallons of gasoline per hour—so that an 8,000-gallon tank with its two safety valves would be discharged in about 50 minutes with very little rise in the pressure. One of the experimental valves gave a discharge capacity of 40,000 lb. per hour.

The committee has approved some slight modifications in the details of the design of the valve to reduce foundry losses and to facilitate machinery. These changes do not affect the functioning of the valve, or the interchangeability of the parts, and the committee recommends that they be incorporated in the standard design of valve.

### BOTTOM DISCHARGE VALVES.

This question has been assigned to a sub-committee of which J. E. Grant, special agent of the Bureau of Explosives, is chairman. This sub-committee is working in close co-operation with a similar committee of the American Petroleum Institute. There have been about twenty-five designs submitted, eleven of which are being tried out under observation in service. It is hoped that another year will demonstrate the correct principles on which satisfactory designs must be based.

Reports show that a large part of the unsatisfactory performance of existing valves is due to failure to keep the tanks and consequently the valve seat clean.

### EXTENSIONS TO BOTTOM DISCHARGE OUTLET

There have been a number of protests against the requirement adopted last year that:

No nipples, valves or other attachments shall project below the bottom outlet cap, except while car is being unloaded.

These protests emphasize the lack of confidence in the present bottom outlet valves, in that it is claimed that the cocks attached to the bottom cap are necessary to enable the consignee to tell whether the outlet valve is closed, and that if the valve is not properly closed the removal of the cap would permit the uncontrollable discharge and loss of the contents of the tank. The trouble is really due to man failure rather than design failure. The regulations of the Interstate Commerce Commission require that the bottom cap shall be removed when the tank is loaded, and if this is done it will insure the valve being properly closed and there will be very little danger of its being unseated in transit. The one exception is where water from gasoline leaks past the valve into the outlet pipe and freezes, which may result in unseating the valve or breaking the outlet pipe, or both. The overcoming of this is one of the features of the problem of a satisfactory valve.

The committee believes a further step should be taken to guard against the danger of breakage of the outlet pipe by limiting the distance which the outlet projects below the sills to that required to operate a wrench in applying and removing the cap. It is, therefore, recommended that:

Effective July 1, 1922, in the case of new cars and of replacements on existing cars, the bottom outlet pipe when applied to tanks of cars having center sills shall not project below the bottom line of sills more than the threaded length necessary to permit the application and removal of the bottom outlet cap.

The presence of a cock on the bottom of the discharge pipe is not necessarily objectionable, provided it complies with the proposed requirement.

[In connection with the bottom outlet, the committee also recommended the elimination of the following sentence from Section 7 (c), first paragraph, of Classes III and IV specifications: "Additional attachments thereto, having threads of other dimensions may be used."—EDITOR.]

### DOMES CLOSURE ARRANGEMENT

The Bureau of Explosives takes strong ground against the ordinary screw type of dome cover, particularly for cars carrying liquid normally under pressure. It was expected that the escape of gas through the vent holes at the top of the screw portion of the cover would give adequate warning to a man of ordinary intelligence that internal pressure existed and that the dome cover should not be removed until this pressure had been relieved. The numerous casualties which have occurred because of the removal of the cover in spite of this warning show that a better form of cover is necessary.

There are also appreciable losses of contents in the form of gas due to lack of tightness of the screw cover, even where soft gaskets are used.

With cars assigned permanently to these very volatile products it would suffice to provide only such cars with another form of cover, but in an emergency, at least, any car may be loaded with these products.

The attention of the car builders has been called to the matter and a number of them are endeavoring to work out satisfactory designs. Two general types meet the requirements, viz.: (1) An internal cover supported by a screw and yoke against an returned flange of the dome ring. Such a cover can not be removed while there is internal pressure. (2) An external cover held in place by a number of hinged bolts, the nuts of which engage lugs on the cover so designed that the cover can not be removed as long as there is internal pressure against it.

It may be necessary, eventually, to require that all new cars shall be equipped with some form of cover which can not be removed until internal pressure is relieved. The committee believes that a beginning should be made with cars carrying casinghead gasoline and its blends, and recommends that paragraph 6 (c) of the Class IV Specification be amended to read:

For cars built after July 1, 1922, the dome cover, if external, shall be secured by bolts; or if internal, by yoke and screw.

The Committee feels that the external cover is preferable because of the greater probability of good workmanship and because its operation is simpler.

#### ANCHORAGES.

The center anchorage for tank cars is the subject of a basic patent which expires in August, 1921. Because of this patent builders have been allowed considerable latitude in their designs of this type of anchorage. Some of these designs have proved unsatisfactory in service, and a number of cases have been reported of tanks going adrift with breakage of outlet pipe and loss of contents. So far these failures have been confined to the bolted anchorage and are traceable to bad design or workmanship, or both. The principal causes have been the use of rough bolts in unreamed holes instead of turned bolts in reamed holes, as required by the specifications; and the use of wooden fillers, prohibited by the specifications, between the anchorage and the underframe, so that the bolts are in flexure instead of in shear. In a number of cases the bolts were threaded so far down that the shearing value was that of the root of the thread instead of the body of the bolt, while the bearing value was but that of the top of the threads.

This matter was taken up with all of the tank car builders, and where it was found desirable to change the designs it was willingly done. The approved designs of all of the builders now provide connections materially in excess of the minimum requirements of the specification and it is believed that no failures of these anchorages will result with any reasonable handling.

#### HEATER PIPES

The Committee can only report progress upon this subject.

#### NUMBER AND CLASS OF TANK CARS

The growth in the number of tank cars is shown by a recent tabulation from Boyd's Tank Car Circular, which shows a total of about 137,000 tank cars in service, of which 125,500 were of private ownership and 13,500 of railroad ownership. This compares with figures for January 1, 1913, given in one of the Interstate Commerce Commission reports, viz.: 30,039 of private ownership and 9,150 of railroad ownership, a total of 39,189.

#### WELDING

In its 1912 report the committee called attention to the desirability of the welded tank, and in 1919 provision was made in the specification to permit the experimental use of welded tanks for Class III cars. Several welding concerns have given the question attention, but so far the cost of tanks welded by the forge welding process has been so high as to be prohibitive. Recently one of the large pipe manufacturing concerns proposed the use of its forge welded pipe for this purpose. If this proposition assumes definite form your committee will be prepared to take up the question of this construction as an alternative to the riveted tank.

Various overtures have been made to permit the use of autogenously welded tanks, but the committee is not prepared to recommend the acceptance of such tanks in advance of definite proof of the reliability of this method of welding. At present there are too many uncertainties as to the character of the welds made by different operators, and particularly as to the ability of such welds to stand the alternating bending stress to which tank cars are subject.

The one exception which has been made is in the case of anchorages on welded Class V tanks. It was originally required that this should be forge welded, and during the War a number of tanks for the United States Government were so welded but the results were unsatisfactory. Owing to the nature of the lading, exposed anchorage rivets are objectionable and the latest construction approved by the committee consists of riveted anchorages with the rivet heads on the inside covered by autogenously welded cup shields.

In this connection the attention of the committee has been called to the fact that in some cases cracked shells have been repaired by autogenous welding and that the result has not been satisfactory. The committee recommends that, for the present at least, repairs to shells of tanks shall not be made by autogenous welding.

#### A. R. A. STANDARDS AND RECOMMENDED PRACTICE

The specifications for Classes III, IV and V tank cars, under the head of Couplers, Brakes and Trucks, prescribe "A. R. A. Standards and Recommended Practice." It has developed that this, in connection with the Rules of Interchange, makes the standards and recommended practice mandatory in the case of tank cars where they are not so in the case of freight cars generally. It was not the intention of the committee to single out tank cars for greater compliance with the standards and recommended practice than is required in the case of other kinds of freight cars, and the committee recommends amending this requirement to read:

A. R. A. Standards and Recommended Practice as in the case of other classes of freight equipment cars.

#### BRAKES

Question has been raised as to the difference in the wording of the brake requirements for Classes I and II cars, reading:

Each car shall be equipped with air brakes of a capacity equal to not less than 70 per cent of the light weight of car, and at least one hand brake operating the brakes of both trucks.

and those for later classes of cars, reading:

A. R. A. Standards and Recommended Practice.

When the general revision of the specification was made in 1916 the committee, in accordance with its policy of avoiding as far as possible retroactive requirements, did not recommend any change in this respect so far as Classes I and II, which were the existing cars, were concerned. The difference is more in form than in substance, the original 70 per cent brake power being based on 60 lb. the pressure due to emergency application, while the 60 per cent is based on the 50 lb. due to equalized service application. As there is so

little difference in the final results it is believed that the situation can be satisfactorily covered by adding, in the case of Classes I and II cars;

When any change is made in the brake arrangement it shall be made to conform to A. R. A. Standards and Recommended Practice.

TANK CARS FOR HYDROCHLORIC ACID.

Certain products such as hydrochloric acid, vinegar, etc., because of their chemical reaction can not be successfully handled in the ordinary metallic containers. In the case of hydrochloric acid, which is extremely corrosive, it has been handled in wooden tanks mounted on flat cars. The committee has not, so far, recommended any specification for such cars, but, at the suggestion of the Bureau of Explosives, in view of complaints as to leakage with existing designs of cars,

the question of developing a standard specification has been taken up and a sub-committee of five representatives of the largest acid shippers in co-operation with the Bureau of Explosives is engaged in experiments with steel and wooden tanks with glass and rubber linings, and with wooden tanks enclosed in steel shells insulated by plastic bituminous materials.

The report is signed by A. W. Gibbs, chairman, Pennsylvania System; C. E. Chambers, Central Railroad of New Jersey; S. Lynn, Pittsburgh and Lake Erie; John Purcell, Acheson, Topeka & Santa Fe; George McCormick, Southern Pacific; F. K. Tutt, Missouri, Kansas & Texas; Col. B. W. Dunn, Bureau of Explosives; A. E. Smith, Union Tank Car Company; Geo. Hartley, Semet Solvay Company, and C. W. Owsley, The Texas Company.

Report on Train Brake and Signal Equipment

RETAINING VALVES FOR FREIGHT EQUIPMENT

The question of retaining valves for freight equipment cars referred to in this committee's report of last year has been made the subject of a special investigation by a sub-committee, which outlined and arranged for a series of tests on grades ranging from 1½ to 3½ per cent, with retaining valves of various capacities. Owing to the serious business depression now generally prevailing, the tests were discontinued before sufficient information had been collected to permit the committee making definite recommendations.

AUTOMATIC HOSE CONNECTIONS FOR FREIGHT AND PASSENGER EQUIPMENT

The question of automatic hose connectors for freight and passenger equipment was referred to a sub-committee which reports that there were thirty-nine answers to the circular of inquiry sent out February 20, 1920, to all of the railroads in the United States; four railroads reporting experience with automatic connectors. Of these, there is only one which has any considerable number of cars equipped, or which are in any representative service. The committee learned that there were some automatic connectors used in Canada, which were not included in the answers to the circular, and endeavored to find what information could be obtained from this trial; but was unable to get any great amount of information.

The committee is unable to find in the reports a design that would seem to lend itself to general use, and for the lack of such information is, therefore, unable to make any specific recommendations at this time.

AIR BRAKE CYLINDER PACKING

The committee has further considered the matter of air brake cylinder packing made of leather substitutes. It has also been recently suggested that specifications be prepared for brake cylinder packing. The committee will solicit the assistance and co-operation of the Committee on Specifications and Tests for Materials in preparing suitable specifications, after which it will be in position to submit definite recommendations.

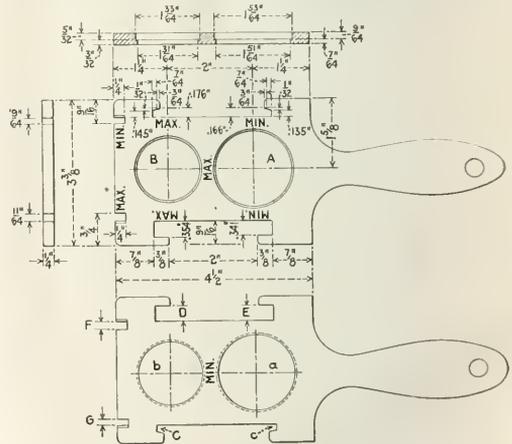
MECHANICAL SANDERS

The committee has considered the question of connecting mechanical sanders to the engineer's brake valve in a manner that will automatically sand the rails when the brake valve is placed in emergency position. This is a local matter and the committee has no recommendations to make.

LIFE OF AIR BRAKE HOSE

This subject has been investigated by a sub-committee which has reviewed all data available. Unless the period

for removal of air hose in service is extended to at least thirty months a large number of hose will be removed which would last for a much longer time; also the fixing of such a period for removal from service would not provide for removing a large number of hose which fail within this period. Instead of establishing a maximum life it would be preferable to consider revising the present specifications to provide a better quality of hose, and it is suggested that



Openings "A" and "a" are for gaging max. and min. (external) diameter of packing ring flange.  
 Openings "B" and "b" are for gaging max. and min. (external) diameter of projecting wall or face portion of ring.  
 Slots "C" and "c" are for gaging max. and min. thickness of flange and level on surface of flange.  
 Slots "D" and "E" are for gaging max. and min. over all depth of ring at face.  
 Slots "F" and "F'" are for gaging max. and min. thickness of projecting wall or face portion of ring.  
 Rings must enter all sections of gage marked "max." and must not enter any section of gage marked "min."

Fig. 1—Tolerance Gage for Air Hose Coupling Packing Rings

this be considered by the Committee on Specifications and Tests for Materials.

The committee again calls attention to the importance of applying the soap suds test as called for in the present rules governing the maintenance of freight brakes.

EXTRA HEAVY PIPE AND NIPPLES FOR AIR BRAKE TRAIN LINE

A member has requested that consideration be given to

using extra heavy wrought iron pipe and nipples exclusively for repairs to all freight car equipment, regardless of age, and that prices for material be revised accordingly. This practice is in effect on several large roads and while extra heavy wrought iron pipe is unquestionably superior to steel or standard weight pipe, in view of the decided difference in first cost the committee does not feel justified in recommending a change at this time. It is suggested, however, that standard weight nipples be used at the angle cock with either extra heavy or standard weight brake pipe.

#### LOCATION OF ANGLE COCKS ON LOCOMOTIVES

In view of the fact that this subject was investigated during the period of Federal Control by the Railroad Administration's Committee on Standards, assisted by several members of your Committee on Train Brake and Signal Equipment, without being able to develop a solution for the problem, the committee is not now in position to develop anything new on the subject.

#### GAGES FOR AIR BRAKE HOSE COUPLINGS AND PACKING RINGS

The Committee on Specifications and Tests for Materials has recommended that, (a) suitable gages be developed for checking the dimensions of hose couplings when new, (b) consideration be given to changing the form of present standard gage for hose coupling packing rings, and (c) the tolerance dimensions for packing rings be made to conform to the tolerances shown in its

report for 1919, which was printed in Circular S III-23.

With one exception the tolerance dimensions referred to are practically the same as are now provided for in the standard gage for hose coupling packing rings, the exception being that the gage provides for no tolerance in thickness of packing ring flange. The Committee on Train Brake and Signal Equipment now believes it desirable to provide for tolerances for all dimensions, and recommends that the gage drawing be revised to conform to the accompanying Fig. 1.

It is suggested that the question of gages for hose couplings be made the subject of investigation by this or a similar committee during the coming year. The Committee on Specifications and Tests for Materials concurs in this suggestion and has consented to furnish a sub-committee, if necessary, to assist in such an investigation.

#### ADJUSTMENT OF HAND BRAKE POWER ON FREIGHT CARS

On account of the present business depression in railroad service, the test which was scheduled to be made early this spring in connection with the adjustment of hand brake power on freight cars has, with the approval of the General Committee, been indefinitely postponed.

The report is signed by F. L. Burton (Chairman), New York Central; B. P. Flory, New York, Ontario & Western; J. M. Henry, Pennsylvania System; L. P. Streeter, Illinois Central; R. B. Rasbridge, Philadelphia & Reading; G. H. Wood, Atchison, Topeka & Santa Fe; H. M. Curry, Northern Pacific; W. J. Hatch, Canadian Pacific, and G. C. Bishop, Long Island.

## A Simplified Check for Large Freight Houses

By C. J. Casteel

Traveling Freight Inspector, Wabash Railroad

**A** GENTS IN CHARGE of large freight houses frequently complain that they find it next to impossible to obtain a satisfactory check of all of the freight in their warehouses. Such men will find a desirable check in a system recently adopted by the Wabash which provides a rapid means of adjusting "overs" and "shorts," and at the same time prevents claims arising from irregular deliveries.

Owing to an unusually congested condition which followed a large movement of I. C. I. freight through one of our larger warehouses, we found ourselves confronted with hundreds of articles of freight for which we were unable to locate the billing by which it had moved. In the same way we found large numbers of freight bills for which we could find no corresponding shipments of freight. This condition was due to a number of causes, but principally to the cross delivery of shipments, one of the failures so common to inefficient or careless delivery clerks.

Our efforts to check the warehouse periodically by means of the oldtime tally sheets not only involved a tremendous amount of work, but resulted in considerable delay, together with a conglomeration of written reports to ponder over in the slow process of matching up "overs" and "shorts." In addition to this difficulty, the check sheets were worthless to us, for once being filed they were never referred to afterward.

To overcome these bad features and to reduce the constantly growing volume of "overs" and "shorts," our claim prevention representatives adopted a rather novel plan which has been operated with considerable success in our warehouses. Printed cards, numbered consecutively, have been prepared. These are furnished the clerk in charge of each section of a warehouse with instructions that a separate card is to be filled out for each shipment or portion of a shipment which appeared in the individual section after the expiration

of the free time limit; the free time limit to be determined by the car number and the date of unloading, which is stamped on each article by the unloading clerk as it leaves the car. The card itself is arranged to provide space for data, including the name and address of the consignee, the number of the card, the number of the shipment, the name of the shipper and his address, a brief description of the articles in the shipment and their weight, the car number, date, and the section of the warehouse through which the shipment has moved. These data are filled in by the section clerk, who then turns the card over to the OS&D clerk, who completes the record by adding the date and the OS&D number.

To avoid any possible duplication of these cards the section clerk marks each package reported with a red tag bearing the number of the card and fastened securely to the shipment. When the shipment is delivered this tag is detached and sent to the OS&D clerk, together with all other tags and cards. These are sent in at the close of each day's business and automatically notify the OS&D clerk that he is to close his files on the particular shipment reported. The first duty of the OS&D clerk at the beginning of the day is to check off cards which have been handed him by the section clerk on the previous day, with the bill case in the office of the cashier. All cards which are able to be matched in this way are filed alphabetically with reference to the consignee, in a permanent file. Cards which cannot be matched are filed in a current file box from which the OS&D clerk works constantly. As soon as a card is ready for permanent filing its disposition is noted on the back, and it is then ready for the claim clerk who may need it for reference in checking up possible cases of claims for lost or undelivered packages.

This card system, we find, gives us a perpetual inventory on our warehouses. It places before our OS&D and claim clerks a permanent daily check which relieves them of the necessity for making numerous time-killing trips about the warehouses to identify and compare billing of "over" and "short" shipments. The system protects us against claims for lost packages arising from any possible failure to establish delivery.

# Electrical Communication in Railroad Service\*

## Proper Organization of the Telegraph Department Essential to Obtain Efficiency in All Branches

By H. C. Chace

Superintendent of Telegraph, Atchison, Topeka & Santa Fe, Topeka, Kan.

**A**S THE TELEGRAPH DEPARTMENT is entirely responsible for the operation of the railroad electrical communication, a brief outline of the organization necessary for the proper operation and upkeep of the facilities will serve to illustrate the functioning of the telegraph departments on large railroads.

Adequate facilities are necessary to good service and economical operation. Sufficient force must be provided to render a satisfactory service. Competent supervision is necessary, first, to plan facilities which will meet the requirements of the service and operate them economically, and second, to see that the facilities are properly maintained and used.

The ideal arrangement is to establish general or relay offices under the jurisdiction of one head at convenient points, preferably division and general office headquarters, so that each way office will have access to at least one general or relay office. These offices, forming the backbone of the telegraph service, must have a sufficient force to provide flexibility, and this elasticity makes it possible to economize in the force at the less important offices without seriously impairing the service.

### Organization

In the Santa Fe organization the telegraph department is administered by the superintendent of telegraph, reporting to the operating vice-president. Assistant superintendents of telegraph are located at Topeka, Kan.; Galveston, Tex., and Los Angeles, Cal. A telegraph engineer, a telephone engineer and a construction engineer are also attached to the superintendent of telegraph's staff. A telegraph-telephone supervisor is located on each general manager's territory and is responsible for the maintenance of pole lines, circuits and equipment.

The bulk of the telegraph business is filed during the day hours and usually in such volume that the facilities were overtaxed, while at night those same facilities were practically idle. With the exception of messages marked "rush" and those detected by telegraph office supervisory forces as being important, telegrams were, prior to the introduction of our classified service plan, transmitted in sequence of their filing time. As a consequence, important messages during periods of congestion occasionally were not given the service they deserved while waiting their turn, while less important ones were moved more promptly than was necessary.

In order to correct this condition, distribute the traffic load more evenly and provide a more satisfactory and economical service, we inaugurated a classified service, which in addition to the Pink service provides for: (1) Preferred Service—For the handling of subjects requiring immediate and preferred attention. (2) Day Service—For handling subjects the urgency of which do not require preferred service. (3) Night Service—Where the delivery of the telegram on the morning following will answer the purpose. No one knows the importance of a telegram as well as the sender or writer, upon whom now devolves the responsibility of designating its class, and the excellent co-operation we have had has made the plan an entire success. Such officers as may be designated by

the vice-president are authorized to use what is known as Pink service for extremely urgent telegrams. These messages take precedence over all business except train orders and are given practically instantaneous service.

### Circuits and Circuit Arrangements

In providing and arranging telegraph circuits the object is to furnish each telegraph office with a direct wire to division headquarters and to at least one relay office, preferably and usually the one located at division headquarters, and to connect the relay offices with each other for direct service whenever the volume of traffic warrants. Each relay office is connected by a direct and exclusive circuit to grand division headquarters and to such other relay offices as are warranted by traffic conditions, the object being to avoid manual relay with its attendant delay, expense and hazard of error.

The connecting circuits between relay offices are practically all quadruplex and duplex, the extra channels thus provided obviating the necessity for additional wires on the pole line. The quadruplex is availed of wherever additional facilities are needed and can be thus obtained.

The main lines of the Santa Fe and many of the branches are equipped with telephone train dispatching circuits, and in addition have some independent telephone circuits used exclusively for railroad message work.

If two metallic telephone circuits parallel each other and have been properly transposed, an additional telephone circuit known as a "phantom" can be obtained for operation between terminals. These phantom circuits give entirely satisfactory service. Compositing of trunk telephone circuits, permitting Morse operation of each of the wires, is also practicable between terminals.

### The Printer

When speaking of printer operation it is meant that a prepared tape, when passed through a transmitter at one end of a circuit, operates a typewriter mechanism at the other, thereby printing the message the same as is done by a typewriter manually operated.

When referring to a channel this means that one employee can be sending and one can be receiving at each end of the circuit. By increasing the number of channels over a wire the capacity of that circuit is increased accordingly, with but single channel operation, on which the speed averages from a slight reduction in the speed of each, as compared with 40 to 50 words per min. on each side of the channel. Between points 500 or 600 mi. apart as many as four channels are obtainable, which at 40 words per min. on each side of the channel would give an output of 320 words per min. on the four-channel multiplex-duplex, or eight times the capacity of a single wire. Printer operation is not, of course, confined to circuits of the length above mentioned. Three-channel printers are in daily operation for distances up to 2,500 mi., and since the recent introduction of the rotary repeater two-channel circuits are regularly operated up to 3,500 mi.

### The Carrier System of Wired Wireless

It appears that the greatest field for the future development of electrical communicating systems lies in the use of

\*Abstract from a paper presented before the Western Society of Engineers, Chicago, on April 21, 1921.

ultra-sound frequencies for carrying voice and other signaling currents over existing wires. The Edison Phonoplex in use many years ago on several railroad lines was the beginning of superimposed systems and the pioneer of relatively high frequency signaling systems. However, the frequencies it and some of its successors employed were within the range of audibility and went into the discard with the growth of the telephone system. Means have been found through the use of vacuum tubes of employing frequency so high that they can produce no audible effect in the ordinary telephone receivers or telegraph instruments through which they pass.

Under the most favorable conditions now known, theoretically it seems possible to carry on 60 independent telephone conversations and 6 or more additional telegraph communications with two pairs of wires without interfering with the present method of operation on them. Development work with the carrier system or wired wireless is being carried on by the Signal Corps of the United States Army and by the American Telephone and Telegraph Company, and tests have been made on one or two large railroad systems.

### Train Dispatchers' Loud Speaking Telephone

Train dispatchers find but one objectionable feature that is worthy of note to telephone train dispatching, and that is the necessity for the dispatcher having to wear a headband receiver clamped on the ear continuously during his time on duty, a practice which is irksome to a degree under the best conditions, and particularly painful during lightning storms.

Loud speaking telephones, to be satisfactory in train dispatching service, must be as dependable as the headband receiver, free from maintenance complications, have ample volume which can be readily controlled by the dispatcher, and clear in articulation. Inventors of an electro-dynamic telephone receiver have, with the co-operation and advice of the telegraph and telephone engineers of the Atchison, Topeka & Santa Fe, developed a loud speaker which promises to meet all of the requirements.

### Other Systems

The wireless telegraph does not seem to have been developed to the extent it deserves, as it could be used to bridge over severe wire prostrations to a considerable extent, but even these advantages seem to have been availed of by but few roads. I believe this is a field which should be given intensive development. The wireless telephone also gives some promise of utility on railroads, such as the bridging of interruptions, and communicating with moving trains, but this system also does not seem to have been developed to a point where it is practicable for railroad use.

## The Need for Railroad Statistics

By A. Bonn

**T**HE WORKING FORCES of any railroad are regularly employed in the compilation of statistics. The working foremen must keep accurate records of the labor and material used in the work upon which their forces are engaged. These records form the basis for the necessary periodical accounting and also are called upon to serve as the foundation for important comparisons. The various operating units, such as train dispatchers, train crews, yard forces, etc., are daily recording information which finds its way into the permanent and working records.

The accounting division of a railroad contains forces working on data gathered from different sources and a great deal of this data is set up into statistical records. The traffic division must keep pace with the commercial situation and in order to do so it assembles all available information relating to the subject. The miscellaneous divisions like-

wise must compile for reference the activities or results of their work.

It can readily be seen that considerable time and a large sum of money are devoted annually to railroad statistics. Some of these statistics have been permanent for a long time and for that reason are accepted today without change. Some roads have been living on these records and have never thought it necessary to expand very much beyond them. Other statistics are assembled for special occasions and may only be used once. Then we have the working statistics, which are referred to as temporary records, and do not apply beyond a certain working period. There is a present opportunity to get away from the idea of the temporary nature of the working statistics and make them more of value in the building up of the permanent records. Some duplications of work and avoidance of wrong impressions will result if this change is brought about.

Because of the constant changing of the requirements—national, state, executive, departmental, etc.—the statistics have grown in volume, not always sure of analysis, sometimes misleading, and certainly a great burden upon the time, working energy and patience of the railroad executives and other officials concerned. With tons of statistics brought together each year it would seem that nothing worth while could be missed, yet every day there is evidence of useful data omitted.

In many instances the original data is totaled up by years or other periods to satisfy a special report but no time is taken to set up the basic information in good shape for use in a subsequent report, necessitating lost time, extra expense, perhaps different results, and consequent delay to other work. It is also noticed that certain statistics are compiled to a certain point with the thought that beyond it rarely is it necessary to go.

A sharp line is always drawn between accounting and statistics. For that reason the accounting results are not always used for statistical purposes. The statistician will often go back to the starting point for information for his statement. There must be a closer relation between the accountant and the statistician if the crying need of the hour is going to be heeded. The clerical work of a railroad has increased so decidedly in the last few years until it is felt that the task is almost hopeless unless some order is brought out of the chaos. The accounts are given preference, the statistics are delayed or passed aside, often causing hasty preparation when urgently required. For lack of time on many occasions approximations are resorted to in the use of information which could have been kept in reliable shape by a little time and forethought. A successful approximator or guesser may prevent the necessary preparation of essential records.

It is no doubt true that everyone is trying to reduce to a minimum the tendency to lost motion in the field of railroad statistics. Each department, however, having its own ideas of important data, spends its time on work which may not be valuable beyond a certain office, which may seldom be called for and may be cast aside by changing of officers. Sometimes the different departments are not aware of information already compiled, available for use, and go ahead and work out the same data, reaching different results and confusing those in whose hands the statements are placed.

Those who have spent many years in railroading and have seen the evolution of the modern railroad and the methods used to keep track of the results accomplished, are easily bewildered as they turn from side to side to study the present-day railroad statistics. It is to them "higher mathematics compared to the "arithmetic" of their early days.

Some of our executive heads have seen the railroads managed with less stress put upon the tabulated results and,

therefore, take only a passing interest in what may now be done. They are not concerned in the methods used or the time required but only attempt to control the size of the force employed for statistical work. Favorable statistics please their fancy, while less favorable data are frequently brushed aside with the familiar expression, "interesting if true."

The great railroad minds are watching the pendulum swing in these reconstruction days. They have become impressed with the need of co-ordination all along the line. They realize any shortcomings are to be corrected. The best and still the most economical methods of railroading must be adopted. They cannot turn back but must press forward with those who are bent upon re-creating the railroads of the United States.

The slogan of the day is "service." In our efforts to succeed we cannot lose sight of the cost or the economic needs of the property. Our statistics must be effective, quickly read, and not smothered in secondary detail. The executive who is not fortified by reliable information is as much lost in the competition as the manufacturer who attempts to sell his goods blindfolded. The margin of profit in railroading is even closer than in the commercial field.

Again, in recent years the manufacturer has appreciated the necessity of cost statistics, without which he could not exist. Previously it was the accounting totals which gaged his business, now it is the knowledge gained by studies into each step of manufacture which tells him whether he is prospering.

While some emphasis has been laid upon cost statistics in railroading, it is mostly confined to certain railroads and often to certain officers on these roads. There has been no genuine demand, as is common in manufacturing. The opportunity to study the different values entering into the cost of making transportation should always be most interesting to any railroad official. The need of doing so is imperative at this time.

The changed sentiment towards labor certainly must be met by developments not thought necessary previously. If there is going to be successful railroading hereafter there should be co-operation all along the line among the employees of a railroad. The laboring man is intelligent enough to become interested in the results of his work if they are presented to him in the spirit of co-operation. The manufacturer has seen the benefit to his employees of working with them in the development of helpful information.

The payroll of the railroads today has reached an amount which calls for intelligent control. It is not sufficient to work on approximations. There must be inaugurated a definite policy of regulation built up through continuous study of what the forces have done, are doing and can reasonably be expected to do in unit performance. In addition, the employment of labor should follow the receipt of material. Until railroads are willing to anticipate the material requirements and keep their forces fully supplied with the necessary material we will use labor excessively.

The consumption of material is equally important with the labor expense. How often quality is sacrificed for price! The consequences of this short-sighted policy as to quality, too common among the railroads, must now be realized. We cannot afford to use labor to apply inferior material.

The quantity of material required to be applied periodically should be the result of studies into the life expected under the conditions of service. Something more definite must be known about the quantities of the different materials consumed in order to be able to study their economies.

The day is passing when the executive's thoughts will be concentrated on transportation alone. Maintenance expenses are soaring and he must know accurately, by unit values, where he stands in respect to the physical condition of his

property. He cannot alone accept the verdict of a mere physical or casual inspection. He must know what the demands upon his property are, and how they should be met. He cannot do this unless he knows the actual quantity of material needed, the most economical quality to apply and the true labor cost to maintain his property. He needs more than ever cost statistics, prearranged annual programs and defined policies.

The railroad executives are busy in these present months gathering up the loose ends, straightening out the finances, and closing up the period of federal control. They should, however, be giving some thought and preparation to ways to better the railroad statistics, to make them simpler and more effective. They will soon be in full control of their properties and they should commence to think of improvements which are needed to bring about economic results. They should first use the experience and observations of their own men and begin what may be termed as an internal survey. Every branch of railroading should be covered and a co-operative scheme outlined by which no department will be sufficient unto itself.

Now is the time to know what statistics are being kept; what duplications are going on; how much is non-essential; how far the fundamentals are preserved; what interest there is at the present time in the work, without which accuracy cannot be certain. This preliminary work will open many avenues of thought helpful to the problem.

The assembling of railroad information must follow the simplest methods because of its volume. Definite rules tending to simplicity must be in force. Properly trained men should be charged with the responsibility of setting up the data.

The problem, therefore, is to take the mass of details, simplify the records as much as possible and draw off the data which will be most useful to the transportation business. We must study the economic use of materials, analyze our labor costs and be assured that our own cost bases are as sound as they are in the industrial field.

We are all familiar with the operating statistics known as the "deadly parallel." We should have "deadly parallels" in all branches of railroading. The manufacturer and his employees know and are interested in watching the unit costs at the different plants. The railroad executive and his employees know much less about their own accomplishments.

There is also a community of interest among the railroads and the help to be derived through the ability displayed in certain directions by any one of them should be for the benefit of all.

Most of the railroads have already some form of statistical organization working in their several departments. At present there is no co-ordination between the departments, no central head who is keeping in touch with all the departments. There is a great need of a central statistical bureau for every road. This should be an assembling point for all statistics useful for the necessary management of the road. The chief of this bureau should be the general supervising head of the statistical work of the road. He should have a general statistical committee embracing all departments. Through his committee he should study the economic preparation of statistics, be able to keep them within bounds, and as far as humanly possible have the statistics state the facts accurately. This bureau should be in full knowledge of the necessities for information, both inside and outside of the road. It should furnish the essential analyses to the chief executive and others interested. If by chance the new day shall soon appear, we must be ready "to rise on our dead selves" to better railroad statistics. Never again should we allow the old statistical ruts to come.

# General News Department

**The Operation of Freight Trains on Sunday** in the State of Georgia, which has been allowed since 1917 by the Railroad Commission as a war measure, must now be stopped, except in the case of perishable and live freight, the commission having on August 10 revoked the permissive order.

**Dinner at \$1.25**, table d'hote, is now provided in the dining cars on two prominent trains of the Baltimore & Ohio; No. 6 leaving Chicago for New York at 6:25 p. m. and No. 527 leaving New York for Washington at 4:45 p. m. Meals are served a la carte, also. The new arrangement has proved popular.

**As a Result of the New System** for the classification of cars for the expedition of trains through yards, described in the *Railway Age* of August 6, 1921, page 254, the Baltimore & Ohio accomplished a saving of 61,167 engine hours during the month of June, 1921, as compared with June, 1920. Statistics on the relative number of cars handled during the month of June for the two years is not available for the entire system, but on the Eastern lines the number handled in June, 1920, was 522,113, as compared with 553,991 in June, 1921. The cars handled per engine hour were increased from 6.7 cars in June, 1920, to 8.5 cars in June, 1921, an increase of 27 per cent.

**The Outdoor Athletic Meet** of the Pennsylvania Railroad System will be held at Dennison, Ohio, on Saturday, September 24. Men and women employes, as well as the sons of employes, of the entire System will participate. For men there will be tennis singles and doubles, tug of war, trap shooting, circling the bases against time for baseball players and pitching quoits and horse shoes; also 100-yard, 220-yard, 440-yard and 880-yard dashes, 100-yard, 220-yard, 880-yard swim and plunge, 12 pound shot put and other events. For women there will be a 50-yard dash and tennis singles and doubles. There will be special track events for sons of employes, and, finally the first of three baseball games to be played for the Pennsylvania System championship between the two teams chosen by elimination in the several regions. The members of the general athletic committee are: J. T. Coleman, chairman; C. E. Clay, M. Y. Shuster, E. F. Ewing, M. A. Toomey, C. S. McIntyre and J. D. Zerbe.

## A Correction

Charles M. Lewis, division engineer of the Erie, with headquarters at Susquehanna, Pa., has been transferred to Jersey City, N. J., with jurisdiction over the New York division and side lines, including a part of the New York, Susquehanna & Western division, instead of having jurisdiction over part of the territory of S. J. Malloy, as was incorrectly announced in the *Railway Age* of July 23 (page 186).

## Taxes on Transportation May Be Removed

The revenue bill as amended by the House Ways and Means Committee and reported to the House provides for the repeal of Subdivisions (a), (b), (c), (d) and (e) of Section 500 and Subdivisions (b), (c) and (d) of Section 501 of the Revenue Act of 1918, the provision for taxes on freight and passenger transportation. The repeal under the new bill would be effective on January 1, 1922, and taxes paid on portions of tickets and mileage books unused on that date would be refunded.

## Derailment and Fire at Reaves, La.

By the derailment of eastbound freight train No. 32 on the Gulf Coast Lines, near Reaves, La., on Monday, August 8, the road was blocked for about 36 hours; and the wreck, including

eight vents of a wooden trestle, was destroyed by fire. In the fire a number of trespassers were burned to death, the reports estimating the number of these at from two to 15. The derailment occurred on or at the approach to the bridge and is thought to have been due to a fallen brake beam. Eighteen cars, including one or more cars of oil, fell through to the ravine below, and it is believed that 15 or 20 hoboes were on these cars. The fire burned for 24 hours; two of the trespassers are said to have escaped and two bodies were identified.

## Executives Decline to Comply

### With Brotherhoods' Requests

The Eastern Presidents' Conference at a meeting in New York on August 11 adopted the recommendation of its sub-committee that the executives reject the demands of the brotherhoods that the carriers restore wages to the level in effect on June 30 and pledge themselves against application for further reductions and against the elimination of time and a half pay for overtime. This was telegraphed to the leaders of the brotherhoods at Chicago. Executives in the Western, Southeastern and Southwestern regions rejected similar requests by the unions. It is understood that the New York decision was based upon the requirement of the transportation act that the railroads be managed in an economical and efficient manner; also to the fact that the 12 per cent wage reduction was effected on July 1 by the authorization of the United States Railroad Labor Board in decision No. 147, and that decision No. 119 of the board gave the carriers full authority to negotiate new working rules with their employees.

## I. C. C. Refuses to Authorize Proposed

### New Station at Cleveland

The Interstate Commerce Commission, Division 4, has dismissed the application of the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis for a certificate of public convenience and necessity authorizing them to guarantee the bonds of the Cleveland Union Terminals Company and take other necessary steps to assure the construction of a union station on the public square at Cleveland, Ohio. The New York Central pointed to the present congestion on the lake front and contended that the station at the proposed location would obviate this congestion. In the decision, however, the Commission took the view that much of this congestion on the lake front was caused primarily by the fact that the Pennsylvania and the Cleveland, Cincinnati, Chicago & St. Louis cross the New York Central's line at grade and that for the New York Central's four track line through Cleveland a single track drawbridge is the only means provided for crossing the Cuyahoga river. Some objection was voiced because certain of the air rights of the proposed terminal were not held by the railways. An alternative plan was suggested calling for the construction of a union station on the lake front together with certain other improvements, viz: increasing the main tracks of the Cleveland Short Line, the New York Central's freight line south of the main part of the city, from two to four, building a four track drawbridge to replace the present single track one, etc. This plan, it was estimated would necessitate an expenditure of some \$42,000,000 while the public square project would cost in the neighborhood of \$10,000,000.

A dissenting opinion was given by Commissioner Pether on the grounds that the Commission was "not warranted in asserting" that its opinion "concerning the business questions involved in working out the scheme is sounder than the opinion of the representatives of the carriers who are more familiar with the situation."

## Traffic News

Representative John B. Colton of Utah has introduced in Congress a bill, H. R. 8164, to establish the standard of work and duty for common carriers of freight and to establish uniform rates for the carriage of freight by common carriers between the states.

The National Freight Traffic Golf Association will hold its annual golf tournament at the Flossmoor Country Club, Chicago, on September 20 and 21, in connection with the annual meeting of the American Association of Freight Traffic Managers which will convene at the Drake hotel from September 19 to 24.

Rates on smelter products from Arizona points and Cananea, Mex., to Baltimore and New England points via New Orleans, or Galveston, in connection with the Southern Pacific steamship lines will be reduced September 12; to New England from \$21.10 to \$17.60 a ton and to Baltimore from \$20 to \$16.50.

The Railroad Commissioners of South Dakota have filed a complaint with the Interstate Commerce Commission protesting that the rates on grain from that state to the east by the Chicago & North Western, the Burlington, the St. Paul and the Minneapolis & St. Louis are unreasonable as compared with the rates from points in Iowa, Minnesota and Nebraska.

The Southern Pacific has withdrawn from the consolidated ticket office at Third and Washington streets, Portland, Ore., and has reopened its individual city ticket office in the Lyric Theatre building at Forest and Stark streets, where in connection with the reconstruction of the theatre building an interurban passenger station has been established.

The Interstate Commerce Commission has received arguments both for and against the reductions in freight rates on coal which have been made, and are proposed, by the Detroit, Toledo & Ironton, Henry Ford's railroad. The National Rivers & Harbors Congress has filed a brief in support of the tariff making the reduced rates, while the Northern West Virginia Coal Operators' Association and other shipping interests have protested and ask that the new rates be suspended.

From May 27 until the end of the cantaloupe season late in July, 159 cantaloupe trains were moved out of the Imperial Valley by the Southern Pacific and each of the 159 trains arrived at terminal points on time. The trains ran on a 50-hour schedule to El Paso, Tex., a cut of seven hours from the schedule of last year, and 153 hours from Brawley to Chicago, 15 hours shorter than last year. The movement this year amounted to 12,000 carloads as compared with 8,735 cars in 1920.

### Plain Talk

Governor Nathan L. Miller of New York, making a tour of the State Canal, makes speeches along the way, and at Schenectady he said:

"Here is a capital investment of \$165,000,000, with probably ten millions more to be spent in the completion of the terminals and with two millions and more a year required for maintenance, yet the people do not seem to know they have it. We must devise some way of selling this proposition over again."

### New England Freight Rate Divisions

Committees have been appointed to discuss the division of freight rates between the New England roads and the trunk lines west of the Hudson river, in accordance with the suggestion made by the Interstate Commerce Commission in its recent decision on the New England situation. For the trunk lines the committee consists of W. S. Kallman (N. Y. C.), chairman; Golder Shumate (B. & O.); E. T. Campbell (Erie); D. T. Lawrence (D. L. & W.); W. J. Mullin (D. & H.); F. J. Woulfe (L. V.), and F. P. Eysmans (Penn.). The Central Freight Association will be represented by a committee yet to be announced. The committee for the New England lines consists of George S. Hobbs (M. C.); Gerrit Fort (B. & M.);

G. F. Wicks (B. A. R.); George M. Wood (N. Y., N. H. & H.); F. O. Stafford (Rutland), and J. W. Handley (C. V.).

### "Train Jumpers Fined"

This is the heading of a recent news item from Sea Cliff, N. Y. It refers, however, not to the usual train jumper—the tramp or idler who steals a ride, short or long, on a freight car—but to passengers who get off from eastbound passenger trains at Sea Cliff station on the wrong side. The Long Island Railroad, after giving ineffectual warnings, had eight of these passengers tried in court for violation of the law forbidding trespassing on railroad property, and they were punished by fine. There is a fence between the two main tracks at Sea Cliff and these offenders jumped over the fence, landing on the westbound track. By this short cut they were able to reach the street cars more quickly than did those passengers who walked over the bridge provided for passage between the south and the north sides of the railroad. The fines assessed were \$2 for old offenders and \$1 each for the others.

### Reduction in Pacific Coast Export Rates

The trunk lines and transcontinental railroads have agreed to file tariffs, to go into effect on September 1, making reductions of about 10 per cent in 34 commodities when destined for Asia, to be exported from Pacific ports, the reduction to apply from points in official classification territory east of Chicago (Group 1). The southeastern lines did concur in this action. The change will make the rates from points in Group 1 equal to those from points west of Chicago (Group 2). Iron and steel articles are not included. Some of the commodities included are agricultural implements, automobiles, drygoods, plate glass, window glass, machinery, paint, paper, plumbers' goods, railway equipment, roofing, wire rope, steam heating apparatus and tobacco.

The trunk lines propose to reduce, on September 1, rates on iron and steel for export to Atlantic ports, the reduction to be about 25 per cent.

### Anthracite Shipments in July

Shipments of anthracite in July are reported as 5,462,760 gross tons as compared with 6,031,937 tons in the preceding month, and 6,389,100 tons in July, 1920. There is a continued slack demand for pea and steam sizes, which has caused the closing down of a number of individual operations; and there has been considerable idleness from petty strikes in the Lehigh and Wyoming regions. Shipments by originating carriers were as follows:

	July, 1921	June, 1921
P. & R.	1,039,078	1,157,738
L. V.	946,387	1,069,521
C. of N. J.	507,942	571,213
D. L. & W.	926,850	1,009,119
D. & H.	691,132	763,893
Penna.	384,780	441,693
Erie	619,365	555,882
N. Y. O. & W.	110,605	163,742
L. & N. E.	236,621	299,136
Total	5,462,760	6,031,937

### A Billion Peaches

Ten peaches for every man, woman and child in the United States were handled by the Central of Georgia Railway during the 1921 season which has just closed. This is the estimate of an officer of the road. He says that this movement was accomplished to the entire satisfaction of the growers, and without interruption to regular traffic. Approximately 8,175 cars; 3,892,300 crates of peaches were moved. The largest previous movement was 5,908 cars in 1918. The major portion of the crop moved at the rate of 250 cars a day. The whole crop of Georgia amounted to about 9,500 cars, which brought the growers about \$7,500,000.

At the peak of the movement, during the week of July 9, the operating forces were called upon to put forth extraordinary efforts to replenish the ice and car supply, but the task was successfully accomplished and regular traffic maintained. The largest single day's shipment totaled 541 cars.

POTATOES, 5,000 CRATES, of about 15 carloads, were shipped recently from Vancouver, B. C., to Manila, P. I. This shipment was made on the encouragement afforded by experimental shipments from British Columbia to the Philippines last year.

## Commission and Court News

## Foreign Railway News

### Interstate Commerce Commission

The New York Central has filed a petition with the Interstate Commerce Commission for a rehearing and reargument of its application for the construction of a new union passenger station at Cleveland, O., which was denied by the commission August 15.

### Live Stock Rates Should Be Reduced

The carriers should reduce (on five days' notice) all rates on live stock in western territory (except on horses and mules), which are higher than 50 cents per 100 lb.; and rates should be made on the basis of 80 per cent of the present rates, but not less than 50 cents per 100 lb. This is the decision of the Interstate Commerce Commission, issued August 15, on the complaint of the National Live Stock Shippers' League that rates in western and mountain-Pacific territory are unreasonable.

The Commission will not enter an order at this time and the record will be held open.

Commissioner Hall wrote the opinion of the Commission. Commissioner McChord held that the case calls either for a dismissal of the complaint or an order awarding specific relief and he advocated a substantial reduction in the rates. Commissioner Campbell, dissenting, said:

"\* \* \* We should have been fully justified in this case in making an absolute and definite finding of unreasonableness as to both long and short hauls and entering an order requiring a reduction, instead of merely suggesting it . . ."

Attorney Examiner Disque, in a tentative report on this case on July 14, suggested a new rule of rate making to the effect that the rates assailed are not excessive from a strictly transportation standpoint but are unreasonable from an economic standpoint; and the Commission in its opinion says:

"The complainants have made their record and presented their case largely on the basis of economic necessity. Little evidence was introduced by them as to the unreasonableness of specific rates or groups of rates. They do not seriously assail the live stock rate structure, in the main prescribed by us, as it existed prior to the increases made by the Director General under General Order No. 28. They seek removal of that increase, and of the subsequent increase authorized by us under Ex Parte 74, as applied to the pre-existing structure, without distinguishing between its several parts."

The Commission calls attention to the fact that in its opinion under Ex Parte 74 it stated that the general price level is changing from month to month and from day to day, and that it is impracticable at one time to adjust all of the rates on individual commodities; the rates must necessarily be subject to such readjustments as the facts may warrant. Attention is called to the fact that such readjustment between shippers and carriers has not been made in rates on live stock moved to market, and the Commission concludes:

"The importance of stock raising to the general economic situation in the range country lying west of the 100th meridian, has been noted. Because of the long hauls, and for other reasons, rates on live stock from this territory to packing centers in the middle west have always been relatively high. In a general way this is also true of all rates in western territory for the longer hauls. The percentage basis of increase applied in 1920 to the higher rates for the longer hauls resulted in greater increases per unit than in the rates for shorter hauls. It may be that reductions in the higher rates at this time will, as claimed by complainants, benefit the carriers as well as the live-stock industry. Manifestly the higher long-haul rates, such as that on cattle from Helena, Mont., to Chicago, \$1.015 per 100 lb., are of greater importance to and have greater effect upon the transportation and marketing of live stock than the lower short-haul rates, such as those applicable from Des Moines to Chicago, 37 cents on cattle and 40 cents on hogs. Having in mind the present value of live stock, and other factors, it is our view that under present conditions the carriers should themselves reduce all live-stock rates in western territory."

### British Railways Returned to Owners

The railways of Great Britain were returned to their owners on August 14 after having been under government control since the beginning of hostilities in 1914. Information concerning the details of the final action taken by Parliament on legislation providing for future control of the carriers has not been received as yet. This bill as first introduced was published in the *Railway Age* of May 27 (page 1209). The bill was then referred to committee and a number of amendments were introduced—none of them, however, changing the essential structure of the measure.

### Baldwin Locomotive Works Extend

#### Credit to Mexican National

Credit to the amount of \$5,000,000 has been granted the Mexican government by the Baldwin Locomotive Works according to announcement which comes from the National Railways of Mexico. It is stated that \$4,000,000 of the credit or loan is to be used in the purchase of locomotives and other rolling stock for the government-owned railways, and the \$1,000,000 is to be spent in repairing the tracks and in other needed improvements.

### Electrification of Italian Railways

Work on the electrification of Italian railways is proceeding actively, according to Consul General Osborne at Genoa. At the end of August, 1920, a total of 494 miles had been electrified. From September 1, 1920, to June 30, 1921, a total of 145 miles were electrified and during the current year 269 miles additional will be electrified. The saving in coal resulting from these electrifications amounted, at the end of June, to 160,000 tons. By July 1, 1922, it is calculated, the saving in coal will reach 1,000 tons a day, causing a daily saving of approximately \$14,000,000 a year. At the end of August, 1920, the sole generating plant worked by the railways of the state was that of Mordegno, with a capacity of about 5,000 horsepower and normally working with about 3,800.

### Exports of Locomotives in June

Steam locomotives numbering 136 and valued at \$4,254,474 were exported in June, as against 109, valued at \$2,647,441 in May. Of these engines 66 went to Mexico, 30 to China and 18 to Brazil. The detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Number	Dollars
Canada	1	3,000
Honduras	1	10,000
Mexico	66	1,833,847
Cuba	1	31,436
Argentina	2	85,290
Brazil	18	406,665
Colombia	1	28,000
Peru	4	49,790
China	30	1,585,000
Japan	4	38,900
New Zealand	1	11,685
Philippine Islands	6	170,861
Total	136	4,254,474

### Competitors Take Cheer at

#### America's Dwindling Export Trade

That the decrease in our exports which has continued over many months now is not unsatisfactory to our competitors is shown by a recent editorial in the *Times* (London) Foreign Trade Supplement. The monthly tables which are published in these columns showing our exports of railway supplies give ample evidence that America's competitors are regaining their foothold in foreign markets. The *Times* says in part:

"The war-born experimenters in foreign trade are fading out fast. Finance has been their stumbling block, as we anticipated would be the case. Many banks that entered the foreign trade field have quietly written off their losses. America, in short, has decided that foreign trade is not the 'dead easy' business the less informed once thought it. The world-wide organization of Brit-

ish banking and merchant houses cannot be duplicated at will, and without it the difficulties to be encountered are formidable indeed. On the other hand, as our New York correspondent reminds us, Mr. Hoover sees quite clearly that America must find a market for her surplus production, and since she will not listen to suggestions for encouraging imports the question how she is to get payment for her exports remains unsolved."

**June Exports of Car Wheels and Axles**

The value of the exports of car wheels and axles in June was \$236,719, or slightly above the May total of \$207,966. Shipments valued at \$61,940 were sent to China and other large shipments to Argentina and Brazil. The detailed figures, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	
Roumania	\$174
Canada	6,193
Costa Rica	2,150
Guatemala	1,647
Honduras	526
Panama	1,155
Mexico	19,476
Cuba	11,054
French West Indies	2,060
Argentina	51,479
Brazil	53,044
Chile	413
Colombia	218
Ecuador	2,250
Peru	479
China	61,940
Japan	22,521
Total	\$236,719

**Venezuela Invites Railway Construction**

With the strengthening of diplomatic and commercial ties between the United States and Venezuela, the improvement of the existing railroads of the latter country and the building of new lines are brought definitely nearer, according to an official statement issued by the Venezuelan Commercial Agency at New York. There are at present twelve railroad systems in Venezuela with a combined length of 600 miles and \$40,000,000 of invested capital. In addition, the building of four new roads is being considered. One of these would connect a fertile cacao region with the coast, the second would run through rich cattle, coffee, cacao and tobacco lands, the third would bring the product of the country's rich oil fields to a deep water port, and the fourth would make it possible to ship machinery to the Youruari gold mines, which are now being worked only in a primitive way, and at the same time, would tap rich grazing lands and extremely valuable fields of iron ore.

American capital is, according to the statement, welcomed in Venezuela by the government, which is pursuing a very liberal policy toward foreigners. Recent laws guarantee railroad builders against the construction of rival lines paralleling their routes, and against oppressive taxes. Railroads are assured of a fair proportion of unclaimed lands, of the right to erect telegraph and telephone lines and of the exemption of their employees from military service except in the case of international war.

**British Railway Finances**

During 1920 the net income of the railways of Great Britain was \$249,318,000, or \$7,290,000 more than in 1913; but while the total receipts, including government compensation, for 1920 was nearly two and one-third times the receipts for 1913, the total expenditures were nearly three and one-third times those of the pre-war year, according to information compiled by the European Division of the Bureau of Foreign and Domestic Commerce. This is indicative of the fact that the increased cost of operation is out of proportion with the receipts, notwithstanding the increase in rates and fares. The revenue, expenditures and net income of the railways for 1913 and 1920 were:

	1913	1920
Total receipts, including government compensation	\$630,342,000	\$1,447,308,000
Total expenditures, including provisions on basis of 1913 plus certain items of maintenance in excess of 1913 and sums in respect of arrears of wages and arrears of maintenance and not properly chargeable to the year	405,810,000	1,218,888,000
Balance	224,532,000	228,420,000
Miscellaneous net receipts	17,496,000	20,898,000
Total net income	\$242,028,000	\$249,318,000

During 1920, 317,877,500 tons of freight were handled, as against 364,162,500 in 1913. Much of this decrease can be laid to the coal strike. Capital expenditures on the railways in 1913 amounted to \$4,860,631,800 and, in 1920, to \$4,935,330,000.

**Remodeled Electric Locomotive on English Railway**

Twenty electric locomotives belonging to the Metropolitan Railway (England) are being rebuilt for the purpose of increasing their capacity. The general design of the locomotive is somewhat similar to that used for multiple unit cars, except that the locomotives are shorter, heavier, equipped with more powerful motors and the auxiliary apparatus, such as the vacuum exhaust, air compressor, reservoirs, etc., are located in the cab instead of under it. The locomotives are equipped for multiple unit operation with the "all-electric-automatic" type of control. There are two 4-wheel trucks, on each of which are mounted two 300-hp. series motors geared to the axle by single reduction gearing. Each motor is carried on its axle by suspension bearings, and a portion of the weight is transmitted by a nose on the motor casting, which rests in a yoke which slides vertically up and down in guides fixed to the truck crossbar. A slightly elastic support is obtained by rubber cushions. The principal dimensions of the locomotive are given in the table.

Length over all	39 ft. 6 in.
Width	8 ft.
Height from rail	12 ft. 4½ in.
Distance between truck centers	20 ft. 3 in.
Length of rigid wheel base	9 ft. 3 in.
Total wheel base	29 ft. 6 in.
Diameter of running wheels	43½ in.
Gear ratio	26/54
Total horse power capacity	1,200

A number of special features will be incorporated in the rebuilt locomotives. An electrical interlocking device will make it impossible for the engineman to start the locomotive without first having the brake apparatus ready for immediate application. An automatic window wiper, operated from the inside, will enable the engineman always to have a clear vision in wet weather. The first and last cars of the train will be fitted with contact shoes and main positive and negative feeders carried through the train to the locomotive, thus making it possible for the locomotive to collect its current when the collector shoes on the locomotive are bridging gaps in the conductor rail.

**Operating Improvements on the**

**Paris, Lyons & Mediterranean**

The Paris, Lyons & Mediterranean is the longest private-owned railway in Europe, says the Railway Gazette (London), in presenting some interesting information concerning that road. At the end of last year it possessed a total stock of 4,662 locomotives (including those for narrow-gage lines) as compared with 3,571 at the beginning of 1914. Of these, 498 engines were American and 177 German, and during the year there were ordered 80 Pacifics, 120 Mikados and 50 ten-coupled locomotives. An interesting sidelight is thrown on the effects of the eight-hour day by the fact that it became necessary to open four new locomotive shops (a fifth will shortly be opened), and to enlarge six existing ones.

The company has submitted to the Ministry of Public Works a program for the electrification of some 1,800 miles of line, to be operated by hydro-electric power, which will largely be obtained from the Rhone. It is hoped to make a beginning on the Culoz-Modane line, which has very severe gradients and handles a heavy traffic. Like other French railways, the Paris, Lyons & Mediterranean has found it advantageous to make its own arrangements for the maritime transport of locomotive coal and by the end of the current year it hopes to have received delivery of a new fleet of 14 vessels with an aggregate capacity of 100,000 tons, in addition to the seven already acquired.

Another of its activities has been the establishment of a refrigerator car and warehouse company, in co-operation with the Northern and Eastern Railways, which has leased the 550 refrigerator cars fitted up by the Paris, Lyons & Mediterranean for war service, as well as a number left behind by the American Army. Another American legacy, it may be recalled, was the train dispatching system. This has been experimented with between Dijon, Chalons-sur-Saone and Lyons, and the results have been so satisfactory that it is proposed to adopt the system on a much larger scale.

June Car Exports

Twenty-one passenger cars, valued at \$96,100, and 536 freight cars, valued at \$1,066,256, were exported during June. These figures are somewhat above similar totals for the preceding month. Parts of cars exported totaled \$887,241 in value. Of the freight cars exported 160 were sent to Brazil, 106 to Honduras, 103 to Cuba and 101 to Mexico. The detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Passenger		Freight and other		Parts of cars.
	Number	Dollars	Number	Dollars	
Belgium					1,631
France					8,183
Netherlands					940
Spain					120
England					6,268
Canada	6	17,500	6	3,388	28,252
Costa Rica					16,705
Guatemala					402
Honduras	3	22,600	106	159,902	1,854
Panama					853
Salvador					281
Mexico	12	56,000	401	222,055	20,397
Newfoundland and Labrador					171
Jamaica					50
Trinidad & Tobago					3
Other British West Indies					3
Cuba			103	230,369	10,687
Virgin Islands of U. S.					250
Dutch West Indies					974
Dominican Republic			5	3,875	2,246
Bolivia					7,508
Brazil			160	444,167	219,092
Chile					30,287
Peru					7,022
Venezuela					244
China			55	23,500	393,347
Kwantung, leased territory					694
British India					6,069
Hongkong					308
Japan					66,766
Siam					56
Australia					777
New Zealand					32,511
Philippine Islands					20,378
British South Africa					1,665
Portuguese Africa					
Total	21	96,100	536	1,096,256	887,241

How the Germans Undersell Americans and English  
LONDON.

The Review of the American Chamber of Commerce in France states that the reason that the German manufacturer can undersell the Americans and the British is primarily due to the lower costs in raw material, labor, capital overheads, management overheads and profit. The following statistics of wages and living costs were gathered in Germany last fall. They are (in marks) converted into gold on the basis of the dollar exchange:

	WAGES PER WEEK			
	Marks		Dollars	
	1913	1920	1913	1920
Cabinet makers	43.20	336.00	10.29	5.37
Pattern makers	39.00	228.00	9.28	3.64
Carpenters	44.38	216.00	10.58	3.45
Electricians	39.15	204.00	9.32	3.26
Plumbers	40.50	220.00	9.64	3.53
Bricklayers	44.28	216.00	10.58	3.45
Clerks, etc.	40.00	190.00	9.52	3.04
Female shop help	18.00	155.00	4.28	2.48

The above is for a weekly wage of nine hours a day in 1913 and an eight-hour day in 1920.

	LIVING COSTS			
	Marks		Dollars	
	1913	1920	1913	1920
Meat, per lb.	1.00	24.00	.24	.38
Eggs, dozen	.65	21.00	.16	.34
Bread, 4-lb. loaf	.45	4.50	.11	.07
Butter, per lb.	1.25	17.00	.30	.27
Potatoes, per 10 lbs.	.30	4.00	.07	.06
Men's suits	80.00	2,000.00	19.05	32.00
Shoes	12.50	300.00	2.97	4.80
Five-room apartment	125.00	150.00	29.75	2.40
Coal, per cwt. (112-lbs.)	1.00	23.50	.24	.38

The comparison of the above paper and gold prices gives the clue to one part of Germany's program. The German government controls prices, and has a bureau in which is combined the control of exports and imports with the control of exchange. The mark in domestic exchange is kept upon a basis of its own, and the foreign trade value of the money is negotiated upon a different basis. From this it is plainly apparent that Germany is employing a subtle new kind of protectionism in her foreign trade.

Equipment and Supplies

Locomotives

The SEWELL VALLEY is having 1 Mikado type locomotive repaired at the shops of the Baldwin Locomotive Works.

The SEABOARD AIR LINE is asking for prices on 5 Mountain type, 10 6-wheel switching and 13 Mikado type locomotives.

The IMPERIAL GOVERNMENT OF JAPAN has ordered, through Takata & Company, New York, 2 electric freight locomotives from the Westinghouse Electric International Company. The locomotives will weigh 62 tons and will have 1000 h.p. capacity.

The NATIONAL RAILWAYS OF MEXICO have ordered from the Baldwin Locomotive Works, 10 Pacific type locomotives, 15 Mikado, 20 Consolidated and 20 narrow-gage. This is in addition to the 18 locomotives ordered from the same builders as was reported in the *Railway Age* of July 16.

Freight Cars

The PERE MARQUETTE contemplates making inquiry for repairs on 1,000 box cars.

The ERIE has given a contract to the Illinois Car Company, Urbana, Ohio, for the repair of 400 40-ton box cars.

The BUFFALO, ROCHESTER & PITTSBURGH is having repairs made to 500 box cars in its own shops at Du Bois, Pa.

The MEXICAN LIGHT, HEAT & POWER COMPANY, Toronto, Ontario, has ordered one 6,500-gal. tank car from the Pennsylvania Tank Car Company.

The CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 200, 50-ton gondola cars. The company is also asking for prices on repairs to 500 all steel general service cars.

The ATLANTIC FRUIT COMPANY, New York, reported in the *Railway Age* of June 24, as inquiring for 100 cane cars of 20-ton capacity, has ordered this equipment from the Maser Car Company.

The CHICAGO GREAT WESTERN, reported in the *Railway Age* of July 23, as being in the market for repairs on 175 to 200 box cars, is having repairs made to 198 box cars, at the shops of the Ryan Car Company, Chicago.

The FRUIT GROWERS' EXPRESS is having repairs made to some of its refrigerator cars at the shops of the Streets Company, Chicago. This company is also inquiring for prices for heavy repairs on from 100 to 250 refrigerator cars.

Iron and Steel

The CHICAGO, BURLINGTON & QUINCY will accept bids until 12 o'clock noon, August 26, for one 50 ft deck plate girder and 1 one 60-ft. deck plate girder.

MIITSU & COMPANY, New York, have ordered from the United States Steel Products Corporation, 300 tons of 100 lb. rail and accessories, for a Japanese railway.

Miscellaneous

MIITSU & COMPANY, New York, are inquiring for 3,000 cast iron pipes to have a diameter of 16 in. and to be 12 ft. long, for shipment to the Far East.

The NEW YORK CENTRAL will receive bids until 12 o'clock noon, August 23, for 1 portable electric arc welding machine and accessories; its shop requirements until October 1, 1921, of Tate or Alco flexible staybolts and parts for same, also of steel wheels for locomotives and passenger car repairs.

The **NORFOLK & WESTERN** will receive bids until 12 o'clock, noon, August 24, 1921, at Norfolk, Va., for: Electrical material, parts for electrical apparatus; repairs to pump; parts for pump; 120 rods wire fencing and approximately 75,000 lb. soft steel bars.

The **LONG ISLAND** will receive bids until 12 o'clock, noon, August 26, for the following oils to be supplied from September 1 to December 1: 400 wooden barrels of 150-deg. kerosene oil for headlights; 80 wooden barrels of long time burning oil for use in the lamps controlled by the signal department; 55 wooden barrels 300-deg. of mineral seal oil; 95 steel barrels motor gasoline, 64 deg.; about 35,000 gal., gas oil for making Pintsch gas for cars.

The **LONG ISLAND** will receive bids until 12 o'clock, noon, August 29, 1921, for the following spikes, bolts and frogs and switches to be supplied from September 1, to December 1: 200 kegs iron track spikes,  $\frac{5}{8}$  in. by  $5\frac{1}{2}$  in., 350 kegs of heat treated track bolts of 13/16 in. diameter to consist of 100 kegs of  $4\frac{1}{4}$  in. bolts, 100 kegs of  $4\frac{1}{2}$  in. bolts, and 50 kegs each of  $4\frac{3}{4}$  in., 5 in. and  $5\frac{1}{2}$  in. bolts; 63 rigid and 12 hard frogs, 80 lb. open hearth rail; 55 80-lb. switches.

## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company contemplates extensions and improvements to its Harvey house at Albuquerque, N. M.

**CHICAGO & ALTON.**—This company contemplates the construction of a line from Eldred, Mo., to Reddish, Ill., a distance of approximately 7 miles, at a cost of about \$60,000.

**CHICAGO, BURLINGTON & QUINCY.**—This company, which was noted in the *Railway Age* of July 2 (page 42), as receiving bids for the construction of a new grain elevator at St. Joseph, Mo., has awarded the contract for this work to the Burrill Engineering Company, Chicago.

**CHICAGO, BURLINGTON & QUINCY.**—This company is accepting bids for building the foundation and erecting the structural steel for its new freight house east of Canal street and south of Harrison street, Chicago.

**CHICAGO & NORTH WESTERN.**—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 100-ton steel coaling station to replace a frame structure recently destroyed by fire at Lick, Ill.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company, which was noted in the *Railway Age* of July 23 (page 184) as accepting bids for the construction of a 100-ton frame coaling station at Pipestone, Minn., has decided to build this structure with company forces.

**CHICAGO UNION STATION.**—This company has awarded a contract to the W. J. Newman Construction Company, Chicago, for widening the second link of Canal street between Jackson boulevard and Van Buren street, Chicago.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of July 23 (page 184), as receiving bids for the construction of a new 1-story brick express building and elevator shaft at Mattoon, Ill., has awarded the contract for this work to the A. Lund Construction Company, Chicago.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of August 13 (page 311), as accepting bids for the work of widening the bridge approaching its passenger platforms at the Randolph street station, Chicago, closed bids for this work on August 19.

**KANSAS, OKLAHOMA & GULF.**—This company and the Missouri, Oklahoma & Gulf have applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Baxter Springs to Pittsburg, Kan., 25.3 miles.

**UNION PACIFIC.**—This company contemplates the construction of a two-story brick freight station at Concordia, Kan., to cost about \$50,000.

## Supply Trade News

F. A. Hastings has been appointed assistant sales manager of the **Pittsburgh Bridge & Iron Works**, Pittsburgh. Mr. Hastings was formerly with the American Bridge Company.

The **Glidden Company**, Cleveland, O., and its affiliated companies have been given the manufacturing and distributing rights, in North America, for the Holland enamel paint known as Ripolin.

**John Duncan**, vice-president of the **Wheeling Steel Products Company**, Wheeling, W. Va., has resigned to engage in the operation of coal, coke, iron ore and railroad properties in Illinois.

**Stewart C. Wilson** has been appointed Pittsburgh district sales manager of the **Whiting Corporation**, Chicago, succeeding **Robert S. Hammond**, who has been transferred to the Chicago office.

## Trade Publications

**LOCOMOTIVE TERMINALS.**—Dwight P. Robinson & Company has recently prepared a 33-page booklet describing some of the terminal work which the company has done for railroads. The major part of the booklet is devoted to illustrations and brief descriptions of several of this company's more prominent projects which have been carried out for seven railroads, while the last few pages of the book are devoted to the listing of work done on several additional railroads.

**LOCOMOTIVE CRANES.**—Booklet No. 2-21 entitled "Man-Power Multiplied" and prepared for persons interested in the handling of bulk or heavy materials has been issued recently by the **Brown Hoisting Machinery Company**, Cleveland, Ohio. The booklet describes Brownhoist No. 2 locomotive cranes which are light, all-steel, full-revolving type flexible machines designed particularly for general service. The cranes are built to operate by steam, electricity or gasoline engine and to be mounted on railroad trucks, creeper trucks or traction wheels. The first pages of the booklet are devoted to illustrations showing some of the many purposes for which these cranes are being used. Other pages describe in detail the construction and mechanism of the cranes and the pamphlet is concluded with a table of capacities, weights, wheel loads and clearances.

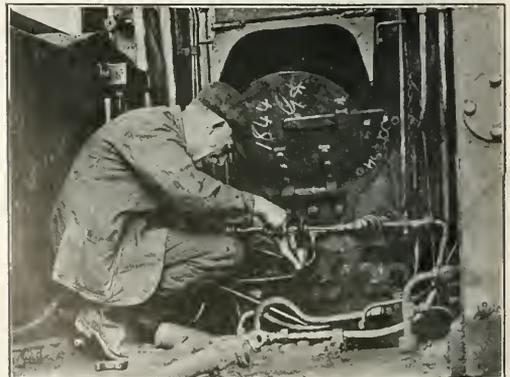


Photo by Keystone

Applying Oil Burners to English Locomotives During the Coal Strike

# Railway Financial News

**AKRON, CANTON & YOUNGSTOWN.—Asks Authority to Issue Equipment Trust Notes.**—This company has asked the Interstate Commerce Commission for authority to enter into an equipment trust agreement and under that to issue \$396,000 in equipment trust notes in part payment for nine ten-wheel freight locomotives secured at a cost of \$411,000 from the New York, Chicago & St. Louis Railroad.

**BOSTON & MAINE.—Stockholders Authorize Issue of Bonds.**—The stockholders at a special meeting voted to authorize an issue of bonds, secured by present mortgage, to the Old Colony Trust Company, to pay or refund \$3,049,000 bonds maturing between now and January 1, 1922, as follows:

	Amount	Maturity date
Fitchburg Railroad .....	\$1,775,000	Oct. 1, 1921
Boston & Maine.....	1,000,000	Nov. 1, 1921
Manchester & Lawrence.....	274,000	Jan. 1, 1922
Total .....	\$3,049,000	

The stockholders also voted to make a contract or lease for the continued operation of the Suncook Valley Railroad. Change of the by-laws to permit the Boston & Maine officials to file tariffs and make regulations in compliance with Canadian laws was authorized.

Among other matters included in the call for the meeting was to take action with reference to authorizing execution of an equipment trust agreement to provide for purchase of 50 locomotives or a less number and to authorize an issue of equipment notes not exceeding \$1,500,000.

The meeting was adjourned until August 23.

**BILLINGS & CENTRAL MONTANA.—Acquisition by Northern Pacific.**—See Northern Pacific.

**LONG FORK.—Authorized to Issue Stock and Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue \$485,000 of capital stock and \$1,347,500 of first mortgage bonds and to deliver these securities to the Baltimore & Ohio in settlement of advances made by that company to the Long Fork for capital purposes.

**MONONGAHELA RAILWAY.—Application for Loan Denied.**—The Interstate Commerce Commission has dismissed the application of this company for a loan of \$1,000,000. The commission tentatively had approved a loan of \$500,000 July 16; on July 19 the commission after further investigation approved a loan of \$250,000 to the applicant on the condition that the latter raise an equal amount. The carrier informed the commission later that it was unable to do so.

**MISSOURI PACIFIC.—Bond Suit Against Texas & Pacific.**—Judge Rufus E. Foster in the Federal District Court at New Orleans, La., on August 13 dismissed the claim of this company against the Texas & Pacific for approximately \$25,000,000, representing about 20 years' unpaid interest on \$23,700,000 of the latter's income bonds owned by the Missouri Pacific. The court ruled, also, that the Texas & Pacific must pay the Missouri Pacific \$2,500,000 on promissory notes together with interest amounting to \$500,000. The Missouri Pacific will appeal to the Circuit Court of Appeals against Judge Foster's decision.

**NORTHERN PACIFIC.—Acquisition of Billings & Central Montana Approved.**—The acquisition of the properties of the Billings & Central Montana Railway has been approved and authorized by the Interstate Commerce Commission, provided that the applicant shall not pay more than \$220,445 and shall not enter any sum in excess of that amount in its cost of roadway and equipment accounts.

**SEABOARD AIR LINE.—Asks Authority to Abandon Line.**—This company has asked the Interstate Commerce Commission for a certificate of public convenience to abandon a line in Manatee County, Fla.

**TENNESSEE, ALABAMA & GEORGIA.—Sale Postponed.**—The sale

of this 96-mile road, extending from Chattanooga to Gadsden, Ala., has been postponed from August 6 until later in the year, on account of an offer made by Prince & Co., Boston bankers, to stand the operating losses until September 15. It is believed at Gadsden that an important railroad company will purchase the road.

**TEXAS & PACIFIC.—Must Pay Missouri Pacific on Promissory Notes.**—See Missouri Pacific.

**WESTERN MARYLAND.—Application for Loan.**—This company has asked the Interstate Commerce Commission for a loan of \$1,000,000 for 10 years from the revolving fund for the construction of additional elevator facilities for export grain at Baltimore. The security offered for the loan is \$1,429,000 of first and refunding mortgage bonds of the applicant.

**WHEELING & LAKE ERIE.—Authorized to Pledge Bonds.**—The Interstate Commerce Commission has authorized this company to pledge \$451,000 of refunding mortgage 6 per cent bonds with the Secretary of the Treasury as partial security for a loan from the revolving fund.

**WYOMING & MISSOURI RIVER.—This road will be sold at public auction on September 21 to satisfy a judgment of \$348,000 held by Mahlon Kemmerer of Pittsburgh, Pa. The company operates a line between Aladdin, Wyo., and Belle Fourche, S. D., a distance of 18 miles.**

## Tentative Valuations

The Interstate Commerce Commission has announced the tentative valuation of the used property of the following carriers:

Marion & Rye Valley.....	1916	\$317,177
Mobile & Ohio (including Warrior Southern).....	1915	44,462,440
Warrior Southern .....	1915	770,000

## Dividends Declared

North Pennsylvania.—\$1 quarterly, payable August 25 to holders of record August 11.

Southern Pacific.—1½ per cent quarterly, payable October 1 to holders of record August 31.

Union Pacific.—Common, 2½ per cent, quarterly; preferred, 2 per cent, semi-annually; both payable October 1 to holders of record September 1.

## Treasury Payments

The Treasury has announced the payment of a loan of \$25,000 from the revolving fund to the Lake Erie, Franklin & Clarion and partial payments of guaranty as follows:

Franklin & Pittsylvania.....	\$3,000
Gulf, Florida & Alabama.....	12,000
Live Oak, Perry & Gulf.....	10,000
Mt. Jewett, Kinzua & Riterville.....	16,000
Savannah & Statesboro.....	2,500
St. Paul Bridge & Terminal.....	7,500
Wichita Valley.....	145,000

## Partial Payments of Guaranty

The Interstate Commerce Commission has certified to the Treasury partial payment of guaranty to the following roads

Gulf, Florida & Alabama.....	\$12,000
Paris & Mt. Pleasant.....	5,000
St. Paul Bridge & Terminal.....	7,500
Wichita Valley.....	145,000
American Railway Express Company.....	425,000
Kansas, Oklahoma & Gulf.....	100,000
Missouri Pacific.....	2,000,000

The Commission has also certified the payment of \$500 to the Bonlee & Western as reimbursement for deficits during Federal control.

## Final Settlements with Railroad Administration

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Denver Union Terminal Railway Company.....	\$12,500
Leavenworth Depot & Railroad Company.....	10,500
Louisiana Southern Railway Company.....	90,000
Minnesota & International.....	340,000
Detroit & Mackinac.....	165,000
Interstate Railroad .....	60,000

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the Administration during the 26 months of Federal control.

## Railway Officers

### Operating

**C. A. Plumly**, superintendent of telegraph of the Baltimore & Ohio, has resumed his duties after a long illness.

**R. W. Ellsworth** has been appointed trainmaster of the Ontario division of the New York Central, effective August 12.

**J. F. Lucas** has been appointed passenger trainmaster of the Boston & Albany with jurisdiction over all the company's lines, effective August 1.

**Agnew T. Dice, Jr.**, whose appointment as superintendent of the Wilmington and Columbia division of the Philadelphia & Reading was announced in the *Railway Age* of August 6

(page 273), was born March 17, 1890. He studied engineering at Princeton University and was graduated from that institution in 1912. He entered the service of the Philadelphia & Reading on July 1 of the same year, and remained with that company until October, 1917, when he enlisted for service in the army. He was later commissioned a first lieutenant and was, until mustered out of the service, connected with the Bureau of Air Craft Production of the Air Service as assistant to the chief of production, New York

A. T. Dice, Jr.

district. He re-entered the service of the Philadelphia & Reading on October 20, 1920, as assistant superintendent of the Reading and Harrisburg divisions, which position he held until the time of the present appointment.

**P. S. Lewis**, whose appointment as superintendent of the Atlantic City Railroad (a subsidiary of the Philadelphia & Reading), was announced in the *Railway Age* of August 6, 1921 (page 273), was born in Springfield, Ill., on May 10, 1889. He was graduated from Princeton University in June, 1911, and on July 1, entered the service of the Philadelphia & Reading as a rodman at Williamsport, Pa. In August, 1911, he was appointed inspector of construction work at the St. Clair Yards. On July 1, 1912, he was promoted to general inspector at St. Clair Yards and on August 12 of the same year, assistant supervisor at Harrisburg. In June 5, 1913, he was transferred to Pottstown in a similar capacity. On September 15, 1914, he became signal inspector at Philadelphia and on April 1, 1915, supervisor of the Atlantic City Railroad at Camden, N. J.; on March 23, 1916, he was transferred in a similar capacity to the New



P. S. Lewis

York division of the Philadelphia & Reading with headquarters at Olney, Pa. Mr. Lewis was promoted to passenger trainmaster of the Reading division with headquarters at Reading, Pa., in May, 1917. In September of the same year, he entered military service as a first lieutenant in the Engineers (Light Railway Operating Regiment). In February, 1919, he was commissioned major of engineers, and on June 1, 1919, was appointed chief of the General Troop Movement Bureau at Paris. He was discharged from army on September 1, 1919, and was appointed trainmaster of the Philadelphia division of the Philadelphia & Reading. On April 20, 1920, he was promoted to assistant superintendent of the Atlantic City Railroad, which position he held until the time of the present appointment.

**F. A. Maxwell**, chief dispatcher of the Chicago, Milwaukee & St. Paul, with headquarters at Madison, Wis., has been promoted to trainmaster with the same headquarters, effective August 11. **J. H. Valentine**, succeeds Mr. Maxwell.

**B. L. Pedneau** has been appointed trainmaster of the New River division of the Virginian with headquarters at Princeton, W. Va., succeeding J. W. White, promoted to superintendent. **J. H. Fry** has been appointed assistant train master with headquarters at Elmore, W. Va., succeeding B. W. Williams, assigned to other duties.

### Traffic

**H. R. Whiting**, general agent of the Louisiana & Arkansas, and the Mississippi Central, with headquarters at Alexandria, La., has been transferred to Oklahoma City, Okla. **A. B. Patten**, succeeds Mr. Whiting; **W. S. Cornell** has been appointed general agent with headquarters at Dallas, Tex.

### Engineering, Maintenance of Way and Signaling

**E. I. Rogers**, roadmaster of the Iowa division of the Illinois Central, has been appointed chief engineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., effective August 20.

**A. M. Smith**, designing engineer in the bridge department of the Canadian National Railways with headquarters at Winnipeg, Canada, has been transferred to Toronto. **C. R. Doull**, **L. A. McKeage** and **J. Whitelaw**, assistant engineers with headquarters at Moncton, N. B., have been transferred to Toronto. **J. A. Ellis**, office engineer with headquarters at Moncton has been appointed assistant engineer of standards in connection with roadway standards with headquarters at Toronto.

**D. O. Lewis**, assistant engineer on the Canadian National Railways with headquarters at Toronto, Canada, has resigned. **E. R. Logie**, assistant engineer in the engineering department with headquarters at Toronto, has been transferred to the operating department with headquarters at Ottawa, Canada. **K. Huffman**, assistant engineer, engineering department, with headquarters at Toronto has been transferred to the operating department at Capreol, Canada. Mr. Logie and Mr. Huffman retain their present titles of assistant engineer.

### Obituary

**M. Flanagan**, general master mechanic on the eastern district of the Great Northern died at St. Paul, Minn., on August 2.

**Henry C. Adams**, professor of economics at the University of Michigan, and formerly statistician of the Interstate Commerce Commission, died at Ann Arbor, Mich., on August 11. Mr. Adams was born at Davenport, Iowa, on December 31, 1851, and was educated at Iowa College, and at Johns Hopkins and Heidelberg universities. He was appointed statistician of the Interstate Commerce Commission in 1887, and served in that position continuously until 1911. In addition to his other duties, he also served as advisor to the Chinese government on standardization of railway accounts from 1913 to 1916, and was the author of numerous books and treatises on railroad and financial matters.



Chicago, Rock Island & Pacific Yards at Herington, Kansas

## Contents

### Pennsylvania Challenges Authority of Labor Board ..... Page 399

Denies Right of Board to Regulate Working Conditions—Has Agreed With Two-Thirds of Its Men.

### The War and Its Effect on French Railway Labor ..... 401

War Time Increases in Pay Not Great—Railways' Extensive Housing Projects—Co-operative Buying.

### Ford Has Not Wrought Miracle with D., T. & I. .... 405

Traffic in Flivvers and Auto Raw Materials as Well as Increased Divisions Real Reason for Expanded Earnings.

#### EDITORIALS

Service From Train Order Signals .....	391
Operators of Handling Devices Should Be Trained .....	391
The Managements' Interest in Rail Renewals .....	391
Baldwin and Mexico .....	391
The Function of Material-Handling Devices .....	391
The C. & O. in June .....	392
Magistrates Do Not Punish Tramps .....	392
Problem of Good Manual Block Signaling .....	392
The Commission's Rate-Making Policy .....	392
Extraordinary Changes in Freight Business .....	394
Protecting the Investment .....	394
St. Louis Southwestern .....	395

#### LETTERS TO THE EDITOR

Remedies for Wasters in Railway Operation, by T. C. Powell .....	397
The Status of the Chief Clerk .....	397

#### GENERAL ARTICLES

Pennsylvania Challenges Authority of Labor Board .....	399
Block Signal Mileage on January 1, 1921 .....	400
The War and Its Effect on French Railway Labor, by O. F. Allen .....	401
Ford Has Not Wrought Miracle With D., T. & I. ....	405
Regulating Brake Cylinder Piston Travel .....	409
Leavenworth & Topeka Patrons Vote on Tax Levy .....	411
Cover to Keep Out Snow Complicates Turtable Replacement .....	412
Many Roads Considering the Use of Heavier Rail .....	413
Saving the Railroads for Private Control .....	415
Railroad Funding Bill Approved in Lower House .....	417
Labor Board Settles Overtime Controversy .....	419
Freight Car Loading .....	421

#### NEW BOOKS ..... 396

#### GENERAL NEWS DEPARTMENT ..... 422

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*  
L. B. SIEMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.  
BULLETIN BLDG.  
WASHINGTON: Home Life Bldg.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
Cable address: Urasigmo, London  
NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
H. B. ADAMS  
H. F. LANE  
R. E. TRAYER  
C. B. PECK  
W. S. LACHEA  
J. G. LITTLE

A. F. STUEBING  
C. W. FOSS  
K. E. KELLEBERGER  
ALFRED G. OEHLEK  
F. W. KRABGER  
HOLCOMB PARKES  
C. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LYNE  
I. H. DUNN  
D. A. STEEL  
K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00 £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 9,000 copies were printed, that of those 9,000 copies, 8,082 were mailed to regular paid subscribers, 54 were provided for counter and news company sales, 345 were mailed to advertisers, 65 were mailed to employees and correspondents, and 434 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date was 329,100, an average of 9,679 copies a week.



It will surprise you to learn how Ryerson machinery reduces spring repair costs

## What Are Your Springs Costing?

Repair springs in your own shops with Ryerson Standardized Spring Shop Equipment and

- Save in the cost of repairs
- Reduce the stock of extra springs
- Save freight to and from the manufacturer's plant
- Minimize delays to big, expensive locomotives.

Railroads have found that Ryerson Standardized Spring Shop Equipment quickly pays for itself. Some of the bigger roads have saved the cost of the equipment in the first year.

Ask us what YOU can save.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

All railroads have some form of train order signal to indicate to a train crew that orders are being held for delivery, but this equipment is not always designed so that they can make the most efficient use of it to indicate whether a "19" or a "31" order is to be delivered. This slows down operation and increases operating costs whenever a train stops for a "19" order. Unlike automatic signals, the location of a train order signal is fixed at or near the telegraph office without reference to the fact that this location may be at the top of or on a heavy grade or at a point where other physical handicaps make a stop undesirable. Consequently, if no advance information is furnished a train crew, it must of necessity slow down to a speed much lower than would otherwise be required or come to a full stop if the operator should have a "19" order to deliver and fail to get out with it in time. A three-position train order signal, properly used, will enable these unnecessary stops to be eliminated and promote train operation.

### Service from Train Order Signals

During the past few years the railways, as well as other industrial organizations, have been faced, first, with a scarcity of labor and then as a result of the first, with high priced labor. As a consequence of this combination of circumstances, the labor charge per unit of work soon became excessive. In the efforts to control these rising costs, the possibilities of mechanical devices as substitutes for labor have received close attention; there is a vast amount of work on the railways which lends itself readily to the application of such machines. There are certain general principles of application which should be observed as necessary to the success of any material handling installation. One of the most important of these is the training of the actual user of the equipment, not only in the mechanical features of the machine he operates, but particularly in its possibilities. This training is especially important where operating conditions are changing, where no two methods of use are followed by equal results, and in those instances where the new idea originates with the higher officers and the subordinates are apt to be partial to the old methods. Such a policy should end in better results from a particular installation, in overcoming the opposition on the part of the workmen to the introduction of new methods and, if carried to the ultimate conclusion by requiring reports from the trained operators, in many valuable suggestions bearing on the purchases of new equipment.

One of the points which have been stressed in discussions regarding the undermaintenance of tracks during government control, and to some extent since that period, has been the inadequate amount of rail renewals. Even though the railroads have attempted, so far as their financial position would permit, to remedy this condition in recent months it has been only partially met as yet. With this the case, it is of distinct interest to the managements of the railroads that rail renewals be handled in the most economical manner. At the present time

the methods of laying rail vary considerably and what is more to the point, the differences in the costs per mile of laying rail of approximately the same weight under similar traffic conditions are sometimes astonishingly large. One reason for this is that some railroads are employing practically the same methods for laying rail weighing 100 lb. or more per yard that they used for laying 60-lb. to 65-lb. rail. In contrast to this, other roads have developed and put into practice many improvements over the old methods while a few have reduced rail laying to an almost scientific basis. This is not a problem solely for the maintenance of way department to solve but is one the solution of which will only come through the full co-operation of the managements.

The action of the Baldwin Locomotive Works in advancing credits to the extent of \$2,500,000 to the Mexican government with the prospect of the further extension of a similar amount affords the most encouraging evidence of a real understanding of America's position in foreign trade. The first credit will go toward the purchase of 65 locomotives for the National Railways and the loan in prospect will be used for general rehabilitation of the railways. Baldwin's action is encouraging from several points of view. It means an important contract for a railway equipment concern which is welcome in these days when business in general is struggling to return again to activity. It means the recognition by a powerful American concern of the fact that with conditions in the world as they are today, America must extend credit if it wishes to export its products in important quantities. It means a great step toward the rehabilitation of the Mexican railways and incidentally, toward general economic revival in Mexico. The news from Mexico has been increasingly encouraging of late months. Affairs there are rapidly approaching normal and it seems not unlikely that Mexico may before many years be in a much happier condition than ever before. It is gratifying that Americans should play an important part in speeding this revival. Friendship built up in this manner is not destroyed overnight. Far-seeing action such as the Baldwin people have taken is laying a firm foundation for a mutually profitable international trade and for cordial diplomatic relations between this country and Mexico.

The principal purpose of material handling equipment is to serve other machines. For instance, in railway shops the cranes, trucks, tractors, trailers, etc., find their usefulness in working in conjunction with the production machines. In freight handling the analogy is not so marked, still, even in this service it is the function of the handling machines to supplement other equipment. It is evident that mere capability to perform certain operations is not enough to warrant the installation of a particular device for such operations. On the contrary, it is exceedingly important that the entire process of production be given careful consideration in conjunction with the handling problem before a decision is reached, to make sure not only of the selection of the best machine for

**Baldwin  
and  
Mexico**

**The Function  
of Material  
Handling Devices**

remedy this condition in recent months it has been only partially met as yet. With this the case, it is of distinct interest to the managements of the railroads that rail renewals be handled in the most economical manner. At the present time

a particular purpose but to insure the best possible co-ordination between the handling machinery and the other equipment. In this connection it is worthy of notice that reputable manufacturers of handling equipment hold themselves ready and anxious to give purchasers of equipment the benefit of their experience in the carrying on of the necessary preliminary studies and, as well, their co-operation in solving any operating problems that may arise after an installation is made. By availing themselves of this co-operation, purchasers of handling equipment may profit by the mistakes of others, while the manufacturers benefit through increased sales resulting from successful installations.

One of the outstanding features of the operating statistics of large steam roads for June, reported by the Interstate Commerce Commission is the showing made by the Chesapeake & Ohio. This carrier is the only one in the list of 51 roads whose figures are given—those having annual operating revenues in excess of \$25,000,000—that moved as many net ton-miles of freight in June, 1921, as in June, 1920. The larger part of the roads did considerably less business, in some cases 20 or 25 per cent less, in June this year than in June last year. The Chesapeake & Ohio, however, in June, 1921, carried 1,072,786,000 net ton-miles as against 1,039,845,000 in June, 1920. June was the busiest month that the Chesapeake & Ohio has had so far this year and the business handled in June was greater also than that handled in any month in the first half of 1920. The Chesapeake & Ohio suffered severely in February and March this year, when its traffic fell off in rather an alarming fashion; the traffic handled in June was nearly double that handled in February. The recovery in the amount of traffic on the road has naturally been shown in the gross and net earnings. The net railway operating income in June was \$1,944,753. This compared with a net in June, 1920, of \$245,461; it was approximately double that of most of the other months in the first half of either 1921 or 1920. The character of the recovery since the dull period of February will be evidenced by the fact that in February the road had a net operating deficit of \$556,636. Because of the dull months earlier in 1921, however, the net railway operating income for the first six months of 1921 was only \$5,041,319 as compared with \$5,483,768 in the first half of 1920.

The repression of the tramp nuisance on the railroads is a duty of the state rather than the towns and cities; municipal officers are too easy, and the nuisance is not abated. This is a conclusion that was reached by careful students of the question several years ago; but since the advent of war-time conditions the matter has dropped out of sight. Now, however, with increased numbers of men out of work, the same old conditions are returning. A local paper in western Massachusetts, referring evidently to conditions on the Boston & Albany, said recently:

#### Magistrates Do Not Punish Tramps

Industrial depression in the western part of the country is driving men east and they are coming by way of "blind baggage" to such an extent that a toll of them is taken each day by the local police. There will be several arraigned in court to-morrow morning and their plea will be "no work," as has been the cry of the many taken from trains in the past two months. It has been the custom of the court to deal lightly with these offenders, and they are usually passed on to some other municipality that perhaps does the same. During the last industrial depression train riders became so numerous that the court was forced to place a heavy fine on them in order to rid this section and the railroad of their presence. It was found, however, that the charge on the county institutions was too great and that it was cheaper to allow them to go.

On the Gulf Coast Lines in Louisiana, a few weeks ago, an observer counted 20 tramps on an eastbound freight. This was at De Quincy, near the Texas line. An hour later the

train, in which were oil cars, was derailed, took fire and was mostly destroyed in a 24-hour fire; and it was believed that 15 of these men were killed in the flames. "Dealing lightly with offenders," as referred to in the above news item, is a deep seated weakness of government which nobody seems able to cope with, except perhaps for brief periods, in very limited territory. The manager of one big American railroad remarked, not long ago, that attempts at train wrecking were reported to him by his subordinates on an average once every week. Only the most thorough police establishment can have much effect on an evil like that. Read over again the above-quoted paragraph and show it to members of your legislature and other public spirited citizens. To cease punishing law breakers, because the jails are costing too much, is a queer situation; but that idea will be found lodged in many local magistrates' minds.

The annual statement of block-signal mileage issued by the Interstate Commerce Commission, noticed on another page, contains a large amount of valuable data, as interested readers are well aware, but the original purpose of the publication, to show the degree of progress made year by year, in the

#### Problem of Good Manual Block Signaling

introduction of the block system, is of no great interest just now; for there is progress in only a few spots. On the other hand, those features of these elaborate tables which disclose the need of progress, where but little has been accomplished, continue to stand out prominently. For example, the list of manual block signal stations shows in nearly every item a large percentage of stations which are closed a part of each day; the block sections have to be lengthened, wherever and whenever possible, because of the necessity of extreme economy in signalmen's wages. This is not necessarily an evil, per se, but the general situation serves to emphasize the need, to which attention has many times been called, of greatly improving much of our manual block signal practice. Patchwork and halfway measures are tolerated, where a true and complete block system ought to be installed. In this situation two important elements should be kept in mind: first, that the federal government—that is, the Bureau of Safety of the Interstate Commerce Commission—affords the only suitable instrumentality for setting forth the actual conditions, adequately; and second, that the correction of existing dangers and weaknesses of manual block signal operation is largely a question of administration—of the use of brains and energy—rather than of expenditures for plant or apparatus. There is no need of deferring action until the advent of easier money.

#### The Commission's Rate-Making Policy

THE EMBARRASSMENT caused, and the harm done, by regulating railways on principles foreign to sound business methods is illustrated by the opinion rendered by the Interstate Commerce Commission on August 3 in the live stock rate case.

For years after effective government regulation of rates began the railways tried to get the rates based mainly on "what the traffic would bear." What the traffic will bear is measured chiefly by the value of the service rendered to the shipper. The railways contended that rates never should be made higher than the shipper could reasonably afford to pay, but that if they were reasonable in proportion to what he could afford to pay they should not be reduced, even though the railways were making a large profit by charging them. They also maintained that if the traffic could easily bear higher rates, there was no economic or legal reason why the railways should not be allowed to advance the rates, even

though the advance in rates enabled the railways to earn more than the minimum profit which the courts held to be the least return to which they could constitutionally be restricted.

This argument of the railways was for years contested, and successfully contested, by the shippers. Most of them contended that the value of the service rendered to the shipper not only should not be made the principal basis of the regulation of rates, but that it should be treated as a comparatively unimportant factor. A reasonable rate, they claimed, was one based upon the cost incurred by the railways in rendering service to the shipper. The cost incurred by the railways included operating expenses, taxes and a "fair return upon a fair valuation." If the rates charged by a railway were sufficient to cover the cost of the service, as thus defined, there was, according to their view, no justification for an advance in rates.

The Interstate Commerce Commission, in the rate advance cases decided by it down to 1917, accepted this "cost of service" theory of rate-making. In consequence, the average freight rate remained stationary or declined, while prices of all commodities were advancing. The average freight rate per ton per mile of the railways of the country was the same in 1917 as in 1913. Meantime, average wholesale prices of farm products increased 89 per cent, and average wholesale prices of all commodities increased 76 per cent.

The tendencies of railway rates and of the prices of commodities, especially farm products, have been sharply reversed within the last year. The average railway rate per ton per mile is now about 74 per cent higher than in 1913; the average wholesale prices of all commodities about 50 per cent higher, and average prices of farm products about 13 per cent higher. Producers of live stock have been suffering severely from the decline in their prices. They therefore appealed to the Interstate Commerce Commission for a reduction of live stock rates. They contended that the rates should be reduced solely because, owing to the advance in rates and the decline in the prices of live stock, the rates had become relatively so high that the shippers of live stock could not afford to pay them. In other words, they contended that the rates had become excessive in proportion to the value of the service. They did not contend the rates were excessive in proportion to the cost incurred by the railways in rendering the service of transporting live stock. No such contention could have been supported with any evidence. All the evidence showed that, measured by the cost of the service, the rates were too low, not too high.

The Interstate Commerce Commission in its decision frankly recognized the dilemma in which the evidence placed it. It pointed out that in a long series of decisions it had held that "the right of a railroad to charge a certain sum for freight does not depend at all upon the fact whether its customers are making or losing by their business." It pointed out that on the basis of the "cost of the service" there could be no justification for a reduction of live stock rates since, on account of their high expenses of operation, the railways under the present rates had fallen far short of earning enough to cover their operating expenses and taxes and the annual net operating income set as a mark by Congress—and by the Commission itself.

On this reasoning it is difficult to see how the Commission could have reached any conclusion other than that it should not order, or even suggest, that the rates on live stock should be reduced. Nevertheless, without entering any order, the Commission did suggest to the carriers a substantial reduction in these rates. Furthermore, Commissioners McChord and Campbell dissented from the majority opinion and contended that the rates should be ordered reduced, the latter expressly basing his view upon the ground that the rates are too high in proportion to the value of the service rendered.

What action the railways will take is yet to be determined.

The inconsistency of the Commission's suggestion in this case with its decisions in past years is, however, only too plain. It refused in past years to allow the railways to advance their rates when the traffic could bear higher rates, but it now suggests to them that they should reduce the rates because they are too high in proportion to what the traffic can bear. Formerly it refused advances in rates upon the ground that the cost of rendering the service had not increased enough to justify the advances, and now it suggests reductions in rates regardless of the fact that the cost of rendering the service is so high that the railways cannot afford to reduce them.

There are commodities whose prices are so low in proportion to the present railway rates that the rates are relatively high measured by the value of the service rendered in transporting them. This is especially true of the prices of and rates on live stock. There are other commodities whose prices are still so high that they could easily bear further advances in rates. For example, according to the statistics of the Bureau of Labor, the average prices of house furnishings in April were 174 per cent more than in 1913, and the average prices of building materials 103 per cent more. The price of coal at the mouth of the mine at Fairmont, W. Va., on August 1, was 131 per cent more than in 1913. The price of brick was 118 per cent more.

Since the Commission suggests reductions in the rates on live stock because of the low prices of live stock, it would be only consistent for it to authorize advances in the rates on house furnishings, coal, brick and other commodities, the prices of which are still so high relatively that they easily could stand higher rates.

The Commission has express instructions from Congress to so fix rates as to enable the railways to earn an average return of at least 5½ per cent. The railways for almost a year have patiently done the best they could under rates fixed by the Commission which have yielded them an average return of only about 2½ per cent. How does the Commission reconcile its suggestions for reductions in some rates, and its failure to suggest advances in other rates, with the duty given it by Congress to enable the railways to earn an average return of at least 5½ per cent?

Railway expenses are gradually going down. Not only are the prices of some commodities still so high that they could stand much higher rates, but the prices of some commodities which declined lately have recently been advancing, including those of some important farm products. Since the Commission now suggests that, regardless of the high operating costs of the railways and the enormous losses they have been incurring, the railways reduce live stock rates to help the producer of live stock, what attitude is it going to take in the future if there are radical changes in the relations between railway costs and the prices of commodities? Suppose business conditions become such that the railways, without in any instance charging rates that are relatively high in proportion to what the traffic can bear, can make average net earnings which greatly exceed 5½ or 6 per cent. Since the Commission now suggests that they shall reduce certain rates when for almost a year they have been earning only 2½ per cent, will it in future help them to maintain rates which, without exceeding what the traffic can bear, may conceivably enable them to earn an average of, say, 8 or 10 per cent?

The *Railway Age* has no criticism to offer if the Commission intends to change its past policy and in future permit rates to be based on "what the traffic will bear." But the Commission will be guilty of the grossest inconsistency, and lay itself wide open to the most destructive criticism, if it pursues a policy of basing rates on what the traffic will bear when railway costs are high, and of then basing them on the cost of the service when railway costs have been reduced.

## Extraordinary Changes in Freight Business

NOTHING COULD BETTER illustrate the peculiar conditions now existing in general business than the contrast between the facts regarding the movement of freight of various kinds on the railways at present and the facts regarding the movement of the same kinds of freight a year ago. Many people believe there has been a decline in all kinds of freight. This is not true. Throughout the present year there have been increases as compared with last year in the shipments of some kinds of freight and decreases in the shipments of other kinds of freight.

The freight rates which have been the most bitterly attacked are those on farm products. The western state railroad commissions, led by the Kansas commission, have started proceedings for extensive reductions in grain rates before the Interstate Commerce Commission. They claim that the traffic will not bear the rates and that therefore as long as the rates remain in effect the farmers cannot produce grain at a profit. Curiously enough, as has been pointed out in these columns before, grain shipments throughout the present year have shown larger increases than those of any other commodities. In the four weeks ended August 6, the total carloads of grain shipped were 246,938 as compared with 146,440 in the same weeks of 1920, an increase of almost 70 per cent. There has also been loud complaint that the farmers could not ship their live stock under present rates. The shipments of live stock in these same four weeks were 101,159 carloads as compared with 105,022 in the same weeks of 1920, a decrease of less than 4 per cent. There has been a large increase in shipments of merchandise. In the four weeks mentioned they were 836,098 carloads as compared with 753,947 carloads last year, an increase of almost 11 per cent.

Compare the foregoing figures with those regarding shipments of some other commodities. Comparing the four weeks ended August 6, 1921, with the same weeks of 1920, coal shipments declined from 793,536 carloads to 596,620 carloads, or about 25 per cent. Shipments of coke declined from 51,501 carloads to 15,994, or almost 70 per cent. Shipments of forest products declined from 239,287 carloads to 175,335 carloads, or almost 20 per cent. Shipments of ore declined from 308,775 carloads to 127,300 carloads, or over 60 per cent. Shipments of miscellaneous unclassified commodities declined from 1,344,857 carloads to 1,042,197 carloads, or over 30 per cent.

These figures disclose that the present freight traffic of the railways is due to changes as compared with last year varying all the way from an increase of 70 per cent in grain shipments to a decrease of 60 per cent in ore shipments and of 70 per cent in coke shipments.

Many people are trying to convince themselves and others that present business conditions are largely, or even mainly, due to the present railway rates. But the advances in railway rates made since 1917 have been horizontal increases, and therefore have been relatively the same upon all classes of commodities. If the advances in railway rates have produced such an immense effect upon general business, how does it happen that with relatively the same increases in rates upon all commodities, shipments of some commodities are now 70 per cent greater than a year ago while shipments of other commodities are 70 per cent less than they were a year ago?

The wide differences in the changes that have occurred in the shipments of the various classes of commodities show that the present business situation is due in only a small measure to railway rates and mainly to other conditions. Undoubtedly the main reason why the shipments of some kinds of commodities have greatly increased while those of other commodities have greatly declined is that the process

of readjustment has been carried much farther in some lines of industry than in others. The increases in railway rates cannot, however, have materially hastened the process of readjustment in some industries or retarded it in others, simply because the increases in railway rates have been uniform as to all classes of commodities.

With grain shipments 70 per cent greater than they were a year ago and coal shipments 25 per cent less, forest products shipments 20 per cent less, ore shipments 60 per cent less and coke shipments 70 per cent less, it is quite plain that the public must look to other influences than to any possible reduction in railway rates to cause a return of general business activity.

## Protecting the Investment

IN THE LAST TWO ISSUES we have referred to the direct interest which the railways have in the extensive program of highway construction which has been undertaken over the country. This interest arises from the large investment which they have made and are making in these roads through taxation in one form or another. It has been estimated by competent authorities that the amount available for highway construction work this year is approximately \$1,400,000,000 or over six per cent of the total investment in the railways of the entire United States. Once this investment has been made, the railways are interested in seeing that it is protected and that the structures resulting therefrom are used in the manner for which they were designed, and in the way to secure the greatest return from the expenditure.

When a railway constructs a line, its structures are designed by trained engineers to carry the loads which it is desired to move over it. With the completion of the road, the loads are limited rigidly to those for which the structures have been designed. If conditions develop which make it desirable to transport heavier loads or make higher speeds, they are permitted only after the structures have been strengthened accordingly.

In our last issue the lack of engineering design of the highways into which these hundreds of millions of dollars are being poured was referred to. As a result there is little relation between the roads which are built, local conditions under which they are constructed, and the traffic which they are to bear. But this is not all. After the road is completed with public funds little or no attempt is made to limit the loads or the speeds at which they are transported. Any truck operator is at liberty to haul any load he desires and under any conditions which he sees fit to impose, without regard to the effect on the road which has been provided for him free of expense by the railways and other taxpayers. Such a disregard of engineering principles would be suicidal on a railway; and it is equally so on a highway. The result is that this large investment is being dissipated in large measure, for these highways are failing in many instances after only three or four years of service, and frequently after an interval that represents only a fraction of the period for which they are bonded.

In a report made by the automobile clubs of California, it is stated that on 49.8 per cent of the highways in southern California serious failure has already begun or is far advanced. While California is one of the few states which have passed laws limiting the weight of trucks it has quite generally failed to enforce this requirement. The report states that "it is apparent that if truck operators are permitted to use the highways without police supervision a few unreasonable truck drivers or operators will wreck any road system that may be built. Thinking people recognize that such a policy is improper, short-sighted and suicidal. It is equally important that speed regulations should be enforced for trucks, for the speeds at which these heavy loads travel on



\$1,900,000 but in the last four months it also had the advantage of higher rates. In addition, it carried a record traffic throughout most of the year and did not suffer a decline in its traffic until rather later than most roads. Speaking now of the St. Louis Southwestern alone and omitting for the moment the St. Louis Southwestern of Texas, thus taking into consideration 968 miles of the system's total of 1,775, it is interesting to observe that the road's standard return for the period of federal control was \$3,355,749. In 1918, it had a net railway operating income of \$3,628,950,

or including the ties inserted in January and February which brought the total up to 777,612, an increase of 130,111, as compared with 1919. There was \$158,138 spent for tie plates, and there were applied 74,718 cubic yards of ballast. The road spent \$560,581 for application of drain tile, widening cuts, etc. There were laid 75 miles of 85 lb. rail replacing worn 75 lb. rail. Of the total of \$3,271,924 mentioned above \$2,524,823 was spent on maintenance of way and structures and \$747,101 for maintenance of equipment. In addition the road during the year purchased 20 new Consolidation

ST. LOUIS SOUTHWESTERN OPERATING RESULTS 1912-1920

Year ended	Freight revenue	Total operating revenue	Operating expenses	Net operating revenue	Operating ratio	Revenue tons	Revenue ton miles	Average haul	Revenue train load	Revenue car load	Miles per car per day
1912	\$8,971,114	\$12,042,543	\$8,419,415	\$3,623,128	69.92	3,408,054	835,722,979	245	292	15.05	26.66
1913	9,864,490	13,296,950	9,215,797	4,081,153	69.31	3,657,964	871,985,756	238	300	15.27	28.22
1914	9,295,143	12,791,904	9,833,801	2,958,104	76.83	3,495,57	830,023,078	237	294	15.37	25.54
1915	7,891,642	10,637,861	8,361,154	2,266,707	78.67	3,181,267	747,474,244	235	304	15.47	19.78
1916	6,183,185	12,224,449	8,406,786	3,817,664	68.77	3,745,130	891,140,359	238	344	15.97	24.83
Year ended Dec. 31:											
1916	10,369,943	13,850,130	9,318,306	4,531,825	67.28	4,009,498	956,572,396	239	351	16.36	30.15
1917	13,062,975	17,309,657	10,896,860	6,412,797	62.95	4,996,813	1,270,829,273	254	431	18.59	34.08
1918	14,365,854	19,588,761	15,840,615	3,748,146	80.87	4,872,201	1,240,619,003	255	450	21.03	22.81
1919	15,821,318	20,661,163	18,497,241	2,163,921	89.53	4,760,216	1,140,459,526	240	463	19.50	23.49
1920	25,280,354	31,030,958	25,886,056	5,134,902	83.45	6,356,708	1,815,775,668	286	523	21.86	30.36

in other words, it exceeded the government rental. In 1919 it had a net of \$3,077,808. In 1920, while operating for 10 months on its own account, it had a net railway operating income of no less than \$6,001,829. Referring again to the St. Louis Southwestern as a system, it will be noted that the corporate income account in 1920 showed a net of \$2,959,837, all of which was appropriated for investment in physical property. The net corporate income in 1919 was \$1,345,909.

It has been noted above that the property was assisted in 1920 by an extraordinary expansion of its traffic. The total revenue tonnage in 1920 was 6,356,708 as compared with 4,760,210 tons carried in 1919 or 4,996,813 carried in 1917, the best previous year. As compared with 1919 there was an increase of 33.54 per cent. The increase in revenue ton mileage, however, was no less than 59.21 per cent. The revenue ton mileage in 1920 was 1,815,775,668. The 1919 figure was 1,140,459,526; the 1917 total was 1,270,829,273. The road's average haul in 1920 was 286 miles; in 1919 it was 240 miles; in 1917, 254 miles.

The St. Louis Southwestern's tonnage is rather diversified. In 1920 products of agriculture constituted 16.24 per cent of the total revenue tonnage; products of animals, 1.05 per cent; products of mines, 21.02 per cent; products of forests, 28.65 per cent, and manufactures, 33.04 per cent. As compared with 1919, the tonnage of products of mines in 1920 showed an increase of 100 per cent. The tonnage of refined petroleum and its products, which in 1920 made up 7.82 per cent of the total tonnage of the road, represented an increase over 1919 of 121.37 per cent.

It is quite natural to expect that with an increase in total revenue tonnage of 33.54 per cent and an increase of 59.21 per cent in revenue ton mileage there should have been compensating increases in revenue train load, revenue car load, etc. The average revenue train load in 1920 was 523 as compared with 463 in 1919, 450 in 1918, 431 in 1917, etc. The average revenue load per loaded car was 21.86 as compared with 19.5 in 1919. The St. Louis Southwestern ranks well with the other roads in its territory in these matters. The progressive increase in the figures, however, is possibly of even greater importance.

In view of the fact that the St. Louis Southwestern spent large sums for the rehabilitation of its property during 1920, it is worth while to see just what work was carried out. The details as given in the annual report, show that between March 1 and December 31 there was spent on major items of maintenance and betterment work the sum of \$3,271,924. This included the purchase and application of 642,505 ties,

freight locomotives, of which 10 were received before the close of the year.

The operating results 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,776	1,755
Freight revenue	\$25,280,354	\$15,821,318
Passenger revenue	4,026,709	3,819,762
Total operating revenue	31,120,958	20,661,163
Maintenance of way expenses	6,326,553	4,127,516
Maintenance of equipment	6,717,152	5,220,162
Traffic expenses	755,704	314,114
Transportation expenses	10,898,597	7,880,833
General expenses	1,109,259	902,361
Total operating expenses	25,886,056	18,497,241
Net operating revenue	5,134,902	2,163,921
Taxes	1,247,677	853,182
Operating income	3,885,448	1,306,557

The corporate income account is as follows:

	1920	1919
Standard return (January and February, 1920, full year 1919)	\$651,819	\$3,910,914
Railway operating income (10 mos.)	3,970,947	656,740
Non-operating income	1,534,298	4,570,653
Gross income	6,105,478	2,250,490
Interest on funded debt	2,236,888	3,224,744
Total deductions from gross income	3,145,642	3,224,744
Net income	2,959,837	1,345,909
Income appropriated for investment in physical property	2,959,837	

New Books

*The Engineering Index, 1920.* 586 pages, 7 in. by 9½ in. Published by the American Society of Mechanical Engineers, 29 West Thirty-ninth street, New York.

The Engineering Index, which was published from 1892 to 1917, inclusive, by the Engineering Magazine Company and since then by the American Society of Mechanical Engineers, has for many years been recognized as the standard reference index to current engineering literature, and is practically indispensable to those who have frequent occasion to look up articles which have been written on subjects in this field. The completeness of the index is shown by the fact that the volume for the year 1920 covers nearly 14,000 articles from some 700 engineering and technical publications, together with society proceedings. Most of these are in English, but the more important articles in French, German and other languages are included also. The subject matter is arranged in alphabetical order with convenient main and sub-heads and gives a concise description of the substance of each article. The railway field is well covered and includes references to articles on management, operation, construction, maintenance, stations, freight handling, yards, track, maintenance of way, shops, locomotives, cars, etc.

## Letters to the Editor

### Remedies for Wastes in Railway Operation

NEW YORK.

TO THE EDITOR:

Referring to the article by F. J. Lisman under the above title in the *Railway Age* of July 9, 1921.

In some respects there is a distinct difference between the measure of a rate which is satisfactory to the shipper and the measure of a rate which is compensatory to the carrier, and the difficulty which confronts the traffic official is to balance one against the other and to so adjust the rates that the application thereof will result in the maximum volume of business at the maximum net return.

The actual cost of handling a ton of silk is relatively unimportant, but I realize Mr. Lisman has used silk as the extreme at one end of the scale and pig iron at the other end. But with respect to silk it may be interesting to note that the value is so great, the insurance so high and the amount of interest so large that the actual freight rate has practically no bearing, provided the service is given by the ocean and rail carriers and, as a matter of fact, the service is almost the same as passenger train time.

I think you are entirely correct in pointing out that practically all the expenses can be reduced to a formula, but although I have personally wrestled with the problem for a number of years I have yet to find a formula which can be applied from year to year.

Some years ago it was customary to price cotton seed at country stations in dollars per ton equal to the current price in cents per gallon of cotton seed oil. That is, if cotton seed oil was 18 cents per gallon it was assumed cotton seed should be priced at \$18 per ton. It was a good formula and worked successfully until the market prices on cotton seed meal broke it down.

I do not see any special value in basing traffic expenses upon the gross tonnage handled. I have just seen a steel box car, for which the tare weight is 47,400 lb. but as a vehicle for transporting one load it is worth no more to the traffic official than a car of lighter construction which weighs only 35,000 lb. The traffic man does not want to take the credit for the deadweight tonnage of the cars in which the traffic is moved, and, furthermore, he is not responsible for the construction of the cars except as he may suggest the kind of equipment needed to handle the business of the railroad. I think traffic expenses should be based on gross earnings.

Accounting for maintenance of equipment on the basis of gross tonnage would not throw any light on the situation except as to the locomotives, and I agree with you that this would be a more definite basis than mileage.

In the matter of less-than-carload traffic, it so happens that the gross earnings of the Erie Railroad for the first four months of 1921 on less-than-carload traffic amounted to 8 per cent of the total freight earnings; this is lower than it was before 1919, for the reason that in 1919 the Commission changed the method of reporting merchandise freight and threw into the carload column all cars loaded with as much as 10,000 lb., although under the rates and classification the railroads continued to load and unload traffic moving at less-than-carload rates regardless of the quantity. In other words, they continued to incur the extra expense of handling carload traffic in spite of the change in accounting.

In round figures the average freight rate per ton of the

carload traffic handled over the Erie Railroad for the first four months of 1921 was \$2.50, while the average earnings per ton on less-than-carload traffic amounted to \$8.27 for the same period. Assuming that the cost of loading and unloading a ton of freight at point of origin and at destination is \$2.00 each or a total of \$4.00, we have as a comparable figure with the carload tonnage a return of \$4.27 which is nearly twice as much as the rate per ton earned on carload traffic.

The Erie Railroad claims on less-than-carload traffic, with the exception of one or two items such as boots and shoes and tobacco, are not as great proportionately as on a large volume of carload traffic, such as fresh fruits and vegetables, packing house products and fresh meats and on live stock.

The Erie Railroad has definitely taken the position that the so-called short haul l.c.l. traffic, that is to say within a radius of 25 miles of the distributing centers, should be handled by motor trucks or some other system of delivery than the steam railroad. However, the greater responsibility of the steam railroad, as compared with some of the trucks which offer their services, is such that the traffic is forced upon the railroad without solicitation and without any desire to handle it.

As to the car loading of merchandise traffic, it must be remembered that very frequently the cars if not loaded with merchandise would move empty so that quite a substantial portion of the l.c.l. business outside of the 25-mile radius is handled at the lowest cost from a transportation standpoint.

The "sailing day" plan which was so designated during the war was not a new plan but a new phrase was adopted which excited a great amount of prejudice on the part of shippers and was subsequently abandoned. The modern plan, which is in vogue on the Erie Railroad, is to establish certain transfer stations in which all the merchandise is centered, and after being separated according to destination is loaded into solid merchandise cars which are run through from the transfer station to final distributing point.

Not all merchandise traffic is profitable and some of the railroad officials contend that very little is profitable, but that does not permit the carrier to completely ignore the business.

Although in the first four months of 1921 the merchandise tonnage as classified by the Interstate Commission amounted to 2.6 per cent of the tonnage, the revenue amounted to nearly \$2,500,000, or nearly \$1,000,000 gross revenue from each per cent of tonnage. The only other item that equals this is animals and products of animals, on which the rate per ton is slightly in excess of the rate per ton on merchandise, largely because of the longer haul.

T. C. POWELL,

Vice-President, Erie Railroad.

### The Status of the Chief Clerk

TO THE EDITOR:

Commenting on my discussion of the status of the chief clerk, which appeared in *Railway Age* of July 23, page 159, I note in your issue of August 6 an interesting letter signed "Operating Officer" in which the writer advocates the personal handling of more of their own work by railroad officers and says that "to give the chief clerk greater recognition and a definite position in the organization would simply tend to perpetuate and increase what is already one of our greatest weaknesses." He also calls attention to the "limited outdoor experience" of the average chief clerk and asserts that the latter often overrules the recommendations of officers of lower rank than the officer represented by the chief clerk. This operating officer thinks my contentions are reasonable

under the conditions as they exist on the railroads today, but thinks the conditions should be changed.

All the authority that exists or is exercised on the railroads is delegated. It originates, theoretically at least, with the stockholders who are not on the railroad at all, and is delegated by them to the board of directors, who delegate to the president such authority as they think he should have, and so on down the line. Even the section foreman's authority is delegated or relayed to him from the stockholders through a long line of officers.

Nothing but necessity justifies the delegation of duties and responsibilities by anybody but it is a physical impossibility for the average railroad officer to give his personal attention to all his business. He therefore attends personally to as many of the more important matters as the limitations of time will permit. An officer who does not learn to depend on his organization in a general way never gets to the top. The most ignominious failure I ever witnessed was that of a superintendent of motive power on a certain large road, with six or seven divisions in his district, who earnestly endeavored to supervise personally everything that was done in his territory. He had unlimited ambition and enthusiasm and his vitality was remarkable. He worked about 18 hours a day for two or three years but his system was hopeless. The huge number of details with which he struggled single-handed had completely buried him long before he lost his position. His inability to delegate duties and responsibilities was fatal.

When an officer must delegate duties, to whom should they be delegated? Custom makes the chief clerk the recipient in a large measure. If anybody else is better qualified to assume these delegated duties, that person, instead of the chief clerk, should be the recipient; but the chief clerk, by reason of his position, is in close touch with conditions and events and understands the situation better than anybody else excepting the officer he represents. Therefore a multitude of important duties are invariably delegated to him but the recognition that should go with them is withheld.

As to our limited outdoor experience, which is cheerfully admitted, I respectfully submit that the operation of the railroads nowadays is by no means an outdoor problem exclusively. The indoor work that is indispensable represents a large percentage of the total effort required. To be quite frank, how much more does the average officer know about office work than the average chief clerk knows about outdoor work? It is practically impossible for any man to know every phase of railroad work and this fact should not militate against the chief clerk more seriously than against anybody else.

I do not advocate the writing of caustic letters by chief clerks—nor by anybody else. The effect of such letters is nearly always bad. Harmony should be the watchword on the railroads and elsewhere. If the performance of an employee is such that it fails to preserve or promote harmony by promoting the welfare of the railroad, take him off the payroll, but do it pleasantly. The best officers rarely resort to rough tactics.

There is no good reason why the officer in charge should not see a copy of every letter that the chief clerk writes. It has been my practice for years to place on the desk of the officer in charge, each morning, a reading file consisting of carbon copies of all letters written in our office on the previous day. A minimum of his time is required to read these copies and if he finds anything objectionable, necessary action is taken immediately. It would be very indiscreet for me to dictate offensive letters or issue instructions on matters I do not understand, knowing that he would see copies of such letters a few hours after they were written. But his time is valuable and it is my obvious duty to handle as much of the correspondence as I can handle properly so that the maximum amount of his time may be available for his nu-

merous other duties. On my ability to do this and other important work intelligently, I base my claim for recognition, pecuniary and otherwise.

We make mistakes. Everybody does. The chief clerks are far from claiming infallibility but if I should overrule a recommendation of an officer subordinate to my chief and such subordinate officer is confident that I have made a mistake, what prevents his taking the question up with my chief, either orally or by personal letter? I can think of nothing besides a possible suspicion that my chief might have directed me to take that very action. This is really beside the question, however, as the right kind of chief clerk does not approve nor disapprove recommendations of subordinate officers without consulting the officer in charge unless such recommendations involve the violation of rigid instructions from higher officers.

The editorial in the *Railway Age* of July 23 which recites that in the lists of officers of the railways of Great Britain the name of the chief clerk follows that of the officer encourages me to hope that we shall yet be accorded, in this country, the recognition to which I believe we are entitled. Our salaries cannot be compared with the salaries of others on the railroads handling work of equal and less importance and we get no public recognition whatever. We do not ask for a definite place in the organization for we have that—the closest and most confidential relationship with the officers with whom we work. Where is the officer who fails to appreciate the value of a good chief clerk, whether the one he has is good or poor? Why is the chief clerk destined to be appreciated only in private and paid only 50 to 75 per cent of what he is worth to the railroad? I have been asking myself these questions for years. Does anybody know the answers? •

CHIEF CLERK.

GOOD BRAKES are as important as a good motor. "The subway trains of the Interborough Rapid Transit Company (New York), running at full speed, can stop in less than half the distance ordinarily required by the best steam railroad express trains."—*Subway Sun*.

SEVENTY-FOOT mail storage cars having become common, the Postmaster General and the Railway Mail Pay Committee (representing the railroads) have petitioned the Interstate Commerce Commission to approve the use of such cars at a pro rata increase over the rate prescribed for 60-foot cars.



Photo by International

A Derailment in France Caused by Train Wreckers

# Pennsylvania Challenges Authority of Labor Board

Denies Right of Board to Regulate Working Conditions—Has Agreed with Two-thirds of Its Men

THE PENNSYLVANIA RAILROAD, on Wednesday, August 24, made answer to the recent order of the United States Railroad Labor Board, in which answer the board declares that the company has a lawful right under the Transportation Act to establish rules and working conditions with its employees, and that the contracts entered into by the management and its employees are now in full force and effect; and it asks the board to "set aside and vacate" its recent decision in the case of the Shop Crafts Union. The railroad declares that:

The Board has no right and power to prescribe principles to govern the railroad and its employees in the making of agreements covering rules and working conditions;

The Board has no power to prescribe an election or any other method by which the railroad may ascertain who are the authorized representatives of its employees;

The Board has no power to compel a conference or to prescribe what representatives of employees the railroad shall confer with; Since the termination of federal control the railroad has endeavored to re-establish with its own employees a contented and harmonious relationship and has offered all classes of employees a voice in matters affecting their welfare through employee representatives of their own selection, whether union or non-union men;

Approximately two-thirds of the employees who are interested in and affected by rules covering working conditions have by vote or otherwise expressed a desire to negotiate rules and working conditions through employee representatives;

Contracts have been entered into between the management and representatives of approximately 150,000 employees;

Since the Board's decision, representatives of the various classes of employees with whom contracts have been made have expressed their satisfaction, not only with the manner of selecting representatives, but also with the rules and working conditions agreed upon;

If the railroad complied with the labor board's decision these contracts would be void "to the great and irreparable injury of the carrier and its employees."

The railroad's application to the labor board follows:

1.—The carrier renews its objections to the jurisdiction which were urged upon the hearing of this cause, and it avers that the board had no power or authority in law (a) to extend the National agreements and (b) after extension and the order of termination as of July 1, 1921, to decide without a hearing on June 27, 1921, upon a further extension. The carrier avers that the National Agreements are as to it and its employees wholly terminated and of no force and effect.

2.—The carrier denies the right and power of the board to prescribe principles, which must in law govern the carrier and its employees in the making of agreements covering working rules and conditions. Notwithstanding this, the carrier has endeavored in negotiations with its employees to adopt and observe such of the said principles as are fundamentally sound and correct.

3.—The carrier notes that the board in this cause decides that it "acquired such jurisdiction" but it declares that "that question is not of prime importance in this case." The board also states, "There is no question of the closed or open shop involved in this dispute and no other real matter of principle. The question involved is merely one of procedure." With these propositions the carrier takes direct issue. If the question is merely one of procedure, the carrier avers that the board has no right or power to set up its judgment or opinion against that of the carrier. Dissatisfaction, whether real or fancied, by certain employees with matters of "mere procedure" should not be tortured into a "dispute" within the purview of Sections 301 and 307 of the Trans-

portation Act. No fear need be entertained of "interruption to the operation of any carrier" because of differences between carrier and employees upon questions of "mere procedure." Disputes under the law, referable to the board, are those of substance and real moment. Reduction of wages, real grievances, unfair, unreasonable, burdensome working rules and conditions are the matters comprehended by the Transportation Act as prolific of "disputes" which might interrupt transportation, to prevent which the Labor Board was created.

4.—The carrier denies the power of the board to prescribe an election, or any other method, by which the carrier may ascertain who are the authorized representatives of its employees; and it avers that it cannot accept as advisory the rules and conditions set forth in the board's decision in this cause. The carrier will, as the occasion requires, accord franchise rights only to its employees in service, or absent upon leave, and will not concede voting qualifications to men who have been laid off or furloughed and who may be engaged in other occupations, or may never return to the service of the carrier. The carrier denies the power of the board to compel a conference or to prescribe what representatives of employees it shall confer with, and it can not accede to the rule prescribed for ascertaining the representative capacity of the spokesmen for unorganized employees.

5.—The carrier states that it has been its policy, since the termination of Federal control, to re-establish with its own employees a contented and harmonious relationship, ever bearing in mind that honest, efficient and economical operation of its lines can be secured only by close and unrestricted co-operation by the management and the employees. With that end in view, it was determined that all classes of employees should have a voice in the administration of matters affecting their welfare, through representatives of their own selection, and that such representatives, whether union or non-union men, should be actual employees. In pursuance of this policy, conferences were held with representatives, duly authorized and designated by the employees in the several crafts.

There are in the service of the carrier at this time approximately 176,000 employees who are interested in and affected by rules covering working conditions, and 117,176 or 66.5 per cent of said employees have by vote or otherwise, as a result of said conferences, expressed a desire to negotiate rules and working conditions through employee representatives. Accordingly, contracts respecting rules and working conditions have been entered into between the carrier and representatives of 149,918 employees, apportioned among the several classes, as follows:

Train and engine service employees.....	41,316
Clerks and other office, station, storeroom, warehouse, and elevator forces, including engine and train crew callers.....	39,598
Maintenance of way and structures and shop laborers.....	40,009
Mechanics, helpers and apprentices, maintenance of equipment and telegraph and telephone.....	24,078
Signal department employees.....	2,061
Marine department employees.....	1,544
Dining car and restaurant employees.....	1,522
	147,128

6.—Since the decision in this cause, the carrier has held conferences with representatives of the several crafts with whom contracts have been made, for the purpose of ascertaining whether or not in the light of the said decision, said employees were satisfied with the manner of selecting representatives and with the rules and working conditions actually agreed to; and as a result of said conferences, the

said employees, through their representatives, manifested their satisfaction not only with the manner of selecting representatives but also with the rules and working conditions embodied in said agreements.

On August 22, a general conference was held with representatives of employees who had been selected by ballot in accordance with the plan of election submitted by the carrier after the publication of the board's decision No. 119. To this conference at least 250 representatives of System Federation 90, of the American Federation of Labor, employed by the carrier, were invited, but, acting under the instructions of the president of System Federation 90, but few of such representatives attended the conference.

In this connection it may be stated that many of said employee representatives are union men, and in the case of several crafts the entire delegation of elected representatives consists of union men. At this conference the employee representatives again signified their approval of and their satisfaction with the plans and purposes of the management and the contracts which had been duly executed.

7.—The carrier states that the contracts between itself and its employees are in full force and effect, and by their terms the parties thereto have acquired mutual rights and assumed mutual obligations; and that if the carrier complied with the decision of the board in this cause, the said contracts will be void and of no effect, to the great and irreparable injury of the carrier and its employees, parties to the said contracts.

8.—The carrier represents to the board that the rights of the employees who are not parties to the said contracts and who do not want to be bound thereby have not been impaired in any manner, for the reason that they may at any time invoke the aid of the board, if they are of opinion that the rules and working conditions contained in the said contracts, now in effect upon the carrier's lines of railroad, are unfair and unreasonable.

9.—Wherefore, the carrier asks that the board vacate and set aside its decision in this cause and find, in pursuance of the Transportation Act (a) that the carrier has the lawful right to establish rules and working conditions in the first instance, either with or without first holding conferences with its employees; and (b) that the contracts respecting rules and working conditions heretofore entered into by the carrier and its employees in the shop crafts are now in full force and effect, without any further action on the part of the carrier and its employees in the said shop crafts.

10.—The carrier hereby makes request of the board for an oral hearing of this application, at which time evidence in support of these allegations of fact will be introduced.

### Block Signal Mileage on January 1, 1921

THE INTERSTATE COMMERCE COMMISSION has issued its annual statement of the block signal mileage of the railroads of the United States, showing, for the whole country on January 1, 1921, a total of 101,883.6 miles of road; this varies less than one mile from the total recorded one year before. The totals are:

	Miles of Road		Total
	Automatic	Manual	
1921 .....	38,543.9	63,339.7	101,883.6
1920 .....	37,968.8	63,915.4	101,884.2
	Inc. 575.1	Dec. 575.7	Dec. 0.6

This change, however, is not quite so simple as it appears. In a number of cases automatic signals have been installed in the place of manual signals and the increase under one head exactly equals the decrease under the other; but that such is not the case in the majority of the items is evident from the following brief statement of notable changes in 1920:

NOTABLE CHANGES IN 1920 (MILES OF ROAD)

Name of Road	Increase		Decrease, n automatic
	Automatic	Nonautomatic	
Atchison, Topeka & Santa Fe .....	29.1	.....	.....
Baltimore & Ohio .....	25.0	.....	20.1
Boston & Maine .....	.....	32.4	.....
Chicago, Burlington & Quincy .....	215.1	.....	216.8
Detroit United .....	1.5	.....	.....
Grand Trunk .....	10.1	.....	131.3
Missouri, Kansas & Texas; Missouri, Kansas & Texas of Texas; and Wichita Falls & Northwestern .....	93.3	.....	2.7
New York, New Haven & Hartford .....	1.2	19.2	.....
Northern Pacific .....	126.8	.....	4.5
Pennsylvania .....	42.5	.....	45.7
Pere Marquette .....	32.2	.....	.....
Richmond, Fredericksburg & Potomac .....	32.2	.....	.....
Southern Railway .....	.....	.....	129.6
Texas & Pacific .....	.....	139.0	.....

The totals of these columns are 609.0 and 648.6 increases (total 1255.6), and 419.4 decrease. This makes a net increase of 836.2 miles. The increase in automatic mileage alone is 33.9 miles greater than the net increase shown in the first comparison. There are, however, numerous increases small in amount, to be added to this, and no less than 144 miles decrease in automatics. There is no clear evidence that this indicates the actual discontinuance of any automatic signals; some or all of the items may represent errors in reporting, in one year or the other. Some of these decreases are: C. M. & St. P., 5 miles; Chicago, R. I. & P., 12 miles; C. St. P. M. & O., 4 miles; Empire State Railroad Corporation, 7 miles; Illinois Central, 7 miles; Mahoning & Shenango Railway & Lighting Company, 37 miles; Portland, 38 miles; Washington Southern, 32 miles. The last three names do not appear in the report for 1921.

All of the final totals of the tables issued by the Commission are vitiated by the inclusion of several hundred miles of road twice (or in some cases three times) where long sections are operated jointly. These duplications aggregate, as near as we can make out, 731.9 miles of road.

The net total length of road equipped with automatic block signals seems to be 38,108 miles. This figure is the one of most immediate interest, in any study of progress, for the reason that the non-automatic block system is operated under such varying rules and often applies to such a small part of the trains that no measure of the value of the system is practicable without a study of the train movements and of the volume of traffic.

In the Commission's Table No. 1 the number of items in which a road is recorded as operating all of its passenger lines under the block system is 57, as compared with 74 items on January 1, 1920; but here, again, the retrogression in many cases is more apparent than real. Part of the discrepancy is due to consolidation of items, as where the Chicago, Milwaukee & St. Paul is reduced from five lines to two lines. Some of the changes are small, as the Baltimore & Ohio (eastern lines) from 100 per cent to 98.1 per cent, indicating, perhaps, a correction of clerical errors.

Seven roads report automatic train stops in use, the Chicago, Rock Island & Pacific (22 miles, double track) being added to the six roads published one year previously.

Different kinds of automatic signals in use are reported in table No. 2, as usual. The length of roads signaled by electro-gas signals is 80 miles less than in 1920. The Pennsylvania reports 103 miles of road signaled with position-light signals. The electric train staff is in service on 382 miles of road, 79 miles less than in 1920. The Louisville & Nashville in 1920 reported 68 miles; this year, nothing.

The report gives the usual data concerning methods and apparatus used with the manual block system; practices in connection with block signaling on manually operated lines, etc., and concerning the use of alternating currents, electric lights, etc., in connection with automatic block signals. Automatic block signals are electrically lighted on 8,153 miles of road, 442 miles more than shown in the preceding report. The telephone is used for train orders on 122,022 miles of road, 2,868 miles more than on January 1, 1920.

# The War and Its Effect on French Railway Labor

War Time Increases in Pay Not Great—Railways' Extensive Housing Projects—Co-operative Buying

By Oliver F. Allen

Formerly Major of Engineers, American Expeditionary Forces

WHEN FIRST INVESTIGATING the availability of existing manufacturing plants in France as aides to the work of the American army engineers, the writer was surprised to find in a large railway shop at Tours in February, 1918, practically the normal number of apprentices learning their trades just as diligently as if there were no war. It is true that their course was shortened to allow them to start productive work sooner than in the ordinary course but it was, nevertheless, very complete. The managements of the railways realized that trained young men would be needed after the war even more urgently than before. Just as soon as they had a chance to catch their breath after the armistice, railway officers began to study the expansion of their training courses, and at least one of their prominent engineers came to America in 1920 to study intimately our trade schools and apprentice courses.

In the same railway shop at Tours inquiry was made as

mulgated for each department (which corresponds to a state in this country), and in some instances for smaller areas, such as large cities, and posted conspicuously so that working men and women as well as proprietors had free access to them. This protected the working people against underpayment for their work, but its great protection was in guarding the families of men at the front against profiteering not only by the employers of labor but by some workers who stayed at home and sometimes tried to take advantage of the situation for their own greater profit.

In a particular case the local conditions about an American engineering shop were such that some of the employees in a French factory in the same town were disposed to leave it and seek employment with the Americans. As the French factory was manufacturing pumping machinery needed for the water supply of both the French and American armies it was just as important that its production should continue



Plan of the Industrial Community at Roze, Showing Community Features

to migration of workers in quest of different working conditions or higher pay. It was surprising to learn that while the entire plant had the appearance of peace time operation with everyone in civilian clothes it was actually on a military basis. A workman who quit his job in a French railway or other shop doing work essential to their armies during the war was treated as a deserter. When the American engineers established some manufacturing plants for which civilian labor was sought the advantages of this protection was very helpful to the services of supply. The pay for different classes of work throughout the country was standardized and was made the subject of official decrees posted in every community. The base wage was the same throughout the country. It was augmented in certain localities by a surcharge or bonus where essential things cost more at retail than the prices on which base wages were computed. Complete tabulations of the classifications and the base wages and surcharges were pro-

vided for each department (which corresponds to a state in this country), and in some instances for smaller areas, such as large cities, and posted conspicuously so that working men and women as well as proprietors had free access to them. This protected the working people against underpayment for their work, but its great protection was in guarding the families of men at the front against profiteering not only by the employers of labor but by some workers who stayed at home and sometimes tried to take advantage of the situation for their own greater profit.

## French Soldiers Worked While on Leave

The French working man and working woman, realizing that they were all getting a square deal, not only did not fight against this regulation of wages and practical dictatorship over industry during the war, but helped wherever poss-

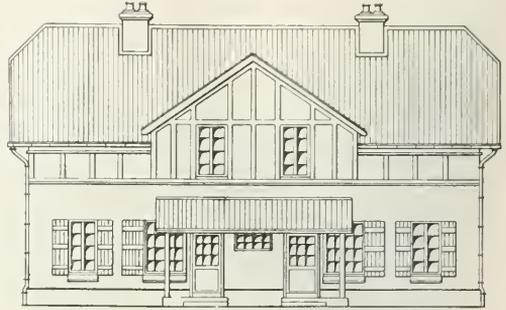
sible in carrying on the work behind the lines. It would be difficult to imagine the average American soldier as working while on leave, but the majority of the French "poilus" worked ten days out of their fourteen day leaves. So general was this custom that at least one American engineering shop recruited a large part of its civilian employees from French soldiers on leave. Several French merchants and factory managers have told the writer that their businesses were carried on throughout the war largely by their old employees while back on leave.

While the Boches were at the very gates of Paris, and the mass of the people did not know if France could hold on until the Americans arrived, the French railways, as well as other industries, did not simply plan for repairs and the replacement of things destroyed by the war, but made a comprehensive program of extensions and betterments co-ordinating with the anticipated renaissance of French industry and commerce. The items in this program were arranged to be carried out in the order of their importance.

### French Railways a Part of the Army

In organizing the special engineering regiments of the American army, such as those for the railway service, an attempt was made to find both officers and men with experience in the special line of work which the regiment was to do with the army. The French were able to go further. Their extensive military railway engineering organization was largely their peace time railway personnel in uniform operating as military units. Frequently both officers and men were doing substantially what they had done as civilians. The close relations existing between government departments and the railway organizations, the military control of railway

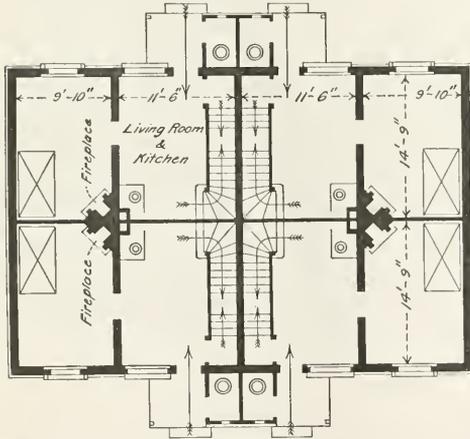
readjusting wages. The pay for common labor went up automatically and that of some higher officers was also raised, but the great intermediate group, the station agents, foremen, more important members of the operating and maintenance crews and the engineers and clerks of the central offices have found the recovery of a pre-war balance between



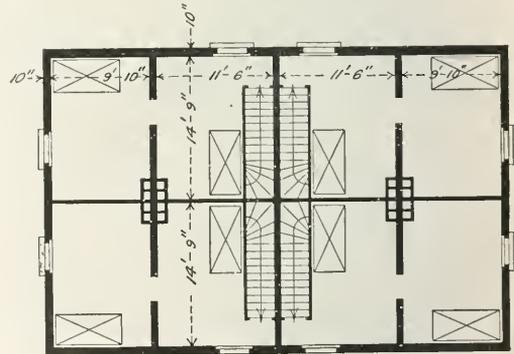
Front Elevation.

Exterior of Four-Family Houses at Tergnier

income and expenses very slow. Such increases in rates of wages as occurred, either during the war or soon after the railways were freed from military control, were approximately commensurate with the actual higher cost of living and not the result of unrestrained greedy demands. The management, therefore, had the advantage of relatively lower



Ground Floor Plan.



Second Floor Plan.

Floor Plan of Four-Family Houses at Tergnier

operations and this personal element combined not only to facilitate the development of comprehensive plans for reconstruction, but to make the carrying out of those plans thoroughly understood and co-operated in by all.

### Wage Increases Comparatively Small

During the war the pay of railway employees who were kept on a peace time basis, mostly in those parts of the country away from the fighting areas, was either not increased at all or but little compared with the increased cost of living. Those who were in active military service also suffered actual diminution of income. In the first year after the armistice the railway management was perhaps a little too slow in

labor costs than our American railways when returned to private ownership.

Labor turnover has not been as great and with the keeping up of the training of young men the French railroads are perhaps in a better position as to personnel today than the American in spite of their far greater losses due to over four years of the hardest fighting. While there have been a few serious labor disturbances on the French railways since the armistice there has been very little loss of time or waste of energy.

During this period of readjustment there have, naturally, been a few agitators, but they have been discredited by the railway workers themselves. There have been some honest

differences of opinion between the workers and the management as to hours of labor and rates of pay. There has been the real problem of adjusting wages to the actual high cost of living, and sometimes these differences have not been adjusted as quickly as the financial embarrassment of the workers made them feel that it should have been done. Some Frenchmen feel that if the management had recognized the actual needs of the mass of their most efficient and most

French railway personnel has been of the highest order. The chief difference between the French and American labor troubles since the armistice has perhaps been in the underlying causes. In France it has been mostly a question of real economic requirements and a cry for return to the old purchasing power of income. There has been almost no question of change in relations between the employee and the management nor of trade unionism. There has also been



Living Quarters of Railway Employees Just After the War

Army Huts Utilized as Homes, Market at Lens Before Reconstruction and Temporary Settlement at Tergier Before Permanent Homes Were Started

valuable personnel, those between the classes of the common laborers and the officers, those who were most loyal and did most to keep the wheels going during the war, there would not have been any serious strikes and those same employees would now feel more interest in and affection for their work than they do now. The slowness in recognizing crying needs has sown some seeds of discontent, even in a remarkably loyal and faithful group. Both throughout the war and since the armistice, the loyalty and fine workmanlike spirit of the

little evidence of political propaganda of any kind. Not having accustomed themselves to an extravagant way of living there is little of the trouble which follows contraction of inflated expenditures caused by profiteering incomes.

The terrible losses in killed and permanently injured thinned the ranks of all industrial organizations. This has necessitated the breaking in of new men with consequent loss in efficiency. So many soldiers returned to civilian life thoroughly tired out and unused to normal occupations after

four years in the trenches that there has been some decrease in the output per man. It is doubtful, however, if the breaking in of new men due to war losses over there is any more serious than the breaking in of new men due to the great migration of labor in the United States, or if the loss in productive capacity due to war fatigue is as great as ours due to readjustments following our period of wild extravagance and munition profiteering.

### Efforts to Restore Pre-War Efficiency

Coincident with the study of improvement and expansion of facilities, the French railway managements have studied very carefully how to bring production per man-hour back up to pre-war practice, and what is equally important, how to simplify repair and upkeep operations and raise labor efficiency so as to enable it to exceed pre-war performance with the necessarily reduced personnel resulting from the war losses during the fewer working hours necessitated by the universal tendency to make the eight-hour day, with consequent three shift operation, an established fact.

During the first phase of the reconstruction when the devastated regions were occupied by the allied armies and bridges were being built and tracks laid by military engineers, the entire personnel lived like any other fighting soldiers. In the areas where the front line did not move very much in either direction as in the American Toul sector, there were many railway stations within ten miles of the Roche trenches and from there back to the Spanish frontier the railway personnel lived, as far as the existence of necessary houses permitted, very much as under peace time conditions and were frequently accompanied by their families. It is surprising how many French families continued practically at the front throughout the war, the women working and running the same risks of airplane bombing and long range shelling as the soldiers.

### New Housing for Railway Employees

After demobilization began and the railway personnel changed from their military to their railway uniforms they naturally wanted to change to normal peace time ways of living and have their families with them. A first step in this direction was the utilization of army barracks for temporary homes in the devastated regions. An accompanying illustration shows part of such a settlement on the line of the Northern Railway between Lens and Bethune in the summer of 1919.

While the first essential work was being done by the personnel living in army huts or in temporarily repaired buildings, arrangements were perfected for creating industrial communities which would provide comfortable and permanent homes for the necessary working forces. Due to the necessity of quick action, the scarcity of skilled labor and of materials for construction, and to the fact that considerable lumber was available from army stocks, the first houses in these communities were wooden structures intended for temporary use for four or five years only, after which it is expected that they will be replaced by more permanent buildings. Practically all building done since the early part of 1920 has been of the permanent kind and almost exclusively of concrete. These houses are sometimes built of concrete blocks and sometimes of concrete moulded in place.

A typical industrial community is that at Tergnier. This development comprises 1,400 houses, of which 1,000 have been completed. This community is to serve the transfer yards and shops at Tergnier in the Aisne Valley between Soissons and St. Quentin where lines from Dunkirk, Calais and other channel ports going by way of Amiens meet lines from Belgium going by St. Quentin to Paris and to the south and east by way of Soissons and Laon. Plans of typical houses are also shown in the illustrations. Attention is called to the location of practically every house in the center of a substantial lot midway between streets and with abundant

open space about it. The houses are mostly of the four-family type, each part opening in a different direction.

A little further east on the national highway from Amiens to Paris, in the department of the Somme near Montdidier, is another settlement at Roye, a map of which is shown in one of the accompanying illustrations. This is a smaller community than Tergnier, but the map shows clearly the community features and the careful planning which characterize all of these plans. These community features include a public market, a general assembly hall, or community house as we would call it, and a large athletic field with a race track, open air bowling courts and tennis courts. In the Roye settlement there is a separate section for bachelor's quarters, a large public square and quite a number of two and three-family houses as well as the four-family apartments. They are all on large lots and so situated as to give the maximum of light and air and the minimum appearance of set regularity which makes so many industrial communities drab and depressing in appearance.

The Northern Railway is building many of these industrial communities including one for the Dunkirk-Couderkerque improvement, described in the *Railway Age* of June 3 (page 1265).

They all present a very artistic appearance, the houses are spacious and the rooms have an abundance of light and air. There is a lack of bath rooms surprising from an American point of view, but the Europeans patronize the public baths a great deal more than we do. Each apartment is equipped with running water, gas and electricity. The use of gas for cooking and electricity for lighting is becoming almost universal even among families of comparatively poor people. Fireplaces which have almost disappeared from American homes are being retained, and every family will have a small garden and a cellar in which to store its supplies.

### Co-operative Buying

The industrial communities being built in the devastated regions of the north will cost not less than 200,000,000 francs (\$40,000,000 at normal exchange). To assist the employees in re-establishing themselves without waste of money, the company has in practically every case procured furniture, food and clothing at low prices on a very large scale and furnished all such supplies to the families moving into these settlements.

The purchase of food and clothing on a co-operative basis, either by associations of employees on a purely mutual basis or by the employer without profit is by no means a new development in French industrial life. It is being done not only because of conditions arising during the period of reconstruction, for many French industries have had service of this kind for many years. When the employees of several factories are grouped, as is sometimes done, their combined purchasing power becomes very great and they buy at lowest prices. The service rendered by such co-operatives is so universal that they are able to make regular deliveries. Such an organization in Paris, for instance, furnishes each employee with an order book, has regular collection boxes and a system for getting the orders promptly to headquarters and delivers once or twice a week to all parts of the city and suburbs. Here again we have an illustration of an effective means of combating the high cost of living.

Anyone who has seen the personnel of the French railways actually doing their reconstruction work cannot help remarking on the wonderful spirit of co-operation and determination which is being shown by all. They are all not only trying to help in the rebuilding of France by putting their railroad systems in the best possible condition in the least possible time, but they are working to re-establish a comprehensive railway system in which will be combined first class service to the public and reasonable returns with comfortable, happy living conditions for themselves and their families. It is a spirit which cannot help but win!

# Ford Has Not Wrought Miracle With D., T. & I.

Traffic in Flivvers and Auto Raw Materials as Well as Increased Divisions Real Reason for Expanded Earnings

WHEN IS FORD a manufacturer and when is he the chief executive of a public service corporation? Essentially, Mr. Ford is operating the D., T. & I. primarily as an adjunct to his factories and secondly as a common carrier. . . . The spectacular increases in earnings, both in gross and in net, are not the result of Mr. Ford's ability as a railroad traffic manager, but because Mr. Ford as a shipper, has diverted all of the raw materials and finished products to and from his factories over the D., T. & I. . . . This wonderful increase in earnings, therefore, is not the result of making two blades of grass grow where one grew before. It is merely a shifting of tonnage to the D., T. & I. from other roads." These are some of the thoughts expressed in an article in the New York Evening Post of Tuesday last by William J. Cunningham, the James J. Hill Professor of Transportation at Harvard University. Professor Cunningham takes issue with those who hold the view that Henry Ford has worked a miracle with the Detroit, Toledo & Ironton and shows that Ford has secured his improved results by methods not particularly new or original.

The improvements in the earnings of the Detroit, Toledo & Ironton which Ford has made since he acquired the road a little over a year ago have attracted almost as much attention in the press as tax reform or the tariff. The opinion has been expressed on many sides that he has effected a miracle in railway operation that should serve as a lesson or a model to other railway executives. His results have served as arguments for lower rates, higher wages and for suggestions in some quarters that the railroads of the country be turned over to Ford to operate.

On the other hand, this expression of opinion has been met with assertions, of which Professor Cunningham's is one, that Henry Ford has worked no miracle, but that on the contrary he is merely making the D., T. & I. a plant facility and by putting on its rails the enormous traffic of the Ford industries, he is naturally getting different results than were secured when the road was without such traffic. So far is one writer from agreeing that Ford is a miracle man, that he says:

"Railroad men see in Mr. Ford's apparent success in transportation merely the result of his ability to obtain return tonnage on an extremely favorable basis from really great railroads and make his small line show a profit. It is even suggested that sooner or later this question will be investigated with a view to determine whether Mr. Ford has not discovered an ingenious method for evading the transportation laws regarding rebates."

There are given below abstracts of several of the articles which have been written on this subject. First is the article by Professor Cunningham which appeared in the New York Evening Post of August 23. There is also an interview with J. A. Gordon, the former president of the D., T. & I. which appeared in the Wall Street Journal of Wednesday morning.

Expressing rather the idea that Ford has effected a revolution in railway transportation is an article which appeared in the New York Times of August 14, entitled, "Ford's Revolutionary Railroadng," by H. E. Hoagland, Professor of Transportation at Ohio State University. In conclusion, there is given a transcript of an article which appeared on August 27 in the Review, a journal published by the New York brokerage firm of W. J. Wollman & Company.

## Ford Not a Miracle Man as Railroad Operator

W. J. Cunningham in the New York Evening Post

The public appears to be quite willing to believe the press reports which tell of the magical results achieved when the Detroit manufacturer waved his wand over his 400-mile "streak of rust." Deficits have been turned into surpluses, rates have been cut, wages have been increased.

Mr. Ford is said to have dismissed a large part of the railroad trained officials and to have turned over the operation to manufacturing, engineering, and merchandising experts who are successful mainly because they know little of orthodox railroad methods and therefore "have nothing to unlearn." Mr. Ford, then, is credited with "showing up" the railroad managers and of exposing their inefficiency. In some way not clearly explained he has pushed railroad labor leaders off the plank by paying the Ford factory wage scale, by scrapping the national agreements, and by getting eight hours' work for every eight hours' pay.

### Misinterpretation of Facts

In whatever degree these things have been actually accomplished, they are noteworthy, and to Mr. Ford and his lieutenants should go the credit for that part of the achievements which are the result of a superior quality of management. Mr. Ford has made a wonderful record in his own field and undoubtedly can bring to railroad operation ideas which will increase efficiency. The achievements on the D., T. & I., however, are attributable mainly to influences wholly apart from the efficiency of management. The tendency of the writers of the press articles, who in the main are not qualified to pass judgment upon or to interpret results of railroad administration, is to credit everything to the genius of Ford and to make no allowance for the natural operation of economic laws under changed conditions. They have been more anxious to get good stories than to weigh the facts or to go behind the returns.

As a matter of fact the explanation of the extraordinary change on the D., T. & I. is extremely simple; so simple that its telling spoils the story. Before Mr. Ford bought the railroad it could not pay its charges because it could not get traffic. The traffic went to roads which were more advantageously situated and had better service. With the change in ownership came the immense traffic of the Ford Company, millions of tons per year.

### Diversion of Traffic

This increase in business on the D., T. & I. changed the situation almost over night. The spectacular increases in earnings, both in gross and in net, are not the result of Mr. Ford's ability as a railroad traffic manager, but because Mr. Ford, as a shipper, has diverted all of the raw materials and finished products to and from his factories over the D., T. & I., and in addition to that he is securing for that road a large part of the unrouted traffic consigned to other than the Ford Company. He is able to do that by making traffic agreements with other roads that will bind them, in return for the favor of receiving Ford's business from the D., T. & I. to hand to the D., T. & I. all of the unrouted freight in the opposite direction.

This wonderful increase in earnings, therefore, is not the result of making two blades of grass grow where one grew before. It is merely a shifting of tonnage to the D., T. & I. from other roads. These roads, already struggling under the

handicap of reduced business because of the general depression, are that much further embarrassed. This point should be noted by those who acclaim Mr. Ford as the Moses to lead the railroads out of the wilderness. His magic would disappear if his operations were extended. If, as has been seriously suggested, the railroads should again be commandeered by the government and turned over to Mr. Ford as Director General of Railroads, the tonnage to and from his plants now bolstering up the showing of one small road could not be used to serve similar purposes elsewhere. The gain on the D., T. & I. would be offset by the losses suffered by the roads from which the shipments had been diverted.

### No Magic in Results Achieved

It is unnecessary in this article to comment upon the effect of increased traffic on net earnings. Attention is called, however, to the fact that the D., T. & I. had been a road with unusually light traffic and the facilities, although below those of competitors, were adequate to take care of many additional trains. The new traffic which the Ford factories have thrown to it at the expense of other roads can easily be handled with no increase in overhead and with but relatively small increase in operating expenses.

Consequently, with such substantial increases in gross revenue the operating ratio is lowered and net income is earned instead of deficits. There is no magic about it. It is merely the working of the economic law of increasing returns. Any one of the many roads which are now only a few jumps ahead of the sheriff could pack up all of their financial troubles if presented with such increased tonnage.

Only those who have little conception of the effect of wholesale diversions of traffic will be misled by the press reports of Ford legerdemain in railroading. There is danger that the rejuvenation of the D., T. & I. may be regarded as merely the shadow of the personality of an industrial leader, and that similar leadership on all railroads would solve the whole railroad problem. No such delusion, however, is held by organized shippers.

### Reason for Ford's Success

Industrial traffic managers, always on the alert for arguments which will support their efforts for lower rates, are not using Mr. Ford's achievements as a text. Their position is clearly stated in an editorial in the August 6 issue of the Traffic World, their most influential publication. After reciting the facts already dealt with in this article, the editor closes with these words: "All there is to Henry Ford's railroad success is that as a shipper in the railroad business he is able to control his own and other traffic to such an extent that his line profits at the expense of other lines."

It is curious that so little thought is given to this phase of the subject. When is Ford a manufacturer and when is he the chief executive of a public service corporation? Why is it that the public apparently approves of Mr. Ford's control of a railroad when they would strongly object to similar domination of public service by the Steel Corporation, the oil companies, the packers, or the coal mining companies? Essentially Mr. Ford is operating the D., T. & I. primarily as an adjunct to his factories and secondarily as a common carrier. In technical terms he has transformed the D., T. & I. from a railroad into a plant facility. His railroad venture is a side issue in which the interests of the factories, rather than those of public service are dominant.

### An Interview with J. A. Gordon, Formerly President of the D., T. & I. From the Wall Street Journal

An inside light upon the means by which the Detroit, Toledo & Ironton has been able greatly to increase its gross and net earnings since Henry Ford bought control of it has

been obtained, says the Wall Street Journal, in its article Wednesday, from J. A. Gordon, former president of the road and its general manager under federal control. Mr. Gordon refused to take any part in the public discussion of Mr. Ford's railroading until it appeared that a serious injustice was being done to the executives of other roads and that the public was being misled. Mr. Gordon says:

"Today I read an item quoted from the New York World in which after commenting on D., T. & I. earnings for six months this remark was made: 'Perhaps the railroads need financial aid from the Government less than they need five or six Henry Fords to run them intelligently.' This article is unjust and harmful.

"It is said that Ford took four steel private cars from officials and converted them into coaches. The facts are that the D., T. & I. doesn't own a single steel passenger car; that there was but one official car—the 51—in service; that a car numbered 100 had, prior to 1918, been used by officials, but had been out of service for over three years and had been offered for sale.

### That Story of Junk Salvage

"It was stated in a Ford interview given the Detroit Times that Ford gathered up enough junk along the road to pay for it. Just before Ford secured control the old board had purchased 2,200 tons of new 85-pound rail. Ford then bought 10,000 tons of new steel rail. It was the scrap released by these purchases that produced the junk. Ford did retire 1,000 freight cars of 30-ton capacity and great age, also five or six light locomotives. Practically all of this old equipment had been set aside by the federal Administration as not worth repairing; but it was the equipment Ford purchased when he purchased the road. At that its value was less than \$150,000.

"One of the inferences to be drawn is that because Ford did some superior job of repairing an engine, he had been able to cut the time between Detroit and Baimbridge some two hours. Now the D., T. & I. passenger engines were mighty old and poor, but they didn't limit the speed. Track conditions imposed speed limits, for up to the fall of 1920 most of the 220 miles between Detroit and Springfield were laid in 60-pound rail which had been in service over 25 years and was fearfully bent and twisted.

### Where the Earnings Come From

"Coming now to the big thing, namely, that Ford has made a financial success of the road. His formula is not a secret one; it has been known to all railroad men for ages. It prescribes a volume of traffic up to a road's carrying capacity, especially high class carload traffic. Ford has that traffic en route to and from his own plants; he doesn't have to solicit it. While negotiations for the road were still in progress, I was asked by a Ford representative what I thought could be done with it. My reply was that much money would have to be spent to improve it physically and provide it with appropriate equipment so that patrons could rely upon its service; that it was valuable to Detroit as the only road coming in from the South which did not operate through the frequently congested Toledo terminals; that I was convinced it could be converted into a money maker even by other hands, but that so far as the Fords were concerned, they ran no risk at all, since they already had traffic enough of their own to make the road profitable.

"The Ford performance stands out all the more prominently right now because he has been able to double and treble the earnings by means of his own traffic at a time when all other lines are suffering a great diminution of traffic. But imagine, if you please, other railroads of the country enjoying such an increase in high class carload traffic! They would immediately wax so fat that a great reduction in freight rates would quickly ensue. The financial status of

all roads would be revolutionized just as Ford has revolutionized the status of the D., T. & I.

### Federal Control Benefits

"There were some incidentals besides which helped set the stage, as it were, for Ford's successful debut. Just previous to his taking over the road, 15 new engines and 300 new box cars had been purchased from the Railroad Administration. Something over half a million dollars had been expended during federal control on such additions and betterments as heavy rail, a new engine house and machine shop at Napoleon terminal, a coaling station at Jackson terminal, a large number of new shop tools, cinder pits at all terminals (previously there were none), a new 120-ton wrecking outfit, additional yard and passing track, an American ditcher, a Jordan spreader, a clamshell, snowplow, etc. These expenditures are now bearing fruit.

"Then the D., T. & I. was weak and had never been treated fairly by many of its connections in the matter of equitable division of through rates. Ford says: 'Come across with more favorable divisions or no Ford traffic for you,' and he secures the divisions.

"And so Henry Ford is making a profit out of the D., T. & I., and his possession of the traffic necessary to this result enables him to put before the I. C. C. what, at first glance to the unthinking, looks like a most plausible pretext for a reduction of freight rates. Obviously Ford has many millions more to gain out of reduced freight rates than out of any possible profit on the D., T. & I. Fortunately the Transportation Act deals with railroads as a whole or by groups, and it isn't at all likely that the I. C. C. will authorize a reduction at this time, because that body of experts must realize that D., T. & I. profit is at the expense of other roads from which the Ford Motor Company traffic was withdrawn.

"It would be a spectacle for the gods to see Ford struggling with the D., T. & I. if he had no traffic of his own to route over it!

### Scrapping the Older Employees

"It is self-evident that the same ownership control of vast traffic, which has turned the road into a money-maker, also puts Ford in a position to name a wage scale which other roads might find intolerable, and I wonder, therefore, if the Labor Board has taken cognizance of this, as the board should do under terms of the Transportation Act. Personally I think highly of the general policy of paying a liberal rate per day and eliminating the arbitrary and unfair conditions which have grown up in the railroad world. These conditions run into vast sums of money which might better be added, in part or in whole, to the daily rates. Most of the controversies between railroad employer and employee arise out of divergent constructions of the meaning of the working conditions prescribed in wage schedules. But I should hate to see railroads adopt the Ford policy of discarding without pension employees who have grown old and who have worn out their lives in faithful service merely because it was possible to obtain younger and huskier men who could do a bigger day's work. This may be efficiency, but Lord save the industrial world from such efficiency!

## Ford's Revolutionary Railroad

H. E. Hoagland in the New York Times

A look at the map indicates some of the possibilities of the D., T. & I. in the hands of those who can develop them. At the southern end it connects with the Chesapeake & Ohio and through the Big Sandy division of the latter with the Carolina, Clinchfield & Ohio. This gives a fairly direct route from Detroit to the Southeast and affords connections with the coal fields of West Virginia and Kentucky.

The D., T. & I. crosses every trunk line from St. Louis and Chicago to the East. This practically makes the Ford railroad one vast terminal through which coal and the steel products of the Pittsburgh district may move northward in exchange for the profitable traffic in the products of Michigan's and northern Ohio's factories, southward, eastward and westward bound. In a measure, at least, what has heretofore been considered one of the road's greatest sources of weakness—the absence of cities along its route—may, under the Ford control, be a source of great strength. The Toledo "bottle neck," for example, has been one of the first points of congested traffic whenever freight movements became heavy. The D., T. & I. main line avoids this congested area and makes connection with other roads at points less susceptible to concentration of cars.

For less than \$5,000,000 Mr. Ford and son bought the right to realize the possibilities of the above plan through the acquisition of title to the skeleton road called the Detroit, Toledo & Ironton. Already the needed rehabilitation is taking place. To this skeleton is being added the flesh of railroad construction in the form of more and better ballast, the substitution of 85 pound for 56 pound rails, the strengthening of bridges, the improvements of terminals, the reduction of grades, the improvements of shop facilities, and the construction of new mileage to give the road additional strategic connections.

Henry Ford became president of the D., T. & I. in March, 1921. In the short time that has elapsed since he assumed direct control, the changes effected have already become a favorite topic of discussion and conjecture in railroad circles.

### Increased Wages, Decreased Rates

At a time when wage decreases are the order of the day throughout all industry, the D., T. & I. has announced that the minimum wage of \$6 per day for eight hours—now famous in the plants of the Ford Motor Company—will be adhered to for railroad employees. This means a general increase for many classes of railroad labor.

The D., T. & I. has filed a new rate schedule, effective Aug. 20, 1921, calling for a flat decrease of 20 per cent on all rates local to its lines.

Meantime, the road is operating with an effectiveness unprecedented for this company and seldom approached by any company. The operating ratio for June, 1921—the latest figures available—was 53; that is, for every dollar of revenue collected the cost of operation and maintenance was only 53 cents. The corresponding ratio for June, 1920, was 117 and for June, 1919, it was 118.

How are these results being accomplished? The answer is really very simple.

One of Mr. Ford's first acts as president of the D., T. & I. was the dismissal of all but one of the officials and higher-up employees of the old regime. The dismissal was tempered by a bonus of two months' pay. Then he proceeded to turn over the operation of the road to men in the Ford Motor Company's organization. These men are not railroad men in the commonly accepted meaning of that term. And yet, to Mr. Ford, they are better than railroad men. Some of them possess two very decided advantages over the man who knows by long experience the routine work of railroad operation. In the first place, they have no such experience to "unlearn" in their efforts to find new methods; and second, for years they have been studying the weaknesses of existing railroad organization. They have been fortifying themselves against the mistakes of others and are profiting by this preparation. These are the men, imbued with the Ford spirit, who are revolutionizing railroad operation on the D., T. & I. The word revolutionizing has been used advisedly because nothing short of a complete upheaval in the operating plans of a road such as this could have produced in so short a time the results effected by its new organization.

It is in his relations to the employees that Mr. Ford has made the most radical changes in his railroad operation. He believes that a work day longer than eight hours is fundamentally wrong and that a form of industrial organization which supports it has no right to exist. This doctrine is particularly heretical in the railroad industry, where maximum days have been limited to sixteen hours only by the force of law and where much longer work periods were formerly common. In 1916 the railroad brotherhoods received an eight-hour basis of pay in the passage of the Adamson act. Mr. Ford believes that their actual working time should be limited to eight hours a day. As rapidly as possible he is reorganizing the operation of the D., T. & I. so that all employees, even the operators of trains, will have an eight-hour day. At present, where emergency work or difficulties in adjusting the running time of trains necessitate for any particular employee a day longer than eight hours, compensating time off is granted as soon as possible. No employee is permitted to work more than 208 hours a month.

### Full Eight Hours of Work

However, Mr. Ford's day is very materially different from the workday of considerable numbers of railroad employees. When he thinks of eight hours' work he has in mind not only the first two words of this phrase, but also the last. He believes that if the D., T. & I. pays for eight hours of the employee's time it is entitled to the application by the employee of the entire eight hours to the interests of the road. Two things are being done to make this possible—first, the operation of the road is being so organized that a man can do his stint in eight hours and that normally it will take him eight hours to do it; and, second, time-worn title distinctions are being discarded. An employee of the D., T. & I. is expected to work for the interests of the D., T. & I. If ordinarily he is a machinist, but the job at hand most pressing is window washing, he is expected to wash windows.

A corollary to the eight-hour day is the regular rest period, especially the American observance of Sunday. Mr. Ford believes that in this respect railroad operation can be conducted, for the most part, as factory operation. Already he has eliminated all shop, maintenance and office work on Sunday and has cut train operation to the bare necessity of movement of live stock and perishables.

Since the eight-hour day and the observance of Sunday as a rest period afford time for normal family life, Mr. Ford believes that all employees should receive a wage which will make possible the American conception of normal living. He has, therefore, extended to the operation of the D., T. & I. the \$6 a day minimum wage made famous in its application to the employees of the Ford Motor Company. This, of course, is only a minimum, gradations above this varying with duties and responsibilities.

Out of it all Mr. Ford has cut his force of railroad employees from 2,700 to 1,650 in the face of more traffic than the road has ever handled before. Nor are the economies in wages the only ones already effected. Damage claims have been materially reduced because freight is being handled more expeditiously and more carefully. This is shown also by the fact that the usual charge of about \$5,000 a month for clearing wreckage was reduced to \$2,200 in June, 1921. Stationery and printing bills have been more than cut in two. Fuel bills for yard locomotives show a decrease of one-third and for transportation locomotives over one-fifth from June, 1920, to June, 1921, in spite of the very great increase in ton-miles hauled. Even allowing for a decrease in unit costs of fuel, a satisfactory economy remains to be accounted for by more effective use of fuel.

For June, 1921, freight revenues amounted to \$686,355, an increase of \$319,079, or 87 per cent over June, 1920. Expenses for June, 1921, amounted to \$376,383, a decrease of \$102,543, or 21 per cent. In June, 1920, the deficit, after paying taxes and rents amounted to \$135,932; for

June, 1921, the corresponding figure was a net income of \$261,259. Meantime the cost of carrying one ton of freight one mile has been reduced one-third.

## Has Ford Discovered an Ingenious Method of Rebating?

From W. J. Wollman & Co.'s Review

Practical railroad men have not been as ready as a credulous public to believe that Henry Ford has worked another miracle in the operation of the Detroit, Toledo & Ironton which he acquired about a year ago. Whatever may be conceded about Mr. Ford's success in the automobile business, even in extricating himself from his financial difficulties of last year, railroad experts insist that the stories of his achievement with his new railroad, if taken at their face value, read like the discovery of perpetual motion, or a device to make water run up hill.

For many years the Ford plants in and about Detroit have been served by an important alliance which includes the New York Central, Grand Trunk, Pere Marquette and Wabash, besides the Detroit, Toledo & Ironton. The business was distributed among these carriers with service satisfactory to the shipper. The Detroit, Toledo & Ironton was receiving the least of this tonnage, as it reached no important points. This latter road had been receiving cut divisions of the through rates on business interchanged with its connections, but this failed to yield sufficient revenue to sustain it. The methods of shipping raw materials to, and finished products from the Ford plant normally yield perhaps upward of 500 cars of freight per day.

Mr. Ford bought the D., T. & I. through a purchase of stock and adjustment mortgage bonds of that company. The road had outstanding \$7,628,000 of adjustment bonds, \$5,989,998 preferred and \$6,500,000 common stock in addition to \$2,254,000 of underlying bonds. Mr. Ford is said to have paid \$600 per \$1,000 adjustment bond, \$5 per share for preferred and \$1 per share for common stock. If Mr. Ford had acquired all of the adjustment bonds and stock, his investment would have been \$7,637,000 or \$17,300 per mile against an original capitalization of about \$50,700 per mile for the 411 miles of railroad.

### Meeting Ford's Demands

With the acquisition of the railroad, Mr. Ford concentrated the larger part of the tonnage movement on his new property. He exacted from connecting carriers percentages of division which the other railroads recognized as an excessive burden, but which was yielded by certain lines because the tonnage could be diverted elsewhere. The tariff on this freight has been estimated at \$22,000,000 a year.

Rates cannot be reduced by individual roads without disturbing the entire rate structure served by them but the increased carrier divisions which Mr. Ford has exacted have left the rates nominally undisturbed. However, these increased carrier divisions, which now aggregate over \$500,000 per month, are paid to a road which under normal traffic conditions would not receive them. The result is that the Detroit, Toledo & Ironton is receiving a revenue of about 100 per cent above what it would obtain under ordinary conditions for the service it performs, and out of all proportion to that received by its connecting carriers for similar service or similar hauling.

Railroad men see in Mr. Ford's apparent success in transportation merely the result of his ability to obtain return tonnage on an exceptionally favorable basis from really great railroads and make his small line show a profit. It is even suggested that sooner or later this question will be investigated with a view to determine whether or not Mr. Ford has not discovered an ingenious method for evading the transportation laws prohibiting rebates.

# Regulating Brake Cylinder Piston Travel

A New Slack Adjuster for Freight and Passenger Cars Gives Direct Control of Shoe Clearance

THE DESIRABILITY of an automatic device which would mechanically compensate for the variations in the brake cylinder piston travel caused by the wear of the brake shoes was realized even in the early stages of the development of the air brake. Many devices have been designed to meet the demands and a number of them have come into more or less extended use. At the present time a considerable portion of the passenger cars in the country are equipped with automatic slack adjusters, but such devices have never been applied to any great extent to freight equip-

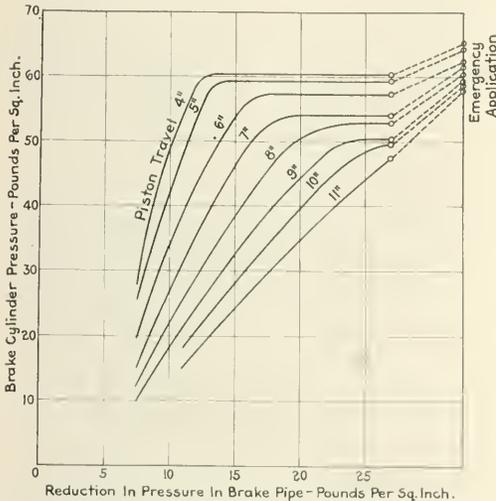


Fig. 1—Effect of Piston Travel on Brake Cylinder Pressure

ment, despite the evident safety and economy which would result from a uniform and automatically adjusted brake shoe clearance.

## Brake Cylinder Piston Travel

In order to secure the desired flexibility of control in service braking, the brake cylinder piston travel should be kept at as near 8 in. as possible. With hand adjustment, however, the piston travel is apt to be anywhere from 4 in. to 10 in. and in case of neglect it may even increase to 12 in. and the brake rendered inoperative due to the piston striking the cylinder head. Differences in brake cylinder piston travel mean unequal pressures and consequently unequal force. This is one cause of shocks, damage to freight and broken couplings. The effect of variations in brake cylinder piston travel on the cylinder pressure is evident from the curves shown in Fig. 1, which were plotted from data obtained from tests made on the Swiss Federal Railways. For example, the curves show that a brake pipe reduction which will give 60 lb. cylinder pressure when the piston travel is 4 in. will give only 23 lb. in a cylinder having a 10 in. piston travel. While the results shown differ slightly from those obtained in this country, the general character of the curves does not differ greatly.

Piston travel may be divided into two portions: first, that

necessary to bring the shoes into contact with the wheels and, second, that which takes place afterwards. In taking up the slack and bringing the shoe against the wheel a small portion of the piston travel is required to care for the looseness of the pins in the holes, but most of it is due to the clearance between the shoes and the wheels, being a direct product of the shoe clearance and the total leverage. If the brake shoes are suspended from a point above the truck springs, as is common on passenger equipment, there will be a somewhat greater shoe clearance on loaded than on empty cars, but as the added weight in a loaded passenger coach is comparatively small in relation to the empty weight, the increase in shoe clearance will be slight. On freight cars the shoes are ordinarily hung directly from the truck frame so that the loading does not affect the shoe clearance. The second portion of the piston travel is often referred to as "false piston travel" and is due mainly to the stretch in the rods, the bending of levers, the deflection of brake beams and the drawing down of the shoes under the wheels. This portion of the travel is closely related to the difference which is obtained in standing and in running tests. It is of prime importance that it should be kept as low as possible. The factors controlling its extent are all related to foundation brake rigging design and are therefore matters to be handled by the air brake engineer and the designer and cannot be taken care of by any slack adjuster. In fact, they simply greatly complicate matters relating to the operation of the slack adjuster as ordinarily applied. The total leverage of the brake rigging is controlled by the maximum amount of shoe clearance which is liable to occur in practice and by the amount of false piston travel. An adjuster which will positively maintain a minimum shoe clearance will so fix the most important variable that a relatively large total leverage can be used.

## A New Principle in Slack Adjusters

A slack adjuster constructed along new lines has been developed recently by a Swedish inventor, A. K. Durson. This adjuster, which is applicable to both freight and passenger equipment and has been in service for several years on railroads in Sweden, Norway, Holland, Denmark and Switzer-

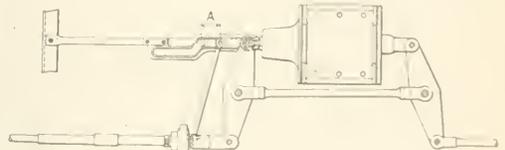


Fig. 2—Slack Adjuster Applied to a Passenger Car

land is now being introduced in this country. Instead of attempting to control the slack by limiting the brake cylinder piston travel to a predetermined amount, this adjuster is designed to control directly the clearance between the shoes and the wheels and to keep it at a fixed amount regardless of shoe wear. All adjustments are made during that portion of the piston travel which takes place before the brake shoes are in contact with the wheels and the brake rigging is subject to stresses, consequently the operation is not affected by false piston travel or by any difference between service and emergency piston travel. This is rendered possible by the intro-

duction of an auxiliary yielding device which prevents the adjuster taking up any further slack from the moment tension arises in the brake rigging.

**Operation of Adjuster**

A typical installation of the Durson slack adjuster as applied to a passenger car is shown in Fig. 2. Attached to the

While Fig. 2 shows the Durson slack adjuster introduced into one of the top pull rods, it may be a part of the cylinder lever rod or of the bottom rods of the truck as conditions demand. It is designed for use either as a tension or as a compression member.

The construction details of the slack adjuster are shown in Fig. 3. A shaft 5 with a suitable collar 3 adapted for either

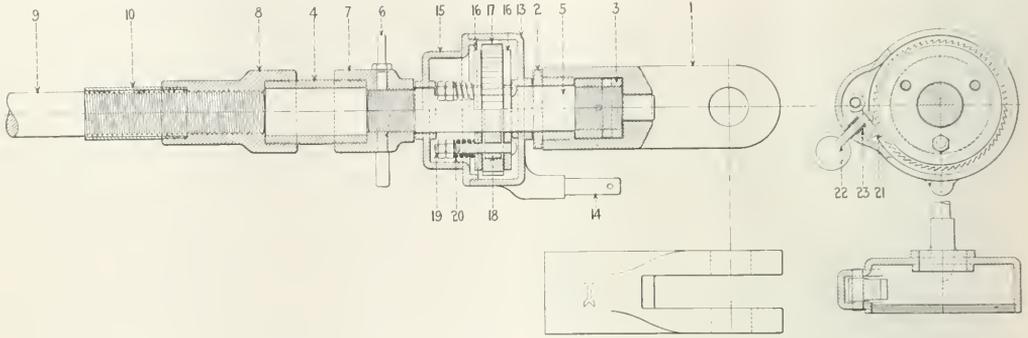


Fig. 3—Details of Durson Slack Adjuster Mechanism

piston rod is a roller which travels outward in a slotted cam as the brake is applied. Distance plates on either side of the cam transfer this motion to a second roller which is located at the distance *A* from the point where the second roller starts to change its direction. This distance *A* corresponds to the piston travel required to bring the shoes into contact with the wheels. It will vary with the total leverage

in the jaw 1. To the opposite end of the shaft, extended to its proper length by a section of heavy pipe 9, is attached a threaded nut 8. Engaging this nut is a length of shafting 9 which is threaded at one end and which is attached to a jaw at the other end in order to become an integral part of the brake rigging. Welded to the shaft 5 is a collar 18. On either side of the collar 18

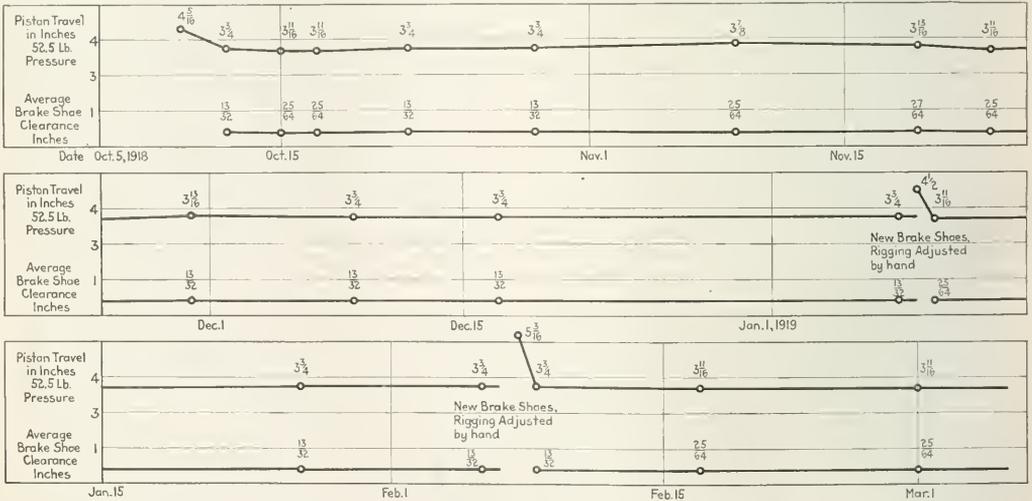


Fig. 4—Diagram Showing Uniform Shoe Clearance and Piston Travel During Five Months' Test

of the brake rigging, but is, however, a constant for each type of car. As the second roller changes its direction, this motion is transmitted by suitable levers to the arm of the slack adjuster. Should there be any additional clearance due to brake shoe wear the adjuster extends itself to compensate for this wear until taken up. When that point is reached further motion in the arm of the adjuster is taken up by a yielding friction mechanism.

are two friction discs 16 which revolve freely about the shaft 5. A circular ratchet 17 revolves about the collar 18 and between the friction discs 16. Three bolts 19 are fitted in holes drilled through the friction discs 16 and the collar 18 and transmit their motion to the latter. Three springs 20 are held in position by lock nuts and maintain a certain friction between the friction discs 16 and the circular ratchet 17. Motion of the ratchet 17 is therefore transmitted through the

friction discs 16 to the collar 18 and shaft 5 and the revolution of the shaft 5 increases the total length of the slack adjuster. The bracket arm 14 is attached to the housing 13. To this housing is also attached the pawl 21 held against the circular ratchet 17 by the spring 23. Motion of the bracket arm 14 in a clockwise direction is transferred through the housing 13, the pawl 21 to the circular ratchet 17 and thence as noted to the shaft 5.

When the transverse motion of the roller, connected by levers to the bracket arm 14 takes place the slack adjuster is lengthened until tension arises in the brake rigging. At this point the friction moment between the nut 8 and the shaft 9 is greater than that between the friction discs 16 and the circular ratchet and further movement is taken up by the sliding of the circular ratchet between these friction discs.

When new brake shoes are applied, the slack adjuster can be reset by releasing the pawl 21 by means of the ring-bolt 22 and revolving the nut 8 by the extended pin 8 in the coupling-nut 7.

It should be noted that all threads are protected by grease-filled housings which prevent any lack of functioning through the action of snow, ice or mud. The tension between the friction discs and the ratchet is fixed at the time of the assembly of the slack adjuster and need never be changed.

### Results of European Tests

As has been stated, Durson slack adjusters have been in service for some time in a number of European countries where their performance is said to have been highly successful, not only from the standpoint of regulation of the brake shoe clearance, but also from the standpoint of maintenance. They have been extensively used on the northernmost railroad in the world, the line carrying ore from Kiruna to Narvik in northern Norway. This line is entirely within the Arctic Circle and although conditions are unusually severe, the adjusters have proven satisfactory in every respect.

In tests made on a number of railroads some valuable data have been obtained. In this connection it will be interesting to note the records on the Swiss Federal Railway as given in Fig. 4. This diagram shows the brake shoe clearance and piston travel during the test period from October 5, 1918, to March 1, 1919. The only breaks in the curve occurred when shoes were renewed and, as will be noted, the clearance was quickly adjusted each time. The piston travel was less than that used in American practice, but the curves show the uniformity in adjustment during a period of five months.

Some of the advantages claimed for the Durson slack adjuster are the following:

Brake shoe clearance kept constant at all times. As a consequence, the piston travel will be maintained within as close limits as the design of the foundation brake rigging will admit.

Hand adjustment eliminated, except when new shoes are applied and inspection costs lowered.

Practically uniform and simultaneous braking power on all cars and consequently a reduction in shocks with a saving in damage to equipment and lading.

No matter how the brakes are applied, the slack cannot be so taken up that the shoes will drag and increase the train resistance.

As the shoe clearance is positive it can be fixed at an amount less than would otherwise be possible. Consequently the maximum total leverage can be employed consistent with the design of the brake rigging and the amount of false piston travel. A higher total leverage than would be practical if slack adjusters were not applied can often be employed with safety.

A saving in air consumption with a resultant increase in safety and a postponement of the time when recharging becomes necessary.

The Durson slack adjuster which is built for the European

market by Aktiebolaget Bromsregulator, Stockholm, Sweden, is being introduced and will be handled in this country by the firm of Hamilton & Hansell, Inc., Park Row Building, New York.

## Leavenworth & Topeka Patrons

### Vote on Tax Levy

RESIDENTS of parts of two counties in Kansas are going to the polls to determine whether passenger and freight service is to continue on the Leavenworth & Topeka Railroad. This is in accordance with the new Kansas state law which permits benefit districts to vote on tax levies at special elections to make railroad service possible. Advance returns, from the ballot, point to the continued operation of the road.

The Leavenworth & Topeka has been operating 44.72 miles of line between Leavenworth and Meriden across the counties of Leavenworth and Jefferson in an east and west direction. The road serves the town of Oskaloosa, the county seat of Jefferson county, and therefore the vote for the tax in this district has been most favorable.

The history of the company since its incorporation has been fraught with financial difficulties. It was incorporated in May, 1918, after the road had been purchased at a receiver's sale from the Leavenworth & Topeka Railway Company. The latter was the successor to the Leavenworth, Topeka & Southwestern, which was incorporated in December, 1899, and was thrown into receivership in April, 1916, by an application of the Union Pacific in the U. S. District Court at Topeka, Kan. At that time W. A. Austin of Leavenworth, Kan., was appointed receiver. In October, 1917, the road was sold to interests headed by F. L. Wells of Chicago, who was elected president, and A. J. Isherwood, secretary and treasurer. An executive committee at that time was formed to plan for the permanent operation of the road, but under the terms of the sale the new owners were not to take over the operation of the road until Judge John C. Pollock, of the Federal Court, ended the receivership. In June, 1918, W. A. Austin, the receiver, filed his final report and was discharged and Charles J. Conlon, Atchison, Kan., was appointed receiver to close up the affairs of the Leavenworth & Topeka Railway Company. Under the terms of the sale to the Wells interests, the purchasing company undertook to operate and maintain the road continuously, furnishing adequate service, and upon its failure to do so the court was again to take action and resell the road, paying to the owners of the Leavenworth & Topeka Railway the difference between \$80,000 which was the upset price and the amount which it had been sold for at that time as junk, which was ascertained to be \$160,000.

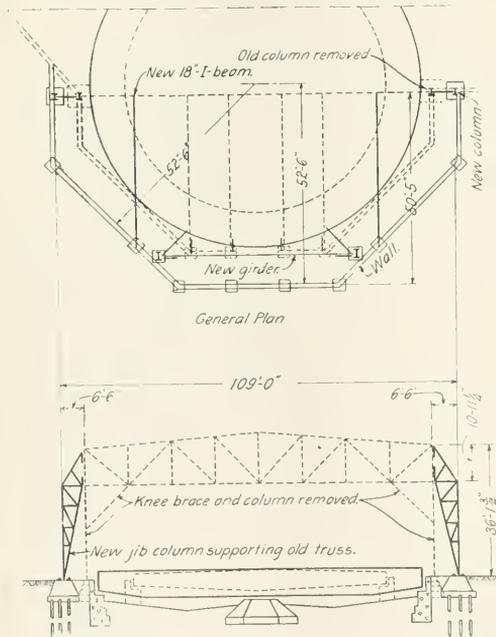
The officers of the road, in order that the operation be assured, have now found it necessary to go to the public. Citizens of the territory served by the road confronted with the abandonment of the property, the possible difficulty of the disposition and marketing of their products, the bringing in of commodities necessary to existence, have gone to the new state law devised for just such emergencies. The advance returns on the ballot now being taken show that the voters in the benefit district of Jefferson county have voted 780 to 231 for a tax levy of 2.5 mills to help finance the road. The entire levy will raise approximately \$32,500 and, though the road is of less direct benefit to the citizens in Leavenworth county, confidence is expressed that this amount will be raised and the road will continue in service.

THE NOMINATION of Frederick I. Cux, of New Jersey, to be a member of the Interstate Commerce Commission, was confirmed by the Senate on August 23.

## Cover to Keep Out Snow Complicates Turntable Replacement

A ROUNDHOUSE located in regions subjected to extremely heavy snow-falls such as are encountered in portions of Canada and the Pacific Northwest presents an added problem in the sheltering of the turntable and its pit from complete burial under the heavy snow blanket. In other words where snow conditions are unusually severe, it is found necessary to roof over the turntable and the entire space between the table and the inner wall of the roundhouse. Owing to the fact that no supporting columns can be placed in the turntable pit or between the pit and the roundhouse, the problem of designing the supporting frame for a roof of this kind is by no means simple. By the same token a project to renew a turntable with one of greater length introduces difficulties not experienced where there is no roof to interfere.

A problem of this kind was imposed on the engineers of the Canadian Pacific when it became necessary last year to replace the 70-ft. turntable of the enginehouse at White River, Ont., on the Lake Superior division, with a 90-ft. turntable. This is a 13-stall roundhouse and, therefore,

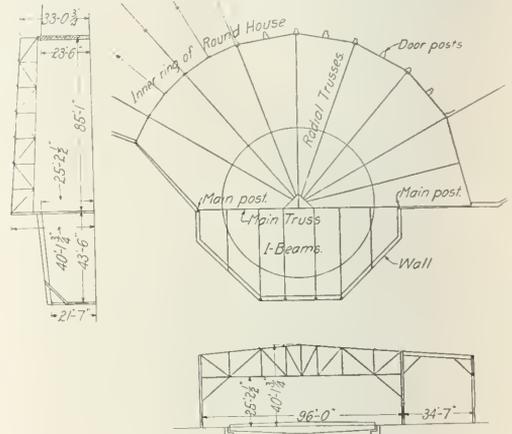


Framing of the Shelter as Revised to Accommodate a 90-ft. Table

occupies less than half the circle so that it was readily possible to design the roof framework with a main or key roof truss 96 ft. long, standing directly over the center of the pit with columns at each end that were well in the clear of the turntable and of the tracks. This main truss served as the support for radial roof trusses extending from alternate door posts of the roundhouse and also for I-beams spanning between posts in the wall, closing in the side of the turntable pit away from the roundhouse.

To replace the 70-ft. table by a 90-ft. table made it necessary to move back the outer wall of the shelter a distance of 6 ft. 6 in. on the five sides of the half octagon enclos-

ing the outer side of the turntable pit. This, of course, involved the moving of all of the interfering columns supporting the roof frame, including the two main columns under the main truss. In other words the roof frame had the "props knocked out from under it." To provide a new main supporting truss 13 ft. longer than the old one would have been expensive in structural steel and entailed an expensive and troublesome erection problem. Lengthening of the existing truss was not desirable because the 13 ft. additional span length would have resulting in over-stressing the main members of the truss. This problem was solved in an ingenious manner. Two inclined struts or jib columns were erected on new concrete pedestals set 6 ft. 6 in. from the loca-



Framing for the Turntable Roof as Originally Constructed for the 70-ft. Table

tions of the old ones and rigidly connected to the old truss at each end to form a stiff u-frame. Analysis of this construction indicated that it provided for the disposal of the truss reaction at points 6 ft. 6 in. beyond the ends of the truss with no appreciable increase in the stresses. The sketches show how this was accomplished with the minimum difficulty since the arrangement was such that the old columns could be left in place supporting the truss until the new jib columns were erected and riveted connections made, after which the old columns were cut out.

A minor problem was introduced in providing supports for four of the old beams carrying the roof over the outer side of the turntable pit. To avoid the purchase of new beams of greater length and to avoid throwing any more load on the main trusses as would be the case if the span of these beams were increased to reach the new outer wall, an additional girder was introduced in the position of the old wall to take the ends of these four beams. This girder was made long enough so that supporting columns under each end were well clear of the turntable.

We are indebted for the above information to J. M. R. Fairbairn, chief engineer of the Canadian Pacific, Montreal, Que.; P. B. Motley, engineer of bridges, was responsible for design.

FREE COFFEE, before breakfast, is the latest innovation in Baltimore & Ohio dining cars, and, according to the assistant to the senior vice-president, the novelty seems to fill a long-felt need. The practice has been introduced on a few of the through trains and it is the expectation that it will be extended to others.

# Many Roads Considering the Use of Heavier Rail

## Increased Traffic, Heavier Wheel Loads and Prevalence of Failure Focus Attention on this Tendency

**A**LTHOUGH RAILS weighing 105 lb. per yard were the heaviest used to any extent in steam railway service less than ten years ago, at least seven roads are now laying rail weighing 130 lb. or more per yd., some of them this season for the first time. While nearly all the others limit their purchases to sections weighing not more than 100 lb. per yd., and several important western roads still adhere to a maximum of 90 lb., a number of them are now considering the advisability of adopting heavier sections. Opinions regarding the advantage which will accrue from the use of heavier rails are as diversified as the practices, but, considering the complexity of the conditions influencing the service to be obtained from rail, this is not at all surprising.

Because of the seeming lack of uniformity in practice and opinion, a questionnaire was sent to the chief engineers of a number of the principal American railways, requesting them to outline the practices on their roads with respect to rail renewals and to point to any possible tendency toward the use of heavier sections. The questionnaire was as follows:

### Questionnaire on the Adoption of Heavier Rail Sections

1. What weight and section of rail are you now laying on your main line?
2. How long have you been using this weight?
3. Are you contemplating the use of any heavier sections?
4. What effect or benefits have you observed or do you estimate will follow a change to heavier rail on a given line?
  - (a) As to reduced cost of maintaining line and surface?
  - (b) As to possible increase in the life of ties or other portions of the track structure?
  - (c) As to increased economy in rail maintenance or in other words, an increase in the life of a rail sufficient to pay for the extra cost due to the use of the larger sections?
  - (d) As to reductions in rail failure?
  - (e) Any other benefits?
5. Based on such observations have you developed any relationship between traffic and weight of rail which serves as a guide in determining the weight of rail to use?

Replies were received from 24 railroads so distributed geographically as to give a fair representation of the conditions the country over, except that perhaps a larger proportion of the eastern roads are represented.

#### SUMMARY OF TENDENCIES AS TO WEIGHT OF RAIL

Road	Current sections	Year introduced	Heavier section contemplated?
1 A. T. & S. F.	90-lb. ARA-A	1909	Considered
2 B. & O.	100-lb.	1913	{ 130-lb. 1921 }
	130-lb. RE	1921	{ 12,000 tons }
3 B. & L. E.	130-lb. PS	1917	No
4 B. & A.	105-lb. Dudley	1913	No
5 C. & O.	130-lb.	1916	No
6 C. & N. W.	100-lb. NW	1909	No
	90-lb. NW		
7 C. B. & Q.	100-lb. ARA-A	1908	
	90-lb. ARA-A	1911	No
8 C. R. I. & P.	100-lb. ARA-A	1911	
	90-lb. ARA-A	1912	No
9 C. C. C. & St. L.	105-lb. Dudley formerly 90-lb.	1920	
	105-lb.	1914	No
10 D. L. & W.	105-lb.	1914	No
11 Erie	100-lb. ARA-A	1909	No
12 I. C.	90-lb. ARA-A	1909	Yes
13 L. V.	136-lb. I.V.	1915	No
14 L. & N.	90-lb. ARA-B	1912	Considered
15 M. C.	105-lb. Dudley	1916	No
16 N. Y. C. East	105-lb. Dudley	1913	Discussed
17 N. Y. N. H. & H.	107-lb.	1915	Considered
18 N. & W.	130-lb. PS	1918	{ 130-lb. all }
	100-lb. ARA-B	1911	{ heavy traffic }
19 N. P.	90-lb. ARA-B	1909	Yes—later
20 Penna. System	430-lb. PS	1916	Studies made
	100-lb. PS		
21 P. & R.	100-lb.	1911 (about) some 130-lb.	Yes
22 P. & L. E.	100-lb. ARA-B	1909	Yes
23 U. P.	100-lb. RE	1917	No
24 West Md.	90-lb. ASCE	1905	No

The present practice of these 24 railroads, as regards the sections of rails now being purchased or considered for future use may be summarized as follows:

Five buy 90-lb. rail exclusively but are considering the use of heavier sections.

Three buy both 90-lb. rail and 100-lb. and are *not* considering heavier sections.

Three buy 100-lb. rail exclusively and one of these is considering heavier sections.

Four buy 100-lb. rail and also some heavier sections (one 115 lb., three—130-lb.)

Five buy 105-lb. rail and only one is considering heavier sections.

One buys 107-lb. rail and is considering heavier sections.

One buys 115-lb. rail in limited quantities.

Two buy 130-lb. rail exclusively.

Three buy 136-lb. rail and also some other weights.

One buys 136-lb. rail exclusively (one road not covered by the questionnaire uses some rail weighing 135 lb. per yd.).

This summary discloses a wide variety of practices. One thing is quite clear, however, that all of the roads now using 90-lb. rail as the maximum, have under consideration the use of some heavier sections, and of those using 100-lb. rail at least 50 per cent are interested in still heavier sections, while of those using 105-lb. rail only one is considering a heavier section. The use of rails weighing more than 100 or 105-lb. per yd. is limited to lines east of Chicago and there seems to be a rather definite feeling that the use of these heavy sections can be justified only in lines of extremely heavy traffic.

### Little Specific Data Available

The replies received demonstrate that the railroads as a whole are in possession of little concrete information regarding the relation of the rail sections to the traffic or cost of maintenance. The presence of other variables and the disturbing influences of varying maintenance policies during the past four or five years would have made it very difficult to arrive at any tangible conclusions, even if attempts had been made to obtain them. However, several roads have developed criteria or formulae to serve as the bases for determining the weights of rail to be used. For instance it has been concluded on the Chicago, Rock Island & Pacific that a traffic of 2,000,000 ton miles, gross, per mile of line, for both passenger and freight traffic warrants the use of 90-lb. rail and that a traffic of 4,500,000 ton miles per mile of line justifies the use of 100-lb. rail. It is suggested by the chief engineer of another road that the 100-lb. A. R. A. type B rail is strong enough to carry the Cooper's E-60 loading, but that he finds that it is impossible to design a satisfactory angle bar that will take care of the joints properly on account of the limited fishing depth to be obtained in the 100-lb. rail. The same general thought is expressed by E. E. Adams, assistant to the president of the Union Pacific system, namely, that the weight on drivers and speeds are more important factors than the density of traffic. He states that the principal arguments which led to the adoption of the 100-lb. rail in place of the 90-lb. on that system were: "(1) Greater girder strength of the rails to sustain wheel loads and thereby minimize rail failures. (2) Giving better riding track, easier to maintain in line and surface."

The relation to loads carried has also been studied by the Baltimore & Ohio officers. Previous to the adoption of the 130-lb. A. R. A. on that road a detailed investigation was conducted covering the relations between engine wheel loads, car wheel loads, weight of rail and greater strength of the

rail, covering a period of 50 years from 1870 to 1920. These studies showed that:

Engine wheel loads increased.... 85 per cent from 1889 to 1920  
 Car wheel loads increased.....118 per cent from 1889 to 1920  
 Weight of rail increased..... 15 per cent from 1889 to 1920  
 Strength of rail increased..... 22 per cent from 1889 to 1920

"With the adoption of the 130-lb. rail the increased weight and strength of the rail will more closely approach the increase in wheel load as the increased weight of the rail will be 53 per cent and the increased strength 82 per cent."

Others ascribe the advantage of the heavier rail to its greater wearing qualities, i. e., additional material available which may be worn away before the rail must be taken out of track. Thus J. E. Crawford, chief engineer of the Norfolk & Western, states: "We have found with 85-lb. rail on the low side of a curve the rail goes to pieces very rapidly after it has been in track a few years on our heavy traffic districts. The 100-lb. rail stands the traffic very well until it is worn considerably."

#### In Relation to Maintenance

There is a general agreement that increasing the weight of rails tends to decrease the expense of holding tracks to line and surface, but only two replies hazard an estimate as to what this would actually amount to in dollars and cents. It is estimated by officers of the Baltimore & Ohio that the use of 130-lb. instead of the 100-lb. rail results in a saving of 25 per cent in maintaining line and surface. A conclusion based on opinions expressed by supervisors of the Bessemer & Lake Erie, to whom this question was submitted, is that the maintenance of line and surface was cut from 10 to 15 per cent with a change to 130-lb. rail. Another road reports a life of 130-lb. rail  $2\frac{1}{2}$  times that of 100-lb. rail on six degree curves. While not expressed in figures, some of the statements are nevertheless specific. Thus G. L. Moore, engineer maintenance of way of the Lehigh Valley, states "The labor cost for maintaining line and surface is very materially reduced. We have track on 10-deg. curves put up in first-class condition (with 136-lb. rail) in 1916 and 1917 which is now in perfect line and surface, no work having been done since the track was put up four or five years ago, except to transpose the rails or renew the high side rails and transfer the high rail to the low side."

#### The Effect on the Ties

With respect to the relation of the weight of rail to the life of the ties, the general feeling is that regardless of the weight of the rail the ties should be adequately protected against wear and crushing by a proper distribution of the load transmitted to them from the rails, through the use of tie plates of ample bearing area. It is not considered consistent with economy to purchase larger rail on account of the better distribution of load to the tie that may be secured by reason of the greater width of rail base. At the same time it is recognized that some benefits do accrue. The greater stiffness of the heavier rail will effect a more uniform distribution of wheel loads. This, together with possibly a wider base, has, of course, resulted in a lessened mechanical depreciation of the ties. Track supervisors on the Bessemer & Lake Erie estimate this saving at 10 per cent, a corresponding saving in the ballast of 20 per cent, and on other miscellaneous items of the track of 10 per cent.

The reply of the Lehigh Valley in this regard is that "The 136-lb. rail provides a greater distribution of the wheel loads on the ties. The moment of inertia of this section is 86.57. Under our heavy traffic the ends of the ties under the low rail on the heavy curves tend to crush or squeeze. With the use of the 136-lb. rail a very noticeable improvement has been observed in this respect."

The testimony of some of the roads using the heavy weights of rail in regard to increased life is as follows:

The Baltimore & Ohio statement is "In heavy traffic ter-

ritory where curvature is heavy and alinement generally unfavorable the life of the 130-lb. rail is considerably more than the life of the 100-lb. rail under the same conditions. On level straight track this would be somewhat reduced. On the average, however, the life of the 130-lb. rail should be at least 50 per cent more than that of 100-lb. rail."

Results on the Chesapeake & Ohio "show that the 130-lb. section is giving approximately two times the length of service, under the same traffic in the same location, that the 100-lb. A. R. A-B section gave."

This is also the case on the Lehigh Valley, the statement being that "The increased life of this section on curves is very noticeable. Our records show more than double the life of the 100-lb. section of rail. On tangents the increased life of the heavy section is noticeable, but not to so great an extent, but the general condition of the track is improved with little or no labor because of the strength of the joint fastenings and rail section."

Anticipations on the Norfolk & Western are stated as follows: "We expect to receive twice the life from 130-lb. rail that we are now getting from 100-lb. rail at locations where heavy rail wear occurs."

#### Rail Failures Also an Item

Any discussion of rail failures is almost sure to raise the question of the effect of over-stress as a consequence of using a rail of limited strength. It is therefore of special interest to note the opinions of railway officers on the relation of the increase in the weight, i. e., the girder strength of rails to the prevalence of failures. Judging from the replies received to the question relating to this subject in the questionnaire, it would seem that this point is one of special interest to railway men concerned with track maintenance. That opinions are not all the same may be judged from some of the quotations given below.

G. J. Ray, who has been prominently identified with this subject as the chairman of the Committee on Rail of the American Railway Engineering Association, expressed his opinion as follows:

"Regardless of the size of the section there would be little or no economy in using a greater depth of head than we now have with our 105-lb. section. The width might be increased by  $\frac{1}{4}$  in. but not more with the present rolling stock. As the weight of rail has been increased it has been found that higher carbons must be used in order to secure a rail of equal wearing qualities. On the other hand it has been contended that with the heavier section it is safe to go to a harder rail. As a matter of fact an examination of the rail records covering the heavier sections as compared with the lighter sections, that is, sections of 120-lb. and over compared with the 100 and 105-lb. sections, disclose the fact that we are having very heavy breakage with the heavier rail. While this may be due to the fact that the carbons have been kept excessively high, it is, nevertheless, a plain indication that we are not getting away from rail breakage by the use of heavier rail sections."

Earl Stimson, chief engineer of maintenance of the Baltimore & Ohio, also states: "Since the open hearth process of manufacture has become almost universally used, railroads have been experiencing considerable trouble with the type of rail failure commonly called the transverse fissure. The practical abandonment of the Bessemer process has eliminated very largely a number of web and base rail failures and to a very large extent of slag inclusion head failure generally known as the split head. These failures, which were generally recognized, were usually detected previous to total failure of the rail. The transverse fissure failure is extremely difficult to detect as it is essentially an interior defect. This type has been the subject of considerable study by engineers generally within the past four or five years in order to determine, if possible, the cause of such failure. A number of theories were advanced, probably the most prominent

of which is what is known as the overstressed rail. Quite a large number of engineers are giving serious consideration to this theory and some have accepted it as the cause of the failure.

"If, then, the cause of the failure is overstressed metal, such failure must be due largely to the excessive wheel load, as compared to the strength of the rail. The adoption of the 130-lb. rail should then reduce the failures attributed to the transverse fissures. If the heavier section rail will reduce to any extent this indefinite, dangerous, type of failure, its adoption is surely worthy of serious consideration."

Taken as a whole, the answers on this point are decidedly variant. Of those who gave a definite reply to this question 11 anticipate or experience no reduction in rail failures as a consequence of the use of increased sizes, while 7 are of the opinion that an appreciable reduction in failure has been or should be obtained. The answers from officers of roads that have used the 130-lb. rail or a heavier section are of particular interest in this regard. The reply of the Chesapeake & Ohio states: "No material difference noted in the number of rail failures." That of the Norfolk & Western is: "We do not expect any reduction in rail failure from the heavy rail." The Bessemer & Lake Erie and the Lehigh Valley on the other hand have experienced no little benefit. Thus the statement of the Bessemer & Lake Erie is as follows: "We have had no rail breakages with the 130-lb. section and very few rail failures. In other words, as far as our present

experience goes, rail failures seem to be reduced with the 130-lb. rail sections."

G. L. Moore, engineer maintenance of way of the Lehigh Valley, also testifies to reductions in failures as the result of the use of the 136-lb. rail, but points also to the defective condition of certain rollings of these heavy rail. "We have found that the number of rail failures in any section of rail bears a distinct relation to the conditions at the mill when the rolling was made. In most rollings where general conditions were unsatisfactory, we have found the results reflected by the rails under traffic to be in accordance and generally in proportion to the degree of general unsatisfactory conditions existing during the rolling. Other rollings have proven generally very satisfactory. This is true of 136-lb. sections, as well as any other, and it has been noteworthy in our experience that the rail failures under traffic bear no relation to the average or range of the carbon content in the rollings. Generally in the most satisfactory rollings in every respect the mills have also found it possible to better satisfy our requirements for the range of carbon content sufficiently high to insure a good wearing quality of steel for the section. While the rails from some rollings have not given as good results as those from others, the behavior of the 136-lb. rail, with the exception of such few particular rollings, has been such as to show us conclusively that we are better protected against dangerous rail failures by the heavy section in proportion at least to the general strength of that section over the lighter ones."

## Saving the Railroads for Private Control

Officers Have Large Responsibility in Securing the Right Kind of Co-operation from the Men

By Franklin Snow

THE WRITER has recently had the opportunity of chatting with two employes of railroad operating departments, employed on two different great railway systems. These men were considerably above the average in intelligence. Their ideas, however, were as different as could be imagined. The one, a brakeman on the crack limited train of an eastern line, was an officer of his brotherhood, and despite his apparent opportunity of rising above his fellow-workers, his feeling was that he preferred to remain in his present capacity rather than to give up his union activities with the eventual expectation of becoming trainmaster, with its greater responsibilities and the consequent necessity of giving up his efforts through brotherhood channels, of assisting his friends' "cause." The other man, a yard conductor in a New York terminal, regarded his brotherhood affiliation with pride, but utilized his spare time to a study which he expected would earn him a promotion. The former was far from being in sympathy with his company's policies, while the latter boasted of his friendship with the superintendent.

Least the moral of the above be not obvious, let it be explained that the contrasted attitudes of these two men represents the basis of future railroad failure or success in this country. The one places his loyalty to his union above that to his company. The other has his entire thought devoted to improving his employer's interests. What a pity that the activities of the former in behalf of his brotherhood could not have been utilized jointly with the company's interests.

### Serious Lack of Understanding

It is this lack of understanding—of co-operation between companies and unions and between officials and employes,

which is costing every road many thousands of dollars of unnecessary waste annually. It is a question as to which is the more to blame for this unfortunate state of affairs—the men or their officers.

The writer, during his connection with the United States Railroad Administration, had an opportunity of learning the really true loyalty of the great mass of railroad workers. True, their desire to make a success of government control was partially due to their belief that it would be to their own greater financial advantage to have the roads remain under federal control. Nevertheless, the mass of letters written by trainmen, conductors, dispatchers, and others, pointing out improper operating methods, rang with the true tone of loyalty.

These unsolicited letters (all promising co-operation) certainly indicated a lack of the proper understanding between these men and their immediate superiors, else they would not have gone over their officers' heads with such matters. The charges of near-sabotage against railroad officials, after the war were familiar ones in Washington, and many investigations resulted. Unfortunately, and unwisely, these investigations were referred eventually to the actual superiors of the men making the charges. It is needless to add that men whose idea in writing was merely to save their country money were discharged from service.

That their letters had a basis of fact was indicated by the fact that from all sections of the country came the same cry, "over-tonnage." It was evident, and still is, that many trainmasters, in their desire to make a good showing, load the engine to the last ton, with the result that the train creeps over the division, doubling on hills, failing to make meeting-

points, and eventually is tied up by the 16-hour law. There is little doubt but that an occasional conference between division officers and train and enginemen would obviate many engine failures by pointing out the difference in capacity between locomotives even of the same class and rating.

### Get-Together Meetings

Some railroads, notably the Pennsylvania System, realizing that many new ideas come from the men in the ranks, have organized committees of officers and men to meet regularly in an informal manner for the exchange of thoughts. Such a system cannot fail to prove its merit, even though nothing more tangible than the foundation of a cordial, co-operative spirit between officers and men is produced. The relations established by friendly meetings of this nature, even though nothing more important is discussed than topics of the day, is worth many times the hour spent in such conference.

But it is not only in the transportation and mechanical departments that these joint committees can be developed. Traffic, auditing and other departments can just as profitably, and with less loss of time in assembling the members from their places of duty, have get-together meetings.

The basic principle of the conference, namely, the creation of a friendly atmosphere aimed toward wiping out the present almost hostile attitude which some employees bear toward their superiors who endeavor to establish too great a class distinction—should never be lost sight of. That such distinctions are carried too far is evidenced by the practice of certain officers who expect trainmen, passing through a business car carrying only men, to remove their hats, and who further expect rear flagmen to ride on the platform rather than in the observation parlor, even in inclement weather. The explanation of the remark made by Edward Hungerford, in one of his recent interesting articles, that the railroads are not operated by as loyal employees as formerly can be seen by the foregoing. The loyalty is not brought out in the right way by the exercise of personality by officials in a position to win the affections of their men.

Few executives have the marvellous personality and the hail-fellow-well-met manner which has made Charles M. Schwab so justly famous, but, nevertheless, there is no question but that a man will double his endeavors for a boss with a cheery "Good-morning" and a smile for all. In this way an official, even though he be not blessed with any great amount of personal magnetism, can build up a loyal, industrious organization—one of which he can be proud and which will be proud of him—with no loss to his dignity.

### Biting the Hand That Feeds Them

The purpose of this article, however, is not to make martyrs of railroad employees. Many there are who fall far short of the proper enthusiasm for their work and their employers. A discouraging incident recently came to the writer's attention.

A ticket-seller in the consolidated office of one of our large Middle Western cities sold a ticket and lower berth to New York to a traveller. In accepting the price of the tickets, amounting to between \$30 and \$40, he made the remark that this seemed to be "a mighty high rate for so short a trip," with some additional observations as to his belief that the railroads were misrepresenting their necessities for high charges, and that statements of revenues were being juggled.

Such remarks, to most business men, would be too ridiculous for comment, and in the particular instance the next man in line nailed the true facts to the story by observing that "You fellows behind the counters are getting most of it in too high salaries." However, there is a certain subtleness in such remarks, that if made several times a day by several ticket-sellers, would send the less-informed people to their trains with a bad thought (from a railroad point of view) in their minds. It is matter for congratulation that the great mass of railroad workers are not foolish enough to bite the

hand which feeds them by any such insidious propaganda, whatever may be their personal opinions.

Right here again is where our little committee of co-operation demonstrates its usefulness. Our man, above described, might be one of those chosen to serve on a committee with officers having jurisdiction over consolidated ticket office matters. Gradually, through the interchange of ideas on railroad and extraneous matters, the employee would get the proper point of view, and come to a fuller realization of the problem the companies are up against, with high operating ratios predicated on high wages. Returning to his work, he would educate his companions to a like appreciation of the gravity of the fight which the railroads are making.

### Encourage Initiative and Ideas

All too few officials appreciate the value of encouraging their men to advance ideas and to criticise current methods which they believe can be improved upon. The writer, at the outset of his railroad career at the age of seventeen, was offered a minor position in the auditing department of a certain New England line through acquaintanceship with a high traffic officer of the line. Hearing discussions of the errors of some agents in short-hauling their company, he came to the conclusion from waybills passing through his hands, that his particular company was being short-hauled on a very considerable amount of traffic; gathering the necessary data to confirm his opinions, he called on his official friend, entirely unconscious at the time of the crime of going over his superior's head. The officer visited, in a courteous and kindly manner, pointed out the reason for the routing assigned to this traffic, and explained that the company's proportion of the rate would be the same no matter how this particular freight was routed, the interview closing with the thanks of this gentleman for the interest displayed.

A few days later the chief clerk heard of the matter, when ensued a lively ten minutes, the writer being severely reprimanded (properly, as he now sees) for going over his superior's head, and being cautioned "never again to question anything which did not appear right, leaving such affairs for others to pass judgment on." Let it be said that this man's name had not yet appeared in the "Pocket List," nor does he deserve a title. The moral is obvious, that this man, in a supervisory capacity, should have been broad enough to realize that a young man sufficiently interested to report matters which he thought incorrect, to an official's attention, should be encouraged in every way possible to continue such loyalty toward his employer, and in the particular instance mentioned, a mild rebuke for the entirely unwitting error in going over his superior's head would have sufficed.

It is seldom, in the transportation field, that a man of small capacity, or mind, becomes an official, but any officer who reads these lines and realizes that he has, at any time, been unresponsive to ideas, and has failed to encourage those advancing such suggestions (even though valueless in themselves) for the good of the company—this man must take stock of himself and realize that such failure is a direct act of disloyalty to his company's best interests. In failing to bring out the best in his men he has neglected his duty.

The next year or two will tell the tale forever for our railroads. If they fail this time to make good, the government will seize them for all time. They have every chance in their favor. Never before have so few criticisms of railroad management been offered by the public. Scarcely a person today but wants to see the perpetuation of private control. On every officer, either in an executive position or in a minor supervisory capacity, is now placed the responsibility of getting the best out of his men, by enlisting their co-operation, by encouraging their initiative and ideas, and by being human and courteous in his dealings with them. In this way only can our railroads survive their present near-crisis and pass the turning point to prosperity.

# Railroad Funding Bill Approved in Lower House

Measure Referred to Senate Which Has Taken a Four-Weeks' Recess—McAdoo Opposed to Bill

WASHINGTON, D. C.

LATE IN THE evening of August 22 the House passed the railroad funding bill by a vote of 214 to 120. Now it awaits passage by the Senate after the recess, which began on Wednesday, before the relief contemplated can be extended to the railroads.

The bill was passed without material change. As it stands, the War Finance Corporation is authorized to purchase from the Railroad Administration securities accepted by the administration from the railroads in settlement of claims of the government against them. The corporation is further authorized to sell the securities in the open market, to use the funds thus obtained to extend not exceeding \$500,000,000 in credit to the carriers.

An amendment offered by Representative Webster, Republican, of Washington, was defeated. It proposed to strike out the section of the bill providing that no claims arising from so-called inefficiency of labor during the period of federal control of the railroads shall be paid out of the money advanced under the terms of the bill, and also that when claims are once paid the roads shall be barred forever from making further claims. The vote was 145 to 17 against the amendment.

Another amendment offered by Representative Moore, Democrat, of Virginia, which would require the War Finance Corporation to pass upon all securities of the railroads accepted by the Railroad Administration, was defeated without a record vote. Democrats in opposition to the bill charged during the debate on the floor of the House that the bill meant that the federal government was embarking upon speculation in railroad securities.

"Under this bill," declared Representative Huddleston, Democrat, of Alabama, "the government is proposing to speculate in Wall Street with the taxpayers' money."

Representative Webster bolted the Republican leadership and attacked the bill. He declared that it meant nothing more than federal loans to the railroads. Democrats charged that the bill was written by President Harding and his advisors and that the Republicans in passing it were carrying out instructions from the White House.

## McAdoo Objects to Funding Bill

A letter written by W. G. McAdoo, formerly director general of railroads, opposing the funding bill, was read in the Senate on August 24 by Senator Stanley, Democrat, of Kentucky, one of the group who wanted Mr. McAdoo called before the Interstate Commerce Committee when hearings were being held and protested when the request was rejected.

Senator LaFollette, representatives of labor and other interests protested against the bill when it was before the committee and alleged that it was being "railroaded" through without giving its opponents a chance to be heard. Senator Stanley referred to these charges in presenting the McAdoo letter, and asserted that to carry out the provisions of the bill would "lick up" the last dollar made available to the War Finance Corporation in thirty days.

"I assert that the fabulous claim of nearly \$800,000,000 now made by the carriers against the government," said Senator Stanley, "is composed principally of claims for 'maintenance of way,' and that from 70 to 75 per cent of that claim is based upon the so-called 'inefficiency of labor,' a claim repudiated by the Interstate Commerce Commission and by the director general of railroads as so speculative and contingent in character as to warrant no consideration whatsoever.

"The alleged inefficiency of labor is denounced by labor as gratuitous and unwarranted, and the representatives of labor day after day clamored for an opportunity to be heard, but, after hearing only those who conceived and created this thing, the seal of silence was placed upon the lips of the ex-director general and of all others who knew anything about this complicated case of stock juggling, and the doors were shut in the face of labor."

Senator Stanley then presented Mr. McAdoo's letter, which, he said, "threw a flood of light upon this subject."

The government, Mr. McAdoo contended, was "under no obligation whatever" to advance to the railroads money for capital expenditures.

"In fact," he said, "the Federal Control act, approved March 21, 1918, expressly required that in every agreement between the United States and the railroads it should be stipulated that the United States may, by deductions from the just compensation (rental to be paid the railroads), or by other proper means and charges, be reimbursed for the cost of any additions, repairs, renewals and betterments to such property (railroad property) not justly chargeable to the United States."

Mr. McAdoo cited the standard contract made with various railroads providing for annual rentals to the carriers equal to the average of the net earnings of the best three years of their history, from July 1, 1914, to June 30, 1917, and said concerning them:

"In these contracts (Section 7) it was expressly agreed that the United States should have the right to deduct from such rentals 'all amounts required to reimburse the United States for the cost of additions and betterments made to the property of the company not justly chargeable to the United States, unless such matters are financed or otherwise taken care of by the company to the satisfaction of the director general.' The director general agreed, however, not to deduct for additions and betterments in such a way as to prevent the railroads from paying the fixed charges 'they had theretofore regularly paid.'"

"While I was director general," Mr. McAdoo wrote, "and Walker D. Hines was director general, the railroads were not required to pay for 'additions and betterments' out of the rental due them at the expense of dividends, nor to sell bonds or stocks, as they had heretofore done, to reimburse the government for these expenditures. The cost of such 'additions and betterments' was generously advanced by the United States, so that, on March 1, 1920, when the railroads were returned to private control, they owed (and still owe) the United States the enormous sum of \$1,144,000,000. These 'additions and betterments' include ' motive power and equipment.'"

"These expenditures were not forced upon the railroads. The railroads needed them and were glad to have the Government lend them the money at 6 per cent, which was less than the market rate. Congress had to appropriate this \$1,144,000,000 out of taxes levied on the people, and these very appropriations for loans to the railroads have been used by unfriendly critics as a basis for the charge that Federal control was wasteful of government money, whereas the debt the railroads owe the government on this account is a valuable asset if those charged with the execution of the law insist upon satisfactory security as the law requires.

"Of this vast debt the United States has already extended, for a long period, the time for payment of \$381,000,000, representing new 'locomotives and cars' furnished to the rail-

roads. This leaves now due for 'additions and betterments' the sum of approximately \$763,000,000.

"While it is true that the Transportation act seems to confer upon the President discretion to determine, within certain limitations, how much of the debt the United States owes the railroads may be set off against the debt the railroads owe the United States, nevertheless, the act does not contemplate that none of the debt of the United States shall be set off, but, on the contrary, assumes that it will be; because in express terms it provides for funding only 'the remaining indebtedness of the carriers to the United States.'

#### Says President Was Misled

"At any rate, it is indubitably clear that under the law and the contract between the parties, the United States is not 'morally and legally bound to fund,' as stated by the President in his message, the \$763,000,000 of debt the railroads owe the Treasury for 'additions and betterments.' The President must have been misled into making such a statement. All that the United States is required to do, legally and morally, is to fund for ten years 'any remaining indebtedness of the carriers to the United States' after a balancing of accounts."

"Stripped of confusing non-essentials, what is now proposed is that the government shall wait ten years for \$763,000,000 the railroads owe it for betterments and improvements, and pay immediately \$500,000,000 to the railroads on account of claims for alleged undermaintenance, etc., taking from the 180 or more railroads involved with their varying degrees of financial responsibility such securities as they may be able to provide—securities which in many instances may not be adequate to protect the government against loss.

"This is not a question of 'legal and moral obligation' on the part of the United States to lend the railroads \$500,000,000 more for ten years. It is a question of policy and should be considered from that standpoint only. For the adoption of such a policy the Administration must, of course, take the responsibility, but it should be candid about it. The public mind should not be confused by juggling of figures, manipulation of accounts or securities, or governmental agencies."

#### Railway Business Association Urges Action

Alba B. Johnson, president of the Railway Business Association, sent a telegram to President Harding on August 24 in which he said:

"For immediate passage of the Railroad Refunding bill the Railway Business Association, on behalf of industries whose employees are idle by hundreds of thousands, aggregating, with those in cognate or dependent industries and trade and with railway employees, not less than 1,000,000, as estimated by the managing director of the War Finance Corporation, urges you to exert your potent influence to the utmost.

"This measure was conceived independently in the public interest alone by one government department, the War Finance Corporation, and advocated in the same spirit by another, the Railroad Administration, without suggestion, aid or argument from the railroads or banks. Various factors of the economic situation tend to improvement in business. Remittances and orders from the railroads made possible by this bill, if passed, would furnish the strongest available reinforcement to that tendency.

"We do not address you as President. In that capacity you have already performed fully your constitutional function in causing the state of the nation as affected by this problem to be communicated to Congress through appropriate executives of the government. We address you as leader of the party in power which citizens can address through no other single repository of responsibility to the country. While deeply appreciative of what you have already done as President, and sympathetic with the embarrassment under which you suffer

from confusion in some quarters of your official status as party leader, we urge you to consider the re-employment of a million men, many of whom, owing to seasonal limitations, if not employed immediately will pass both the autumn and winter without wages, as an object justifying your active participation in party councils to assure enactment of this measure, not after recess, but now. Ability, willingness and leadership to grapple effectively and promptly with so plain a business obligation is, in our judgment, a test of capacity to conduct government."

#### LaFollette Presents Minority Report

A voluminous minority report on the railroad refunding bill, written by Senator LaFollette and signed by Senators Stanley and Pittman, was presented to the Senate on August 24. This report gives seven "reasons" purporting to show why the bill should not be passed. These reasons are as follows:

1. The bill was reported by arbitrary action, upon ex parte hearings, after a refusal to permit testimony by critics of the legislation.

2. The bill would put the government into the business of dealing in railway securities. The War Finance Corporation would control an amount of securities probably larger than those of any private interest. The corporation would therefore be a dominant influence on the stock exchanges through its power to withhold or throw millions of dollars in securities on the market. This is not one of the legitimate functions of government, nor should the credit of the government be used for this purpose.

3. The government will lose hundreds of millions, almost certainly, as a result of the purposed transactions. The government accepts the securities on a 6 per cent basis, whereas the best securities are now upon a seven per cent basis, with inferior bonds yielding eight per cent or more. The government will not be able to sell the bonds on a 6 per cent basis to private investors or the banks. It will be obliged either to hold them until the market "by some miracle" is again on a 6 per cent basis, or by some future legislation authorize their sale at market prices. In the latter case the government stands to lose from \$10 to \$20 on every \$100 worth of bonds sold. The government's losses would be increased if the market declined.

4. These transactions are not required to secure a just and speedy settlement of railroad claims. The argument is then made that the government is not "legally or morally" bound to fund the indebtedness of the railroads and a set-off is called for.

5. Imposition of this great problem of disposing of railroad securities taken over will inevitably hamper the War Finance Corporation in the more important function of financing the marketing of agricultural products.

6. No emergency of a character to justify the proposed transaction has been shown to exist. On the contrary, railroad earnings and railroad credits are steadily improving and are likely to improve more rapidly with the increase in traffic during the crop-moving season. The railroads need money, but no more than any other class of individuals and businesses.

7. During the past 18 months the government has paid or loaned the railroads \$1,376,403,024. The people are overburdened with taxes. No reason is apparent why the government "should embark upon this highly speculative venture at this time."

A TOTAL of 45 new industries, representing an investment of \$4,430,100, were located along the line of the Chicago & Eastern Illinois during the past year, according to W. J. Jackson, receiver. It is estimated that the new industries will furnish employment for 2,109 persons and will give the railroad 11,000 cars of freight yearly.

# Labor Board Settles Overtime Controversy

## Compromise Decision Contains Seven New Rules to Govern Punitive Payments

**S**EVEN NEW RULES, recognizing and continuing the principle of punitive pay for overtime work in railroad shops, have been promulgated by the Railroad Labor Board as the solution of one of the stumbling blocks in the negotiation of new agreements regarding rules and working conditions between many railroads and their shop employees. These new rules, which are effective as of August 16 and are retroactive to July 1, also recognize and sanction the principle of the eight-hour day, the policy of paying time and one-half for work performed on Sundays and holidays except that work which is absolutely essential to continuous operation and the practice of paying an allowance to an employee called but not required to work. On the other hand, the provisions of the seven new rules so change the overtime rules in the Shop Crafts Agreement that several of the wasteful and ridiculous effects brought to the attention of the Board during the hearings on national agreements will not be continued.

The new rules are to take the place of Rules 7, 9, 10, 12, 14 and 15 of the Shop Crafts National Agreement. The changes which have been made are briefly outlined in the following paragraphs. In all other respects the rules have been unchanged.

### RULE 6

Instead of paying all shop employees time and one-half for Sunday and holiday work as was necessary under Rule 6 of the Shop Crafts Agreement, the new rule prepared by the Board provides that "employees necessary to the operation of power houses, mill-wright gangs, heat treating plants, train yards, running repair and inspection forces, who are regularly assigned by bulletin to work Sundays and holidays, will be compensated on the same basis as on week days." The new rule also contains the interesting phrase, "Sunday and holiday work will be required only when absolutely essential to the continuous operation of the railroad."

### RULE 7

Rule 7 of the Shop Crafts Agreement has been changed so that instead of receiving a guarantee of one hour's pay for 40 minutes or less continuous overtime service with the right to go to meals after one hour's work, the shop employee will be paid time and one-half on an actual minute basis with a minimum of one hour, and he can be held for two hours before going to meals. The time then taken for meals will not terminate the employee's continuous service and must be paid for up to 30 minutes.

Again, instead of receiving five hours' pay for three hours and 20 minutes service or less when called to return to work the employee is to be paid a minimum of four hours for two hours and 40 minutes or less work. This four hours' pay must also be paid to employees called but not used.

During the course of hearings on the national agreements the railroads objected particularly to the provision of the old rule which allowed the employee to collect 10 or 15 hours' pay on the ground that, when he had completed the task for which he was called, his assignment to other emergency work constituted a second and sometimes a third call. To offset this the new rule says: "Employees called \* \* \* will be required to do only such work as called for or other emergency work which may have developed after they were called and cannot be performed by the regular force in time to avoid delays to train movement."

The new rule also makes provision for paying employees

time and one-half on an actual minute basis with a minimum of one hour for work performed in advance of the regular working period.

### RULE 9

Rule 9 in the Shop Crafts Agreement gives the employee who works through his lunch period one hour's pay and the opportunity to procure his lunch later without loss of time. The new rule gives him but straight time and the opportunity to procure his lunch later without loss of time *up to 30 minutes*.

### RULE 10

The railroads protested the provisions of Rule 10 of the Shop Crafts Agreement which enabled shop employees, sent out on the road for emergency service, to receive, under certain conditions, time and one-half for time spent in waiting for trains or in traveling. The new rule prepared by the Board eliminates these provisions, giving the employee on such work straight time for all time waiting or traveling.

The time of the employee sent out for such service was formerly reckoned from the time called until his return, but under the new rule his time begins when he leaves his home station.

Again, when such emergency service kept the employee on the road for several days, including either Sundays or holidays, he was guaranteed eight hours pay for week days and time and one-half for Sundays and holidays. Under the provisions of the new rule he is guaranteed but eight hours pay for each calendar day.

The new rule also provides that when an employee is required to leave his home station during overtime hours he will be allowed one hour's pay as preparatory time.

The following provision for wrecking service employees is added to the new rule:

"Wrecking service employees will be paid under this rule, except that all time working, waiting or traveling on Sundays and holidays will be paid for at rate of time and one-half, and all time working, waiting or traveling on week days after the recognized straight-time hours at home station, will also be paid for at rate of time and one-half."

### RULE 12

Changes similar to those made in Rule 10 are made in Rule 12, the provisions of which apply to employees sent out to fill temporary vacancies at outlying points. The railroads particularly objected to the last paragraph of Rule 12 of the Shop Crafts Agreement, which continued those rules more favorable to the employees in older agreements. The new rule contains no provision for the continuation of these older rules.

### RULE 14

Those shop employees regularly assigned to road work who have been paid, under Rule 14 of the Shop Crafts Agreement, straight-time for their regular hours and time and one-half for all overtime hours whether working, waiting or traveling will, under the revised rule, receive straight time for all hours traveling, waiting or working during regular hours and time and one-half only for work performed during overtime hours.

The new rule also contains the following paragraphs which are not included in the old rule.

"Where meals and lodging are not provided by the company when away from home station, actual expenses will be allowed.

"Where employees are required to use boarding cars, the railroad will furnish sanitary cars and equip them for cooking, heating and lodging; the present practice of furnishing cooks and equipment, and maintaining and operating the cars, shall be continued."

The starting time in both the old and revised rules is set at from 6 a. m. to 8 a. m. However, the following exception is included in the new rule:

"In case where the schedule of trains interferes with the starting time an agreement may be entered into by the superintendent of the department affected and the general chairman of the craft affected."

#### RULE 15

Rule 15 of the Shop Crafts Agreement has been changed to conform to the Board's decision relative to the payment of time and one-half for work performed on Sundays and holidays inasmuch as this rule applies to employees regularly assigned to road work and paid on a monthly basis. Whereas formerly the monthly rate of these employees was determined by dividing 3,156 hours, which includes 59 Sundays and holidays at time and one-half, by 12, their monthly rate is now to be deducted by dividing 2,920 hours, or 365 eight-hour days, by 12.

The new rule also contains the following paragraphs which will eliminate some of the features to which the carriers have strenuously objected:

"The regularly assigned road men under the provisions of this rule may be used, when at home point, to perform shop work in connection with the work of their regular assignments.

"If it is found that this rule does not produce adequate compensation for certain of these positions by reason of the occupants thereof being required to work excessive hours, the salary for these positions may be taken up for adjustment."

#### Board Outlines Its Opinions on

#### the Subject of Overtime

The Board in handing down these new rules said in part:

There was a wide diversity of rules among the numerous railroads of this country prior to the standardization that took place during federal control. It is therefore possible to cite precedents for almost any rule that may be advocated. Such precedents, at best, are persuasive, but not controlling. The fact that a given rule may once have existed by agreement on a road is not conclusive of its reasonableness and justice, for it may have been imposed on the employees by unavoidable necessity or on the carrier by economic pressure. The Board has therefore felt constrained to consider the principles of right and wrong involved in the proposals and counter-proposals submitted to it, in the light of present conditions and industrial history.

Throughout these rules, the soundness of the principle of punitive pay for overtime work has been recognized, but not to the extreme extent embodied in the National Agreement.

The eight-hour day has also been given full recognition. The policy of paying time and one-half for work performed on Sundays and holidays is also approved in Rule 6, but an important exception is provided. Certain kinds of work, which are unavoidably and regularly performed on Sundays and holidays and which are absolutely essential to the continuous operation of the railroad to meet the requirements of the public, are not treated as overtime work. The carrier has no choice as to the performance of this work, and does not arbitrarily require it. It is not just to penalize the carrier for that which it cannot escape. Manufacturing plants can, as a rule, control or eliminate Sunday and holiday work, therefore, a comparison of such plants with a railroad is unfair, except in so far as the "back shop" is concerned, and the method of paying for overtime in the back shop has not been disturbed by these rules.

There are other classes of employment in which Sunday and holiday work is regular and necessary, and those engaged in it are not paid overtime; for example, engineers, firemen, conductors, and trainmen, and, going outside of railroad service, police and fire department employees, and street car conductors and motormen.

The practice of allowing five hours for a call is a relic of the time when ten hours constituted a day's work, and it was thought just and reasonable to allow one-half day, or five hours, for a call. Now that the hours have been reduced to eight, by the same prin-

ciple, it is just and reasonable to make the allowance one-half day or four hours.

Employees usually commence work between 7 a. m. and 7:30 a. m., with a lunch period in the neighborhood of 12 o'clock noon, and finish their regular eight-hour period at 4 p. m. Certainly, there is no hardship in asking employees to continue on to 6 p. m. (if their services are required) before they go to a meal, and in many cases workmen would prefer to work the additional two hours in order to complete their work and go home without having to return.

If men are called after regular hours for some emergency work, it is fair and reasonable to use these men only on other emergency work which may have developed after they were called without being obliged to call them again or to call other men.

When men are sent out on the road for emergency service, or to fill temporary vacancies, it is certainly just and reasonable to pay them straight time for all time traveling or waiting, and for all time worked, straight time for straight-time hours, and overtime for overtime-hours in accordance with the practice at the home station or at the point where they are temporarily employed.

It is just and reasonable that men assigned to road service on a monthly basis should be paid eight hours per day, 365 days per year, without any allowance for overtime.

It is a fact that on many Sundays and holidays these men are not called upon to work, but no deduction is made in their pay. These monthly positions must be desirable because they are usually occupied by the older men, and there is regularity as to the monthly compensation.

The Board has felt impelled, however, to decline many of the modifications of said rules advocated by the carriers, because they appeared to go to an opposite extreme that is unjust and unreasonable. In this case, as so often happens in human experience, there is a point somewhere between the extreme positions of opposing forces where justice and reason may be found.

The rules above set out will become effective August 16, 1921, except that employees who have been paid under a less favorable rate or condition for the period embracing July 1 to August 15, 1921, inclusive, shall be reimbursed under these rules.

#### Dissenting Opinion of A. O. Wharton

For the first time in the history of the Labor Board a dissenting opinion accompanied the decision. A. O. Wharton, labor representative on the Board, in a lengthy argument opposed the decision of the majority on the grounds that "it does not appear either just or reasonable that conditions that have been in effect from 10 to 20 years and even longer, established as a result of negotiation and mutual agreement between employers and employees, and not infrequently established where no organization of employees existed, can now be decided as unjust or unreasonable." In support of this contention Mr. Wharton cited the overtime provisions for the shop employees in effect on approximately 100 carriers prior to December 31, 1917, adding, "No charge was made by the carriers and no evidence submitted to the Board that would justify any statement to the effect that any of the rules resulting from negotiation between 1902 and December, 1917, were the result of an undue exercise of the economic strength of the employees' organizations."

Regarding the majority ruling as to straight time rates for Sunday and holiday work for certain classes of employees whose work is necessary to maintain continuous operation, Mr. Wharton said:

"As a matter of fact and recorded in the public hearings conducted by the Board, with representatives of the carriers present and not challenging the statement, overtime at the rate of time and one-half for Sunday and holiday work, and for work outside of the regular established day, has been in effect for this class of employees for not less than 40 years; it was voluntarily put into effect 20 years prior to the time the shop crafts had organization sufficient to negotiate working conditions."

After making several comparisons regarding practices of public utilities and municipalities regarding punitive payments for Sunday, holiday and overtime work, Mr. Wharton cited a compilation prepared by representatives of the Federated Shop Crafts and showing the overtime practices prevailing in 2,544 firms in practically all states of the union during 1920. This compilation shows that 869 of these firms paid double time for all overtime, that 2,270 paid time

and one-half or better for all time worked outside of regular hours and that but 49 paid straight time for all overtime. "The plea that continuous service requirements should be a controlling factor in deciding that employees should be compelled to perform Sunday and holiday service for the same rate paid on week days," Mr. Wharton continued, "or that men should be assigned to duty 365 days per year, with millions of workers walking the streets in search of employment is a fallacy not sustained by any recognized authority qualified to pass . . . upon a question . . . associated with the social and moral well-being of the nation's workers."

**The Division of the Board on General Atterbury's Requests**

In closing his dissenting opinion, Mr. Wharton quoted the minutes of the Board's executive session on February 9, at which the request of General W. W. Atterbury for immediate abrogation of national agreements, return to the working conditions of December 31, 1917, and the right to pay unskilled labor the prevailing rate in the locality in which they are employed, was under consideration. These minutes, which have heretofore been carefully guarded from public perusal, show that the announcement of the Board on February 10 denying General Atterbury's requests was drawn up by Henry T. Hunt, a member of the public group on the Board at that time. The quotation from the minutes also showed that W. L. Park, member of the railroad group, sought to have the Board terminate national agreements at that time, but was supported only by the other two representatives of the railroads. Five members of the Board, three labor and two public, voted against Mr. Park's resolution. Judge Barton, chairman of the Board and a member of the public group, did not vote. Mr. Hunt's announcement was adopted by the vote of the three labor representatives. Mr. Hunt and G. W. W. Hanger, public representatives, and J. H. Elliott, railroad representative. Mr. Park, Horace Baker and Judge Barton voted against the announcement.

**Freight Car Loading**

WASHINGTON, D. C.

**A**N INCREASE OF 24,184 in the number of cars loaded with revenue freight during the week which ended on August 15, as compared with the previous week, was shown by the reports of the Car Service Division of the American Railway Association. The total loadings for the

week were 808,965 cars, which was, however, 162,304 cars less than were loaded during the corresponding week in 1920 and 23,474 cars below the total for the corresponding week in 1919.

Increases in the loading of all commodities were reported. The principal gain was in the loading of coal, the total for the week being 158,260 cars, which was an increase of 10,987 cars over that for the preceding week. It was, however, 63,500 cars less than were loaded during the corresponding week last year.

Tabulations also showed an increase of 7,209 cars compared with the week before in the number loaded with merchandise and miscellaneous freight which includes manufactured products, the total being 479,749 cars. Loadings of grain and grain products were 61,560 cars compared with 38,708 cars during the corresponding week last year and 45,651 cars compared with the same week in 1919. An increase of 225 cars in the number loaded with live stock was also reported, the total being 26,835 cars, which was 261 more than were loaded during the corresponding week last year.

Except for the Southwestern district, increases in the loading of all commodities compared with the week which ended on August 6 were reported in all districts, but in none did the total loadings equal those for the same district for the corresponding week last year.

Due principally to the increased demand for transportation facilities, a further decrease of 13,446 was reported in the number of freight cars temporarily out of service on August 15 because of business conditions (i. e., surplus cars plus bad order cars in excess of 7 per cent of the total), compared with the total on August 8, according to reports of the Car Service Division of the American Railway Association. This total on August 15 was 499,594, compared with 513,040 the week before.

Tabulations showed that of the total, 284,338 were serviceable freight cars while the remaining 215,256 needed repairs. Surplus box cars in good order totaled 84,522 on August 15, which was a decrease within a week of 4,071, while surplus coal cars which could be placed immediately in service if freight conditions warranted numbered 145,072 or 7,702 less than were reported on August 8.

A reduction in the car shortage, which has been reported at certain points, was shown by the reports. On August 15, this shortage was 2,125, or 1,239 below what it was on August 8.

**REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS**

SUMMARY—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago For Week Ended Saturday, August 14, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise	Miscellaneous	Total revenue to freight loaded			Received from connections		
										This year	1920	1919	This year	1920	1919
Eastern	1921	9,174	2,630	39,290	909	4,430	2,029	55,073	74,907	183,494	194,039	274,363	12,367		
	1920	6,906	2,747	53,840	3,228	7,893	9,850	45,631	99,859	230,654	210,150	104,535	146,674		
	1919	3,203	3,263	59,987	5,480	3,207	11,983	37,030	68,841	192,994	196,334	13,249	15,488		
Allegheny	1921	3,566	2,934	42,604	2,221	2,097	7,068	42,531	49,511	152,533	149,552	104,535	146,674		
	1920	2,222	1,553	16,506	1,155	1,087	1,919	24,889	4,741	25,224	37,334	19,788	15,488		
	1919	213	212	23,093	653	1,740	193	2,235	6,435	29,609	29,609	19,788	15,488		
Southern	1921	3,961	1,805	19,664	244	13,502	221	35,260	33,855	108,512	127,446	122,978	72,230		
	1920	3,032	2,052	26,581	1,436	16,784	2,770	33,791	41,000	112,562	122,978	122,978	72,230		
	1919	13,268	7,126	7,790	436	11,310	21,408	28,332	33,675	123,345	123,345	122,978	72,230		
Poconchos	1921	222	153	16,506	1,155	1,087	1,919	24,889	4,741	25,224	37,334	19,788	15,488		
	1920	213	212	23,093	653	1,740	193	2,235	6,435	29,609	29,609	19,788	15,488		
	1919	213	212	23,093	653	1,740	193	2,235	6,435	29,609	29,609	19,788	15,488		
Northwestern	1921	3,961	1,805	19,664	244	13,502	221	35,260	33,855	108,512	127,446	122,978	72,230		
	1920	3,032	2,052	26,581	1,436	16,784	2,770	33,791	41,000	112,562	122,978	122,978	72,230		
	1919	13,268	7,126	7,790	436	11,310	21,408	28,332	33,675	123,345	123,345	122,978	72,230		
Central Western	1921	20,792	9,020	17,070	184	4,960	560	29,939	40,039	122,564	158,995	123,840	53,907		
	1920	11,523	8,499	17,702	414	6,133	5,706	31,208	43,829	125,014	124,633	124,633	53,907		
	1919	7,639	2,940	4,349	709	6,074	763	15,712	26,476	64,162	64,162	64,162	53,907		
Southwestern	1921	8,139	6,864	10,281	1,321	17,510	45,740	30,991	38,649	158,995	123,840	123,840	53,907		
	1920	8,139	6,864	10,281	1,321	17,510	45,740	30,991	38,649	158,995	123,840	123,840	53,907		
	1919	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,204	784,781	784,781	784,781	53,907		
Total, all roads	1921	37,144	26,204	198,729	13,370	61,170	76,880	198,071	334,162	935,730	935,730	935,730	53,907		
	1920	27,478	23,595	174,578	8,567	64,414	51,333	128,270	364,889	887,075	887,075	887,075	53,907		
	1919	12,971	3,015	17,510	1,740	19,322	11,265	69,958	150,340	311,265	311,265	311,265	53,907		
Increase compared 1920		9,666	2,609	24,184	4,843	16,756	25,547	70,113	83,823	148,655	148,655	148,655	0		
Increase compared 1919		24,184	23,580	181,219	11,630	41,756	65,615	128,813	183,822	624,465	624,465	624,465	0		
Increase compared 1919		12,971	3,015	17,510	1,740	19,322	11,265	69,958	150,340	311,265	311,265	311,265	0		
Increase compared 1919		12,971	3,015	17,510	1,740	19,322	11,265	69,958	150,340	311,265	311,265	311,265	0		

L.C.L. merchandise loading figures for 1921 and 1920 are not comparable as of 1920. Add merchandise and miscellaneous columns to get a fair comparison. \*Detail figures for 1919 for Michigan Central not given.

Year	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919
July 30	66,416	25,358	151,089	4,111	44,712	30,103	210,367	264,441	796,570	936,366	*925,195	520,701	694,788	648,600	
July 23	64,919	24,689	152,142	3,928	43,126	33,655	208,316	259,573	790,348	926,418	*909,668	503,926	673,218	628,308	
July 16	36,993	24,802	152,116	3,737	43,447	31,483	208,079	235,006	776,352	942,831	809,845	484,300	681,684	627,841	
July 9	38,015	21,067	126,331	3,830	34,356	26,312	180,658	209,129	639,698	796,191	743,226	434,939	633,997	554,129	

# General News Department

The nomination of Frederick I. Cox, of New Jersey, to be a member of the Interstate Commerce Commission, was confirmed by the Senate on Tuesday, August 23.

The Union Pacific shops at North Platte, Neb., have been reopened after being closed 7 months. Approximately 45 per cent of the former employees have been rehired.

A new organization of railway maintenance supervisory officers was formed in Chicago on August 17 under the name of the "Maintenance of Way Club of Chicago" with an initial membership of 53. The purpose of this club is the holding of meetings from time to time for the discussion of maintenance of way problems. The membership will consist of railway officers and others interested in the maintenance of railway tracks and structures. J. B. Martin, supervisor of track, New York Central, Elkhart, Ind., was elected president.

## Implement Manufacturers Urge Abrogation of All Labor Agreements

W. H. Stackhouse, president of the National Implement and Vehicle Association, has issued a statement setting forth the association's ideas regarding the railroad labor problem. Mr. Stackhouse urges as imperative that the "iniquitous Adamson law" be repealed, and, in addition, that the Labor Board be directed "to abrogate all labor agreements, including the unionization of our great transportation system."

## High Average of On Time Trains on the Pennsylvania

The Pennsylvania Railroad reports that in the Central Region on Tuesday, the 16th of August, 971 or 98.8 per cent of the 983 passenger trains operated in that territory arrived at their destinations on time and 982 trains or 99.9 per cent maintained schedule or better. The best previous daily record was made on July 25, when 99.7 per cent of the trains maintained schedule. In the month of July 98.9 per cent of the trains made schedule, an improvement of 3 per cent over July, 1920.

## Safety Section—A. R. A.

Safety Section, Operating Division of the American Railway Association will hold its first annual meeting at the Hotel Copley-Plaza, Copley Square, Boston, Mass., on Monday, September 26, beginning at 8:00 a. m. Eastern standard time. It is expected that progress reports will be submitted by the committee of direction; the publicity and educational committee, and the committee on prevention of grade crossing accidents. Hotel reservations should be made direct with the Hotel Management without delay.

## Gasoline Motorbus in Railway Service

The Bennettsville & Cheraw Railroad Company, Bennettsville, S. C., has just had completed by the Charlotte Wagon & Auto Works of Charlotte, N. C., a combination trailer car to be operated in connection with its motorbus passenger car which has been run for some time. Concerning the motorbus car a letter from Superintendent W. J. Fooser to the Manufacturers Record says: "This car was designed by our president, J. J. Heckart, using an ordinary 3-ton Corbett truck chassis. The Corbett Motor Company, Henderson, N. C., built the body, it having a capacity of 31 passengers. This car, having no compartment for baggage and mail, we had the trailer built after determining the power and speed of the original car.

"Our experience has been very satisfactory; while our passenger

traffic is light, the operation of this car has proven to us the value of this kind of equipment for short lines.

"The average cost per mile for operation being 13.5 cents; average mileage per gallon of gas 8.5 miles."

## 150 Cars, Eleven Miles an Hour

On August 7, the Ann Arbor Railroad ran what is said to be the longest freight train ever operated in the State of Michigan. It was from Owosso, Mich., southward to Toledo, Ohio, 104 miles. The train left Owosso at 6:15 a. m., with 53 loads and 97 empties, weighing 3,932 tons, and arrived at Toledo at 4:00 p. m., with 53 loads and 98 empties, weighing 3,951 tons. It was hauled by one locomotive of the Santa Fe type with 70,000-lb. tractive effort, equipped with duplex stokers, except that a pusher was used for four miles out of Owosso.

## "Fuel Economy Month"

September has been designated as Fuel Economy Month by the Illinois Central and the campaign will apply to all departments using coal. The goal for the month has been set at 20 per cent less than the September record in former years. The best previous month's record in freight service was 133 lb. per 1,000 gross ton miles in June, 1918; in passenger service the best month's record was 1,637 lb. per 100 passenger car miles for August, 1916; while in switching service the best record was 117 lb. per switch engine mile in September, 1918. Weekly progress reports will be made by the divisional fuel committees.

## Claims Prevention Campaign on the Southern Pacific

The Southern Pacific, Pacific System, will conduct a freight claim prevention campaign to last during the month of September, to educate employees of the company in methods of handling freight so as to cut down loss, damage and errors. The campaign will be under the general supervision of R. G. Fagin, superintendent of freight protection, under whose jurisdiction special committees have been appointed on each division to direct the campaign. The company plans at the same time to educate shippers to the value of proper marking, packing and loading of their consignments.

## Photographs on Commutation Tickets

The New York Central, following its experimental introduction of a rule requiring holders of season tickets to furnish their portraits to be pasted on the ticket (or its case) announces that this requirement will be put in effect, on September 1, at a large number of stations; all those embraced in zones which, roughly, extend from points 30 miles from New York to those 75 miles distant. The principal stations included in these zones, on the different divisions, are: Hudson River division: Poughkeepsie (73 miles), Beacon, Cold Spring, Garrison, Peekskill, Croton and Ossining.

Putnam division: Brewster (54 miles), Carmel, Mahopac, Yorktown Heights, Briarcliff Manor (27 miles).

Harlem division: Pawling (64 miles), Patterson, Brewster, Croton Falls, Golden's Bridge, Lake Mahopac, Katonah, Mt. Kisco and Pleasantville (31 miles).

West Shore: Highland (73 miles), Newburgh, Cornwall, West Point and Haverstraw (33 miles).

The railroad will furnish the case or pocket in which to carry the ticket, and the buyer must provide a photograph 1 3/4 in. square, the same picture to be used 12 months.

From Poughkeepsie to New York the one-way fare is \$2.63, while the cost of a ride on a monthly ticket is only 31 cents. The announcement says that, at one station, under the experi-

mental introduction of the picture requirement, the sales of commutation tickets decreased 41 per cent the first month; indicating a loss, at that one station, of \$90,000 a year. The company appeals to its commuters to aid in putting a stop to this injustice.

### Magistrates Do Not Punish Tramps

Since the editorial note with above title was written, the following press dispatch from Albany, N. Y., has appeared: "Railroad officers have asked the State Constabulary to aid them in their effort to drive hoboes off their property and discourage the knights of the road in their efforts to steal train rides and other things. Freight trains are infested by non-paying passengers and some of these characters are vicious. Freight conductors and brakemen have been robbed by thugs. In two instances last week murder was committed. Seasoned railroad men say that never within their recollection has there been such a raft of tramps jumping trains as there are today. They say they are virtually taking their lives in their hands when walking along to inspect the cars of their trains at night. Detectives employed by the railroads are doing their best to cope with the situation, but do not seem to make much headway. It is not unusual for a crew of railroad detectives to apprehend as many as twenty tramps on a single freight train.

"In many instances railroad detectives have been compelled to release their prisoners because they cannot get them juggled. Peace officials of most of the smaller towns situated along railroad lines refuse to jail these tramps, and let them go under suspended sentence, the reason being these towns cannot afford to keep the tramps in their lockups for several days. It is said that one town, where an obliging magistrate developed the habit of sending railroad tramps to the cooler, is about \$2,000 in debt through expenditures incurred in caring for these prisoners."

### Western Roads Refuse Brotherhoods' Demands

The demands of the "Big Four" railway brotherhoods, the Switchmen's Union of North America, and the Order of Railroad Telegraphers to wipe out the recent wage cut, withdraw all further demands for wage decreases, and withdraw all demands for elimination of time and one-half for overtime refused by the railroads last week, as noted in the *Railway Age* of August 20, page 383. The Western roads, in their statement, issued by A. W. Trenholm (C., St. P., M. & O.), chairman, said:

"A proper regard for the public interest in the operation of the railroads does not permit the officers of the railroads to give assurance that such requests for further decreases as have been made will be withdrawn. This committee has no knowledge as to how many railroads have made requests for further decreases, but there is a demand on the part of the public for reductions in freight and passenger rates, and such reductions cannot be made under the present labor costs. There is no assurance that the cost of living will not be decreased within the next few months, and for the railroads to take the position that there would be no requests for decreases in wages, presented in lawful and orderly manner to the board, there could be no justification. As to the elimination of time and one-half for overtime in train and yard service, the railroads, with a proper regard for the public interest and their affairs, cannot give the assurance sought. This committee realizes that many railroads have certain rules in their schedules which are not in keeping with the rulings and principles laid down by the Railroad Labor Board and cannot bind themselves to refrain from asking relief from such burdensome and expensive conditions where they exist."

The demands of the Brotherhoods for the restoration of the rates of pay in effect prior to the recent wage cut was declined, with the following statement: "In their duty to the public as imposed upon them by the Transportation Act, the railroads must persevere put into effect and maintain decreases in wages just as they recognize the authority of the board in giving effect to increases such as were granted by Decision No. 2, which increased the pay of railroad employees approximately \$600,000,000 per annum."

Leaders of the train service brotherhoods met in Cleveland on August 23 to prepare ballots, to be sent out to the whole membership, setting forth the general situation and calling for a vote.

## Commission and Court News

### Interstate Commerce Commission

The Pere Marquette Ry. has asked the Commission for a certificate of public convenience to abandon a line in Claire county, Mich.

Intrastate rates charged by the carriers in Tennessee on stone and gravel, c. l., for use in the construction of public highways and consigned to federal, state, or local authorities, have been found by the Interstate Commerce Commission to result in undue prejudice to shippers of interstate traffic. Rates are prescribed by the commission to relieve such discrimination, to become effective October 13. Rates on common brick and sewer pipe, c. l., were found not unduly preferential.

The commission has amended the regulations governing the transportation of dangerous articles to provide (beginning September 1) that arsenic, Paris Green, arsenate of lead, calcium arsenate, and other strongly poisonous articles must not be offered or accepted for shipment in bulk, but must be packed in strong and tight containers which will prevent sifting or escape of contents in transit, but sintered arsenical flue dust may be shipped between plants in steel gondola cars equipped with suitable covers.

### State Commissions

The Public Utilities Commission of Ohio has sent to the Interstate Commerce Commission a protest against the suspension of the reduced freight rates recently announced by the Detroit, Toledo & Ironton. The Ohio commission declares such action unjust and a usurpation of authority, and conducive to great hardship to the people of Ohio.

THE SECRETARY OF AGRICULTURE, testifying before the Interstate Commerce Commission in its investigation into grain rates, said that he was assured that Argentine wheat could be laid down in Europe or in the Eastern ports of this country cheaper than wheat from Chicago. The re-establishment of the rates which were in force prior to August 26 last year was urged by nearly every witness for the grain shippers at the hearing, which continued before the commission the greater part of last week. Secretary Wallace supported their plea, although he did not claim that the difficulties of the farmers were caused entirely by the increase in freight rates.



Photo by Eugene Gallaway, N. Y.

American Car Materials Ready at Portland, Ore., for Shipment to China

## Foreign Railway News

### Mexican Locomotive Situation Improves

According to Assistant Trade Commissioner Corneli, 130 locomotives have been purchased in this country by the Mexican government. Of these, 85 were obtained on a rental basis with the view of ultimate purchase and 45 by outright purchase. On these cash payments of from 15 to 20 per cent have already been made. These purchases presumably do not include the recent purchase of 65 locomotives from the Baldwin Locomotive Works.

### American Participation in Electrification in Italy

LONDON

The electrical technical mission of the Italian government which visited the United States for the purpose of studying the American railways has returned and an official statement was issued from which it appears that a mission of American financiers and representatives of American railway companies will shortly go to Italy in order to arrange for American participation in the electrification of the Italian State Railways.

### South African Railway and Harbor Extensions

LONDON.

According to the estimates of expenditures on capital and betterment works for the year ending March 31, 1922, the new program of expenditure on the South African Railways and Harbors will involve a total amount of £2,778,082 (approximately \$13,501,478 at the normal rate of exchange). Of this it is estimated that additions to railway lines will involve £627,992 (or \$3,052,041) and rolling stock £972,000 (\$4,724,920), while £1,132,090 (\$5,501,957) is estimated for expenditure on harbors.

### Proposed Denationalization of Swiss Railways

There is a strong movement for denationalizing the railways of Switzerland, according to the Railway Gazette (London). It is well known, says the Gazette, that there has been a good deal of dissatisfaction with the working of the Swiss Railways for some time and this has culminated, after 25 years of nationalization, in the agitation for abolition of state ownership and control. An initiated measure is now going the rounds of the citizenry and if 50,000 voters sign it the matter must go to the congress and be submitted to a referendum.

### The Extent of the Railways in Central America

LONDON.

At the present time the railways of the Central American states which propose to form a Federation, are as follows, according to the Economic Trade Review (London):

	Area sq. miles	Number of inhabitants	Railway miles
British Honduras .....	8,270	40,000	...
Costa Rica .....	18,680	45,500	349
Guatemala .....	43,600	1,842,000	614
Honduras .....	44,000	600,000	357
Nicaragua .....	49,460	800,000	171
Salvador .....	13,120	1,300,000	264
Panama .....	33,190	400,000	298
Panama Canal Zone.....	425	30,000	...

### Austrian Railway Situation

LONDON.

Before the war the Austrian State railways owned 1,180 miles of track of which only 462 miles is left to it, according to Engineering Progress (London). There remain only 300 passenger cars and 3,200 freight cars. Repairs are badly in arrears. Piece work, however, has been restored in the railway shops with a resultant increase of 25 per cent in output, and by working ten hours overtime a week this has been improved by a

further 31 per cent. The cost of rolling stock has increased over seven times what it was in December, 1919, and at the present time freight cars cost 80 times as much as they did before the war. Definite results for the year 1920 are not yet at hand, but it is estimated that there will be a deficit of 60,000,000 kronen (\$150,000,000 at normal exchange, \$800,000 at prevailing exchange).

### Railway Tunnel Under Thames Proposed

The river Thames widens rapidly after leaving London on its eastward course and no means is provided of crossing it east of London. Because of this fact railways in the east of England in moving traffic north and south have to move their trains through London, greatly increasing the congestion at that point. Certain capitalists now are seeking governmental sanction to construct a tunnel under the river at Gravesend to provide a railway connection between the north and south. The tunnel proposed would be 2 3/4 miles in length and would cost in the neighborhood of \$25,000,000 (at par exchange). North of the river a new line of railway would be built to connect with the Midland, the Great Eastern, the Great Northern and the London Northwestern. South of the river a connection would be provided with the channel ports over the rails of the Southeastern & Chatham.

### Southern Pacific Claims Against the Mexican Government

According to authoritative information received from the City of Mexico, the Mexican government may not accept the Southern Pacific estimate of damage to its lines in that country. At least, there is a difference of more than \$5,000,000, United States currency, in the figures fixed by the government engineer, Federico M. Torres, and the claim which the Southern Pacific has submitted for payment. Mr. Torres recently finished an investigation of the damage to the Southern Pacific of Mexico, incurred during the revolutionary period, and he has just made a report placing the amount at 14,000,000 pesos, equivalent to \$7,000,000 United States currency. Some time ago the Southern Pacific put in a claim for more than \$12,000,000, to cover the damage to the property. It is reported that the government plans to investigate all of the larger claims for banditry and revolutionist damages that have been or may be submitted to it.

### The Needs of the Rumanian Railways

LONDON.

The Bulletin of Economic Intelligence for May issued by the Banque Marmorosch, Blank et Cie., insists upon the importance of transport as affecting the financial question in Rumania.

M. N. Miclescu, formerly Director-General of the Rumanian railways, attributes all the difficulties of transport not to the want of trucks but to a shortage of locomotives. Before the war there were 1,000 locomotives in good condition for 1,864 miles of railroad, while now there are only 1,000 locomotives in bad condition for 7,457 miles of railroad owned by Greater Rumania. This state of affairs, he says, must be remedied at all costs. The sidings are crowded with thousands of locomotives which cannot be used because there are no means of repairing them. New engines, therefore, must be bought; the old locomotives must be repaired either abroad or within the country; and the railway engineering works must be remodelled and new works erected at various centers. According to published information 635 locomotives have been ordered abroad, 175 of which are for delivery in 1922, and 460 in 1923. Contracts have also been made with the Rumanian and foreign firms for the overhauling and repair of all locomotives put out of service since the war. By the beginning of the year 1923, the number of locomotives running will be equal to the pre-war strength, and after that all locomotives repaired abroad will go to swell the traffic. The position, therefore, is not desperate, but, unfortunately, the present shortage prevents the country profiting from the very high prices obtainable for commodities. There is also another aspect, the government having been forced to negotiate long-term loans abroad in order to obtain the necessary funds to cover the purchase of new rolling stock and the cost of repairs. ||

## Equipment and Supplies

### Locomotives

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 10 Mikado type locomotives.

### Freight Cars

THE GEORGIA RAILWAY is making repairs to 125 box cars, in its shops at Augusta.

THE PEKIN-KALGAN (China) is inquiring through the car builders, for 200 gondola cars, of 40-tons capacity.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 200 gondola cars and is also asking for bids for the repair of 500 all-steel general service cars.

THE ERIE has entered into a contract with the Greenville Steel Car Company, Greenville, Pa., for the repair of 500 coal cars, of 50 tons capacity.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of August 6, as inquiring for prices on the repair of 900 miscellaneous box and gondola cars, is now asking for figures on the repair of 1,250 gondola cars.

ARGENTINE STATE RAILWAYS.—The Argentine Ministerio de Obras Publicas, Buenos Aires, is asking for bids until September 2, for 70 broad gage freight cars, of 45 tons capacity, for use on the Port Railways, according to a cablegram from Commercial Attache Edward F. Feely, at Buenos Aires.

### Iron and Steel

mitsui & COMPANY, New York, are asking for bids until August 27, for 4,000 tons of 60-lb. rail and 200 tons of splice bars, for the Japanese Government Railways.

THE CHICAGO, BURLINGTON & QUINCY will receive bids until 12 o'clock noon September 2, for 5,250 miscellaneous steel plates; 5,310 miscellaneous steel bars; 330 miscellaneous tank steel plates; 2,190 miscellaneous angle steel bars, and 400 channels.

### Track Specialties

THE CANADIAN NATIONAL RAILWAYS will receive bids at Toronto, Ont., until 12 o'clock, noon, September 17, 1921, for 1,000,000 railway ties.

### Machinery and Tools

THE SOUTH MANCHURIA RAILWAY has ordered one 88 in. lathe, through Frazer & Company, New York.

THE ILLINOIS CENTRAL has ordered from the Niles-Bement-Pond Company one 90-in. heavy driving wheel lathe, also a car axle lathe.

THE PITTSBURGH & LAKE ERIE has ordered from the Niles-Bement-Pond Company a double-end wheel press and a car wheel borer.

THE MISSOURI PACIFIC has ordered from Manning, Maxwell & Moore, Inc., New York, a 42 in. motor-driven drill press, for its Sedalia, Mo., shops and a 23B Greenlee Brothers mortiser for its Dupu, Ill. shops.

### Signaling

The new work on the CHESAPEAKE & OHIO, between Charlottesville, Va., and Staunton, 40 miles, is proceeding satisfactorily. The bonding of the track and the erection of the pole line will

be finished before long. The American Automatic Train Control Corporation, which is installing automatic tram stops on this section, has given to the Union Switch & Signal Company a contract for the roadside apparatus, including color-light signals, three-indication (44 signals), with relays and other apparatus; an aggregate of material amounting to about \$90,000.

### Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, September 9, for its present requirements of lead covered cable, switch points, slide plates and braces for repairs to switches, switch levers, tongue switches, tongue slides for repairs to switches, and crossing frogs; and for its shops requirements until October 31, 1921, of black galvanized and blue annealed sheets, driving and truck tires for freight switching and passenger service, seamless steel tubes for repairs to locomotives and stationary boilers, axles for car and locomotive repairs, wire nails and staples, steel bars, steel shapes and steel plates.

### Trade Publications

SUPERHEATERS FOR SMALL LOCOMOTIVES.—The advantages derived from the use of superheated steam are recognized so generally by railroad motive power officers that it would seem hardly necessary again to call attention to them. Gains equivalent to those obtained from the application of superheaters to large railroad locomotives are being realized on small industrial locomotives of 40 ton weight or under such as are used around industrial plants, in quarries, gravel pits, mines, logging operations, construction work, etc., but as the owners of locomotives of these types are usually not so familiar with the details of locomotive design as are railroad motive power officers, superheaters have not been so generally used on their motive power. Bulletin No. 9 of the Superheater Company shows what has already been accomplished in the industrial field and will be of interest to anyone who is responsible for the purchase or operation of small industrial locomotives.

### Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, which was noted in the *Railway Age* of August 6 (page 270) as having closed bids for additions to its power house at Albuquerque, N. M., to cost approximately \$150,000, has awarded the contract for this work to E. F. Ware, El Paso, Tex.

CHICAGO, ROCK ISLAND & PACIFIC.—This company will construct a new car repair shop at Trenton, Mo., with company forces.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of an 8-stall roundhouse at Amarillo, Tex. The building will have brick walls and a timber frame and roof, and is estimated to cost about \$35,000.

CHICAGO UNION STATION.—This company is accepting bids for electrical equipment for the substation to be installed in connection with its new railway terminal building, Chicago.

GREAT NORTHERN.—This company contemplates the construction of new ore loading docks at Superior, Wis., to cost about \$1,500,000, replacing wooden structures which are no longer adequate.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of July 23 (page 184) as accepting bids for the construction of a frame enginehouse, with dimensions of 60 ft. by 200 ft., at Herrin, Ill., has awarded the contract for this work to G. A. Johnson & Son, Chicago. The company has also awarded a contract for widening the bridge approaching its passenger platform at the Randolph street station, Chicago, to the A. Lund Construction Company, Chicago.

MISSOURI PACIFIC.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of 5 car-repair sheds. These sheds will be of frame construction, 40 ft. wide by 240 ft. long, and will be built at Crane, Mo., Council Bluffs, Sedalia, Jefferson City and Nevada. The total cost of this work is estimated at about \$55,000.

## Supply Trade News

W. G. Ryan has been appointed special representative of the railroad service department of the **Addressograph Company**, with offices at Chicago.

A. Clarke Morre has resigned as assistant to president of the **Globe Seamless Tube Company**, with which he has been connected since November, 1919.

F. C. Severin, New York manager, with office at 50 Church street, of the **Betts Machine Company**, Rochester, N. Y., has resigned to go into other business.

L. M. Waite, formerly sales manager of the National Acme Company, Cleveland, Ohio, and later sales manager of the Springfield Automatic Screw Machine Company, Fitchburg, Mass., has been appointed sales manager of the **Garvin Machine Company**, New York, succeeding Frank A. Power, resigned.

The **Stowell Company**, South Milwaukee, Wis., has effected a merger with the **Pelton Steel Company**, Milwaukee. The Pelton Steel Company name will be retained and the plant will continue to be operated by the same organization, under the direction of the officers and directors of the Stowell Company.

Walter R. Pflasterer, railway sales engineer of the National Carbon Company in the Chicago territory, has resigned, effective September 1, to become sales manager of the newly organized **Direct Sales Company**, with headquarters in the Manhattan building, Chicago. This company will act as a manufacturers' representative, handling railroad accounts in the Chicago district. Mr. Pflasterer was born at California, Pa., on May 30, 1881. His first railway work was on construction in the signal department of the Union Pacific at Omaha. Later he was transferred to the signal engineer's office, where he had charge of all material for the large construction program in 1906 and 1907. Early in 1907 he was appointed chief clerk to the signal engineer and about a year later he entered the signal department of the Southern Pacific in California. In 1908 Mr. Pflasterer entered the service of the Chicago, Rock Island & Pacific as chief clerk to the signal engineer, which position he held until August 15, 1913, when he resigned to enter the railroad sales department of the Yale & Towne Manufacturing Company at New York City. Mr. Pflasterer remained with this company until December 15, 1914, when he resigned to become sales engineer of the National Carbon Company, Cleveland, Ohio, in the railroad sales department.



W. R. Pflasterer

John C. Robinson has resigned as manager of New England sales at Boston, Mass., for William Wharton, Jr., & Co., Inc., Easton, Pa., after 30 years of continuous service. Mr. Robinson will in future devote his time to his interests in the firm of Harrington, Robinson & Co., Boston. The Boston office of the Taylor-Wharton Iron & Steel Company, High Bridge, N. J., and William Wharton, Jr., & Co., Inc., is now at 201 Devonshire street, in charge of Walter H. Allen.

## Railway Financial News

**ARKANSAS HARBOR TERMINAL.**—*Asks Authority to Issue Notes.*—This company has asked authority from the Interstate Commerce Commission to issue \$50,000 of prior lien 5-year 6 per cent gold notes to be pledged with the Secretary of the Treasury as collateral security for a loan of like amount from the revolving fund.

**ATCHISON, TOPEKA & SANTA FE.**—*Authorized to Abandon Branch Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a branch line in Kay County, Okla.

**CENTRAL VERMONT.**—*Asks Authority to Issue Bonds.*—This company has asked authority from the Interstate Commerce Commission to issue \$147,000 of refunding mortgage 5 per cent gold bonds dated May 1, 1920, for the purpose of reimbursing its treasury for expenditures from income in payment of a similar amount of certain equipment gold notes.

**CHICAGO & EASTERN ILLINOIS.**—*Annual Report.*—The income account for the year ended December 31, 1920, is as follows:

Railway operating revenue (March 1 to December 31)	\$31,307,438
Railway operating expenses (March 1 to December 31)	29,763,451
Net revenue from railway operations (March 1 to December 31)	1,543,987
Railway tax accruals	1,120,400
Railway operating income	418,580
Net railway operating income	2,135,214
Miscellaneous income	257,160
Gross income	2,392,374
Total deductions	881,032
Balance of income	1,504,342

\*Does not include the following income properly due the receiver:

Lease of road, January and February, 1920	\$666,666
Lease of road (balance for year 1918)	1,053,999
Lease of road (balance for year 1919)	1,053,999
Miscellaneous income (quaranty period, March to August, 1920)	2,000,000
Total	4,774,665
Surplus	6,279,007

**CHESAPEAKE & OHIO.**—*Again Defers Dividend.*—The directors on August 19 again deferred action on the usual 2 per cent semi-annual common dividend. Action was deferred at the previous meetings in May and June.

**DULUTH & IRON RANGE.**—*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Railway operating revenue (10 months)	\$10,781,732	
Compensation accrued (January and February, 1920; year 1919)	392,540	\$2,355,242
Gross income	11,471,821	2,578,652
Railway operating expenses	5,695,087	70,286
Tax accruals	1,159,418	183,748
Interest on funded debt outstanding	407,550	407,550
Total deductions	8,271,492	858,669
Net income	2,750,329	1,720,484
Income applied to sinking and other reserve funds	1,254,247	
Balance transferred to profit and loss account	1,495,882	1,720,484

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919, as follows:

	1920	1919
OPERATING REVENUES		
Freight	\$9,927,608	\$7,114,957
Passenger	302,067	271,884
Total operating revenues	\$11,075,952	\$7,961,606
OPERATING EXPENSES		
Maintenance of way and structures	\$1,460,264	\$1,050,529
Maintenance of equipment	1,515,095	1,195,559
Traffic	1,251,313	5,811
Transportation	3,118,080	2,141,178
General	280,063	175,893
Total operating expenses	\$6,394,559	\$4,573,155
PASSENGER TRAFFIC		
Number of passengers carried	288,190	266,608
Passengers carried one mile	9,985,533	9,241,030
Average revenue received per passenger per mile (cents)	3.024	2.942
Average distance traveled per passenger (miles)	34.65	34.66
FREIGHT TRAFFIC		
Number of tons carried	11,467,755	8,459,559
Tons of freight carried one mile	802,360,946	556,110,590
Average revenue received per ton per mile (cents)	1.237	1.279
Average distance hauled per ton (miles)	70	65.7
Average number of tons revenue freight carried per train mile	815.86	777.07

**EASTLAND, WICHITA FALLS & GULF.—Asks Authority to Issue Stock and Bonds.**—This company has asked authority from the Interstate Commerce Commission to issue to purchasers all stock in the company subscribed and fully paid, not to exceed \$1,000,000; to issue its bonds to the amount of \$551,000 for which the company already has received full payment; and to secure the bond issue by a first mortgage and deed of trust on all property of the carrier.

**GREAT NORTHERN.—Loan Approved.**—The Interstate Commerce Commission has approved a loan of \$586,000 to this company to enable it to provide itself with new equipment. The carrier is required to finance \$588,320.

The Commission has also approved a loan of \$15,000,000 to the Great Northern to enable that railway to meet maturing indebtedness. The loan must be repaid within six months from September 1. It is secured by the pledge of \$18,844,000 of the applicant's general mortgage, series A, 7 per cent gold bonds, due July 1, 1936, executed and delivered by the applicant to the First National Bank of the City of New York, trustee.

**Authorized to Sell Equipment Notes.**—The Great Northern has been granted authority by the Interstate Commerce Commission to sell not more than \$606,000 of equipment gold notes in connection with the procurement of certain equipment under an agreement to be dated August 1, 1921, with the General American Car Company, the vendor, and the First National Bank of New York City, trustee, at an aggregate cost of \$1,145,000. The sale of the notes to the trustee is proposed at a price 97½ per cent of par.

**GULF, MOBILE & NORTHERN.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Total operating revenue.....	\$3,597,143	.....
Total operating expenses.....	4,164,830	.....
Net operating revenue.....	567,687	.....
Railway tax accruals.....	142,643	.....
Operating income.....	710,348	.....
Net operating income.....	794,955	.....
Income from lease of road (January and February, 1920; year 1919).....	103,051	\$504,550
Government guaranty accrued.....	728,000	.....
Total non-operating income.....	877,145	35,649
Gross income.....	82,190	496,171
Total deductions from gross income.....	66,363	90,662
Net income.....	15,827	405,509

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919, as follows:

	OPERATING REVENUES	
	1920	1919
Freight.....	\$3,181,066	\$2,112,677
Passenger.....	711,629	567,466
Total operating revenue.....	\$4,147,960	\$2,823,506

	OPERATING EXPENSES	
	1920	1919
Maintenance of way and structures.....	\$1,440,842	\$637,502
Maintenance of equipment.....	1,093,938	685,546
Traffic.....	133,984	71,060
Transportation.....	2,026,246	1,298,091
General.....	215,999	166,515
Total operating expenses.....	\$4,909,102	\$2,847,579

	PASSENGER TRAFFIC	
	1920	1919
Number of passengers carried.....	1,102,084	918,906
Number of passengers carried one mile.....	23,380,047	19,308,501
Average miles carried—all passengers.....	21.21	21.01
Average revenue per passenger mile (cents).....	.03044	.02938

	FREIGHT TRAFFIC	
	1920	1919
Number of tons carried.....	1,746,126	1,367,870
Number of tons carried one mile.....	237,272,834	125,361,616
Average miles hauled—all freight.....	135.89	91.65
Average revenue per ton mile of freight (cents).....	.01471	.01902

**LOUISVILLE & NASHVILLE.—Application to Issue Capital Stock Amended.**—This company has amended its application to the Interstate Commerce Commission, which asked for authority to issue \$53,000,000 of capital stock for distribution as a stock dividend pro rata among its stockholders. In its original application the carrier also asked authority to execute and deliver its first and refunding mortgage to secure divers series of bonds, to issue series A of these bonds aggregating \$28,615,000, and to sell \$12,753,000 of this amount outright to J. P. Morgan & Co. The applicant now asks authority from the commission to procure the authentication and delivery of it of the entire \$28,615,000 of bonds but to sell only \$12,753,000 of them now.

**LOUISIANA & PACIFIC.—Asks Authority to Abandon Line.**—This company has asked the Interstate Commerce Commission for a certificate of public convenience to abandon a line in Beauregard Parish, La.

**PEARL RIVER VALLEY.—Authorized to Issue Notes.**—The Interstate Commerce Commission has authorized this company to issue from time to time unsecured promissory notes not at any one time to exceed \$27,000 in renewal of certain outstanding notes.

**SALT LAKE & UTAH.—Asks Authority to Issue Stock.**—This company has asked authority from the Interstate Commerce Commission to issue \$500,000 of its 7 per cent cumulative first preferred stock and to pledge the same to secure a loan of \$700,000 from the Treasury revolving fund.

**ST. LOUIS SOUTHWESTERN.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**VALDOSTA, MOULTRIE & WESTERN.—May Not Be Junked.**—A company is being organized by W. J. Vereen, of Moultrie, Ga., to purchase this road from C. L. Jones, its present owner, and operate it as a going concern. The road was sold on April 9, 1921 to Mr. Jones for \$87,000 with the right to dismantle the line. Seven miles of it have been junked already.

**WATERLOO, CEDAR FALLS & NORTHERN.—Authorized to Pledge Bonds and Sell Stock.**—This company has been authorized by the Interstate Commerce Commission to pledge to the United States \$2,200,000 of general mortgage 7 per cent gold bonds, of which \$1,575,000 is for collateral security for a loan from the revolving fund and \$625,000 is collateral for a loan from the Railroad Administration. The applicant has also been authorized to sell at par \$700,000 of common stock and to issue lease warrants aggregating \$132,159 in connection with the procurement of equipment.

**WESTERN PACIFIC.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Total operating revenue (March 1-Dec. 31).....	\$13,595,790	.....
Total operating expenses (March 1-Dec. 31).....	10,311,410	.....
Net revenue from railway operations.....	3,284,380	.....
Total operating expenses.....	10,311,410	.....
Net revenue from railway operations.....	3,284,380	.....
Railway tax accruals.....	670,079	\$148,313
Total operating income.....	2,614,301	Def 148,313
Income from lease of road.....	*117,368	1,960,350
Total non-operating income.....	2,050,685	2,370,030
Gross income.....	4,664,171	2,221,717
Interest on funded debt.....	1,302,755	1,213,248
Total deductions from gross income.....	2,247,960	1,495,936
Net income.....	2,416,212	725,781

\*Includes rental due from United States Railroad Administration for January and February, 1920, at \$1,900,350 per annum. Final settlement with the United States Railroad Administration fixing compensation at \$3,200,000 per annum increased this item to \$533,976 and for year 1919 to \$3,200,000.

The Western Pacific did not accept the government guaranty.

**Partial Payments of Guaranty**

The Interstate Commerce Commission has certified to the Treasury partial payments of guaranty to the following roads:

Detroit, Bay City & Western.....	\$4,500
Mississippi Eastern.....	8,500

**Final Settlements with Railroad Administration**

The Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Atlantic Coast Line.....	\$5,500,000
Boston Terminal Company.....	75,364

The payment of these claims to final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the Administration during the 26 months of federal control.

**Dividends Declared**

Buffalo & Susquehanna.—Common, 1½ per cent, quarterly, payable September 30 to holders of record September 15.  
New Orleans, Texas & Mexico.—1½ per cent, quarterly, payable September 1 to holders of record August 25.



DEBITS:			
Surplus Appropriated for Invest. in Phys. Prop.			
Loss on Retired Road and Equipment—Road	\$1,899.02	\$424.54	\$1,474.48
Loss on Retired Road and Equipment—Equipment	17,911.89	Cr. 8,344.69	+ 26,256.58
Miscellaneous Debits	17,713.74	17,342.29	+ 144,056.03
Miscellaneous	12,358.87	1,427.20	+ 10,931.67
Balance, Credits, Carrier to General Balance Sheet	10,514,392.04	10,238,914.50	+ 275,477.54
Total	\$10,473,848.08	\$10,303,763.84	+ \$170,084.24

Notwithstanding the heavy maintenance charges to which reference has previously been made, we closed the year with a net income of \$2,959,836.80, all of which was appropriated for investment in physical property.

OPERATING REVENUES.

The total operating revenues for year 1920 amounted to \$31,020,958.11 as compared with \$20,651,162.63 for previous year, an increase of \$10,369,795.48, or 50.14%. This most gratifying increase is attributable in some measure to the increase in freight rates and passenger fares granted by the Interstate Commerce Commission, effective August 26, 1920, as to interstate traffic and subsequently extended to intrastate traffic, as more fully explained hereunder the caption "Rate Situation," but is mainly due to a marked increase in the volume of freight traffic handled.

Statement showing comparison of freight and passenger traffic handled during the year 1920 and previous year will be found in the report. It will be interesting to note the increase in number of tons of revenue freight handled one mile, amounting to 675,316,142 ton-miles or 59.21%. Passengers carried one mile shows a small decrease.

OPERATING EXPENSES.

Total operating expenses for the year amounted to \$25,886,055.67 compared with \$18,497,241.15 for the previous year, an increase of \$7,388,814.52, or 39.95%. While the percentage of increase in operating expenses is large, it will be noted it is considerably under the increase in operating revenues. The increased volume of freight traffic for a large portion of the increased operating expenses, but other unavoidable conditions occasioned no small part of same. In addition to the heavy maintenance charges to which reference has heretofore been made, the operating expenses for the year include approximately \$1,900,000.00, representing the increase in the payrolls for months May to December, 1920, inclusive, growing out of the increases paid, in compliance with order of the United States Railroad Labor Board promulgated July 19, and were also unfavorably affected during the Federal control period of January and February, and for a short period thereafter, by the payment of large sums for overtime.

Following are some of the major items of maintenance and betterment work accomplished during period of Corporate management, March 1 to December 31, 1920, and cost of same:

Maintenance of Way and Structures—Purchase and Application of 642,505 cross ties	\$1,138,993.29
Adding cross ties inserted during two months of Federal control, makes a total of 777,612 ties applied during year, an increase of 130,111 compared with 1919	
Application of 449,181 tie plates to soft wood ties in main line tracks	158,138.14
At beginning of Federal control there were not in our tracks, main lines, branches or side tracks any other than hardwood ties, white oak, red oak, etc. The United States Railroad Administration, during their management, permitted the hardwood tie practically to go out of use and inserted in our tracks, main line and others, 679,035 pine ties, a considerable number of which were untreated and some of which were placed in track without tie plates. At termination of Federal control practically all of the ties on hand were pine and it was, therefore, impossible to revert to exclusive use of hardwood ties until the matter of production could be worked out, which required several months. This made necessary application of tie plates on light traffic branches that would not have been required if sufficient hardwood ties had been available. The quantity of hardwood ties which we were able to secure, has rapidly increased to the extent that for the year 1921 all ties inserted in main lines, including main lines of branches, are of hardwood.	
Application of 74,718 cubic yards of ballast	139,888.00
Filling and shoring up 9,040 feet of trestle work	143,236.90
Application of drain tile, widening cuts and fills, and ditching	560,580.88
Reconstruction of telegraph lines	30,687.59
Laying of 75.76 miles of new 85-pound rail, replacing worn 75-pound rail	353,298.28
Total	\$2,524,823.08
Maintenance of Equipment—Rehabilitation of freight equipment	\$568,216.53
Restoration of 1,358,178 miles in mileage capacity of locomotives, in excess of miles consumed in service	178,884.63
Total	\$747,101.16
Grand Total	\$3,271,924.24

Contract was also made with the Baldwin Locomotive Works for purchase of twenty-one consolidation freight locomotives, ten of which were received and placed in service during year, thereby adding 496,400 pounds tractive power. The total cost of the ten locomotives was \$318,928.48.

The average load in tons per loaded freight car mile and per loaded freight train mile for the past ten years was as follows:

Average load in tons per loaded freight car mile, including Company material:			
YEAR ENDED	St. L. S.-W. Ry. Co.	of Texas.	System.
JUNE 30, 1912	18.02	16.43	17.54
1913	18.22	16.44	17.58
1914	18.22	16.19	17.62
1915	17.95	16.57	17.55
1916	18.18	17.40	17.95
YEAR ENDED	St. L. S.-W. Ry. Co.	of Texas.	System.
DECEMBER 31, 1916	18.52	17.30	18.17
1917	20.89	19.34	20.36
1918	24.10	23.32	23.34
1919	22.46	19.77	21.78
1920	24.69	22.41	24.10

Average load in tons per train mile, including Company material:			
YEAR ENDED	St. L. S.-W. Ry. Co.	of Texas.	System.
JUNE 30, 1912	447.25	211.19	340.56
1913	461.25	214.50	345.50
1914	455.14	199.32	337.65
1915	457.53	208.21	345.21
1916	489.88	252.71	386.40
YEAR ENDED	St. L. S.-W. Ry. Co.	of Texas.	System.
DECEMBER 31, 1916	485.57	250.67	390.40
1917	616.62	286.10	474.06
1918	670.00	314.50	499.75
1919	680.37	299.48	516.91
1920	728.87	344.92	576.08

RATE SITUATION.

As previously stated, the operating revenues for the past calendar year were favorably affected by increases prescribed in interstate freight rates and passenger fares by the Interstate Commerce Commission's order in Ex parte 74, effective August 26, 1920. The increases in the interstate freight rates varied according to the geographical groups designated in the order. The Western group in which our lines are included was granted increases approximating 35 per cent. Interstate passenger fares were increased to 36 cents per mile.

Negotiations were entered into with the State Commissions for increases covering intrastate traffic resulting in increases in intrastate passenger fares to 36 cents per mile and increases in freight rates in keeping with the interstate rates authorized by the Interstate Commerce Commission. The effective dates of the increases authorized in the various states were as follows:

Passenger Fares:	Freight Rates:
Missouri, September 1, 1920.	Missouri, September 1, 1920.
Arkansas, January 1, 1921.	Arkansas, September 1, 1920.
Texas, March 14, 1921.	Louisiana, October 1, 1920.
Louisiana, April 6, 1921.	

AGRICULTURAL AND INDUSTRIAL.

Excellent crops generally were produced in the territory traversed by our lines during the year 1920, although the prevailing high cost of labor and materials created an oppressive expense. On the other hand a material reduction in prices had taken place by harvest time, resulting in much disappointment to the farmers generally, and in heavy losses to many of them. Cotton production tributary to our line during 1920 was above normal, and in addition thereto, there was a larger quantity of cotton carried over from previous year, which had been benefited from the high prices of higher prices. When the 1920 crop had matured the demand, both domestic and foreign, had greatly diminished and prices had declined accordingly. This reduced demand and the unwillingness of producers to accept the price delay in the market, resulted in a sharp decline in price measure, unfavorably affected our revenues during latter part of 1920, and first half of 1921. We hope, however, to receive our share of this cotton when moved.

A systematic program of instructions to farmers as to the scientific cultivation of crops, preservation of orchards, eradication and prevention of animal and plant diseases was carried on by this company through practical demonstrations which no doubt contributed to the satisfactory results for the past year from the standpoint of quality as well as quantity of production, and which should be conducive of permanent improvement in the agricultural conditions adjacent to our line.

NEW EAST ST. LOUIS FREIGHT TERMINAL.

Reference has been made in previous reports to the organization of the Valley Terminal Railway for the purpose of constructing a complete freight terminal at Valley Junction, St. Clair County, Illinois, adjoining East St. Louis. This terminal was completed and taken over for operation by the United States Railroad Administration as of August 1, 1918. At termination of Federal control, it was leased from the Valley Terminal Railway, and, since April 1, 1920, has provided our terminal facilities at East St. Louis, the joint operating arrangement with the Missouri Pacific at Dupo, Illinois, having been discontinued as of that date.

By reason of having our independent terminal facilities at East St. Louis during the period of the outlay switchmen's strike, which was deferred until August 8, 1920, as continued in full force and effect until the latter part of June, we were enabled to handle a large volume of traffic through the St. Louis-East St. Louis gateway with practically no delay. Had we been without our separate and exclusive terminal facilities during the acute period of this strike, we would have been deprived of the entire gross revenue accruing on business handled through this terminal during this period. It is conservatively estimated that the revenue thus derived, after deducting the cost of performing the service, was sufficient to cover the entire amount invested in the facilities and leave a margin of profit. Substantial economy has also been effected in the operating cost compared with the cost under the joint operating arrangement with the Missouri Pacific.

OPERATION OF FREIGHT TERMINAL AT ILLMO, MO.

Effective September 1, 1920, the Missouri Pacific Railroad Company withdrew from the joint operating arrangement with the Missouri Pacific and we have accordingly enjoyed the exclusive use of these facilities since that date.

The combined traffic of both companies had outgrown the facilities and the continued use of the Missouri Pacific facilities would have caused considerable extension and enlargement in order to serve both companies. Substantial economy has resulted through our exclusive operation.

MEMPHIS FREIGHT TRAFFIC.

On March 1, 1920, the Missouri Pacific Railroad Company served the required twelve months' written notice cancellation its contract with this company covering the handling of freight traffic between Fair Oaks, Arkansas, and Memphis, Tennessee. Subsequent conferences were held with the officers of that company to negotiate a new agreement upon a fair and equitable basis. No disposition, however, was shown to negotiate a new agreement on a basis that would permit this company to compete for traffic through the Memphis gateway. We accordingly opened negotiations with the Chicago, Rock Island and Pacific for the use of their line between Brinkley, Arkansas, and Briark, Arkansas, and with the Illinois Central for the use of their freight terminal facilities at Memphis, Tennessee.

Both of these companies were cordially and amicably opened conferences with their officers, empowered to act, agreements were drawn covering the use of their facilities, the terms of which will provide a substantial saving to this company, compared with the terms offered by the Missouri Pacific. This company is also enabled to operate such a substantial saving at Memphis, and are therefore definitely established as a Memphis line.

In addition to the operating economies which the new arrangement will bring about, there are other benefits which will accrue to this company through association with above mentioned companies, among which will be participation in the handling of a considerable volume of competitive traffic which we have not heretofore enjoyed.

## Railway Officers

### Executive

**J. C. Murray**, whose appointment as receiver of the Missouri & North Arkansas, with headquarters at Harrison, Ark., was announced in the *Railway Age* of July 23 (page 185), was born at Chicago, on August 21, 1885, and entered railroad service on February 26, 1902, with the Cincinnati, New Orleans & Texas Pacific. He served in various positions in the traffic department of this company until July 20, 1907, when he was employed in the auditing department of the New York, Chicago & St. Louis. A year later he was employed in the traffic department of the New Orleans & North Eastern, and in December, 1909, he took a similar position on the Louisville & Nashville. Mr. Murray entered the service of the Missouri & North Arkansas as a tariff compiler in August, 1911, and served successively as chief clerk in the freight department, general freight agent, general freight and passenger agent, and freight traffic manager. He was serving in the latter position at the time of his appointment as receiver.

### Operating

**T. F. Allen** has been appointed supervisor of transportation of the Northwestern Pacific, with headquarters at San Francisco, effective August 15, with special assignment to the staff of the general manager.

### Traffic

**H. H. Ellis** has been appointed advertising manager of the Chicago, Rock Island & Pacific, with headquarters at Chicago, effective August 1, succeeding W. D. Braddock, who has been granted an extended leave of absence.

### Engineering, Maintenance of Way and Signaling

**J. W. Williams**, chief engineer of the Northwestern Pacific, with headquarters at San Francisco, Cal., has been appointed chief engineer of the Western Pacific, with the same headquarters, effective August 15, succeeding T. J. Wyche, who has been appointed consulting engineer.

**G. H. Hicks**, principal assistant engineer of the Northwestern Pacific, with headquarters at San Francisco, Cal., has been appointed acting chief engineer, effective August 15, succeeding J. W. Williams, resigned to become chief engineer of the Western Pacific.

**J. E. Fanning**, has been appointed roadmaster of the Iowa division of the Illinois Central, with headquarters at Fort Dodge, Iowa, succeeding E. I. Rodgers, who has resigned to become chief engineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., effective August 17.

### Mechanical

**E. J. Brennan** has been appointed superintendent of motive power of the Chicago Great Western, with headquarters at Oelwein, Iowa, effective August 15, succeeding H. C. Eich, resigned.

**T. Allison** has been appointed road foreman of engines of the Pasco division of the Northern Pacific, with headquarters at Pasco, Wash., effective August 17, succeeding R. E. Wilkinson, who has been granted an extended leave of absence.

**G. C. Seidel**, master mechanic of the Minneapolis & St. Louis, with headquarters at Marshalltown, Iowa, has been appointed mechanical engineer of the Chicago & Alton, with

headquarters at Bloomington, Ill., effective August 13, succeeding J. H. Leyonmark, deceased.

### Purchasing and Stores

**C. C. Kyle** has been appointed acting general storekeeper of the Northern Pacific, with headquarters at St. Paul, Minn., effective August 17, succeeding O. C. Wakefield, who has

### Obituary

**L. P. A. Weissenbruch**, inspector general of the Belgian State Railways and general secretary of the International Railway Congress, died at Brussels on August 7, after an extended illness.

**Epes Randolph**, president of the Southern Pacific of Mexico and the Arizona Eastern, died at Tucson, Ariz., on August 22. Mr. Randolph was born in Lunenburg County, Va. He entered railroad service in 1876



Epes Randolph

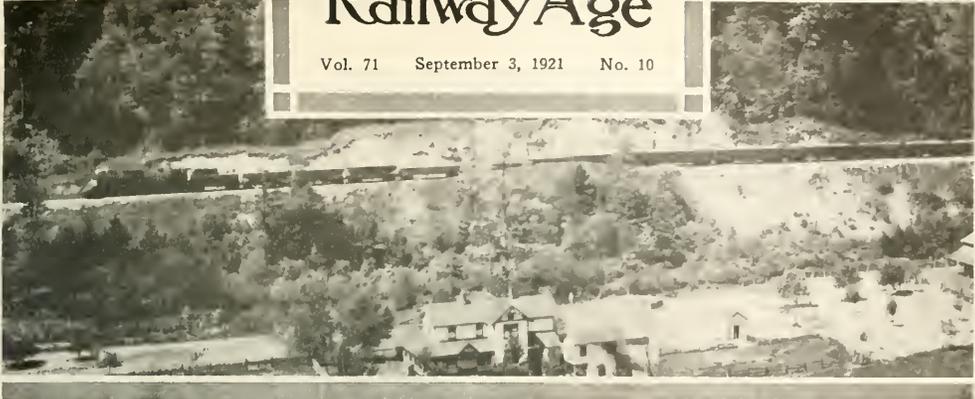
in the engineering department of railroads in the eastern part of the United States that were controlled by Collis P. Huntington, and he early became one of Mr. Huntington's most trusted lieutenants. When the Chesapeake & Ohio built into Cincinnati, Mr. Randolph was in charge of the construction of its bridge across the Ohio river. In 1894 it became necessary for him to go to Arizona on account of his health. He was out of railway service for a year and then went with Mr. Huntington on the Southern Pacific.

After Mr. Harriman acquired control of the Southern Pacific, Mr. Randolph maintained much the same relationship to him that he had to Mr. Huntington. Among other things he was made president of the California Development Company, a Southern Pacific enterprise which had much to do with the development of the Imperial valley in California, and was president of this company in 1906, when the entire valley was threatened with desolation by an overflow of the Colorado river. The work done to save that section of the country was carried on under the supervision of Mr. Randolph, whose engineering experience and skill, coupled with his remarkable sagacity for quick action, probably saved the region. Subsequently, when the Southern Pacific decided to extend its lines into Mexico, Mr. Randolph was chosen to handle that work.

Previous to March, 1891, Mr. Randolph was superintendent and chief engineer of the Elizabethtown, Lexington & Big Sandy, the Kentucky & South Atlantic and the Ohio & Big Sandy, all now parts of the Chesapeake & Ohio. For two years from the date mentioned he held the same titles on the Newport News & Mississippi Valley and the Ohio Valley, and in January, 1893, his jurisdiction was extended over the Chesapeake, Ohio & Southwestern, all three of which roads are now parts of the Illinois Central. He was appointed superintendent of the Yuma and Tucson divisions of the Southern Pacific in May, 1895, and was promoted to general manager of the Los Angeles Railway and the Pacific Electric Railway in 1901. In February, 1902, he was elected president of the Gila Valley, Globe & Northern, the Maricopa & Phoenix, the Arizona & Colorado, the Cananea, Yaqui River & Pacific and the Sonora Railway, and since June, 1909, when he was made vice-president of the Southern Pacific Railway of Mexico, he has been general manager also of these lines. In February, 1910, Mr. Randolph was also elected vice-president and general manager of the Arizona Eastern, which absorbed the Gila Valley, Globe & Northern, and in October of the following year, he was elected president of the Southern Pacific and the Arizona Eastern, which position he held at the time of his death.

# Railway Age

Vol. 71 September 3, 1921 No. 10



Freight Train Between Matabee and Rock, W. Va., on the Virginian

## Contents

### Electrification Progress on Italian Railways . . . . . Page 430

An Extensive Program of Electrification Is Under Way and More Is Contemplated Because of High Cost of Fuel and Difficulty of Obtaining It, by G. B. Santi.

### Job Analysis and Job Specification . . . . . 445

A Study of the Methods of Investigation, the Nature of Various Jobs and the Favorable Results Secured by Such Inquiry, by J. C. Clark.

### Hearings on Western Grain and Hay Rates . . . . . 440

Traffic Officers of Grain-Carrying Roads Show How Reductions Would Impoverish Railroads—Farmers Should Ask Elevator Men to Reduce Charges.

#### EDITORIALS

The Senate Recess . . . . .	431
Britain's Railway Experiment . . . . .	431
Local Railroad Publicity . . . . .	431
Car Orders and Deliveries . . . . .	431
Meeting Motor Truck Competition . . . . .	432
Locomotive Maintenance in Slack Times . . . . .	432
Strength in Railway Securities . . . . .	432
Rates Higher—Railroad Service Costs Public Less . . . . .	433
Fire Risks in Sleeping Cars . . . . .	433
Some Facts Bearing on Strike Talk . . . . .	434
Chesapeake & Ohio . . . . .	434
Hocking Valley . . . . .	436

#### LETTERS TO THE EDITOR

Henry Ford, the "Miracle Man" . . . . .	437
Epes Randolph, an Appreciation . . . . .	437
Are Barge Lines Profitable? . . . . .	438

#### GENERAL ARTICLES

Electrification Progress on Italian Railways, by G. B. Santi . . . . .	439
Labor Organizations Again Spread Strike Threats . . . . .	443
A Check on the Rough Handling of Cars . . . . .	444
Job Analysis and Job Specification, by J. C. Clark . . . . .	445
Booster Tests on Temiskaming & Northern Ontario . . . . .	447
Hearings on Western Grain and Hay Rates . . . . .	449
Austria Plans Extensive Electrification . . . . .	450
Freight Car Loading . . . . .	451
A Large Capacity Locomotive Weighing Plant, by C. C. Zedley . . . . .	453
Twenty Systems in I. C. C. Consolidation Plan . . . . .	455
Ask Accountant's Help in Increasing Efficiency, by J. C. Owers . . . . .	457
The Pennsylvania's Highway Crossing Signals . . . . .	458
Accident Investigations—April, May and June . . . . .	459
Who Pays the Man for Waiting on the Bench? by Grant Gibson . . . . .	461
A New Ticket Printing and Recording Machine . . . . .	462

#### GENERAL NEWS DEPARTMENT . . . . . 463

Published weekly and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.* HENRY LEE, *Vice-Pres. & Treas.* C. R. MILLS, *Vice-Pres.*  
L. B. SIEMAN, *Vice-Pres.* SAMUEL O. DUNN, *Vice-Pres.* ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building CLEVELAND: 4300 Euclid Ave. LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
PHILADELPHIA: 407 Bulletin Bldg. WASHINGTON: Home Life Bldg. Cable address: Unsigmeel, London  
CINCINNATI: First National Bank Bldg.

#### Editorial Staff

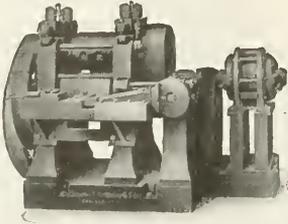
SAMUEL O. DUNN, <i>Editor</i>		
ROY V. WRIGHT, <i>Managing Editor</i>		
E. T. HOWSON	A. F. STUBING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	F. L. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. E. COLE
R. E. TRAYER	ALFRED G. OEHLEK	J. G. LYNE
C. B. PECK	F. W. KRAEGER	J. H. DUNN
W. S. LITLER	HOLCOMBE PARKES	D. A. STEEL
J. G. LACHER	C. N. WINTER	K. H. KOECH

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$8.00. Foreign Countries (excepting daily editions), \$10.00 £2 01s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue 5,100 copies were printed; that of these 9,100 copies 8,049 were mailed to regular paid subscribers; 55 were provided for counter and news company sales, 344 were mailed to advertisers; 65 were mailed to employees and correspondents and 587 were provided for new subscriptions, samples, copies lost in the mail and office use, that the total copies printed this year to date were 338,100, an average of 9.60 copies a week.

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)



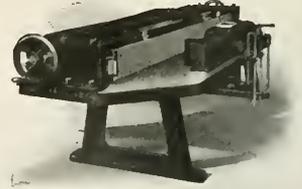
**Combined Tapering Roll and Swedging Machine**

This machine is constructed so that, after the spring leaves are taper rolled, a swedging attachment forces the metal back to the proper width.



**Hydraulic Spring Stripping Machine**

This machine removes the bands from spring leaves, without heating and without damage to the band or leaves.



**Ryerson-Riegel Universal Spring Forming Machine**

This machine forms elliptic spring leaves of any size and curvature used in ordinary practice, requiring but one spring maker for its operation.

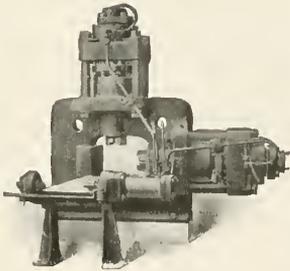
## This Road Saves Over \$21,000 in Spring Repairs

Instead of shipping their locomotive springs hundreds of miles and back some roads repair them at home.

Using Ryerson Spring Shop Equipment one road saved \$21,500 in two and a half years after returning the entire cost of the equipment.

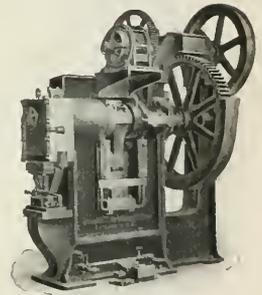
What do YOUR spring repairs cost? We'll tell you what they should cost.

*Send for Standardized Spring Shop Layouts.*



**Triple-Pressure Hydraulic Banding Press with Assembling Table**

This machine is of the triple-pressure type, capable of exerting a maximum pressure of 100 tons, and with minimum and intermediate pressures of 33 and 67 tons.



**Combined Shearing and Hot Punching Machine**

This machine is designed for cold shearing spring stock and for hot punching slots for inside hangers as well as notching for outside hangers.

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Some eminent historian and student of American government has expressed the opinion that although the Senate is on the

### The Senate Recess

whole composed of men of more mature judgment than is the House of Representatives and proposed measures receive much more complete and learned discussion in the higher body, it is nevertheless true that the record of actual accomplishment of the one body is not so much better than that of the other. This is perhaps a weighty manner in which to refer to a measure like the proposed railroad funding bill, but it does nevertheless seem to apply rather aptly. The Senate recessed on August 24 without having come to a vote on the Townsend bill although the House had already voted favorably on its companion Winslow bill. That the Senate should have failed to pass this measure before its recess is—to say it as mildly as possible—unfortunate. The reasons for its failure to secure action are many, but the most striking one is the fact that discussion continued so long as to use up all the time that was available. The strange part is that one of those senators who did most to prevent action is supposed to be a friend of labor. One of the chief arguments in favor of the bill was that by releasing capital at present tied up, the railroads and the companies which sell to them would be permitted to “resume,” in other words, to start the wheels turning, thereby enabling men now laid off to return to work. Love of discussion is doubtless a great thing, but it is rather difficult to see how a professed friend of labor and of the people can justify discussion and expression of his love for “the people as against the interests” while at the same time his actions are hurtful to the very people for whom he essays to speak.

On August 15 when government control ended, the railways of Great Britain embarked upon what promises to be the

### Britain's Railway Experiment

most interesting period in the history of transportation in that country. The railways have been returned to their owners without government guaranties in spite of decreased earning power and a rate scale so high that general increases are not contemplated. The managements have a difficult problem before them which is complicated, but perhaps also made easier of solution, by the setting up of a tribunal to fix rates sufficiently high to secure fair returns to the companies and by the mandatory consolidation of the roads into four systems, plans for which the carriers must submit by January 1, 1923, or else have the consolidations effected by the government as it sees fit. In the main the system of regulation of rates and services which the government of Great Britain has assumed is not without precedent elsewhere and embodies no features which would be startling to one familiar with the minute details of practice which are regulated by public bodies in this country. The method of settling labor disputes, too, is not a radical departure from precedent. The compulsory consolidation of the railways is the remarkable feature of the new legislation. The amalgamation is on a non-competitive, territorial basis—an entirely different theory from the

voluntary consolidation on the basis of competitive systems provided in our Transportation Act. There are some who expect great economies to be effected by these consolidations. Whether their expectations are justified, time only will show. At any rate, we in America can thank Great Britain for making the experiment, hoping that reliable data may be available from their experience in this direction before any far-reaching steps toward consolidation are taken in this country.

The average citizen of the United States believes that the cost of the fuel for the locomotive together with the wages

### Local Railroad Publicity

of the train crew and ticket agent constitutes the major part of the cost of operating a railroad. Other expenses for supplies, maintenance of way and rolling stock are given small consideration in their calculation. However, the expenses of the store, signal, telegraph, engineering and police departments, with whom the public has little or no contact, are only a few of the necessary costs concerning which the public has little conception. Adverse public opinion was a controlling factor in bringing about the present predicament of the railroads and it would therefore seem to be the duty of every railroad officer, employee and stockholder, to help enlighten the general public on a few of the difficulties now being encountered by the railroads. A short instructive talk before the Commercial Club on the function and expense of a certain department by the local representative will have a broad influence in the community. Officers out on the line should be prepared to speak before gatherings of farmers or business men. The opportunity is not limited to rare occasions, for the doctor, lawyer, farmer and the traveling public in general are keenly interested in the railroad and will listen with interest to any conversation explaining some phase of railroad operation. Such local publicity, properly directed all along the line, will exert an extensive influence on future railroad regulation. The management of every railway should take pains to put in the hands of all of their local officers information which will enable them to discuss the railway situation effectively with those with whom they constantly come in contact.

The delivery of cars by the builders in July was greater than the production of the previous month and the number of

### Car Orders and Deliveries

cars on order and undelivered was reduced, as shown by the Railway Car Manufacturers' Association's monthly statement published elsewhere in this issue. The production of freight cars in July for domestic service as reported by the 26 car building plants was 3,892 and the freight cars on order and undelivered at the end of July was 6,145 cars, as compared with a production of 2,245 and a total of 12,149 on order and undelivered at the end of the previous month. The above figures show that there were 1,047 more cars delivered for domestic service and that the number of cars on order

was reduced 50 per cent during July as compared with the previous month. The reduction of cars on order is due not to increased output of the shops, but rather to a lack of orders being placed for new equipment. The number of cars to be repaired on order and undelivered increased during July. The figures for deliveries of cars during August are not yet available, but orders placed and inquiries for new equipment and repairs in the equipment record of the *Railway Age* show that orders were placed in August for repairs to 6,423 freight cars and inquiries for prices on repairs were made for a total of 3,000 cars. There were only 101 new freight cars ordered in August. Orders placed during August for locomotives totaled 67 for export and only 2 for domestic service. Equipment business at present continues to be principally in orders for repairs rather than in orders for new cars, but even orders for repairs are apparently being delayed until definite action is taken on the funding bill now in Congress.

The steps which are being taken by the Boston & Maine to meet motor truck competition are noteworthy as being among the few examples wherein a railroad has made a determined effort to hold its traffic against the rivalry of the truck. The action taken by the road is not particularly novel or original. It is in the form of a reduction of some 33 1/3 to 50 per cent in what are termed the rates on "express matter, miscellaneous shipments of, contents unknown or not stated," applying to cities and towns within a distance of 50 miles from Boston. These express rates are used by industrial concerns and the local express companies, the manner in which they are used by the latter being somewhat as follows: The local express companies pick up the traffic, let us say, in Boston; the freight is loaded into a railroad car and after its rail movement it is distributed by the express company in the local community. The tariff contains a note saying that the rates "will apply only when an individual car is assigned exclusively to this service." The new tariff was filed August 6 and effective September 10, except in the case of some of the rates which have already gone into effect. One of the typical rates is that applying to Lowell, 28 miles out of Boston, wherein a charge is made of 9 cents per 100 lb. with a \$20 per car minimum; a few months ago this rate was 20 1/2 cents per 100 lb. with a \$15 minimum. The scheme of moving traffic under these miscellaneous express rates is of long standing, but in recent years the motor truck has cut sharply into the business, so that it is estimated that to some of the cities in the local zone 50 per cent and even 80 or 90 per cent has been handled on the highways, the proportion depending in a large measure upon the distance. There seems to be an idea that the Boston & Maine has cut its local less than car-load rates; in view of the manner in which the reduced rates are to be applied this construction of the road's action is hardly correct. It would be a commonplace to say that the progress which may be made under the new rates will be watched with considerable interest.

**Meeting  
Motor Truck  
Competition**

While it is true that many railroads now have a reserve of serviceable locomotives, the large reduction in shop and enginehouse forces of many other roads has made it difficult to do much more than maintain running repairs, to say nothing of accumulating a surplus. Approximately 60 per cent of railroad earnings are spent in wages and when the first order came a few months ago to reduce expenses the most natural step

was to reduce forces and cut labor costs. This policy was logical and to be expected but it has had several serious results. Any reduction of forces below that required for normal shop operation is open to the objection that important repair work must necessarily be put off. This can be classed as deferred maintenance work which, if delayed until business is good, will be extremely costly on account of holding locomotives in repair shops when they should be on the road earning revenue. Additional disadvantages of letting too many men go are the loss of organization and morale and the subsequent expense of hiring new men whose abilities are unknown. As one mechanical officer says: "Too much use is made of the easy way of reducing expenses by making too drastic cuts in the labor force, which results in increased expenses in other ways. For example, a man who was assigned to look after air leaks in a large shop was taken off to save his wages, with the result that the increase in air leaks caused a loss equal to many times his wages in additional coal consumed, wear on air compressors, and low air pressure causing slowing up of the work." It is especially costly when roundhouse forces are cut too much. A broken or defective locomotive part should be replaced or repaired immediately, otherwise it may cause the failure of a far more important and expensive part. If enough men are not left in the roundhouse organization to take the proverbial "stitch in time" the resultant cost due to inadequate maintenance of running repairs will far more than offset possible labor savings.

The stock market two or three weeks ago was apparently trying to reconcile a feeling of pleasure that the June net of the Class I railroads—\$51,641,014—

### Strength in Railway Securities

represented a gain of some \$14,000,000 over May with a trace of disappointment that the June net should have been some \$47,000,000, or 47 per cent, below the 6 per cent contemplated in Ex Parte 74. It is now trying similarly to reconcile its pleasure concerning the reports now appearing showing increases in net for July with disappointment over the failure of the Senate to come to a vote on the railroad funding bill and realization that much of the increase in net for both June and July has been in deferred maintenance. At any rate, the improvement that has taken place—even if it has not been as great as was to have been desired—has been something about which it is worth while becoming interested and things to become interested in seem rather rare in stock market circles at present. The gradual improvement in earnings and the progress made on the funding bill have given the railway shares a strength which industrial shares have not had; we speak with due regard to the temporary decline in railway stock prices following the failure of the Senate to vote on the Townsend bill. The prices of industrial stocks have been experiencing a gradual decline which has now extended with brief interruptions since the fall of 1919. This decline has not affected railway shares in like degree, with the result that the railway and industrial stocks are now nearer together in price than they were. The more present point of interest is that during the past few weeks with the exception of the present week the decline in industrials has been especially pronounced, while on the contrary the railroad shares have advanced several points. The sales of railway shares have not been great enough to show that the rails have regained their old-time popularity. The comparative strength in railway shares as contrasted with the lack of it in industrials shows, however, that the stock market has an open mind on the subject at least insofar as concerns the progress which the railways are making towards restoring their net income to normal levels.

### Locomotive Maintenance in Slack Times

## Rates Higher—Railroad

### Service Costs Public Less

IN SPITE of higher railway rates, both passenger and freight, the people of the United States paid almost \$21,000,000 less for railroad transportation in the first six months of 1921, under private operation, than they did in the first six months of 1919, under government operation.

This was due partly to the fact that a smaller amount of railroad service was rendered, but mainly to other causes. The first half of 1919, like the first half of 1921, was a period of business depression. The depression was more severe, however, in the first half of 1921, and the amount of freight service rendered was 7½ per cent less than in the corresponding part of 1919, and the amount of passenger service rendered almost 15 per cent less. But in spite of the smaller traffic handled the total earnings of the railways in the first six months of 1921 were almost \$320,000,000 more than in the first six months of 1919. How, then, it may be asked, can it be that the public paid less for its railroad service than in the first six months of 1919?

The explanation is very simple. In 1919, under government control, the public paid in taxes for part of the transportation service it received because the railways were under government control and incurred a large deficit. In the first half of 1921 the public paid for its transportation entirely in freight and passenger rates because the railways were under private operation.

The total earnings of the railways in the first six months of 1919 from their rates were \$2,356,685,300, but the government in these six months, according to the estimate of Director General Hines, incurred a deficit of \$296,101,654, which made the total amount paid by the public in both rates and taxes \$2,652,786,984. The various governments, especially the state governments, got back from this amount in taxes paid to them by the railroads \$91,663,514. This made the net cost to the public of the railroad service rendered to it \$2,561,123,470.

In the first six months of 1921 the total earnings of the railways were \$2,676,497,252. The amount of taxes paid by the railways to the national and state governments was \$136,120,810. Deducting this from the earnings makes the total net cost to the public of the railroad service it received, \$2,540,376,442, or \$20,747,028 less than the net cost in the first six months of 1919.

The saving made to the public in the total amount paid by it for railway transportation was made at the expense of very heavy losses to the owners of the railways. The net operating income actually earned by the railways in the first six months of 1921 was less than \$142,000,000. This was about one-third of the net return they received in the first half of 1919 under government control, when their net return was guaranteed by the government. It was about \$95,000,000 less than the mere interest on their bonds, since six months' interest on their bonds is about \$237,000,000.

Although the public actually paid almost \$21,000,000 more for its railroad service in the first six months of 1919 than in the first six months of 1921, and although the necessity of paying a given amount of taxes imposes as much of a burden on business as the necessity of paying a given amount of rates, the high cost of transportation in the first six months of 1919 did not prevent a great increase of general business activity and of railway traffic in the last half of the year.

The present cost of railroad transportation undoubtedly is too high, but it is the railway owners rather than the public who have suffered most from it thus far this year, since, while the public actually has paid less for railroad service than it did in 1919 under government control, the owners of the railways have received many millions of dollars less of net return.

## Fire Risks in Sleeping Cars

THE BURNING of a sleeping car, resulting in the death of five passengers, near Walsenburg, Colo., on the Denver & Rio Grande, on March 16, briefly reported in the *Railway Age* of March 25, page 812 was an unusual disaster which apparently must go into the train-accident record under the head of unexplained. The officers of the road made an investigation, at which were present representatives of the Public Utilities Commission of the state, and a coroner also held hearings; but no formal report has been issued by the coroner or by the commission and, so far as appears, the commission is not going to issue any. Thus, all that the public knows about the tragedy is that it is an unsolved mystery.\*

When a problem involving life and death is enveloped in complete darkness the only recourse is to explore all possible sources of danger. The worst fire risks on passenger trains are exceedingly hard to cope with. One well known danger in sleeping cars is the cigarette. Passengers who smoke in their berths are said to be seen quite commonly by porters who are watchful, and this sad accident may well be taken as the occasion for repeating to employees, and through them to the public, the admonition to bear in mind that, in a sleeping car, a fire, once started, has peculiar horrors; and especially so when, late at night, every person in the car may be asleep. An officer of the Canadian Pacific has lately come out in a newspaper statement calling attention to this risk, and appealing to travelers to be more considerate of their fellow passengers' safety—and of their own. He cites a case where a passenger set fire to his bedding, and disastrous consequences were only prevented by the vigilance of the porter. An operating officer of that road informs us that the company's inspectors find large numbers of window ledges scorched by cigarettes which were placed on them by passengers while in the berths. Had the cigarette in any instance fallen into a blanket and been fanned by a draft from an open window, the possible results can be imagined.

Another dangerous practice is the use of liquid fuel lamps and heaters by passengers. The Canadian Pacific has posted in its sleeping cars and coaches the following notice:

#### AVOID DANGER BY FIRE

"In the public interest, the use by passengers on railway trains of wood alcohol or fuel lamps, 'Therox Fuel Cakes,' 'Sterno' 'Cannel Heats' or other methods of heating fuel is prohibited. Fuel may be heated on the cars by means of the appliances provided by the railway companies."

The notice is, however, ignored by thoughtless and selfish passengers, who use the flame heaters both in wash rooms and in berths. These heaters can be carried in a handbag; and with a locked wash room door, or drawing room door, the passenger can defy the most vigilant porter or trainman. And such passengers are not very likely to realize how easily the sudden stoppage of the train might upset the lamp, set a dressing gown afire and start a panic.

The fire insurance men of the United States at their last convention said that the aggregate of the fire losses in this country in 1920 was \$500,000,000, and the increase in this

\*The train involved in this accident was westbound passenger No. 155. The accident occurred about 11 p. m. in the third of five cars, and the fourth car in the train, the sleeping car "G. C. Jones," took fire while the train was moving at about 25 miles an hour. All five passengers were burnt to death. Two passengers, one in the smoking room window, these were slightly injured. The conductors and porters to have been asleep at the time of the fire. The investigation showed that there is evidence that the car had been "snaked" and it is probable that the occupants were in berths as usual before the cars started. The fire was first discovered by the conductor in the train who, looking back, observed sparks emanating from one of the rear cars and the train was then stopped. By that time the car was a mass of flame and the trainman had difficulty in stopping the train. The conductor and the trainman had difficulty in getting to the head of the train and he and it. Apparently the porter, the only employee in the car, was asleep. The Pullman conductor being in the car, the trainman in the car behind. The investigation held by the railroad company and by the coroner appear to have developed no further information as to the cause of the fire.

huge total year by year sometimes seems to indicate that the universal American vice of carelessness is incurable. This Canadian Pacific poster, however, suggests a simple duty which deserves the attention of all operating officers. To some officers this poster—as indeed do all posters, circulars and other printed matter—will at once suggest what it cannot do; or, in more natural language, will call to mind the lesson of many experiences, that a printed admonition, aimed at everybody in general and at no one in particular, is of value chiefly as a starting point. The main dependence for effective results must be on vigilant, energetic employees.

## Some Facts Bearing on Strike Talk

THERE is much talk at present by railway employees and railway labor leaders regarding strikes. This talk is chiefly due to the 12 per cent reduction in wages ordered by the Railroad Labor Board, effective July 1, and to the Board's recent decision changing the shop crafts' rules regarding overtime. Before any railway employees talk seriously about striking there are certain facts they should carefully weigh.

First, the present situation of railway employees who actually are at work is a very favorable one compared with the situation in which the farmer and other working men find themselves. The average wholesale prices of farm products is only 15 per cent higher than it was in 1913. The average wage per hour of union labor in the United States in the year 1920 was 99 per cent higher than in 1913. Since then wages in almost all other industries, except in the coal mining industry, have been reduced more than in the railroad industry. The average wage per hour of a railway employee is now about 63½ cents, or 125 per cent higher than in 1913. According to the statistics of the Bureau of Labor the average cost of living in the United States in May, 1921, was 80.4 per cent more than in 1913, while the National Industrial Conference Board reported that at that time it was 65.7 per cent more than in July, 1914. It has been declining since then, and the National Industrial Conference Board reported it as being in August only 62 per cent higher than in July, 1914. Therefore, whether we compare his situation with that of the farmer or that of other union working men, or measure it by the changes which have occurred in the cost of living, we are bound to conclude that the present situation of the average railway employee is extremely favorable.

Secondly, there are at present millions of men out of employment in this country and general business continues to be dull. The unemployed include many who have in the past worked on the railways, and who are capable of doing work on the railways again. Seldom has there been a time when it would have been as easy for the railways to have replaced employees who struck as it would be now.

Public sentiment is an important factor in labor troubles. When it is so easy to show that railway employees are very favorably situated with respect to wages and working conditions as it is now, it would be extremely difficult to arouse much public sentiment in favor of railway employees who went on strike. Furthermore, doubtless among the millions who are now unemployed there are not a few who would be glad to accept employment on the railways at even lower wages than those provided for in the Labor Board's recent decision.

The leaders and members of railway labor organizations have at least the average intelligence of the American citizen. They can hardly be unfamiliar with facts such as have been stated in the foregoing, despite all the efforts that radical propagandists have made, and are making, to mislead them. Therefore it does not seem probable that any large class of railway employees will decide that this is an opportune time to strike.

## Chesapeake & Ohio

THE IMPORTANCE of our new export trade in coal, the result mainly of the difficulties of the mine operators in the British Isles, enabled the Chesapeake & Ohio in 1920 to do the largest business in its history, and thereby to increase its net railway operating income over 1919 despite the somewhat formidable increase in operating expenses. The net railway operating income for the year—that is disregarding the compensation for federal operations during January and February, and the guaranty for the guaranty period—was nevertheless not up to the figure reached in 1918, in which year the road's net railway operating income exceeded the standard return; nor was it equal to the standard return itself. The net railway operating income in 1920, as reported in the December monthly report to the Interstate Commerce Commission, was \$11,357,968; this compared with a net in 1919 of \$7,463,955; and a net in 1918 of \$17,103,870. The standard return was \$13,360,000.

In analyzing the operations of the Chesapeake & Ohio for 1920, one is confronted with the fact that although the road for the larger part of the year was probably operated close to its capacity, the directors in May deferred action on the



The Coal Fields on the Chesapeake & Ohio

semi-annual dividend of 2 per cent and at the meetings in June and August still failed to take action. The reason presumably lay not only in the uncertainties of the railway situation, but also in the fact that the Chesapeake & Ohio's traffic, predominately bituminous coal, fell off in rather disastrous fashion in the early part of the year. Another complication was that the Chesapeake & Ohio's corporate income account was kept on a received and not on the accrued basis. The Chesapeake & Ohio has since regained its coal traffic. Comment has already been made in these columns concerning the excellent showing made in June. The road's net railway operating income in the first half of 1921 was \$5,041,319 as compared with \$5,483,768 in the first six months of 1920. In February, which was the low month, there was a deficit of \$556,636; in June, a net of \$1,944,753. It might appear, therefore, as if the directors would be justified in revising their former action in deferring the semi-annual dividend.

The Chesapeake & Ohio in 1920 carried 40,838,116 revenue tons of freight of which 28,625,616 tons, or 70 per cent, was bituminous coal. On this traffic the road secured an average haul of 287 miles. The total ton-mileage for the year was 11,720,030,889 as compared with a figure for 1918, the best previous year, of 10,729,366,446. Much

has been said in these columns of late about the heavy train loads which characterize the operations of the three roads—the Norfolk & Western, the Virginian and the Chesapeake & Ohio—which deliver coal to tidewater at Hampton Roads. In 1920, the Chesapeake & Ohio secured an average revenue train load of 1,131 tons as compared with figures for previous years as follows: 1919, 1,091 tons; 1918, 1,099 tons; 1917, 1,043 tons and 1913, 843 tons. A similarly progressive increase is noted in car loading, the figures being: 1920, 39.1 tons; 1919, 37.7 tons; 1918, 38.2 tons, 1917, 35.6 tons, and 1913, 29.8 tons.

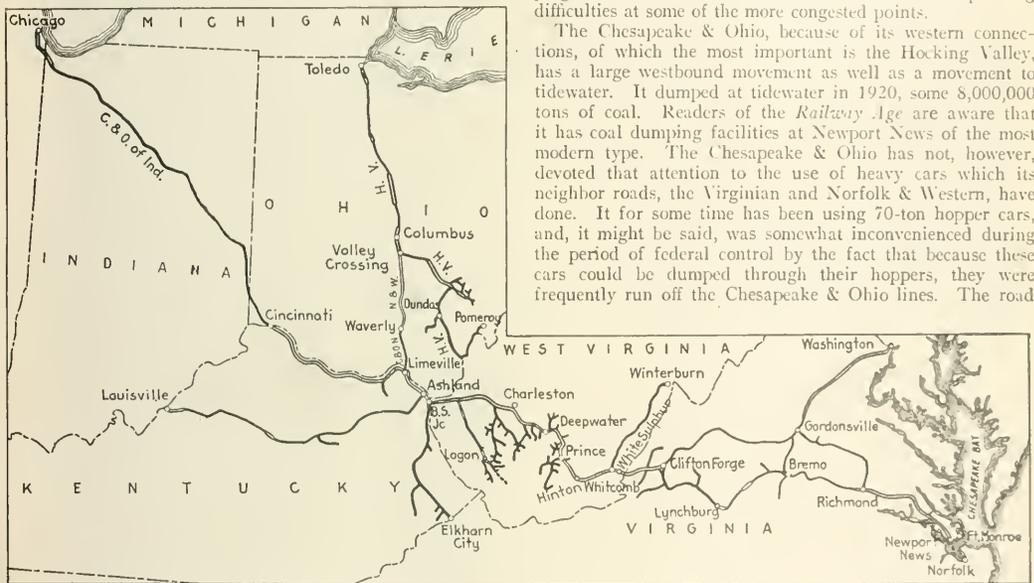
In the sketch of William J. Harahan published in the *Railway Age* of December 10, 1920, at the time of Mr. Harahan's election to the presidency of the Chesapeake & Ohio, considerable was said concerning the characteristics of the property and of the problems which lay before the new president. The opinion was expressed that in the past few years, the development of the Chesapeake & Ohio had been extensive rather than intensive and that the road in the near future would have to devote itself to a program of needed

per cent of the total of the Chesapeake & Ohio's coal traffic.

For many years the Chesapeake & Ohio has had a very open-minded policy in the matter of extending new lines into the coal areas. There is reproduced with this review a map of the lines in the several coal fields served by the Chesapeake & Ohio for the purpose of showing the extensive development which has taken place in recent years. A different symbol is used for those lines which were in existence prior to 1910 and those built since that time. The new construction in the years since 1910 readily indicates why it is that the Chesapeake & Ohio has had such an expansion in its coal traffic as to permit it to carry 17,809,931 tons of coal in the fiscal year ended June 30, 1912, and 28,625,615 tons in 1920.

The Chesapeake & Ohio physically is a high grade road. It cannot be said, however, that it is as yet on a par with the Norfolk & Western which has to meet somewhat similar conditions. The officers of the road would be the last to deny that the property needs more extensive yards and terminals and, in fact, the road now has in contemplation a program which will enable it to overcome some operating difficulties at some of the more congested points.

The Chesapeake & Ohio, because of its western connections, of which the most important is the Hocking Valley, has a large westbound movement as well as a movement to tidewater. It dumped at tidewater in 1920, some 8,000,000 tons of coal. Readers of the *Railway Age* are aware that it has coal dumping facilities at Newport News of the most modern type. The Chesapeake & Ohio has not, however, devoted that attention to the use of heavy cars which its neighbor roads, the Virginian and Norfolk & Western, have done. It for some time has been using 70-ton hopper cars, and, it might be said, was somewhat inconvenienced during the period of federal control by the fact that because these cars could be dumped through their hoppers, they were frequently run off the Chesapeake & Ohio lines. The road



The Chesapeake & Ohio

intensive development. The extensive development referred to included not only the acquisition of the Hocking Valley and the constructions of the Chesapeake & Ohio Northern and the Chesapeake & Ohio of Indiana, but also the manner in which the Chesapeake & Ohio has extended its lines into the coal regions.

The Chesapeake & Ohio receives its coal from four important fields, namely, the New River, the Kanawha, the Logan and the Kentucky. The first supplies a low volatile coal and coal from that region makes up about one-fourth of the total tonnage. Its importance as a source of traffic for the Chesapeake & Ohio has lately been of decreasing importance both actually and relatively to the other fields. The Kanawha and Logan districts supply a high volatile coal. Combined they furnish between 55 and 60 per cent of the Chesapeake & Ohio's total coal tonnage. They are of growing importance and it is in these two districts that the greatest expansion has taken place. The Kentucky field, which also supplies a high volatile coal, makes up about 10

has now adopted the 100-ton gondola car intended primarily for use on the car dumping machines at tidewater and in recent months has been receiving deliveries on an order for 1,000 of these cars.

The Chesapeake & Ohio is fortunate enough not to be confronted by the heavy grades over the Alleghenies which are met with on the Virginian and Norfolk & Western. It does not use power as heavy as the 2-8-8-2 and 2-10-10-2 Mallets which are in use on those roads. On December 31, 1920, however, it owned 193 Mallet locomotives of a total of 571 freight locomotives. These Mallet locomotives had an average tractive effort of 74,350 lb. They made up 21 per cent of the Chesapeake & Ohio's total freight locomotives and 33 per cent of the road's total locomotive tractive power. Thirteen such locomotives were added to the equipment in service during the year. In 1920 the road ordered twenty 2-6-6-2 Mallet locomotives of which, as noted, 13 had been received up to the end of the year. It also had on order five ten-wheel switching locomotives and

the 1,000, 100-ton cars previously mentioned. The financing of this equipment was assisted through a loan from the revolving fund of \$3,759,000.

Referring to the corporate income account for 1920 in which consideration is taken of the standard return for January and February when the road was still under federal control, and the guaranty for the guaranty period, it will be noted that the property had a gross income of \$16,160,773. This includes not the entire sum due on the guaranty but only an advance of \$2,700,000. The gross income for 1919 was \$15,282,362. The net income for 1920, after the deductions of interest, etc., was \$5,986,458 as against \$5,774,169 in 1919. Dividends of 4 per cent on the common stock were paid in both years, totaling \$2,511,264. Enough has been said above to make it appear that as far as the 1920 results were concerned, the Chesapeake & Ohio would have been justified in declaring its semi-annual dividend of 2 per cent this year. It is apparent, however, that the voice of conservatism ruled, it being decided best to keep the finances of the property well in hand until general conditions had taken on better aspects than were then apparent.

Operating results in 1919 and 1920 were as follows:

	1920	1919
Mileage operated	2,519	2,506
Freight revenue	\$72,774,680	\$53,073,002
Passenger revenue	11,776,038	14,158,153
Total operating revenue	90,524,185	71,475,016
Maintenance of way expenses	13,233,158	11,608,515
Maintenance of equipment	25,504,674	18,114,492
Traffic expenses	728,632	471,582
Transportation expenses	38,075,751	38,766,158
General	1,899,489	1,542,271
Total operating expenses	79,859,097	60,878,529
Net from railway operations	10,665,088	10,596,494
Taxes	2,997,230	2,485,078
Railway operating income	7,664,730	8,105,846

The corporate income account is as follows:

	1920	1919
Net income, including compensation for January and February, 1920, and net operating income of company from March to December, 1920, inclusive	14,878,831	14,588,579
Interest from investments and accounts	1,759,489	1,067,568
Gross income, including other	16,160,773	15,282,362
Net income	5,986,458	5,774,169
Dividends, common 4 per cent	2,511,264	2,511,264

## Hocking Valley

THE FACT that nobody seems to want to buy coal any more, partly because with the business depression it is not needed for industrial purposes and partly because those who want it for household purposes are apparently waiting until next winter before they buy it, has made the going rather hard of late for the Hocking Valley, 75 per cent of the tonnage of which is bituminous coal. In the first four months of this year the Hocking Valley carried from one-half to two-thirds as much traffic as it carried in the same four months of 1920, although since that time conditions have considerably improved. From January 1 to June 30, 1921, the road has had, according to the June monthly report to the Interstate Commerce Commission, an operating deficit after taxes and rentals of \$480,365, as against a net railway operating income in the first six months of 1920 of \$868,834. The directors of the Hocking Valley some months ago deferred action on the semi-annual dividend of 2 per cent. Under the conditions existing at the time it is difficult to see how any other procedure would have been advisable.

The Hocking Valley in 1920 was no exception to the general rule of increases in gross, greater increases in expenses and resulting decreases in net. Its revenue freight tonnage in 1920 totaled 15,285,862 and its revenue ton-mileage, 1,974,051,120, increases of 21.5 and 31.4 per cent, respectively, over 1919. The total revenues in 1920 totaled \$17,101,493, an increase of 46.7 per cent over 1919. As against this increase in revenues, there was an increase in expenses of 63.2 per cent. The operating ratio in 1919 was 83.8 per cent; in 1920, 93.2 per cent.

The Hocking Valley is controlled through majority stock ownership by the Chesapeake & Ohio. It does not connect directly with the C. & O. but receives from it large quantities of coal bound for the lakes, this traffic moving over the Chesapeake & Ohio Northern to Waverly, Ohio, and thence over the Norfolk & Western to Valley Crossing. The Hocking Valley itself originates a large tonnage of coal on its own lines from the mines reached in southern Ohio, but the fact remains that it is the most important outlet to the lakes and to the west for the mines in the Kanawha, Logan and Kentucky districts on the Chesapeake & Ohio, outranking by a considerable margin the importance of the Chesapeake & Ohio of Indiana and other connections at the western end of the Chesapeake & Ohio.

The Hocking Valley in 1920 handled 11,567,593 revenue tons of coal, of which it originated 6,150,246 tons and received 5,417,348 tons from connections. Of this tonnage received from connections the larger part was received from the Chesapeake & Ohio. The Hocking Valley has generally been regarded as of value to the Chesapeake & Ohio more particularly because of the dividends received (up to this year) from the C. & O.'s holdings of Hocking Valley stock; it is not so generally realized how important the Hocking Valley is to the Chesapeake & Ohio because of its being in reality an extension of the Chesapeake & Ohio's lines.

The operations of the Hocking Valley, due to the predominance of coal traffic, might naturally be expected to be characterized by heavy train loading. The road, however, has gone a bit further than that; it has so worked out its problem that its net tons per train in 1920, including both revenue and non-revenue freight, were the highest of any road in the eastern district, with but two exceptions. The road's net tons per train in 1920 averaged 1,474, being exceeded only by the Pittsburgh & Lake Erie, 1,531 tons, and the Bessemer & Lake Erie, 1,764 tons. The Hocking Valley's average exceeded the Chesapeake & Ohio's 1920 figures of 1,204; the Norfolk & Western's of 1,178 and the Clinchfield's of 1,077, the latter three roads, of course, being in other districts. The revenue train load of the Hocking Valley in 1920 was 1,516 tons; this compared with a figure for 1919 of 1,465 tons. The average revenue tons per loaded car in 1920 were 46.4; in 1919, 43.2 tons.

The Hocking Valley of late has been undergoing considerable in the way of development to increase its capacity and make for more efficient operation. The most important feature of this development is the installation of double track on the main line from Columbus to Toledo. During 1920, nine miles of additional second track was placed in service on the Toledo division between Meredith and Owens and construction of 6.7 miles additional between Marion and Moral is under way. During the year the road acquired 20 Mallet and 10 Santa Fe type locomotives and 500 coal cars.

The operating results in 1920 as compared with 1919 were as follows:

	1920	1919
Mileage operated	350	350
Freight revenue	\$14,616,677	\$9,703,937
Passenger revenue	1,159,410	1,228,282
Total operating revenue	17,101,493	11,654,517
Maintenance of way expenses	2,028,221	1,329,868
Maintenance of equipment	6,627,605	3,935,248
Traffic expenses	118,304	72,200
Transportation expenses	6,692,739	4,109,051
General expenses	476,925	322,538
Total operating expenses	15,941,435	9,766,372
Net revenue from operations	1,160,058	1,888,145
Taxes	969,614	722,153
Operating income	188,799	1,161,828
Net railway operating income	1,577,963	1,258,416

The corporate income account is as follows:

Gross income	\$2,140,889	\$2,702,194
Interest on debt	1,733,646	1,460,491
Total deductions from gross income	1,795,093	1,672,326
Net income	345,796	1,029,868
Dividends (4 per cent)	439,980	439,980
Balance to credit of profit and loss	9,689,154	9,940,259

## Letters to the Editor

### Henry Ford, The "Miracle Man"

NEW YORK, N. Y.

TO THE EDITOR:

Why not tell the truth about Henry Ford and his claim of having "worked a miracle" in his six-months' operation of the 400-mile Detroit, Toledo & Ironton Railroad? Which truth is: Mr. Ford has perpetrated a gigantic hoax upon the American public; he has simply executed a very shrewd piece of business buccaneering at great profit to himself of money and self-advertising, but a confidence game that is dangerous to general prosperity and exceedingly costly to other railroads and damaging to the prospect of early rehabilitation of the country's great transportation machine and restoration of the pre-war railroad situation—i. e., for the public the greatest quantity and the best quality of railroad service at the lowest cost ever known anywhere.

In other words, Mr. Ford, by using a colossal international manufacturing concern as a feeder and a club to fatten a tiny 400-mile railroad, threatens serious damage to 250,000 miles of railroad serving the whole country because of the spectacular misrepresentation that, by reducing freight rates, raising wages and shortening hours, together with a few more grandstand plays, he has produced such "efficiency" as to turn a decrepit and losing railroad into a prosperous and popular one within six months. The danger lies in the fact that he is "getting away with it."

The general public today actually believes that Ford has performed a "miracle" (how we love our illusions), despite the explanations of the simple facts. This, because Ford's spectacular affirmative claims "out-punch" the negative explanations, which latter merely prove that there is nothing at all to the story.

Mr. Ford's action in pouring his vast tonnage into his own little line, and then extorting equal or greater tonnage on return trips, from connections which are in competition for this business, is not even new. Andrew Carnegie, a greater business genius, did the same thing 40 years ago when he bought a small railroad which crossed trunk lines and used it as a club to extort differentials from other lines.

If Mr. Ford reduces freight rates 20 per cent on his jerk line, the reduction simply would be turned into the coffers of his own Ford Motor Company and his son's Fordson Tractor Company; if such a reduction by his little line were to precipitate a reduction of even one per cent on all the railroads of the nation, he would profit personally through reduced payments to other lines on his own business.

Approximate figures show that Mr. Ford pays something like \$20,000,000 annually for transportation. About \$5,000,000 of this amount goes to the Detroit, Toledo & Ironton and \$15,000,000 goes to other carriers. A 20 per cent reduction in freight rates would mean a decrease of \$1,000,000 in the earnings of the Detroit, Toledo & Ironton road, but this would not be a loss to Mr. Ford as the amount would remain in his manufacturing business. On the other hand, a 20 per cent reduction on the \$15,000,000 which he pays annually to other carriers would mean a gain of \$3,000,000 to Mr. Ford, as this amount would remain in his industrial enterprises instead of going to the carrier companies which now receive it.

Thus, Henry stands serenely at the receiver's end and gets the money both coming and going, while his publicity propaganda works night and day and the people throw up their hats and marvel at the philanthropic "miracle man."

Radical disturbance of the railroad situation at this critical period of its early convalescence would be a capital crime

against American prosperity. Still, Ford, in his passion for notoriety, is making just those moves calculated to disrupt and retard recovery, confusing the situation and misleading the public.

What Ford's propaganda is calculated to do—if successful in deceiving the public to the fullest extent—is to wreck our entire transportation system, which would precipitate a business calamity.

For this Ford is given a few slaps on the wrist in the form of disputations and explanatory editorials, while the news headlines of our press carry proclamations of his successive new claims.

Ford once had the militant American public all excited about his "one-man submarine" or "undersea flivver" by which he claimed he would make impotent and worthless the millions of dollars put into armor plate and the great guns of the super-dreadnaughts. This vehicle of publicity he soon discarded in exchange for the more tangible "Peace Ship," Oscar II, with which he transported a cargo of "nuts" to "get the boys out of the trenches by Christmas." The super-dreadnaughts are still being built and larger than ever before, while the boys stayed in the trenches, and would have been still longer in them, and perhaps even brave losers to the Central Powers' military machine, had it not been for the food and munitions which they never could have gotten without the ready war-service of the American railroads, built up by the American brains, energy and character which Mr. Henry Ford now challenges and insults.

A RAILROAD VETERAN.

### Epes Randolph, An Appreciation

TO THE EDITOR:

Epes Randolph, president of the Southern Pacific Railroad of Mexico and of the Arizona Eastern, a brilliant field marshal of the Huntingtons and of Harriman, is dead. The unique career of this remarkable man is rich in professional interest and in high-minded inspiration for younger men. Frail of body, but big of brain and warm and stout of heart, he for nearly thirty years worked while fighting off tuberculosis which gripped him in the prime of life. It has been well said that if God Almighty had given him lungs equal to his brains and heart, no railroad men of his generation would have gained wider fame.

Born and reared in Virginia, a descendant of Pocahontas and John Rolfe, marked with the high cheek bones of the Indian, his boyhood and youth fell in the trying period of civil war and reconstruction. His early education was classical before it was professional. His reports and correspondence were models of clear and convincing expression. The great engineer, and America never had a greater, was always blended with the cultivated, modest gentleman, one so truly aristocratic that he was democratic. Magnetic and courtly, he was born to lead, to lead far and to lead well.

His early railway work was as a locating and construction engineer in the south and southwest. In the late seventies when Collis P. Huntington was building the Southern Pacific, Epes Randolph ran the location west from San Antonio while William Hood ran the location east from California. They met at Devil's River, Texas. Soon afterward, Randolph during months of hardship, sought for Huntington a feasible rail line from Texas through Mexico to the Gulf of California.

In the eighties and early nineties Randolph was the Huntingtons' engineering and operating representative in Kentucky, serving with the Chesapeake & Ohio, the Kentucky Central and the Newport News & Mississippi Valley. When Collis P. Huntington was told that the Chesapeake & Ohio could not find a bridge entrance into Cincinnati, he replied, "I have a man who can do it." Randolph built a bridge with a switch back approach. Randolph had become a lead-

ing bridge engineer and built numerous other bridges, including the Louisville-Jeffersonville bridge over the Ohio.

When the Huntingtons and the Vanderbilts some thirty years ago planned a transcontinental system, which never eventuated, Epes Randolph, only turning forty, was selected to head the merged lines. Collis P. Huntington once broke in on a complaint of undue severity toward a subordinate with, "I understand, you mean that I object to these things while I wink at my pet, Epes Randolph, playing poker. Now, when you can do as big work as Epes Randolph you may play poker too."

Unsparring of himself Randolph's health was undermined by hardships in the field and by the air being shut off from a bridge caisson that he was inspecting. One Saturday night the city council of Newport, Ky., passed an ordinance contemplating some speedy track construction by the Louisville & Nashville. Sunday morning at daylight he baffled L. & N. men found Randolph and his gangs on the ground with several hours start. Rain and sleet froze Randolph to his saddle but the track was built.

Taken to California in the early nineties, presumably to die, Randolph lived to make the desert his own and his name a household word in the Southwest and in Mexico. Camped on the desert and nursed by his devoted wife—born Eleanor Taylor of Winchester, Ky., who survives him—sufficient strength returned to warrant acceptance as superintendent of the Tucson division of the Southern Pacific. No executive pronouncement was needed to make him general manager of his division. Whatever his title or wherever his work, Randolph was ever the idol of the rank and file.

The vanishing frontier welcomed his sublime courage and his peerless leadership. His was a charmed life. It was a tenet of his railroad belief that speed never causes an accident, it merely exaggerates the consequences. If other cars went down the bank, his held the rails. If bad men or Indians shot up a town or camp, the cool and smiling Randolph was not hit. He bore one scar from a wound received while a young militia officer repelling a mob in Alabama.

Six busy, happy years as superintendent rolled by and H. E. Huntington, another great developer, took Randolph to Los Angeles to build and operate the Pacific Electric whose 700 miles give the Southern Pacific the greatest trolley traffic feeder in the world.

In two years the "bugs," as Randolph called his germs, again got too busy and back to Tucson went Randolph, this time to handle the side lines, since became the Arizona Eastern. Randolph headed off the Santa Fe from the Phoenix & Eastern and kept the cañon of the Gila River for a low grade line for the Southern Pacific.

Randolph forestalled the acquisition by the Phelps-Dodge interests of the thirty-five miles of railway from Naco on the border to the big copper camp at Cananea, Sonora. Without authorization he bought the road one Saturday afternoon and drew by wire on E. H. Harriman for one million dollars for the initial payment. Harriman, who had succeeded Huntington, found a lieutenant after his own heart and quickly fell in with Randolph's monumental undertaking, the Southern Pacific of Mexico, to be a part of a west coast Pan-American line from Canada to Patagonia. Randolph built nearly a thousand miles of line in Mexico and added it to the old Sonora Railway. Revolutions have left an unconstructed gap of a hundred miles south of Tepic. When stabilization comes to Mexico this longest branch line in the world will become a through route and in earning power a second Atlantic Coast Line.

Great as are these monuments of engineering and executive achievement, Epes Randolph will be longest remembered as the president of the California Development Company, the creator and savior of the Imperial Valley. He it was who built the dam that by forty-eight hours saved the Imperial Valley from the great flood of the Colorado river. Living in his car and suffering from occasional hemorrhages, his in-

domitable spirit drove the work. One day he found his men struggling with a derailed car. "Throw it in, what better filling do you want?" he ordered. "We cannot stop this work just for cars." Years later during a freshet in the Colorado he directed by wire from Tucson the felling of trees to form mattresses which eddied the current away from weak spots in the banks, a remarkable example of long distance engineering.

Epes Randolph as a railway executive had a profound and scientific knowledge of traffic, finance, politics and statesmanship, as well as of operation and engineering. Bred in the Huntington school of political manipulation, he was the first to see and to meet the changed order of things. He was the first to invoke the referendum against full crew and trainmen's qualification laws. He had the highest trait of the executive, the ability to delegate authority and to trust responsible subordinates.

Courage, brains, integrity, humor, cheerfulness, courtliness and consideration are inherent attributes that can be cultivated and made an unusual and invincible combination. Happy and inspiring was their ripe fruition in the knightly Randolph. A FORMER STAFF OFFICER.

## Are Barge Lines Profitable?

St. Louis, Mo.

TO THE EDITOR:

The following clipping from a St. Louis paper is a good illustration of a half truth, so told as to completely misinform lay readers, and in fact all readers who are not specially interested in the subject matter and do not have more or less complete definite information on the subject.

WASHINGTON, August 9.—The fact that the Mississippi barge line has made \$175,000 profit in the past four months aroused the enthusiasm today of Representative Cleveland A. Newton of St. Louis, one of the foremost inland waterways advocates in Congress and a thorough student of this form of transportation. "This has proved all our arguments," said Newton. "The barge line is making money and the railroads are not, even though the barge line is charging only half what the railroads charge. If the barge line can make this showing, with the difficulty it has in adjusting new machinery, it certainly shows the public what benefit can be gotten from this kind of transportation."

Unquestionably there have been periods and individual trips when the receipts from the operation of the barge lines upon inland rivers have exceeded the out-of-pocket cost of operation, but these figures beyond a question do not take into account the huge overhead expense, insurance of vessels—and possibly cargoes—repairs, depreciation, and all of the other items which a true balance sheet must take into account and show before the man managing the enterprise can determine whether or not it is remunerative. In other words, all statements which I have seen made by the proponents of barge line transportation are unfair to the government and to the taxpayer for the reason that their statement of income and outgo is not complete, accurate and trustworthy.

If the barge lines are profitable when a complete audit of all just and reasonable charges against the business are made, then the government has no business in that business, but it should be turned over to private steamboat companies for their development. If, however, it is unprofitable I am wondering why we should be taxed to take care of the freight which is being transported by certain shippers by barge line to their manifest financial advantage.

It seems to me that the business of transportation should be conducted along the most economical lines. If that can be done by river transportation, then it should be done, although it has seemed to me that river transportation if it is profitable and advisable should be confined to bulky freight which requires a larger amount of space and upon which the time of delivery is not the important factor. If that could be arranged it would relieve railroads of the necessity of transporting those commodities which congest its line and yield a small revenue, enabling them to handle with reasonable expedition, high grade freight, merchandise, etc., which carry the higher rates and in which the time of delivery is most important. S. A. E.

# Electrification Progress on Italian Railways

A Number of Hydro-Electric Plants Are Under Construction, as Fuel Is Expensive and Hard to Obtain

By Giovanni B. Santi  
Engineer, Italian State Railways, Rome, Italy

SINCE FUEL OIL is not produced in Italy, the railway companies, particularly the state railways which operate most of the mileage, and all of the lines where the traffic is heavy, have been engaged for some years in substituting electric traction for steam motive power. The electric power

generators. These difficulties, however, were soon overcome to a large extent.

On the Valtelline line the 3-phase system was adopted with a low frequency of 15 cycles and 3,000 volts. The first installation was of an experimental nature and all the details were constructed in a very economical way, particularly as regards the contact line apparatus. Owing to the favorable results of the trial, some parts of the apparatus were strengthened later and at the present time, after a 20-year period of operation, the whole plant is running smoothly. The power is generated at 15 cycles in the power station at Morbegno on the river Adda, close to the electrified line. The copper contact wires are small, conductors having a cross-section of 50 sq. mm. being used for each overhead phase, the third

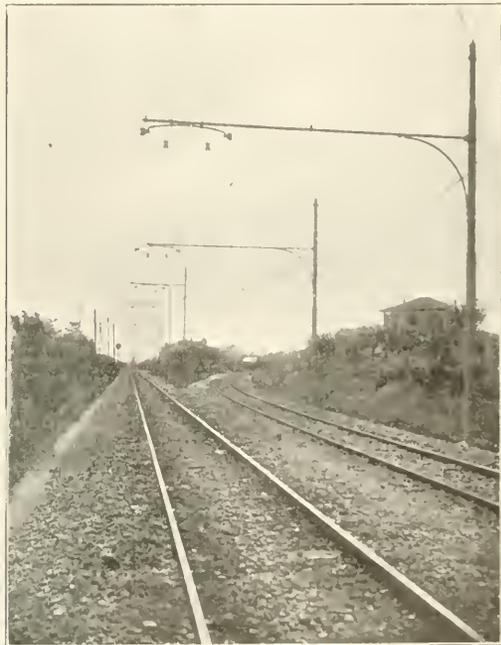


Line from Lecco to Colico, Showing Wooden Poles Used in 1901 for Supporting the Contact Wires

used for this purpose is secured from a number of hydro-electric power plants, and at the present time this number is being increased.

## The Development of Electric Operation

The first trial of electric traction in Italy was made in 1901 and in that year the Milan-Varese line and the Valtelline line were electrified. The points between which electric operation was begun were La Lecco-Colico-Sondrio and Colico-Chiavenna. The electrification of the Milan-Varese line was carried out with a direct current, third-rail, using 650 volts. This line has a double track and is 36.7 miles long. It is still being worked with the same power plant which was installed in 1901 and enlarged in 1912 to cope with the increase of traffic. The direct current, third-rail system, gave some trouble during the first month of its operation, particularly on account of the overheating in the



The Monza-Lecco-Colico Line, Showing the New Contact Wires Supported by Tubular Poles of the Mannesman Type

phase being formed by the rails. The poles supporting the catenary were made of wood with transversal suspension as shown in one of the illustrations, except on small sections where two longitudinal types of suspension were tried which were proposed by the firms of Ganz and Westinghouse. The wooden poles were later removed and replaced by Mannesman tubular construction, also illustrated.

The transformer stations are of low power and are ar-



Map of Italian Railways, Outlining the Electrification Program

ranged in grades along the line with an average distance of about 6.2 miles between them. In 1901, the time at which the Morbegno plant was fitted up, it fulfilled the conditions of maximum economy on the total costs, consisting of interest and depreciation of the plant and cost of maintenance and operation. These conditions of maximum economy have now

Recent Installations Applied to Lines

With Greatest Grades and Traffic

The new installations were made on lines where the traffic was very heavy. Between the year 1910 and the year 1914 the two Giovi lines were electrified. These two lines, which connect the port of Genoa to the inland country across the Apennine mountains, encountering grades of 3.5 per cent, have the largest amount of traffic of all of the Italian roads. The Savona-Ceva line, connecting the port of Savona with the inland country, also crosses the Apennines at 2.5 per cent grade. The Susoleno-Modane line crosses the Alps. This line has a tunnel 8.45 miles long at an altitude of 4,134 ft. above sea level. It is the chief line of communication between Italy and France.

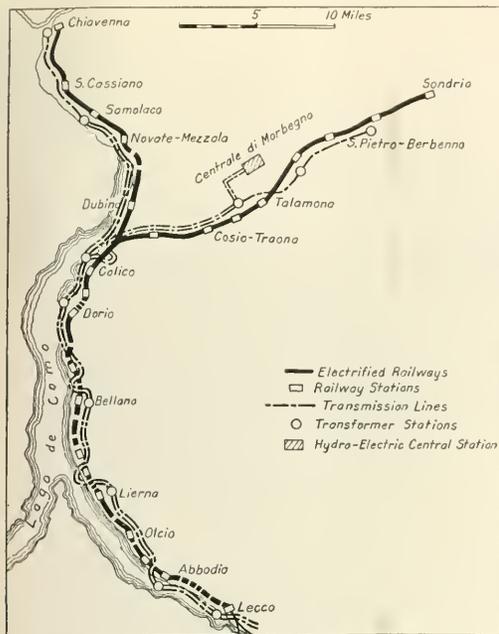
This group of electrified lines in the last few years has carried four times the amount of the average traffic of all the Italian railways. In the statistical year of 1917-1918, for instance, the average amount of traffic per mile of line on the whole of the State Railway system was about 2,060,000 ton-miles, while on the group of electrified lines mentioned above, the amount was about 8,800,000 ton-miles.

In 1916 the coast line between Savona and Genoa was electrified. This line connects the mountain lines referred above to, namely, from Savona to Ceva and the Giovi lines, and allows better use to be made of the apparatus and rolling stock on these lines.

Work in Progress

The electrification of the Pinerolo-Bricherasio-Torre Pellicce and Bricherasio-Barge lines, 18.6 miles, will also be completed shortly. This is a continuation of the Torino-Pinerolo line, already electrified. The Torino-Chieri line, 13.7 miles, of which eight miles is double track, has been operating by electricity since March, 1921.

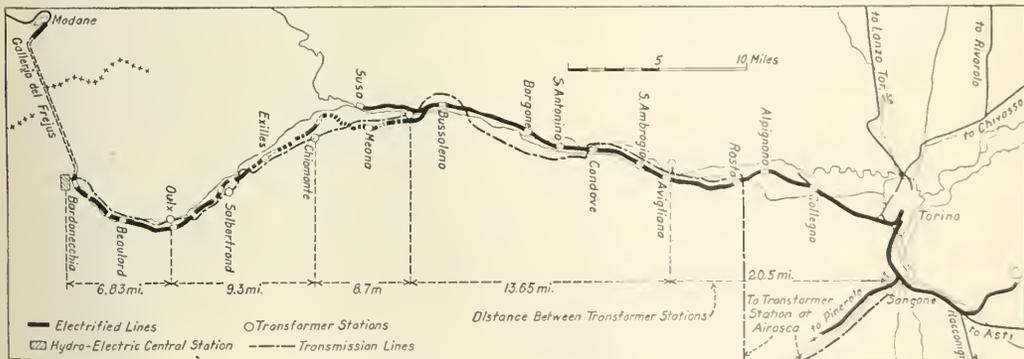
The power transmission lines and the electric transformer stations of the Torino-Pinerolo line were designed to supply either the Torino-Bussoleno line or the other lines which start from Torino, and which are at present in process of being electrified. The European war delayed the work of electrification, although it was never stopped completely, and immediately after the declaration of peace the electrification program was actively renewed. It was possible, therefore, to begin the electric service on the Torino-Bussoleno and Bussoleno-Susa line, 33 miles, of which 28 are double track,



Lines Electrified in 1901 from Lecco to Chiavenna and Sondrio

greatly changed, especially on account of the increase of wages and the introduction of the eight-hour day.

The trial on the Valtelline line at once gave satisfactory results. It revealed great advantages in the three-phase trac-



Electrified Line Put in Operation in 1919

tion system, particularly in regard to heavy traffic. This system was adopted, therefore, in the future electrification of the main lines of the State Railways, although alterations were made in all the details in order to render the equipment more technically perfect and more economical, particularly with regard to the maintenance and operating costs.

towards the end of 1919. In this way the Frejus electrified line (Bussoleno-Modane) and the Torino-Pinerolo were linked up awaiting the time when the whole of the electrified lines in Piedmont will be connected to those in Liguria, when the electrification of the Torino-Ronco line is completed, which should be at the end of 1921.

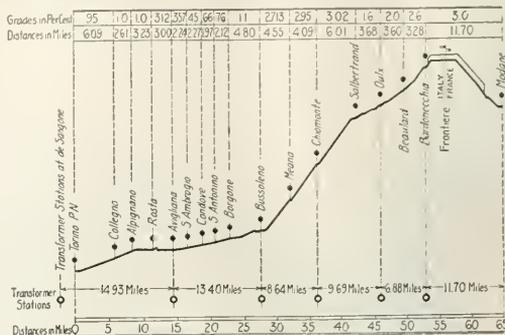
The electrification of the Voghera-Alessandria, Tortona-Nova and Tortona-Arquata lines, which will give access to the Giovi line, and the line from Milan to Chiasso and Switzerland will be completed in the beginning of 1922 at the latest. Nearly all of this work was agreed upon and commenced before the war. It is expected, therefore, that at the end of 1921 the electrified portion of the State Railways (that is the state-owned main lines), will be about 435 miles. As many of the lines have double track, the total length of the electrified section, including junction lines, freight yards, etc., will be about 808 miles. A summary of the more important features of the lines already electrified up to May, 1921, is given in the table.

To these state-owned lines must be added about 124 miles of smaller electrified lines having standard gage track, which are operated by private companies. About 310 miles of narrow gage electrified lines are also operated by private companies.

**Plans for the Future**

The new work for extending electric traction in Italy, which was decided upon before the war by the State Railways in agreement with the government provides for the electrification of about 2,800 miles of the State Railways. These lines are shown on the full page map. They have been chosen from those where the most coal is consumed on account of the steep grades and very heavy traffic. The total length of line operated by the State Railways is 8,700 miles and the annual consumption of coal is about 2,500,000 tons.

in Central Italy. There are reservoirs in these hydraulic stations to provide a reserve of water for other stations in



**Profile of Electrified Line Between Torino, Italy, and Madane, France**

time of water shortage. The power which can be generated in these hydraulic plants is as follows:

Station at Meleze:	26,000,000 kw. hr. per annum
Station at Rochemolles:	40,000,000 kw. hr. per annum
Station at Sagittario:	73,000,000 kw. hr. per annum
Station at Reno and Limentre:	82,000,000 kw. hr. per annum
<b>Total</b>	<b>221,000,000 kw. hr. per annum</b>

TABLE I—MILEAGE AND CHARACTERISTICS OF THE IMPORTANT ITALIAN ELECTRIFIED RAILWAY LINES AS OF MAY, 1921.

Lines Electrified	Length of Electric Lines				Total	Length of Electrified Track (per cent)	Maximum Grades (per cent)	Minimum Radius of Curves	Weight of Rail (lb. per yd.)	System Used		
	Outside Tunnels		Inside Tunnels							Voltage	Current	Frequency
	Single Track	Double Track	Single Track	Double Track								
Lecco—Colico—Sondrio	40.	.....	.....	.....	65.45	76.2	1.7	72 and 55	3,400	3-phase	15 to 16	
Colico—Chiavenna	14.7	.....	1.5	.....	.....	.....	.....	.....	.....	.....	.....	
Lecco—Monza	18.6	4.3	.3	.....	23.2	39.7	1.2	1,640 ft.	72	3,400	3-phase	15 to 16
Milano—Varese—P. Ceresio	8.6	36.4	.25	.....	45.25	90.7	2.0	985 ft.	72	650	D. C.	.....
Torino—Bussoleno—Modane	16.3	12.8	4.5	37.3	64.9	110.	3.0	1,148 ft.	101	3,900	3-phase	16 to 17
Torino—Pinerolo	18.3	4.7	.....	.....	23.	37.9	1.3	1,969 ft.	72	3,700	3-phase	16 to 17
Savona—Ceva	22.6	.....	6.	.05	28.65	43.4	2.5	1,312 ft.	101	3,700	3-phase	16 to 17
Ronco—Bivio Rivarolo (via Busalla)	.....	16.9	.....	2.9	.....	.....	.....	.....	.....	.....	.....	.....
Campasso—Bivio Rivarolo	.....	1.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Campasso—Bivio Succursale	.....	1.7	.....	.....	16.9	49.6	3.5	1,312 ft.	101	3,700	3-phase	16 to 17
Campasso Sui Scali Maritt.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Genova B.—S. Piardarena	.....	2.7	.....	1.9	.....	.....	.....	.....	.....	.....	.....	.....
S. Piardarena—Ronco (via Mignanego)	.....	7.2	.....	7.9	19.7	57.5	1.6	1,312 ft.	101	3,700	3-phase	16 to 17
S. Piardarena—Scali Maritt.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. Piardarena—Savona	19.6	.....	5.2	.....	24.8	31.8	0.7	886 ft.	92.5	3,700	3-phase	16 to 17
Torino—Chieri	13.4	.....	.....	.....	13.4	19.4	1.0	1,640 ft.	64 to 72	3,700	3-phase	16 to 17
Bussoleno—Susa	4.7	.....	.....	.....	4.7	5.2	1.0	1,640 ft.	55	3,700	3-phase	16 to 17
<b>Total</b>	170.8	82.1	27.0	50.05	329.95	561.4	.....	.....	.....	.....	.....	.....

The electrification of 2,800 miles, decided upon in the May, 1920, program, will permit of a saving of 1,300,000 tons of coal, or nearly half of the total amount required for running the entire system. In its place, 600,000,000 kw. hr. per annum will be consumed and this means that power stations will have to be provided with a capacity of 150,000 kw.

**Most of the Electric Power Will Be Purchased**

The power as a rule will be bought from private power distribution companies, but in order to speed up the work the State Railways have already commenced to build large hydro-electric installations, which will operate in parallel with the power stations of the private companies. These hydro-electric installations are those of Meleze and Rochemolles in the upper Piedmont section near Bardonecchia; Suviana and Castrola on the river Reno and Limentre near Bologna, and Anversa on the river Sagittario near Sulmona

It will be possible to generate in the stations at Reno and Limentre, when all the water is used, 127,000,000 kw. hr. more, making a total for all the stations now being built of 221,000,000 plus 127,000,000, or 348,000,000 kw. hr. These figures represent the limit of the annual power available from power stations. Of course, it will not be possible in practice to use this power in full. It must be taken into consideration, however, that the stations will be connected with other industrial power stations, and it will be possible, therefore, to transmit and use the power as it is required. Almost all of these stations are provided with reservoirs of water, and it will be possible to regulate the amount of power taken from individual power stations connected in parallel, so as to make the best use of the entire power system and get a maximum of power with a minimum waste of water. It is expected that the percentage of energy which is available will be about 80 per cent of the total.

# Labor Organizations Again Spread Strike Threats

## Train Service Brotherhoods and Shop Crafts Announce Preliminaries to a Walkout

**P**RESS REPORTS of the activity of railroad labor organizations during the past week have given rise to the wide circulation of strike rumors. What has actually happened may be summarized as follows:

The Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Brotherhood of Railroad Trainmen, the Order of Railway Conductors and the Switchmen's Union of North America asked the carriers, through the Association of Railway Executives, to definitely state their position on three requests: (1) to restore the rate of pay in effect prior to the 12 per cent cut of July 1; (2) to withdraw all requests for further wage decreases, and (3) to withdraw all requests for the elimination of time and one-half for overtime. These demands were all rejected by committees representing the carriers in western, eastern and southeastern territories.

Upon receipt of the answers, brotherhood leaders, in accordance with instructions received from their membership following a meeting in Chicago on July 1, met at Cleveland, Ohio, to draw up a ballot for submission to the men. After several days' conference it developed that, although these five organizations agreed that their policy in the future should be put squarely to the membership of the various organizations by ballot, they did not agree on the form in which the presentation to the men should be made. The reports which emanated from the conference room indicated that the Brotherhood of Railroad Trainmen would not agree on the conservative statements to accompany the ballot. As a result four of the organizations prepared a joint ballot and the Brotherhood of Railroad Trainmen prepared its own.

The joint ballot said if the membership rejected the wage reduction "it is to be understood the men will be permitted to withdraw from the service of their respective companies unless satisfactory settlement can be reached under the laws of the organization."

The statement accompanying the trainmen's ballot reads in part:

"All members and others are hereby notified that if the membership vote is in lawful necessary majority to leave the service rather than continue service under the reduced wages now in effect, they will on any or all lines where such vote is secured (with the sanction of the general grievance committee) be given necessary authority by the president of the grand lodge. The president of the grand lodge will not (with the information given above) undertake to prevent the wishes of the men as expressed in their ballot from being adhered to."

The ballots of these organizations will be sent to the men before September 1, and it has been estimated by union officers that it will require a full month or more thereafter to complete the referendum.

### Federated Shop Crafts Issue Preparedness Bulletin

The Railway Employees' Department of the American Federation of Labor, comprising the Federated Shop Crafts, has already taken a referendum on the recent wage cuts, and although no official announcement has been made of the result of this vote it has been freely intimated that the returns are overwhelmingly in favor of a walk-out. On top of this vote came the order of the Railroad Labor Board providing that railway employees regularly assigned to necessary Sunday and holiday work should not receive punitive overtime on these days. This decision, together with a summary of the

dissenting opinion which was handed down at the same time by A. O. Wharton, member of the labor group on the Board, was outlined in the *Railway Age* of August 27, page 419. Officers of the Federated Shop Crafts were particularly displeased with this decision and after a three-day conference at Chicago issued a letter to the membership of the six crafts declaring "that these organizations were never confronted with a more critical situation." The letter sounds a warning to the men not to "become involved in an unauthorized stoppage of work," and at the same time declares that an unsatisfactory settlement may make it necessary to "use the full power and strength of these organizations in collective action," and the individual members are therefore requested to "prepare for war" by conserving their personal resources. The local, district and system lodges are directed to "conserve finances by carefully guarding expenditures, and increasing funds to the greatest possible extent."

Pointing to the history of the rules negotiations, both before the Board and on the individual roads, the letter says: "Notwithstanding that management's request (to have the negotiation of rules remanded to the individual roads) was granted, there are but three small railroads on which a complete agreement has been negotiated and signed. On the other hand there are great numbers of disputes from practically every railroad, involving some one or all of the rules."

"There are only 136 carriers named in the decision on overtime, while there were 320 carriers specified in the decision on rules and working conditions (Decision 119). As to the remaining 184 carriers, many are still in conference, and these conferences must be completed, results known and acted upon by the Labor Board before final action can be taken by the organization."

### Declare Overtime Decision Not Justified

The recent "middle of the road" decision of the Board recognizing the basic eight-hour day and the principle of punitive pay for overtime with a few modifications from former rules, is declared by the shop crafts to be not justified.

"By no conceivable line of reasoning can Decision 222 be justified, and this body declines to accept it," the report says. "Decision 222 (on overtime) does not give the federated shop crafts even a reasonable basis upon which to approximate the results which will accrue from further decisions of the Railroad Labor Board, as to those rules still in dispute, and which this decision does not dispose of, therefore it would be most unwise at this time to adopt a program looking toward final disposition of only the rules covered by Decision 222, and the federated shop crafts must of necessity defer final action until the Railroad Labor Board has released its decision as to the important rules in dispute."

"This body will take steps to urge the Railroad Labor Board in one decision to finally dispose of all rules which are to be general in their application, in order that the federated shop crafts may have before them at the earliest possible moment the final action of the Railroad Labor Board."

"This body will, therefore, be reconvened at the proper time, and will at that time outline a program for the purpose of securing at the earliest possible moment the position of railroad management on each of the rules decided by the Board that are not acceptable to this body, and the placing of the facts before the membership for vote and final action in compliance with the laws of the organizations."

These developments, together with the direct and implied

threats of labor leaders, have been taken by a large portion of the press as indicating either a general strike or a series of sporadic strikes in which the trainmen and shopmen would be particularly involved.

#### Opinions as to Strike Probabilities Vary

Some students of labor conditions argue that there will be no strike in the near future because of (1) the unemployment throughout the country; (2) the weight of public opinion against strikes, especially when a mediatory body is functioning; (3) the present relatively high wages of railway labor, and (4) the recognition of labor leaders of the likelihood of failure in view of these conditions. The present strike talk, they say, is but a repetition of strenuous efforts to use the threat of strike to influence the Labor Board.

On the other hand, it is pointed out that the labor leaders have worked themselves into a position where they must either call a strike in accord with the power placed in their hands by these referendums or repudiate their own statements and being discredited by their membership. Strike talk and dissatisfaction as the result of the propaganda carried on by the reconstructed "outlaw" organizations have gone too far, those who hold the latter view, argue.

The position of those who believe that railroad labor disturbances are impending is bolstered up by the action of the trainmen's officers in preparing a separate ballot for submission to the membership and by the fact that, despite an "unwritten" agreement among members of the Labor Board that no dissenting opinions would be made, Mr. Wharton not only filed one, but quoted the actions and votes in one of the Board's executive sessions. The action of the trainmen's officers is taken as confirmation of estimates as to the effect of the propaganda being carried on by the old "outlaw" yardmen's association. To offset the dissatisfaction of the trainmen with the manner in which their affairs have been handled, officers of the trainmen's organization are forced to take radical steps toward using their economic power, it is pointed out. The action of Mr. Wharton is taken as indicative of the length to which officers of the shop crafts unions will go to retain the substance at least of their national agreement.

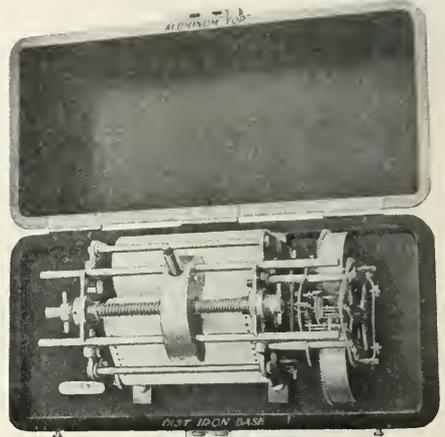
### A Check on Rough Handling of Cars

**R**OAD service tests on a device designed to keep a record of the rough handling of cars have been carried to the point which is said to have definitely established the practicability of the device. They have also shown that most of the rough handling to which cars are subjected occurs in yards during the makeup and breakup of trains and not, as has been claimed by some, in the handling of trains on the road as a consequence of slack adjustments. The particular value of this device arises from the possibility of effecting an appreciable reduction in rough handling.

The device is shown in the illustration. It consists of a spring motor or clock which winds a tape or registering chart graduated to 15-min. periods and designed to give a continuous record over a period of 10 days. This tape records the movement of a pencil attached to a weight which moves between suitable guides under the control of two springs. Any sudden impulse or impact given to the device gives the weight a vibratory motion and thus records marks in a crosswise direction on the tape. The length of these lines as indicating the distance that the weight has been moved from the neutral position near the center of the tape is a measure of the amount of impact sustained.

The first problem which it was necessary to settle before a successful test could be inaugurated was that of determining the limit of rough handling in terms of vibration on the chart of the impact register. This was accomplished through

a series of tests conducted with a view of creating actual cases of rough handling and observing the resulting vibration on the chart of the impact register. Both loaded and empty cars were used, with wood and steel underframes. These were allowed to couple at speeds varying from 2 to 10 miles an hour. Each case was considered from the standpoint of possible damage to a car of merchandise and was accordingly adjudged as being a case of rough handling or permissible handling and the limit of rough handling was decided to be



The Impact Recorder

between two and three miles an hour speed at the time of impact.

After the chart graduation test had been completed, a number of machines were put into use in through merchandise cars operated by the Chicago, Milwaukee & St. Paul between Chicago, Kansas City, Milwaukee, Madison, Minneapolis and Mason City. The machines were in cars operated on a regular loading schedule and were handled at destination by the agent in charge. No traveling inspector accompanied the machines, but their records were removed by the receiving agents and mailed to the general office for investigation and tabulation. The movement of the machines was not advertised and train crews did not know at any time when they might be handling the register. Each case of rough handling which resulted was taken up with the superintendent on whose division it occurred and the crew responsible disciplined therefor.

Studies of records made with the increment recorder indicate, as stated in the opening paragraph, that 97 per cent of the rough handling cases actually occur in yards. The question has been raised whether it is within the limits of reason to expect that cars may be handled under the conditions imposed on railway operation without a certain amount of rough handling. In answer to this it is noted from the record obtained in the tests that 27 out of 111 cars under observation moved from origin to destination over an aggregate distance of 10,000 car miles without a single case of rough handling. There are also repeated instances where cars moving over exactly the same route received widely varying treatment. It is, therefore, estimated that if 24 per cent of the cars can be handled properly under present conditions of transportation with no rigid disciplinary measures in effect, the enforcing of proper discipline would enable the handling of at least 70 per cent of the equipment in the same manner. The impact recorders described above were developed and are being manufactured by the Railway Impact Register Company, Belleville, Ill.

# Job Analysis and Job Specification

## Showing Advantages to Be Gained from Close Study of Job and Uses to Which It Can Be Put

By J. C. Clark\*

Assistant to General Manager, Oregon Short Line Railroad Company

**T**HE EFFECTIVENESS with which human labor is applied to railroad operation determines to a large degree the safety and efficiency of the service rendered the public, the financial returns to the owners, and the loyalty and contentment of management and employees. To be effective, human labor must be applied systematically, which means that management must decide what work is necessary to properly operate the property and then divide this work in such a manner that each individual unit of the human organization will have a definite task or job to perform. These tasks or jobs must be so related that each job harmonizes with the others to make a perfect whole.

It is obvious that the content of each job and the relationship existing between the various jobs has a vital bearing on the effectiveness with which human labor can be applied. Job analysis is a systematic study and statement of all the duties and requirements of the job, and the modifying factors which surround it.

### Purposes of Job Analysis

Railroads employ workmen of a large variety of trades, and the forces are scattered over the entire property. This condition may make the work of job analysis somewhat more difficult but all the more necessary. In the mechanical department the work is largely repair work and each locomotive and car may require different handling and different material. In manufacturing concerns where job analysis has been worked out to a considerable extent, the processes are, as a rule, well defined and regular. This condition does not obtain in railroad shops for the reasons stated.

In other departments where employees come in contact with the public, the personality of the employee is a very important item. In all jobs where the employees have to do with the handling of trains, character and judgment necessary for safety are of the utmost importance. The diversified nature of railroad work as a whole, and the dependence of each department on other departments makes job analysis all the more important, especially as to relationship or co-ordination of jobs.

The purpose for which job analysis is needed will determine the extent of the study necessary. The employment office will need sufficient information to draw up a specification only, but this does not require the detailed study necessary if it is intended to estimate a fair day's work. To be complete, however, job analysis should aim at four principal objects:

*First*, determine a fair day's work. We have heard considerable of late concerning "A fair day's work for a fair day's pay." But who can say what a fair day's work is? Most wage negotiations in the past have been conducted on the basis of "How much can I get?" rather than upon the basis of "How much am I worth?" Of course the cost and standard of living will always enter into wage negotiation, but the foundation of any wage agreement should be what the work is worth, and what is a fair day's work. There is a great deal that could be said as to the manner of arriving at an equitable conclusion in these matters, but that cannot be

developed at this time. It is possible, however, to determine a fair day's work and what it is worth from a strictly scientific standpoint.

If the Labor Board in Chicago had before it a classified list of all the jobs on the railroad, properly indexed and cataloged, showing all the details of the job and the conditions surrounding it, and a scientific estimate of a fair day's work in each job, would it not be in a far better position to determine an equitable wage? It may sound like a big undertaking, and it is, but wage controversies will continue with all of their disturbing outgrowths until wages are based on facts concerning the job, instead of the present methods.

*Second*, secure accurate knowledge of the surrounding conditions and the modifying factors. Under this heading would come all the data relative to hours of work, average length of employment, opportunities for promotion, sanitary conditions, and any other matter which affects the job, but is not a part of the job itself.

*Third*, keep in view the improvement of existing tools and machinery and the devising of new methods or machinery with the object of saving labor or increasing efficiency.

*Fourth*, determine the effect of employment on the workers. Railroadng as a rule is a pretty healthy occupation. However, it would be worth while to study the effect of irregular working hours on trainmen, enginemen and other irregular workers. The hazards of railroad operation would also come under this head, and it should be possible to make an accurate estimate of the hazards of each job, at the same time pointing out methods of reducing these hazards.

### Value of Job Analysis

There are a great number of ways in which job analysis would benefit the management, the employees and the public. Any study of this question should include the status of railroad work in the community. A few of the chief values of job analysis would be:

*First*, to standardize operation. From the standpoint of management, job analysis is needed to determine the best methods of carrying on a job under existing conditions. It will be found that on the same railroad, different methods of performing an operation are used in different shops. This may be due to an established practice of unknown origin or to the preference of some shop superintendent or master mechanic. No matter how the difference in methods originated, each operation should be studied with a view to adopting the best method under existing conditions.

This may apply to other departments than the mechanical. Operations incident to track work, the make-up of trains, the handling of material in the store department, etc., should all be studied with a view to standardizing them.

Closely allied to the subject of standardization is the study of how to improve an operation. By close questioning of employees actually engaged on the job, it will no doubt be found that many operations can be improved upon, either by adopting different tools or machinery, or using different kinds or classes of material.

*Second*, job analysis will define the responsibilities of each job. At the present time, there may be confusion as to responsibilities connected with a great many jobs and this applies to industry, as well as to railroad operation. This

\*For other articles by Mr. Clark on the personnel problem see *Railway Age*, December 31, 1920, page 1157; February 4, 1921, page 329; and March 18, 1921, page 719.

affects both employer and employee and creates a tendency to shift responsibility. If each and every job was accepted by the employee with a definite knowledge of what the responsibilities were, there would be no chance to shift and get out from under it.

*Third*, a statement of the sequence of operations for a job will be provided. This would apply more particularly to the mechanical department, but would affect to a certain degree employees handling freight in freight houses and material in store houses. It is probable that almost any job is benefited by a statement of this kind, because we all know that it never pays to start a job wrong. There is always a right way to start and that should be plainly indicated, when practical.

*Fourth*, data will be secured with which to draw up a job specification. The job specification should include the physical qualifications necessary in the worker, such as age, height, weight, sex, hearing, vision, etc.; mental qualifications such as education; experience; ability to speak, read or write English, or other languages; also a brief statement as to the type of mind required.

Next in order would come a complete description of the job itself, which should start with the name of the job and a complete description of the operation. Next would come all of the conditions surrounding the job, then length of time to learn, rapidity of advancement, and chances for promotion. Next in order would come terms of employment, stating the rate, average earnings per month or day, and any other condition relating to terms of employment.

If the specification is to be used as a basis for wage negotiation, there should be included a statement or an estimate of a fair day's work on the job and how it was arrived at. There should also be a statement of methods used in measuring individual progress at the job. This subject was covered in an article in the *Railway Age* of March 18, 1921. If this method of individual progress reports were in use, it would in effect be a statement of the qualifications necessary in the worker.

Another value in job analysis would be to secure data on the amount of output produced by workers of different degrees of skill or experience. This would involve a study of actual performance of various classes of workers and should provide valuable information to assist in the estimate of a fair day's work.

Another important value would be the co-ordination of jobs. The analysis should develop a logical succession at jobs and solve problems dealing with co-operation between departments, gaps in responsibilities, inadequate inspection, etc.

### How the Public Would Profit

There are three ways in which job analysis would be of value to the public. The United States Public Health Service, as well as like organizations in the various states and communities, is constantly seeking data on conditions that effect public health. Job analysis should provide definite information on sanitary conditions which affect the occupations and will be of distinct value to the health authorities, and will no doubt be reflected in wise laws governing sanitation and health. This information would also be of value to the various states in administering their employees' compensation laws. Some of these laws are inequitable because based on very meager information. Job analysis would help this situation materially and should result in modification of the compensation laws in some of the states.

The last important value to the public would be to provide data on which to help settle disputes. In a number of cases the public has been called upon to decide labor disputes, and public opinion is always the deciding factor when it comes to a strike or a lockout. Full and unbiased information provided by scientific job analysis would be of immense value in

molding public opinion as to the merits of any controversy and would be of equal value to public representatives on arbitration boards.

### How to Proceed

The next question is, "How can all this data be secured?" It is obvious that a very thorough and detailed study would have to be made, which would include the point of view of the employee, the supervising officer, and the general officers. It might be necessary to get the testimony of representatives of the public. It would seem, therefore, that a general committee should be organized to carry on the work, this committee to be composed of an officer of wide experience and ability from each of the major departments, and an employee from each of the major departments. This committee would secure data by personal investigation on the ground, assisted by officers and employees from each division, shop or department, as the case may be.

The committee, of course, would outline a definite program of procedure which would be approved by the executive officer of the railroad. This would be necessary to give the committee proper standing. After the work of analyzing each job had been completed, it would be necessary to continue at least a part of the committee to keep the analysis and specification up to date. Another plan which might be feasible, would be to charge the personnel department with the duty of keeping analysis and specifications up to date, with a periodic survey by the general committee when deemed advisable.

This work is another field in which a personnel department would be of utmost value, and the head of the personnel department should work with the committee on job analysis and job specification and to a certain extent direct its labors. There is no doubt that the job directly affects personnel, and any change in the job means a change in personnel to some extent. It is therefore important for the personnel manager to be in very close touch with the work.

THE CANADIAN BROTHERHOOD of Railway Employees has been expelled from the Trades and Labor Congress of Canada by a vote of 394 to 151. The action was a climax to a long standing dispute over jurisdictional matters. The brotherhood has from 7,000 to 10,000 members scattered over the Dominion. A. R. Mosher, president of the brotherhood, declared that the vote of those favoring expulsion was largely due to abnormal influence brought to bear by interests in the United States.



Photo from Underwood & Underwood

Railway Station at San Juan, Porto Rico

# Booster Tests on Temiskaming & Northern Ontario

## Freight Tonnage Increased 20 Per Cent by Booster—Rapid Acceleration of Passenger Trains

AN INTERESTING SERIES of tests was recently made on the Temiskaming & Northern Ontario of locomotive boosters in freight and passenger service in order to determine their value under the conditions existing on that road. At the present time boosters are applied to one Mikado type locomotive which has 25 in. by 30 in. cylinders, weight on drivers 197,000 lb., and a tractive effort of 45,000 lb. without booster, and to three Pacific type locomotives which

tonnage for this grade, with this power, is ordinarily 1,200 adjusted tons, so that the excess loading was 301 adjusted tons. The speed of the train when it reached the foot of the 0.75 per cent grade was 26 miles an hour. The full lines in the left hand portion of the chart show the variations in speed and drawbar pull until the train finally stalled on the 1.25 per cent grade, 528 ft. south of mile 11. The locomotive stalled without slipping, the drawbar pull showing as 45,000 lb. The train was then backed down the hill and on the second test the speed was 9 miles an hour when the booster was cut in 660 ft. south of mile 11. The drawbar pull increased rapidly from 33,000 lb., at which figure it was when the booster was cut in to 50,000 lb., but 528 ft. north of mile 11, after the speed had fallen to 3 miles an hour and then picked up to 4 miles an hour, the locomotive slipped and stalled. On backing down and setting off one load, leaving a train of 1,424 adjusted tons—an excess of 224 tons over normal rating—the grade was got over without difficulty.

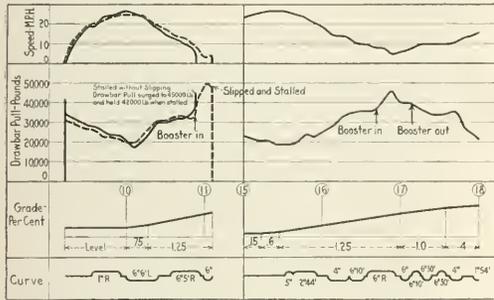


Fig. 1—Booster Test with Mikado Locomotive, Showing Increase in Drawbar Pull

have 23 in. by 28 in. cylinders, weight on drivers 155,000 lb., and a tractive effort of 36,000 lb. without booster.

Dynamometer car 84, belonging to the Canadian National Railways, was used during the tests for obtaining the data. The trial run with the Mikado type locomotive number 150

The train then proceeded to the grade between miles 15 and 18, the result of the booster being cut in on the 1.25 per cent portion of the grade being shown in the right hand portion of Fig. 1. The speed of the train, when the booster was cut in on the hard pull on a 6 deg. curve, was about 9 miles an hour and drawbar pull showed 38,000 lb. As the speed decreased to 5 miles an hour, the drawbar pull went up to 47,000 lb. When the train had gained the 1 per cent portion of the grade and the speed had been picked up to 8 miles an hour, the booster was cut out. In order to get this excess tonnage over these grades, aggregating three miles in length, it was necessary to operate the booster for less than half a mile. The train was then taken through to Englehart, 138 miles north of North Bay, the booster being used on the

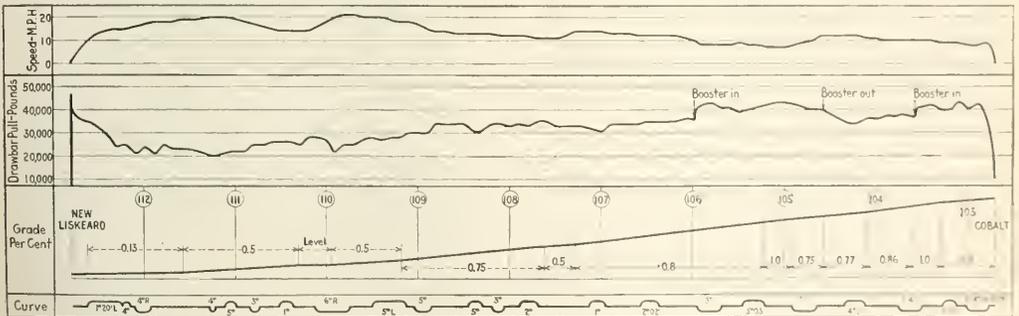


Fig. 2—Booster Test with Mikado Locomotive, New Liskeard to Cobalt

was made north from North Bay. At the start the train consisted of 21 loaded freight cars, the dynamometer car, two official T. & N. O. cars, Temagami and Whitney, and a caboose.

The actual tonnage of this train was 1,401 tons, 756 contents and 645 tare, the adjusted tonnage with the T. & N. O. allowance being 1,501. The left hand portion of Fig. 1, given herewith, shows the performance of the locomotive with this train between miles 9.2 and 11.1. It was decided to see first what the locomotive could do with this train on the 1.25 per cent grade at mile 11 without the booster cut in. The

stiff pulls, with a degree of success equal to that displayed in its performance in the test between miles 15 and 18.

The next day the same locomotive was started from Englehart south with a train of 32 loaded cars, 4 empties, the dynamometer car, T. & N. O. official car Temagami, and caboose. The actual tonnage was 1,800, contents 957, tare 843 and the adjusted tonnage, T. & N. O. rating 1,995. Fig. 2 shows the results of the tests with this train on the grades from New Liskeard, mile 112.8, to Cobalt, mile 102.7. These grades vary from 0.13 per cent to 1 per cent and the normal rating for a locomotive of this class is 1,000 adjusted tons.

so that the excess loading was 335 adjusted tons. The booster was first cut in 100 ft. south of mile 106, when the speed was slightly under 10 miles an hour and the drawbar pull was 36,000 lb. The drawbar pull quickly increased to 43,000 lb. and speed was maintained at about an average of 8 miles an hour on the 0.8 per cent, 1 per cent and 0.75 per cent portions of the grade until the booster was cut out 0.42 mile south of mile 105. When the booster was cut out, the drawbar pull dropped from 40,000 lb. to an average of 36,000; when the booster was again cut in, 0.42 mile south of mile 104, on the 1 per cent portion of the grade, the drawbar pull increased from 37,000 to 42,000 lb., speed remaining constant for 0.6 mile at 10 miles an hour, but dropping to 9 miles an hour on the 6 deg. 12 min. curve, while drawbar pull increased to 43,000 lb. at this speed. The train was thus handled into Cobalt without difficulty, by making the booster operative twice for short intervals on the hardest pulls.

Throughout the tests there was no difficulty in maintaining a constant steam pressure of 180 lb. This was possible because both the Mikado and Pacific types of locomotives used are remarkably free steamers.

Southbound out of Cobalt another load was switched into the train, making the actual tonnage 1,848 and adjusted tonnage 2,048 tons. Fig. 3 shows the results with this train, between miles 26 and 22. The booster was cut in 0.22 mile south of mile 25 on the 1 per cent grade, when the speed was 9 miles an hour and drawbar pull 39,000 lb. As the speed gradually came down to 4 miles an hour while the train approached the summit, the drawbar pull gradually increased until it reached a maximum of 51,000 lb. The booster was cut in again 0.32 mile south of mile 23, on a 1 per cent grade, but not until the speed had decreased to 7 miles an hour, the drawbar pull being 38,000 lb. As the train topped the summit, the speed had decreased to 3 miles

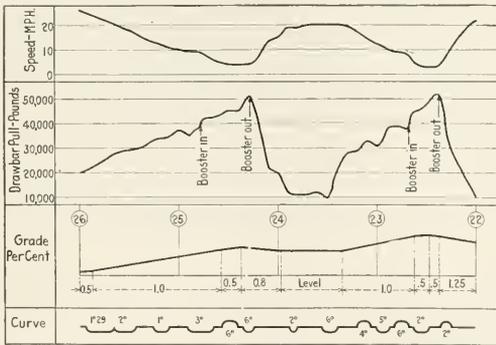


Fig. 3—Booster Test with Mikado Locomotive, Showing How Train Was Taken Over the Top

an hour and the drawbar pull increased to 52,000 lb. The train then proceeded to North Bay.

The tests with Mikado locomotive 150 amply demonstrated the correctness of the proposition that a largely increased tonnage can be handled over a division without difficulty, if it can be successfully got over the few hard pulls of the division, and they demonstrated the ability of the booster in aiding the locomotive to get it over the hard pulls. The T. & N. O. has a profile marked by several short, steep grades which have acted to limit the tonnage handled in the past. By enabling a locomotive to take a tonnage, increased by 20 per cent, over these grades, the value of the booster applied to the freight hauling units of such a railway is at once evident.

Fig. 4 shows the results obtained by tests of Pacific type locomotive 157 in which the booster was used in starting and accelerating a passenger train of 13 cars. The trains were the Canadian National Railways' transcontinental express No. 1 north from North Bay to Englehart, and No. 2 returning. In both cases the train weighed 942.7 tons.

The left hand portion of the diagram was taken when starting the train out of North Bay station over frogs and switches on a 1 per cent up-grade and a 10 deg. curve, uncompensated. Without booster, the tractive power of the locomotive is 36,600 lb. As will be noted from the diagram, the drawbar pull with the booster cut in was 45,000 lb. at the start, 37,000 lb. in 60 sec. when a speed of 5 miles an hour had been obtained; 28,000 lb. in 120 sec. at a speed of

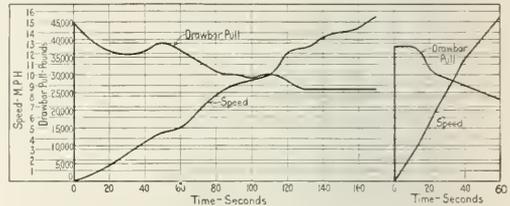


Fig. 4—Booster Test with Pacific Locomotive, Acceleration Curves When Starting Heavy Trains

12 miles an hour, and 26,000 lb. in 170 sec., when the speed was 15½ miles an hour. The manner in which the locomotive handled the train under these conditions was highly gratifying and showed the advantage of the booster as an aid in getting trains to road speed quickly when leaving terminals or after station stops.

The right hand portion of diagram, Fig. 4, shows the result of a test designed to determine the acceleration obtainable on level track. The same train of 942.7 tons was handled north out of Tomiko, mile 27.3, from North Bay, the drawbar pull when lifting the train registering as 38,000 lb. This remained practically constant for 10 sec. as a speed of 3½ miles an hour was being attained; in 30 sec. it registered as 29,000 lb., the speed being 8.5 miles an hour. At the end of one minute, the drawbar pull showed as 23,000 lb. and the speed had increased to 15.5 miles an hour.

Many of the stations and water stops on this road are on grades so that the time saved over the division by the high acceleration of passenger trains obtained by the use of the booster in leaving stations, in addition to that saved on the hills would be large. The T. & N. O. officers have expressed complete satisfaction with the performance of the device and the efficiency shown by it in doing the work for which it was designed.

THREE RIVERS, QUEBEC, announces the arrival there of a vessel bringing 2,000,000 ft. of British Columbia fir, shipped from Vancouver via the Panama Canal. This is the first vessel, it is understood, to make the trip from British Columbia to a Quebec port via the Canal.

AN ITEM FROM SAVANNAH.—Not a day during the month of June did No. 4 (the night express from Atlanta) fail to roll into Savannah on time. No. 4, like No. 3, is manned by crews whose consciousness of duty and knowledge of service have been outstanding factors in the successful operation of these two popular trains. The comfort of travelers in years gone by has been carefully looked after by Chesterfields of the bell cord, while their safety through long, dark, and sometimes stormy nights, has been well guarded by careful hands of men of nerve, who handled the throttle of the giant engines.—*Central of Georgia Railway Magazine.*

# Hearings on Western Grain and Hay Rates

## Grain-Carriers Show How Desired Reductions Would Impoverish Roads; Small Benefit to Farmers

WASHINGTON, D. C.

THE TESTIMONY of the railroads in the inquiry which is being conducted by the Interstate Commerce Commission on the request of the farmers for reductions in freight rates on grain and hay was heard last week, beginning on Wednesday, with statements presented by L. E. Wettling, manager of the Statistical Bureau of the Western Lines. He said that even in the face of the wage cut made by the Railroad Labor Board and effective on July 1 last such a reduction in rates would cut the net operating income to a point that would bring the annual return to below two per cent on the roads' tentative valuation. Estimating on the nine months ending May 31, 1921, the net operating income of the railroads in the western district from freight traffic would for 12 months be \$143,887,000, or at the annual rate of return on their tentative valuation of only 1.42 per cent. During the nine months referred to, the earnings of the western roads was at an annual rate of 2.78 per cent. If the Interstate Commerce Commission grants this request, this rate of return would be reduced to approximately 1.67 per cent, of which 1.15 per cent would be from freight.

Mr. Wettling declared that the roads in the western district were hit harder by the traffic slump during the first five months of this year than those in any other part of the country, there having been a decline compared with the same period in 1920 of more than 27 per cent. Despite this, he said their expenses increased 7.69 per cent during the nine months which ended on June 1 compared with the corresponding months one year ago. For transporting one ton of grain and grain products one mile, the roads receive an average of 1.10 cents while for all other traffic they average 1.44 cents.

The farmers ought to seek first relief from other industries concerned with the marketing of grain, whose rate of return is much higher than that of the railroads. According to the findings of the Federal Trade Commission, owners of country grain elevators in the western grain states in 1920 realized net returns ranging from 20 to 57 per cent on their investment. The farmers paid the elevator owners an average profit of eight cents a bushel. In some instances they are paying these elevators more than is paid to the railroad. Investigation by the Federal Trade Commission of 1,091 grain elevators showed that on the grain they handled the net return on their investment amounted to 25.33 per cent. One hundred elevators in North Dakota received an average profit of 11.5 cents a bushel and a net return on their investment of 31.34 per cent, while 63 elevators in South Dakota had a profit of 8.24 cents a bushel and a net return of 54.74 per cent on their investment. Investigation by the commission into the operations of eight elevators in Oklahoma showed that they received a profit of 11.93 cents a bushel and had a net return of 57.65 per cent on the amount invested.

From January 1 to July 23 this year, 3,251,455 cars less were loaded with revenue freight than during the corresponding period in 1920 but the number loaded with grain and grain products was 190,530 cars greater than during that period last year, and 120,643 cars greater than in 1919.

The carriers are saving themselves from having operating deficits by greatly reducing expenditures, particularly for maintenance work; but all of this maintenance work must eventually be done. There is little hope of the roads reducing their expenditures for coal before April 1, 1922, when many of them renew their contracts. While, because of the fact that the carriers are compelled to buy their supplies

from 6 to 18 months in advance, it will be some time yet before they can realize anything from the present drop in the cost of materials and supplies.

Fred C. Maegly, assistant general freight agent of the Atchison, Topeka & Santa Fe, testified concerning rates on grain, pointing out that the cost of transporting this commodity is more than for other commodities because of certain services which the roads have to render.

On Friday, testimony was presented to show that even should the low rates on grain and hay be restored, the saving to the farmer would be small while it would result in the loss of millions to the carriers. A. F. Cleveland, assistant freight traffic manager of the Chicago & North Western, showed that the individual farmer in South Dakota, Iowa, Nebraska and Minnesota would be benefited only from \$9 to \$51 on his annual grain crop; while to require the Chicago & North Western to reduce its revenues on these commodities by the amount advanced a year ago, would cost that road \$4,430,194, at a time when the road is not making operating expenses. Should the request of the western states for a reduction be granted the amount saved would only be approximately 1.9 cents on each bushel of wheat; 2½ cents on corn and 1.13 cents on oats. The fluctuation in the market price of grains is far in excess of these amounts. Mr. Cleveland declared that the rates on grain are not such as to interfere with traffic and that that commodity is now being carried for less than other classes of freight. Loss and damage claims resulting from shipments of grain and grain products are heavier than for any other commodity.

F. B. Houghton, freight traffic manager of the Atchison, Topeka & Santa Fe, said that in his opinion a reduction in the freight rates on alfalfa would not stimulate traffic, declaring that feeders in the east would not buy alfalfa from the west when they could get cheaper feed nearer home.

On Saturday, Mr. Cleveland and Frank B. Townsend, vice-president of the Minneapolis & St. Louis, testified that the proposed reduction would only increase the deficits under which many roads are now operating. A reduction of 25 per cent would cause a loss of \$1,414,611 annually to the Chicago, St. Paul, Minneapolis & Omaha, while the annual revenues of the Chicago Great Western would be reduced by \$1,233,951. During the first six months this year, the Chicago, St. Paul, Minneapolis & Omaha had a net operating income of only \$288,737; and the Minneapolis & St. Louis had an operating deficit of \$584,526.

L. T. Wilcox, assistant to the freight traffic manager of the Union Pacific, testifying on Monday, the 29th, denied the claims of grain men that reductions in freight rates on grain and hay would stimulate movement. These assertions have not been borne out by recent experiences of the Union Pacific. Cuts in freight rates on lumber and hay resulted in no increase in the movement of those commodities. Mr. Wilcox presented data to show that grain and grain products were moving freely over the Union Pacific, but that the movement of other commodities had decreased to a considerable extent. One member of the system, he said, was not making expenses by \$250,000 a year, adding that a reduction of 25 per cent on grain rates would reduce the revenues of the line by \$4,781,366. In response to inquiries by members of the commission, Mr. Wilcox said he believed general business conditions were responsible for the diminution of traffic, but added that constant rumors of rate reductions were in his opinion seriously retarding business. He be-

lieved if general business conditions improved, tonnage would move practically as freely under existing rates as it would under reduced rates.

P. J. McCarthy, assistant general freight agent of the Missouri Pacific, said that the proposed reductions of about 25 per cent would cut the revenues of that road \$2,500,000 a year.

On Tuesday, P. H. Burnham, general freight agent of the Great Northern, testified. He estimated that a 25 per cent reduction would reduce the revenues of the Great Northern from the transportation of grain and hay by \$4,167,846. During the first seven months this year, loading of grain on the Great Northern totaled 30,519 cars, 32.8 per cent more than during the corresponding period in 1920. Grain and grain products are moving freely on the lines of the Great Northern under existing rates.

E. W. Soergel, assistant general freight agent of the Chicago, Milwaukee & St. Paul, testified that that road during the first six months in 1921 had an operating deficit of \$2,815,000. If a 25 per cent reduction in rates is made, he estimated that the St. Paul would lose \$4,775,000 annually.

Henry Blakely, freight traffic manager of the Northern Pacific, estimated that the proposed reductions would have reduced the revenues of that road approximately \$3,000,000 during the first six months this year. The Northern Pacific had an operating deficit of \$1,835,000. During the first six months this year 25,173 cars were loaded with grain on the Northern Pacific compared with 23,039 cars in 1920; the total of grain, grain products and hay during that six months was 44,140 cars compared with 57,822 cars in 1920. Mr. Blakely testified that during the first six months this year the Northern Pacific, because of the reduction of receipts expended \$714,500 less for maintenance of way and structures than was spent during the corresponding period last year and \$811,083 less for the maintenance of equipment.

**Necessary Prices of Crops If**

**Farmers Paid Railroad Wages**

Commissioner Potter has put into the record a statement from M. O. Lorenz, statistician for the commission, prepared in response to his question as to the effect upon the Minnesota farmer's costs of producing grain if he were allowed the same earning per hour for labor as is paid to railroad employees. Dr. Lorenz says in part:

"According to our latest statistics, the average earning per hour of all classes of railroad employees in the first half of this year was 69.9 cents. Deducting 12 per cent on account of the recent reductions authorized by the Labor Board, the present earning per hour may be taken at 61.5 cents.

"According to the exhibit presented by F. W. Peck, it took one hour of man labor to produce a bushel of wheat. The rate paid was 25 cents an hour. To have paid 61.5 cents an hour would have increased the cost per bushel 36.5 cents. The average freight rate paid by Minnesota farmers to the primary markets is not available but it may be estimated as follows:

"A study for April, 1920, indicated that 6,734 carloads of wheat destined to Minnesota paid \$3.30 per ton. Increasing this 35 per cent, the present average freight charge is \$4.455 per ton or 22.27 cents per 100 lb., or 13.36 cents a bushel. To enable the farmer to pay to his labor in producing wheat the average railroad worker's earning per hour by a reduction in freight rates, would require a canceling of the entire freight charge and in addition a bounty from the railroad company to the farmer of 23.14 cents a bushel. If time and a half for overtime were allowed to the farmer, the bounty would have to be larger.

"In the case of corn, 26 hours are required to produce 40 bushels or .65 of an hour per bushel. To pay the average railroad wage would thus require .65 or 36.5 additional or 23.72 cents per bushel. The average freight rate on corn

computed from the same source as above is 18.22 cents per 100 lbs. or 10.93 cents per bushel. In this case the bounty would be 12.79 cents per bushel."

On Wednesday, August 31, statements were presented by C. E. Spens, vice-president of the Chicago, Burlington & Quincy; S. H. Johnson, vice-president of the Chicago, Rock Island & Pacific; J. G. Woolworth, vice-president of the Northern Pacific; Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, and A. C. Johnson, vice-president of the Chicago & North Western. Mr. Spens, answering a question of Commissioner Potter, called attention to the fact that even though railroad operating expenses were reduced by wage cuts or otherwise, the carriers could not be expected to "hand over" to the shippers the entire savings thus effected so long as the carriers fail to earn the 6 per cent return contemplated by the Transportation Act. But, of course, a large saving in expenses would in all probability be followed by a reduction in freight rates. It would be "impolitic and impossible" to increase other rates in order to make up for deficiencies caused by a reduction on grain and hay; any talk relative to such an increase was "purely academic." Our only hope is that the volume of business will increase. The present low prices on grains are due to the large surplus or excessive supply versus demand. If freight rates are reduced, the movement of grain will be stimulated, resulting in increasing the present available supply; then the prices would naturally continue on a downward trend, and the producer would reap little, if any, benefit, while the Transportation Act would be nullified.

**Austria Plans Extensive Electrification**

LONDON

**D**URING 1920 Austria imported 4,800,000 tons of coal, and if minimum requirements are to be met in 1921 about 7,000,000 tons will have to be imported, which will cost about 24,000,000,000 Austrian kronen (\$47,500,000 at the present rate of exchange). This coal comes principally from Czecho-Slovakia and Upper Silesia. Austria produces about 20 per cent of its requirements, but the coal is of such a poor quality that but little of it can be used on locomotives. On account of the high price of export coal there is every incentive for railway electrification, particularly so because of the large amount of water power available. It is estimated that there is a potential of 2,500,000 hp. to be developed by hydro-electric plants, of which only 205,000 hp. is now being used. By proper development of this source of energy some 6,000,000 or 7,000,000 tons of coal could be saved.

The present economic and financial conditions in Austria permit of only gradual development. On account of the precarious financial situation the government has reduced the credit already granted for the electrification from 1,200,000,000 to 500,000,000 kronen. This and the prohibitive price of certain materials which, because of lack of coal must be purchased abroad, are hampering the progress of the work. Those lines are to be electrified first which have heavy grades and are located far from the coal supply. Facilities for the production of electric current and traffic conditions are also taken into consideration.

On July 23, 1920, a bill passed the Austrian National Assembly which authorized the electrification within a period of seven years of 405 miles out of the 2,780 miles of railway lines administered by the Austrian government. The lines, which are shown on the accompanying map by a dotted line, are:

Innsbruck-German-Swiss border line.....	146 miles
Salzburg-Schwarzach-Worgl .....	119 miles
Schwarzach-Villach .....	73 miles
Steinach-Attnang .....	67 miles
Total .....	405 miles

The bill provides for the expenditure of a sum not to exceed 5,096,000,000 kronen (about \$10,000,000) to be covered by an Austrian government bond issue repayable within 25 years from date of issue. An effort will be made to enlist foreign capital by mortgaging the railways themselves. So far all expenses have been covered by the government without the issue of a loan and without foreign capital, although negotiations with foreign financial interests are in progress.

The bill further contemplates the electrification in a second period of seven years of the following lines, which are shown on the map by heavy solid lines:

Vienna-Salzburg .....	195 miles
Amstetten-Selzthal .....	114 miles
St. Michael-Villach .....	109 miles
St. Valentin-Kl. Reifling .....	42 miles
St. Veit-Kingenfurt .....	11 miles
Selzthal-Bischofshofen .....	61 miles
Linz-Selzthal .....	65 miles
Hieflau-Vorderberg .....	22 miles
Wels-Passau .....	50 miles
Worgl-Innsbruck .....	37 miles
<b>Total .....</b>	<b>706 miles</b>

If this is done, 1,111 miles or 40 per cent of the Austrian State Railway will have been electrified. The remaining lines by reason of the peculiar traffic will probably not be electrified at all.

The electrified lines will operate on single phase current at 16 2/3 cycles per second. Power will be transmitted at



Proposed Electrification in Austria. Dotted Lines Show Work to Be Undertaken First, Heavy Lines Indicate Projects for Future

50,000-110,000 volts and transformed to 15,000 volts for the contact wire. It is to be noted that this is the same system in use in Switzerland.

The total available energy is estimated for the electric operation in question at 357,200,000 kw-hr. per year.

The power stations for the Innsbruck Swiss-German border line are the Rutz River station near Innsbruck and the Spuller Lake station near Danofen. The sub-stations are to be located at Zirl, Rappen, Flirsch and Danofen. The yearly capacity of the Rutz River power station amounts to 39,000,000 kw-hr.; that of the Spuller Lake power station to 25,000,000 kw-hr. Taking the density of the traffic in 1913 as a basis, the total energy needed from both stations amounts to only 43,000,000 kw-hr., whereby it can be seen that there will be a big reserve for increase of traffic. The Spuller Lake power station is a new plant while the Rutz River station has only to be enlarged.

The Spuller Lake power station, where work was started in September, 1919, will contain 6 units of 8,000 hp. each. At the beginning only 3 units will be used. The hydraulic work is very complicated.

The Rutz River station has at present a capacity of 8,000 hp. and will be enlarged to 16,000 hp. The reconstruction of the Rutz River station will be completed in the spring of 1922. The Spuller Lake power station and the sub-stations

between that place and Innsbruck are to be completed in the summer of 1923. Completion of overhead construction on the line Innsbruck-Telfs is expected for the fall of 1921, that of the line Telfs-Landeck for the winter 1922, Landeck-Bludenz the winter of 1923. By using the energy of Rutz River station electric operation on the Innsbruck-Landeck line is expected to become effective at the beginning of 1923; the electric operation of the Arlberg line between Landeck-Bludenz will probably not be possible before the beginning of 1924.

For the remaining lines to be electrified during the first period, two power stations have been planned, and work has recently been started. These stations are the Stubbach valley power station with 40,000 hp. for supplying the Worgl-Salzburg line, and the Mallnitz power station with 16,000 hp. for supplying the Schwarzach-Villach line. The sub-stations will be located at Westendorf, Hochfilzen, Bruck Fusch, Bischofshofen, Hallein, Hofgastein and Mallnitz. Work is expected to be completed at the latest by the end of 1926.

The electric energy for the operation of the Attnang-Steinach line will be taken from the existing Steg power station near Hallstatt owned by the firm Stern & Hafferl. The necessary work there is expected to be completed at the beginning of 1923, so that electric operations will then be possible.

Of rolling equipment only locomotives are to be secured. So far 27 locomotives—15 passenger and 12 freight—have been ordered from Austrian factories (Brown Boveri, A.E.G., Union and Siemens-Schuckert). This is about one-eighth of the locomotives needed for operation on all lines to be electrified. The passenger locomotives will be of the 2-6-6-2 type and the 2-6-2 type. The 2-6-6-2 engines will operate at a speed of 31 m.p.h. The capacity of these locomotives is about 25 per cent greater than that of the five driving axle steam locomotives now used. They have a rated horsepower of 1,850 at 30 m.p.h. and an overload capacity of 3,000 hp.

The freight locomotives will be of the 0-10-0 type with a rated capacity of 1,000 hp. at an average speed of 18.5 m.p.h. and an overload capacity of 2,000 hp. The cars to be used in the trains operated by electric locomotives will be the same as used for steam operation.

## Freight Car Loading

WASHINGTON, D. C.

**A**N INCREASE of 7,471 in the number of cars loaded with revenue freight during the week ended August 30 compared with the previous week, was shown in the reports of the Car Service Division of the American Railway Association. The total for the week was 816,436 cars. This was a decrease, however, of 151,667 cars compared with the total for the corresponding week last year and 96,773 cars under that for the corresponding week in 1919.

The principal increase, compared with the week before, was in the loading of merchandise and miscellaneous freight which includes manufactured products, although there was a substantial increase in shipments of livestock. Loadings of both coal and grain and grain products, however, were under those of the previous week.

The total number of cars loaded with merchandise and miscellaneous freight was 491,922, which was 12,173 more than during the week of August 13. It was, however, 43,000 less than were loaded during the corresponding week one year ago.

Loading of livestock amounted to 29,110 cars, or an increase of 2,275 cars over the preceding week and 2,000 cars over the total for the corresponding week in 1920. There was also an increase of 150 cars over the week before the loading of coke, the total being 4,436.

Coal loadings, which during the week of August 13 were

up to 158,260, dropped back to 154,140, or a decrease of 4,120. This was 50,000 under the corresponding week last year. Grain and grain products totaled for the week 59,875 cars, or 1,685 under the week before, but 18,237 cars in excess of the same week in 1920 and 7,900 more than were loaded during the corresponding week in 1919.

Loading of forest products totaled 44,583 cars, or a decrease of 750 cars compared with the previous week while ore decreased 572 cars from the week before to a total of 32,370.

Compared by districts, slight decreases under the week before were reported in the Allegheny, Pocahontas and southern regions while all the others reported increases. All, however, were under the totals for the corresponding week in 1920.

**Car Surpluses and Shortages**

Reports from the Car Service Division of the American Railway Association show that on August 23—491,399 freight cars were idle on American railroads owing to business conditions (surplus cars plus bad order cars over 7 per cent of the total), which was, however, a decrease of 8,195 cars compared with the total on August 15.

Of that total 270,024 were serviceable freight cars while

the remaining 221,375 were in need of repairs. Tabulations showed, however, that the former was a decrease in approximately a week of 14,314 cars while the number of cars in bad order was an increase of 6,119 over the last previous figures received up to August 1.

Surplus box cars in good order on August 23 totaled 79,368 which was a reduction of 5,154 within a week while surplus coal cars immediately available to meet current freight requirements, if necessary, numbered 136,981, or a reduction within the same period of 8,091. Surplus stock cars in good order also totaled 10,714 or 1,317 cars less than were reported on the middle of the month. Of the 2,300,929 freight cars on line of American railroads, 382,440 or 16.6 per cent were reported in need of repairs compared with 376,417 or 16.3 per cent on August 1. In computing the number of cars needing repairs but idle due to business conditions an allowance of 7 per cent is made to represent the number regarded as normally out of service.

The car shortage which has been reported in certain localities principally because of increased demand for grain cars is gradually disappearing, the total on August 23 being 1,376 of which 1,275 were box cars compared with a total of 2,125 on August 15.

**REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS**

SUMMARY—ALL DISTRICTS. COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, AUGUST 13, 1921

		Total revenue freight loaded				Received from connections									
Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise	Miscellaneous	This year 1921	Corresponding year 1920	Corresponding year 1919	This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	9,607	2,599	42,004	979	4,500	2,337	36,879	77,923	196,628	237,824	214,302	197,496	271,952	238,120
	1920	7,177	2,672	38,979	3,901	8,134	10,580	46,224	100,147	158,361	199,378	195,959	107,524	144,240	132,516
Allegheny	1921	3,648	2,897	45,058	2,278	2,463	7,119	43,301	51,637	158,361	199,378	195,959	12,908	20,041	13,703
	1920	2,815	3,560	65,927	6,152	3,434	12,986	36,067	67,837	128,891	163,733	98,489	62,124	71,847	61,117
Pocahontas	1921	174	228	19,521	25	1,150	72	2,644	4,575	10,714	37,203	25,061	20,041	13,703	
	1920	213	182	23,325	728	1,378	185	2,937	6,055	10,714	37,203	25,061	20,041	13,703	
Southern	1921	3,973	1,959	21,856	2,678	14,335	184	35,943	31,227	109,737	130,986	120,136	49,238	60,211	46,530
	1920	3,161	1,875	27,117	1,374	19,523	2,678	34,771	40,487	129,839	163,733	98,489	60,211	46,530	
Northwestern	1921	16,743	6,594	8,337	431	11,805	21,968	28,745	31,666	129,839	163,733	98,489	55,342	68,384	61,471
	1920	9,028	6,667	12,666	1,133	18,248	45,814	30,218	39,939	124,200	135,858	124,773	55,342	68,384	61,471
Central Western	1921	12,191	9,340	25,366	489	6,446	4,737	32,007	45,282	162,304	176,706	162,304	157,064	157,064	
	1920	12,191	9,340	25,366	489	6,446	4,737	32,007	45,282	162,304	176,706	162,304	157,064	157,064	
Southwestern	1921	6,557	3,055	4,262	177	6,137	692	15,532	25,747	62,159	66,287	53,719	49,939	44,674	
	1920	4,113	2,278	6,644	136	8,151	611	17,635	26,899	808,965	971,269	832,439	687,614	588,131	
Total, all roads	1921	61,560	26,835	158,260	4,286	45,333	32,942	213,046	266,703	808,965	971,269	832,439	530,550	687,614	588,131
	1920	38,768	26,574	221,844	13,933	65,514	77,591	200,459	326,646	796,570	928,418	909,682	503,926	673,219	628,308
Increase compared 1920	1921	22,852	261	136,416	3,153	20,819	55,351	112,587	139,024	175,406	142,851	122,757	126,631	114,395	140,023
Decrease compared 1920	1921	15,909	.....	63,584	9,647	20,181	44,649	12,587	59,943	162,304	.....	.....	.....	.....	.....
Increase compared 1919	1921	1,762	9,406	5,248	14,036	.....	.....	.....	97,618	23,474	.....	.....	.....	.....	.....

L.C.L. merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

August 13	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,204	784,781	935,730	872,073	522,247	686,317	596,917
July 30	1921	66,416	25,358	151,089	4,111	44,712	30,103	210,367	264,414	796,570	936,366	925,195	530,201	694,788	648,690
July 23	1921	64,919	24,689	152,142	3,928	43,126	33,655	208,316	259,573	790,348	928,418	909,682	503,926	673,219	628,308
July 16	1921	56,991	24,807	152,116	3,737	44,037	31,484	208,079	255,006	776,522	942,851	809,845	484,300	681,684	627,841

\*Detail figures for 1919 for Michigan Central not given.

**REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS**

SUMMARY—ALL DISTRICTS. COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, AUGUST 20, 1921.

		Total revenue freight loaded				Received from connections									
Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise	Miscellaneous	This year 1921	Corresponding year 1920	Corresponding year 1919	This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	8,200	2,863	40,900	1,049	4,498	3,259	38,608	79,990	199,375	236,017	228,099	202,581	267,968	237,680
	1920	7,426	2,548	34,991	1,531	8,435	10,667	47,174	101,845	158,190	204,341	204,713	112,133	147,556	142,890
Allegheny	1921	3,664	2,955	41,098	2,298	2,270	6,878	43,707	55,320	158,190	204,341	204,713	13,098	19,611	18,142
	1920	2,813	3,307	63,804	8,252	3,543	13,484	38,976	70,348	128,812	163,733	98,489	60,211	46,530	
Pocahontas	1921	191	264	18,444	24	1,237	4	2,639	5,206	28,012	34,311	36,862	60,613	74,177	69,578
	1920	191	264	18,444	24	1,237	4	2,639	5,206	28,012	34,311	36,862	60,613	74,177	69,578
Southern	1921	3,825	1,990	22,008	749	13,920	165	35,968	30,768	109,553	128,396	126,997	50,483	62,752	61,824
	1920	3,234	2,055	23,800	1,495	18,603	2,776	35,170	41,263	131,422	168,096	123,939	55,092	71,679	72,761
Northwestern	1921	18,123	7,692	8,219	421	12,729	20,752	29,354	30,183	131,422	168,096	123,939	55,092	71,679	72,761
	1920	11,412	6,802	13,088	1,520	12,828	46,280	30,183	40,783	116,217	131,262	111,320	46,408	49,164	47,670
Central Western	1921	19,774	10,273	18,509	163	5,003	644	30,631	41,180	126,127	131,262	111,320	46,408	49,164	47,670
	1920	12,279	9,810	20,958	416	6,577	4,709	31,405	45,152	158,260	163,733	98,489	55,342	68,384	61,471
Southwestern	1921	6,117	3,123	4,335	236	6,137	663	15,525	25,709	63,757	65,676	61,279	49,939	44,674	
	1920	4,083	2,350	6,135	230	8,207	653	17,183	26,835	816,436	968,103	913,209	687,614	588,131	
Total, all roads	1921	59,875	29,110	154,140	4,436	44,583	32,370	216,752	275,170	816,436	968,103	913,209	530,550	687,614	588,131
	1920	41,638	27,098	204,178	16,188	64,850	78,840	203,088	332,223	796,570	928,418	909,682	503,926	673,219	628,308
Increase compared 1920	1921	18,237	2,012	136,962	11,752	20,267	46,470	113,664	142,947	175,406	142,851	122,757	126,631	114,395	140,023
Decrease compared 1920	1921	9,339	.....	50,388	9,647	20,181	44,649	12,587	59,943	162,304	.....	.....	.....	.....	.....
Increase compared 1919	1921	2,863	39,684	7,050	21,999	.....	.....	.....	115,204	96,773	.....	.....	.....	.....	.....

\*Detail figures for Michigan Central for 1919 not given.

L.C.L. merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

August 13	1921	61,560	26,835	158,260	4,286	45,333	32,942	213,046	266,703	808,965	971,269	832,439	530,550	687,614	588,131
August 6	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,204	784,781	935,730	872,073	522,247	686,317	596,917
July 30	1921	66,416	25,358	151,089	4,111	44,712	30,103	210,367	264,414	796,570	936,366	925,195	530,201	694,788	648,690
July 23	1921	64,919	24,689	152,142	3,928	43,126	33,655	208,316	259,573	790,348	928,418	909,682	503,926	673,219	628,308

# A Large Capacity Locomotive Weighing Plant

Heavy Scale Is Housed in a Special Building with Equipment for Determining Wheel Loads

By Carl C. Bailey

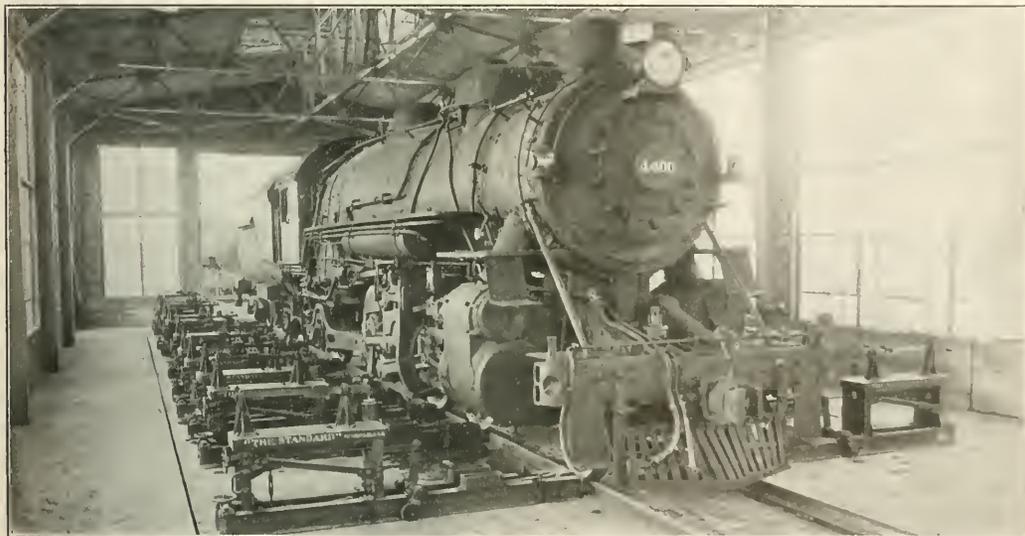
Baldwin Locomotive Works, Philadelphia, Pa.

A LOCOMOTIVE weighing plant was recently completed at the Eddystone plant of the Baldwin Locomotive Works, which unquestionably has yet to be surpassed in size and novelty of construction. It is comprised of a platform track scale, 24 individual wheel scales, concrete scale foundations of massive construction, and a specially designed building which covers and protects the scale and its mechanism. The large scale is composed of six sections, each of which is designed to carry a theoretical concentrated load of 150 tons, making a total working capacity of 450 tons.

Locomotive builders and the railroads in general have long felt the lack of some weighing equipment which would

as previously mentioned, of 450 tons, with a platform of sufficient width to permit the use of individual scales under each wheel. A scale of this type would give accurate results and all weights would be determined with the engine in one location.

In designing the scale the stresses as recommended by the specifications of the American Railway Association, as well as those of the United States Bureau of Standards, were taken into consideration. However, the necessity for rigid limitations on deflection in the longer extension levers, resulted in designs which in many instances give unit stresses very much below specification limits. To conform to these speci-



A Locomotive on the Scales with the Portable Wheel Scales in Position

give them accurate weights and wheel loads, and as a move in this direction the New York Central installed a large track scale at Albany, N. Y., in 1915-16. This track scale has a wooden deck but no provision was made for obtaining individual wheel load weights. The Baldwin Locomotive Works heretofore determined the total weight of the locomotive on a track scale, after which the individual wheel loads were obtained by moving the locomotive to a specially constructed track having concrete foundations of sufficient width to allow the placing of individual scales under each wheel. With this method of weighing, it was difficult to avoid and obtain any degree of accuracy when comparing the weight on the platform with the total weights on the individual scales.

After many investigations relative to the assumed loading of the largest locomotive which it would be practical to build, it was decided to construct a scale having a working capacity,

the designers were confronted with the question of producing a knife edge in the main levers of sufficient length to give a unit loading not to exceed 7,000 lb. per lineal inch, and also with the problem of supporting it in a substantial manner to secure an even distribution of the load. These knife edges are 22 in. long and are made of a special alloy steel which, when hardened in oil, has an elastic limit of not less than 160,000 lb., and a tensile strength of not less than 200,000 lb. per sq. in. The entire surface of all pivots and bearings throughout the scale is machined, hardened and ground and set in machined ways. All bearing steels for fulcrum stands are set in removable blocks that may be lifted off the stands. These knife edges are so constructed as to have continuous contact with their bearings and there are no bow loops in this scale except those for counter-balancing or back-balancing the weigh beam.

There are 12 cast steel main levers weighing approximately

1,075 lb. each. They rest upon fulcrum stands at one end and are suspended by a stirrup  $2\frac{3}{4}$  in. in diameter at the other. From these the massive cast steel yokes that carry the platform are suspended by two heavy machine steel stirrups 3 ft. long and  $2\frac{3}{4}$  in. in diameter.

The connection between the middle extension lever and the transverse extension is accomplished by means of two machine steel stirrups  $1\frac{1}{2}$  in. in diameter that pass over bearing blocks which engage the butt pivot of the transverse lever and the end pivot of the middle extension lever. These stirrups are then connected by a 2-in. plate which permits vertical adjustment.

The connection between the middle extension lever and the 3-ft. even lever consists of two machine steel stirrups of  $1\frac{1}{8}$ -in. diameter that pass over the bearing blocks which engage the end pivot of the middle extension lever and end pivot of the even lever. These stirrups are connected by means of two  $1\frac{1}{2}$ -in. plates and two draw bars  $1\frac{1}{4}$  in. in diameter. At the fulcrums of both the even and the extension levers, there is an up-pull. These fulcrums are anchored down to the sub-bases by means of two cast steel anchors in the form of an inverted stirrup, one at each side of the lever. Each stirrup is held down by two  $1\frac{1}{4}$ -in. anchor bolts, making four bolts to a lever.

The connection between the transverse extension lever and the lever under the weigh beam is composed of stirrups, plates, draw bars and bearing blocks, all so arranged that one lever may be leveled independent of the other, that proper swiveling can take place to match the different angles at which the levers hang, and to give vertical adjustment to the levers in unison.

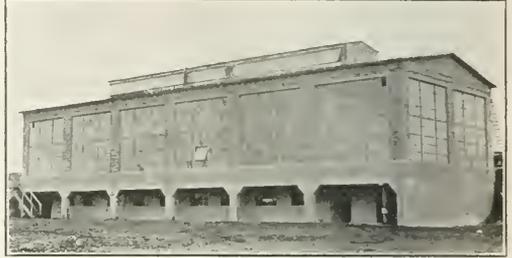
The weigh beam on the platform scale is graduated to 895,000-lb. capacity by 5,000 lb., with an auxiliary beam of 5,000-lb. capacity by 50 lb., giving a total capacity of 900,000 lb. This weigh beam is of "The Standard" type

rocker blocks are made of steel castings and distribute the load uniformly over the entire knife edges.

#### Individual Wheel Scales

The individual wheel scales were designed and constructed more substantially than the ones previously used in obtaining individual wheel weights. The entire frame work, with the exception of the levers, knife edges, bearing blocks, and a few minor parts, is of structural steel.

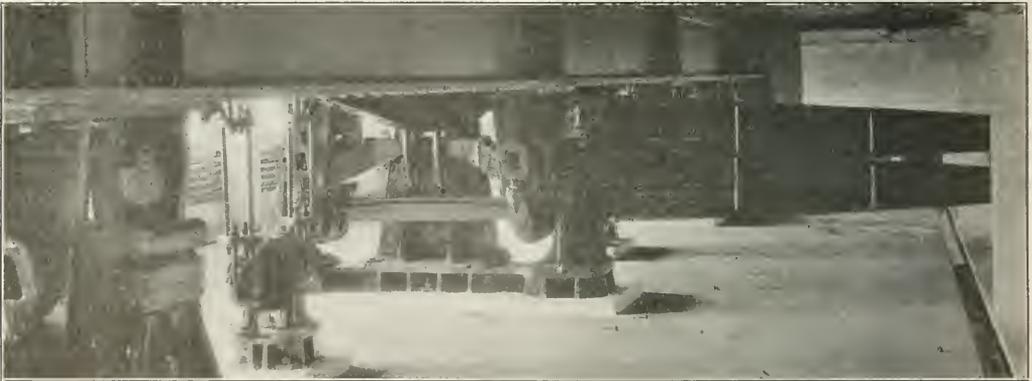
Each individual scale, although weighing 2,310 lb., can



The Scale House Is Largely of Glass

be moved about easily on two rollers or wheels which can be lowered or raised clear of the floor by means of a lever and screw device. These wheels run on roller bearings and enable the scales to be handled with remarkable rapidity.

Each individual scale is so placed that one knife edge is directly under a wheel of the locomotive. It will be noticed that over this knife edge there is a small bearing block which is placed under the tread of the wheel by planing off one



View of the Scale Mechanism on the Lower Level

with a pin recording attachment. This weigh beam, as well as those of the individual scales, is made of high grade cast iron, fitted with steel inserts for the notches.

The main girders that form the weigh bridge for the platform are constructed of 30-in. 200-lb. Bethlehem girder beams with  $\frac{3}{4}$ -in. plates riveted on the top and bottom to increase the section modulus. These girders carry 12-in., 28.5-lb. I-beams placed transversely to form the platform. (It is on this platform that the individual scales are placed to obtain the wheel loads.) The deck is composed of a  $\frac{1}{2}$ -in. steel plate riveted to the I-beams.

The suspension pendulums that carry the weigh bridge upon the lever system are adjustable. The bearing and

side of the rail head flush with the web. This bearing block distributes the load over a knife edge of sufficient length to bring the lineal pressure under full load to 7,000 lb. per in.

The locomotive wheel must be raised clear of the track before the weight can be registered on the way beam. To accomplish this, jacks which are raised and lowered by means of ratchets, have been placed on each side of the 8-in. I-beams which form the frame work for the scale. In order that the individual scales may be in alignment at all times, a small level has been placed on the shelf directly under the weigh beam. The capacity of an individual scale is 49,000 lb., increased by an additional 1,000 lb. by 10 lb. on an auxiliary beam, thus giving a total weighing capacity of

50,000 lb. An idea of the accuracy of the wheel scales was obtained in recent tests in which the sum of the wheel loads obtained with the individual scales varied only one-half per cent from the total weight recorded by the platform scales.

For greater convenience, as well as economical maintenance, it was decided to house this equipment in a building specially designed for the purpose and erected on a sloping site which affords entrance from the outside on two levels.

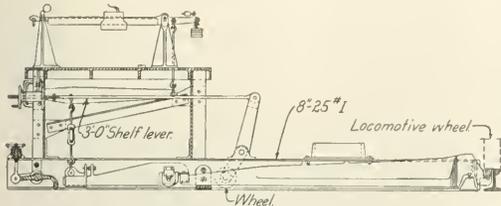
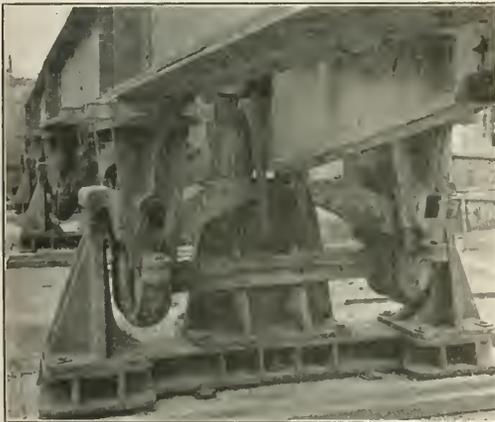


Diagram of the Individual Wheel Scale

The foundations are of concrete, with a concrete mat 110 ft. long, 11 ft. wide and 3 ft. deep, reinforced with 100 lb. rail. In this mat were placed 15-in. 42-lb. I-beams to which the foundation bolts were anchored. The scale-house, as it may be called, measures 122 ft. by 42 ft., and is of hollow tile and steel construction, with steel sash fitted with  $\frac{1}{8}$  factory ribbed glass.

Approaching this building there has been constructed a standard gage track approximately 525 ft. long. The curves



A Close View of One of the Sections

on the track are 16 and 15 deg. respectively, connected by a 40-ft. tangent, which allows the checking up of the clearances on the locomotive when rounding a short degree curve.

Designs for the scale and the complete installation of this equipment were worked out and built under the direction of W. N. Haines and D. L. Daly of the Standard Scale & Supply Company, Pittsburgh, Pa., and B. T. Converse and the writer, of the Baldwin Locomotive Works.

A MISSOURI, KANSAS & TEXAS train was robbed near Denison, Tex., on the morning of August 25. Two bandits boarding the mail car as the train was leaving Bells and immediately covering the mail clerk. They rifled several mail pouches and when near Denison signaled the train to stop and then dropped off. They escaped.

## Twenty Systems in I. C. C. Consolidation Plan

NEW YORK papers on Monday and Tuesday last gave in their columns what purported to be an outline of the tentative plan upon which consolidation of the country's railroads may be carried out, as suggested in the report made to the Interstate Commerce Commission by W. Z. Ripley, professor of economics at Harvard University. The Interstate Commerce Commission refused to comment in any way through official channels on the appearance of the supposed plan, but it is understood that an informal investigation is being made to determine the source of the leak. The official report which the Interstate Commerce Commission is directed to make by the Transportation Act—as given in Section 5 of the Interstate Commerce Act—will, it is said, be made public within a short time.

The plan as given in the papers outlines 20 possible systems, but in some cases—notably that numbered 7a—these are alternative. The New England roads apparently presented the most difficult problem of classification. For example, the New Haven is shown as included in the Baltimore & Ohio system and the Boston & Maine in the New York Central system, but a New England system, including all the roads in that region, except the Boston & Albany, is shown; likewise a New England-Great Lakes system which includes the New England roads just mentioned and the Lackawanna, the Delaware & Hudson and the Buffalo, Rochester & Pittsburgh.

No real transcontinental system is made. Northern Pacific and Burlington go together, the Great Northern and the St. Paul, the Union Pacific and the Chicago & North Western, the Southern Pacific and the Rock Island. The outline of the suggested plan of consolidations was given in the Wall Street Journal as follows:

No. 1. New York Central system: New York Central lines, except Lake Erie & Western, Toledo & Ohio Central, Zanesville & Western, Kanawha & Michigan, and Indiana Harbor Belt; Western Maryland, Fonda, Johnstown & Gloversville, Lake Erie & Pittsburgh, Pittsburgh, Chartiers & Youngbusheny, Monongahela, Boston & Maine, Maine Central, Bangor & Aroostook. Note: Boston & Maine, Maine Central, and Bangor & Aroostook may be included in System No. 7 or in 7a. Professor Ripley rejects trunk line treatment of the New England roads, but the commission presents it alternatively to bring out discussion.

No. 2. Pennsylvania system: Pennsylvania, Panhandle, Toledo, Peoria & Western, Lorain, Ashland & Southern, Lake Erie & Pittsburgh, Central Indiana, Pittsburgh, Chartiers & Youngbusheny, Monongahela.

No. 3. Baltimore & Ohio system; Baltimore & Ohio, Reading, Central of New Jersey, Cincinnati, Indianapolis & Western, Chicago Indianapolis & Louisville, New York, New Haven & Hartford, Central New England, Lehigh & New England, Lehigh & Hudson. Note: B. & O. Chicago Terminal is reserved for consideration in connection with terminal situations.

No. 4. Erie System: Erie, Delaware & Hudson, Delaware, Lackawanna & Western, Ulster & Delaware, Bessemer & Lake Erie, Buffalo & Susquehanna, Pittsburgh & Shawmut, Pittsburgh, Shawmut & Northern, Lorain, Ashland & Southern, Wabash lines east of Missouri River.

No. 5. Nickel Plate Lehigh Valley system: Lehigh Valley, New York, Chicago & St. Louis, Toledo, St. Louis & Western, Detroit & Toledo Short lines, Lake Erie & Western, Wheeling & Lake Erie, Pittsburgh & West Virginia, Bessemer & Lake Erie.

No. 6. Pere Marquette system: Pere Marquette, Detroit & Mackinac, Ann Arbor, Detroit, Toledo & Ironton, Bayne City, Gaylord & Alpena.

### Alternative New England Plans

No. 7. New England system: New Haven, Ontario & Western, Boston & Maine, Maine Central, Bangor & Aroostook, Lehigh & Hudson River, Lehigh & New England.

No. 7a. New England Great Lakes system. Same as above with addition of Delaware & Hudson, Lackawanna, Ulster & Delaware, Buffalo, Rochester & Pittsburgh, Pittsburgh & Shawmut, Pittsburgh, Shawmut & Northern.

No. 8. Chesapeake & Ohio system: Chesapeake & Ohio, Hackensack Valley, Virginian.

No. 9. Norfolk & Western system: Norfolk & Western, Toledo & Ohio Central, Kanawha & Michigan.

No. 10. Southern system: Southern Railway and affiliated lines, New Orleans, Great Northern, Alabama & Vicksburg.

No. 11. Atlantic Coast Line-Louisville & Nashville system: Those two roads and subsidiaries, Western Railway of Alabama, Richmond, Fredericksburg & Potomac, Norfolk Southern, Atlanta, Birmingham & Atlantic, Winston-Salem Southbound, Roanoke to Winston-Salem branch of the Norfolk & Western, Florida East Coast, Carolina, Clinchfield & Ohio, Georgia & Florida, Gulf, Mobile & Northern, Mississippi Central.

No. 12. Illinois Central-Seaboard system: Illinois Central, Seaboard Air Line, branch of Norfolk & Western from Lynchburg, Va., to Durham, N. C., Gulf & Ship Island, Tennessee Central, Carolina, Clinchfield & Ohio.

### Big Western Groups

No. 13. Union Pacific North Western system: Union Pacific, Chicago & North Western, Lake Superior & Isheming, Wabash line west of Missouri River.

No. 14. Burlington, Northern Pacific system: Chicago, Burlington & Quincy, Northern Pacific, Chicago Gt. Western, Minneapolis & St. Louis, Spokane, Portland & Seattle. (Colorado & Southern may be included in system No. 16.)

No. 15. Milwaukee Great Northern system: Chicago, Milwaukee & St. Paul, Great Northern, Duluth & Iron Range, Duluth, Missabe & Northern, Green Bay & Western, Spokane, Portland & Seattle, Butte, Anaconda & Pacific.

No. 16. Santa Fe system: Atchison, Colorado & Southern, Denver & Rio Grande, Western Pacific, Utah Ry., Northwestern Pacific, Nevada Northern.

No. 17. Southern Pacific, Rock Island system—Southern Pacific, Nevada Northern, Chicago, Rock Island & Pacific, Arizona & New Mexico, El Paso & Southwestern, San Antonio & Aransas Pass, Trinity & Brazos Valley, Midland Valley, Vicksburg, Shreveport & Pacific, Chicago, Peoria & St. Louis.

### New Southwestern Alignment

No. 18. Frisco-Katy-Cotton Belt system: St. Louis-San Francisco, St. Louis Southwestern, Louisiana Ry. and Navigation Co., Chicago & Alton, Missouri, Kansas & Texas, Trinity & Brazos Valley, San Antonio, Uvalde & Gulf. (Note: M. K. & T. may be included in No. 17.)

No. 19. Chicago-Missouri Pacific system: Chicago & Eastern Illinois, Missouri Pacific, Kansas City Southern, Kansas City Mexico & Orient, Kansas, Oklahoma & Gulf, Texas & Pacific, Ft. Smith & Western, Louisiana & Arkansas, Gulf Coast Lines, International & Great Northern. (Gulf Coast Lines indicates the New Orleans, Texas & Mexico, and subsidiaries.)

It will be noted that a number of railroads, particularly minor roads, are mentioned in more than one group, indicating that the Commission believes the assignment of such properties might be one way or another.

Subsidiaries of Canadian roads, such as the Soo line, are not assigned, the Commission remarking that they are portions of through transcontinental Canadian systems in active competition with systems above set forth. Few Class II and Class III roads are dealt with here but will be considered at the hearings. Water carriers controlled by railroads are considered as tentatively included with the controlling road.

### Real Test of Scheme Is Its

#### Ability to Economize in Cost

"After lying dormant for several months," says the Journal of Commerce, in commenting on the plan of consolidations outlined, "the railway consolidation scheme provided for in the Transportation Act of 1920 again reappears as a project of the Interstate Commerce Commission. This time it is in a more fully developed form as the result of work done by an expert, who has been reviewing the whole situation at the request of the commission. The Transportation Act directed the commission to develop plans for the permissive grouping or consolidation of the roads, results to be subjected to public hearing before adoption in any form, and even then to go into effect only as requested by the roads."

Continuing the Journal of Commerce says:

There is thus nothing final in what has been done thus far, and an inspection of the early reports regarding the grouping or rearrangement of the proposed systems of roads does not reveal anything of a very revolutionary character so far as the main outlines are concerned. The apparent consequence of the action proposed or planned by the commission, if followed by the lines, would be that of forcing the surrender of some securities by their present holders and the acceptance of others. Such an interchange

might be called for as the result of the action of large owners of securities and might be inevitable from the standpoint of the small holder unless he were willing to lose his entire investment.

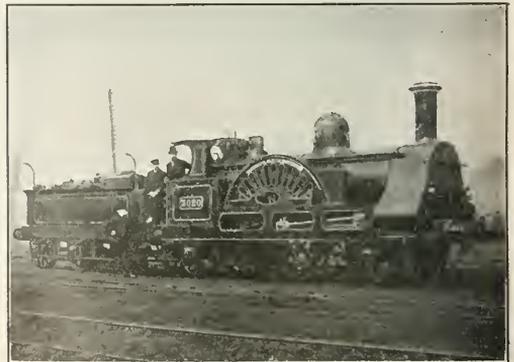
Undoubtedly the time has come for the rank and file of railroad securities holders to consider this merger policy with no little care. The Transportation Act does no more than provide facilities for initiating the new scheme, and considerably more legislation may be needed if the project is eventually to bear fruit. What this legislation should be—whether the community is really ready to submit to the surrender of its ownership of individual railroads and to accept instead ownership in a few systems subject to still closer public control—is a problem of the largest scope. It is offered at a time when the roads are to some extent emerging from the morass of government ownership into which they were plunged during the war, and its immediate effect, should it become practical, might be that of casting still more doubt upon the status of the holdings of those who now own the securities.

The real test of the scheme which is now offered for consideration is its ability to economize in the cost of transportation. If it will save expense it is desirable from the public standpoint, and the effects of it will at least potentially be beneficial to the holders of railroad securities. If there is nothing to be expected on that score there is little use in dabbling further in such experimental plans. Thus far no evidence has been adduced in favor of the consolidation except the assertion, based largely on opinion or conjecture, that savings are feasible. A notable contribution to this phase of the matter is found in the fact that whereas during the war there was close unity and centralization in the operation of the roads, great waste occurred, while since the restoration of the lines to private hands there has been material reduction of expense. Mere consolidation into large units is not likely to bring saving. The basic question, then as now, will be found in quality of management.

From the governmental standpoint it is asserted that the oversight and control of a few large systems would be much easier than the control of the multifarious roads of the present. This is based on the assumption that a change in stock ownership would result in the creation of a few corporate entities, which would be better controllable than a great many independent roads. Probably that is true from the standpoint of mere supervision, but it is not a very strong argument. There is no good reason for remodeling the railroad system of the country merely in order to secure greater ease or efficiency on the part of the Interstate Commerce Commission in the performance of its regular duties.

The whole proposal to fuse the railroad systems has been under discussion for many years, but objections to it have always been so cogent as to defeat it. The scheme went through Congress in a permissive form as a "rider" on the plan for the return of the roads to their owners, but a real and final conclusion regarding it has never been arrived at. Those who in good faith provided for the building of the roads out of their savings and to whom appeal must be made for funds to extend them and keep them up in the future should take the question seriously in hand for decision.

THE DE WITT CLINTON, the old New York Central locomotive, with its train, together with engine No. 999, is being exhibited at the Ohio State Fair, which opened on August 28.



The "Cornwall," London & North Western, 1858—102-Inch Drivers

# Ask Accountant's Help in Increasing Efficiency

Operating Officers Can Find Out Efficiency of Organization  
by Enlisting Accountant's Aid

By John Collins Owers

**M**ORE MILES per dollar! That is the one aim and object of every earnest railway man today. Whether he be a maintenance of way man, an equipment man, or one concerned directly with operating, all his thought is directed toward the one end, of producing more transportation for each dollar spent; and to reach this goal almost anything that promises to reduce expense is being tried.

Old established passenger trains are discontinued, or their schedules radically changed; business hours at stations are shortened and small agencies have been abolished. Switching shifts are omitted; less track work is done; bridge, building and signal programs are reduced, and equipment maintenance has become in arrears. Urgently needed equipment is not purchased; material stocks are allowed to run low, and many unsatisfactory conditions are permitted to exist; all with the primary object of saving money.

There is no doubt that these efforts are accomplishing the desired result. Expenses, especially payrolls, show tremendous reductions. But who knows positively whether all these cuts have produced 100 per cent economies? Or which of them have not been profitable?

Wages and fuel may be saved when fast freight trains are given slow tonnage ratings, but if, as a result, they run late, lose connections or arrive at their destinations too late for markets so that perishable shipments lie over and meats become tainted, or fruit gets too ripe, or the market falls; what is the net saving? Or if at freight houses, the number of delivery clerks is reduced, and to avoid delay, teamsters pick out their own freight and incidentally take packages belonging to someone else; or supposing that receiving clerks have been dropped with the result that improperly marked or packed shipments are accepted and become damaged or lost in transit, have the wage savings been sufficient to offset the claim agent's settlements?

Payrolls may have been reduced by changed train schedules and restricted business hours, but how have the changes affected revenues? Are people satisfied with the new conditions? Is normal traffic being handled, or has competition been stimulated? What is the net profit or loss?

Questions of this sort need the most careful study. In all the history of railroading there has never been a time when accuracy of judgment in matters of detail was so necessary as at present. We need to get rock-bottom facts in all cases; no one can afford to rely on guess work or rule-of-thumb.

## Tell the Accountant

Even if you have never done so before, take the accounting men into your confidence. Let them bring their figures into relationship with your facts, so that you can see in which direction you are traveling and where you are likely to arrive.

The shortest way to get results in this direction is for the operating officers to begin to live in interrogations. Never approve payrolls without demanding to know how much transportation has been produced by the money they have signed away. Refuse to pass statements of expenses without requiring a corresponding statement of what the money has produced, and what each unit of work cost, and how the costs compare with other jobs and the records of other men.

Let them ask the same sort of questions about statements of transportation produced. It is not enough merely to know that passenger mileage or ton mileage has increased, or that the cars or tons handled per locomotive mile are greater than

they were; the officer should insist on knowing whether the traffic has been moved at an economical or profitable figure; and no one should congratulate himself on an apparent good record until it has been put under the acid test of cost and found to be genuine.

Intelligent accounting for expenses and returns will locate specific wastes or uneconomical operations. It will show up inefficient departments, or individuals, and at the same time spur the honest and energetic to still greater effort. This point was interestingly demonstrated recently on a road where a tie installation report was started, on which the results were reduced to the number of ties applied per laborer per day on each section. Each week copies were sent to each foreman. No formal contest was started, nor were "inspiration" circulars used, but a vigorous rivalry immediately developed among the gangs; the low men sought to reach higher places on the list, and the high men to better their positions; so that the tie program, which had been started late, picked up speed and was pushed along at a fine rate, combined with a reduction in cost. Thus a very simple bit of accounting produced returns of a higher order.

Speaking broadly, railroad operations need a generous application of the "factory principle," that Mr. Ford speaks about. The proper measure of a day's work needs to be determined in every department, and for every class of employees and unit of equipment; and where it is not feasible to carry permanent cost systems, irregular "spot" checks should be made, for the purpose of keeping in touch with the results obtained.

## Ask the Accountant

Set the accounting men at work! Show them what you desire to find out; aid and direct their search for information, and you will be surprised (and it may be not wholly pleased) at what you learn. Ask them how much track should be surfaced or tamped per labor day; how many square feet a painter should cover and what various structure maintenance jobs have cost; what ratio exists between travel time and actual work hours. Ask them at what cost per unit the extra gangs are working; how many labor hours are lost by terminal delay or by train operation, and how much the loss amounts to. Then you will be able to tell the dispatcher, or it may be your foreman, what he will have to do in the way of improvement.

Ask how many labor hours are required to clean a locomotive fire, and if one, two or more men can work to better advantage; and what the ratio of fire cleaners' idle time to active time may be. Find out how many cars the yard crews should switch per hour, and under what conditions the number of riders should be increased, or an additional engine employed. Ask what tonnage should be given to your freight trains to secure the lowest possible ton-mile cost.

Ascertain what proportion of revenue earnings may be applied to terminal expenses and if the terminal costs are within that figure. Get the relationship between train operating expenses and revenues, and let them tell you what revenue should be obtained to warrant the operation of a new train.

Go into proposals for the purchase of new cars and locomotives along the same line. There will be fewer expenditure authorities withheld, if executive officers can be satisfied that the investment will realize actual savings. Work of this char-

acter, however, must be thoroughly and carefully done. Every element that bears on the problem must be taken into consideration, and all the items of expense and production properly related in order that accurate judgment may be formed. Incomplete and inconclusive figures are almost valueless.

Because by the use of heavier power, the wages cost of operating per ton-mile is lower than when smaller engines are used, it is not correct to assume that a subtraction of the lower rate from the higher will give the net credit. Many other elements enter the consideration, such as delays to other service caused by the heavier trains, drawbar failures, increased consumption of fuel, higher engine-terminal and maintenance expenses and larger capital investment, all of which add perceptibly to the cost, and therefore should be debited to the operation.

The cost of yard switching, freight trucking and fuel handling will be governed largely by the type and capacity of the equipment used. If, for instance, at one station a tractor-trailer system of trucking is in operation, while at another the freight is moved with hand-operated platform trucks, the cost of trucking at station number one should include the value of the tractor equipment, per ton handled. This can be determined by ascertaining the expenses of operating and maintenance of the tractors, including auxiliary equipment or facilities, and adding thereto a proper amount for depreciation and return on investment. Unless these elements are included, an accurate statement of cost cannot be made, and the degree of economy of one system over the other cannot be stated.

#### Educate the Shirkers

It will also be found necessary to exercise sufficient supervision to insure the accuracy of reports made by employees. Few conductors are above the temptation to insert ditto marks in the tonnage columns of wheel reports; and foremen are notably hard to convince that it makes much difference if they fail to state how much, or for what purpose, material has been used. Careful review and analysis are necessary to locate and remedy errors of this character. The men at fault and also the clerks who compute and distribute the report data need to be taught the inner value of accounting. They need to learn that they are recording live facts, of importance to the well being of their company, not merely piling one figure on another for the sake of a day's pay. They should understand the use to which their work is put and how the figures are related and applied; then it will be found that the work is more accurate and proportionately more valuable.

But beyond and above everything else, get the costs. By hook or by crook, by skill or by main force, know what each job costs. This is one of the secrets of success; it is knowledge that is indeed power, for whoever has accurate knowledge of his operating costs, possesses a power to control results that is well nigh absolute.

## The Pennsylvania's Highway Crossing Signals

THE PENNSYLVANIA RAILROAD has put up at a number of road and street crossings in Pennsylvania, New Jersey, Ohio and Virginia a new design of light signal to warn travelers on the highway of the approach of trains, the lights (electric) showing red, both night and day, whenever a train is approaching. The energizing and de-energizing of the light is controlled by the train, in the usual way, through the instrumentality of the track circuit.

The photographic illustrations show two installations, one where the lights are attached to the ordinary highway sign board and the other where they are set on posts in the center of the street, the latter being a view in Haddonfield, N. J.

The lights (two) are fixed, one above the other, about 18 in. apart, center to center, and the lower one is 6 ft. 8 in. above the level of the highway. Mounted on an ordinary 3-in. pipe post, the fixtures are adjustable so that the light may be directed toward the highway no matter at what angle the road crosses the railroad. To provide for situations where it may be desirable to set the post on the left of the highway, the reflector, shown in the front-elevation drawing, is adjust-



Highway Crossing Signal, Pennsylvania Railroad

able, and may be turned horizontally to either side. At Haddonfield, where the lights are in the middle of the street and are used as an auxiliary to gate protection, the reflector is, of course, set in the center.

The circuits and batteries are usually arranged so that each of the two lamps is operated independently, to guard against both of them being out at the same time. A peephole is provided in the doors so that the signal maintainer, riding



Crossing in Haddonfield, New Jersey

on a passing train, can tell whether or not the lamps are lighted.

The lamp is rebased, so that the concentrated filament in each lamp is in the same position, relative to the pins in the base; and as each receptacle is located exactly the same in relation to the lens, the lamps are interchangeable in all signals, without further adjustment.

A 12-volt lamp, consuming about 5½ watts, is sufficient to give a good indication in bright daylight. Each complete

signal consumes only 11 watts, or 22 watts at a crossing. With the reflector properly adjusted, a driver approaching on the highway can see the indication until he is almost opposite the signal.

The standard lettered sign of the Pennsylvania, shown in



Light-Signal for Highway Crossing

the illustration, is of cast iron, with arms 8 ft. long, and is mounted on a 3-in. pipe post. The middle of the sign is 11 ft. above the ground.

## Accident Investigations— April, May and June

THE EIGHTH quarterly issue of the summary of train accident investigations, prepared by the Bureau of Safety of the Interstate Commerce Commission, which is for the months of April, May and June, 1921, was issued on August 24. This report covers 18 accidents, as follows:

Deraiment...Cincin., N. Orleans & Tex. Pac. New River, Tenn.	April 6.
Deraiment...New Orleans & Northeastern... Moselle, Miss.	April 16.
Deraiment...Boston & Maine... Woodsville, N. H.	April 25.
Deraiment...Pennsylvania... Bennington, Pa.	April 27.
Deraiment...Columbus & Greenville... West Point, Miss.	April 30.
Collision...Norfolk & Western... Welch, W. Va.	May 3.
Collision...Washington, Balt. & Annapolis... Ferndale, Md.	May 5.
Collision...New York Central... Elkhart, Ind.	May 7.
Deraiment...Missouri Pacific... Almont, Ark.	May 7.
Deraiment...Chicago, Rock Island & Pacific... Forrest City, Ark.	May 12.
Deraiment...Texas & Pacific... Eagle Flat, Tex.	May 13.
Collision...Chicago & Alton... Shirley, Ill.	May 15.
Deraiment...Louisville & Nashville... Selway, Tenn.	May 19.
Deraiment...Charleston & Western Carolina... Beech Island, S. C.	May 20.
Collision...Pennsylvania... Burlington, N. J.	May 29.
Collision...Louisville & Nashville... Theodore, Ala.	June 2.
Deraiment...Baltimore & Ohio... Medora, Ind.	June 8.
Collision...Detroit, Jackson & Chicago... Warsaw, Mich.	June 18.

Following are abstracts of these reports:

The train derailed at New River, Tenn., on the 6th of April, was the northbound Royal Palm Limited, No. 2. Three coaches were nearly overturned and 5 passengers were killed. Over 70 passengers, one employee and three other persons were injured. The train was moving at about 40 miles an hour on a curve of six degrees when the locomotive was thrown off the track at a point where the outside rail was not properly supported, the track being under repair at the time. Three steel passenger cars were badly damaged by coming in contact with rocks projecting from the bluffs on the outside of the curve. The inspector says that the repair men were putting in new ties and increasing the elevation of the outer rail on the curve; and it appeared that the ties had been properly tamped on the inside of the curve but not under the ends of the ties at the outside. The section foreman was a man of long experience and good record.

The train derailed near Moselle, Miss., on the 16th of April, was the southbound New Orleans Limited, No. 41. Moving at about 15 miles an hour, the locomotive and three cars ran off the track at a point where the roadbed had been washed out by a sudden flood, and the engine and one car were overturned. The train consisted of one locomotive and nine cars. Two coaches and four sleeping cars remained on the track for several minutes, but the roadway was constantly being washed away, and after a short time two of these cars were overturned, fell down about seven feet and were partly submerged. One passenger was killed and two passengers and three trainmen were injured. The inspector finds that

this accident was due to a cloudburst; the evidence given at the inquiry indicating that the rainfall, causing the rising of a small stream, was the greatest ever known at that place. Train No. 55 had passed over the line a few minutes ahead of No. 41. Two drains under the track proved insufficient to relieve the flood.

The train derailed at Woodsville, N. H., on the 25th of April, was a northbound freight. Moving through a cross-over of about 15 deg. at low speed, one of the two engines of the train ran off the track, and the engineman was killed. Three employees were injured. The inspector found that a number of derailments had occurred at the same place, and that the locomotive in question was of such design that it ought not to be operated over curves of more than 10 degrees. There was no speed limit in force, and the condition of the track was only fair.

The train derailed at Bennington, Pa., two miles east of Gallitzin, on the 27th of April, about 10 p. m., was eastbound passenger No. 64. The locomotive was overturned but 9 cars remained upright. The fireman was killed and the engineman fatally injured. All other persons on the train escaped with slight bodily injuries, all of the cars being of steel. The derailment occurred on a curve of 8 deg. 38 min and the inspector found it due to excessive speed. The permissible rate at this point is only 30 miles an hour, while the train was running, probably, at 40 m.p.h. or faster.

The train derailed near West Point, Miss., on the 30th of April, consisted of two locomotives moving backward and eight cars. While running at about 25 miles an hour, down grade, one of the engines was derailed and both locomotives were partially overturned. Two enginemen, one trainman and one ex-employee (classed as a trespasser) were killed and two trainmen were injured. The inspector concluded that the cause was excessive speed on uneven track.

The train involved in the collision at Welch, W. Va., on the 2nd of May, was a local passenger, moving backward. While running at about 15 miles an hour on a curve the train ran over a misplaced switch and collided with a string of coal cars standing on a side track. Two coaches were crushed. Six passengers were killed and 41 passengers and one employee were injured. The switch was left wrong by track repairers. The look-out was inefficient. The report of the inspector on this collision was noticed in the *Railway Age* of June 17, page 1418.

The butting collision on the Washington, Baltimore & Annapolis electric road at Ferndale, Md., on the 5th of May, was between a passenger train and a work train. The motorman of the work train was killed and 10 passengers and 13 employees were injured. The time-table had been changed a few days before, and the men in charge of the work train, trusting to memory as to the frequency of passenger trains, encroached on the time of passenger train No. 339 without right. The passenger trains had been running every half hour, and some of them were taken off; these men neglected to examine the time-table.

The collision at Elkhart, Ind., on May 7 occurred in the course of switching in the freight yard about 4 a. m., two employees being killed. The inspector found that both of the victims were riding on the footboard of the tender when there was no necessity therefor; and that the conductor had provided no lookout when a car was being pushed by the locomotive.

The train derailed at Almont, Ark., on the night of the 7th of May, was the westbound Sunshine Special, No. 201. Moving at about 30 miles an hour the train was derailed at a facing point switch, misplaced, and the locomotive was overturned. The fireman was killed and four persons were injured. The switch lock had been broken and the switch light covered. The inspector reports the engineman as saying that he temporarily misjudged his location.

The train derailed on the Chicago, Rock Island & Pacific

near Forrest City, Ark., on the 12th of May, was eastbound passenger No. 626 of the St. Louis Southwestern, consisting of a locomotive and six cars. Moving at full speed the locomotive was derailed at a misplaced switch and, with the first two cars, was overturned. The engineman was killed and 12 passengers and two employees were injured. The switch, a facing point, had been left open by track repairers. It had been run through by a westbound passenger train. There was a good view and the failure of the engineman to see the target is unexplained. The inspector reported that possibly the engineman of No. 626 had had his attention diverted by an automobile which was racing with his train.

The train derailed near Eagle Flat, Tex., on the 13th of May, was a westbound freight. Four trespassers were killed and five were injured. The train was moving at about 30 to 40 miles an hour, on uneven track, when the 22d car was derailed, with the consequence just noted. The inspector reported the cause as excessive speed, the limit imposed by the rule being 25 miles an hour.

The train involved in the accident at Shirley, Ill., on the night of the 15th of May, was westbound passenger No. 9. Moving at about 40 miles an hour, it ran over a misplaced switch and collided with freight cars standing on the side track, badly damaging the locomotive and the two cars next behind it. Six passengers and four trainmen were injured. The switch had been maliciously misplaced, the switch lamp having been changed to show all-clear.

The train derailed near Solway, Tenn., on the 19th of May, was northbound passenger No. 32. Moving at about 40 miles an hour the locomotive was derailed and with the first three cars was overturned. The engineman was killed, the fireman fatally injured and two other trainmen less seriously hurt. The derailment occurred at a point where track men were resurfacing and was reported by the inspector as due to the weakened condition of the track. A number of new ties had not been spiked. The track foreman, a man of 17 years' experience, had had a flag out but had called it in, evidently misjudging the strength of the track.

The train derailed on the Charleston & Western Carolina near Beech Island, S. C., on the 20th of May, about 3 a. m., was eastbound express No. 38 of the Atlantic Coast Line. Moving at about 20 miles an hour the locomotive was derailed and overturned, and with the first two cars fell down a bank. The engineman was killed and two passengers and three trainmen were injured. The train was deliberately wrecked, one rail having been taken out.

The trains in collision at Burlington, N. J., on the 29th of May, at about 8.28 p. m., were northbound local passenger No. 2714, which was just starting from the station, and a following extra excursion train, 11 cars, heavily loaded, the excursion train running into the local at about 30 miles an hour. The two rear cars of the local, both wooden coaches, were telescoped into each other. Two passengers, one of them a train dispatcher, and both employees of the Pennsylvania, were killed and 31 passengers were slightly injured. The railroad at this point lies in the street and there was a great uproar, pedestrians, seeing that a collision was impending, shouting wildly. The excursion train had run past a manual block signal, set against it. This collision occurred at a point where the two main tracks converge into a single track. The leading train had been traveling on the left-hand track, and had stopped at the station with a part of the train fouling the switch at the end of the double track. The line is straight for about two miles, and the engineman of the extra said that he had been watching the markers on the other train, which was a short distance ahead of him; and he passed Edgewater Park, two miles back, and a slow board, 1600 ft. back, without being aware of his location. He was running at about 50 miles an hour and did not apply brakes until he came close to the home signal, a short distance back from the point of collision. The light from the

open fire-box door is the only reason given for missing the signals at Edgewater Park; and the engineman said that as he approached Burlington he was still thinking that he was in the vicinity of Edgewater Park. The fireman was equally oblivious to the landmarks. The report of the inspector says that the fireman had made only one trip on this division before this day, and that he had never been examined on the rules; although he had been in the service more than a year. The inspector gives no information about the engineman; but he had been a runner for over three years.

The trains in collision at Theodore, Ala., on the 2d of June, were northbound passenger No. 2 and a preceding freight (No. 78), the passenger running into the rear of the freight at full speed as it was entering a side track. The engineman of the passenger train was killed and the fireman and three other persons were injured. The caboose and three cars of the freight train were wrecked. This collision occurred about 12.20 a. m. The engineman of the passenger train had a good view of the tail lights of the freight for 3,300 ft. and the inspector is unable to find any explanation of how the engineman failed to apply brakes. The primary responsibility is placed on the freight for not providing flag protection and for starting out from the last preceding station with insufficient time to reach Theodore in time to clear the passenger train ten minutes, according to the rule. No block signal system was in use. The flagman of the freight had been in the service 37 years, but it was found that he could neither read nor write, although he said that he could tell the time of trains as shown in the time-table. The inspector found that the flagging and spacing rules were not rigidly observed on that division of the road.

The train derailed at Medora, Ind., on the 8th of June, about 2 a. m., was an eastbound freight, drawn by two locomotives. Both locomotives and 17 cars were wrecked, including seven cars of cattle. Three employees were killed and two were injured. The train was moving at about 35 miles an hour. The derailment was caused by a switch which had been run through in the wrong direction and was loose.

Five persons were killed and 24 injured in the rear collision of westbound interurban cars on the Detroit United Railway at Westsaw, Mich., on June 18. A wooden car was telescoped by a steel car. The inspector found that the motorman of the second train was negligent in controlling speed on a descending grade. The leading train was standing on a side track and the other one, which was the second section on the same schedule, approached at uncontrollable speed. In his service of two years the motorman had a record of numerous cases of disobedience of rules, including one rear collision.



Photo by Underwood & Underwood

Fence Erected Along Mexican Border as an Impediment to Liquor Smugglers

# Who Pays the Man for Waiting on the Bench?

## Many Railroads Could Effect Economies by Adopting a System of Interviewing Supplymen

By Grant Gibson

**D**OES THE RAILROAD executive show his "bigness" or his "smallness" by practicing procrastination in interviewing salesmen? Who pays the bill by reason of the salesman being put off by that much abused phrase "tied up in conference"? What can and should be done to meet and overcome this condition? These are indeed pointed questions and should be given considerable thought by railroad officers.

### Sales Expenses

One railroad supply concern, doing about \$400,000 business annually, keeps a sales organization of eight men. These men cover the central and eastern railroads and expend approximately \$60,000 for traveling expenses and salaries. Fifteen per cent of the total sales must therefore be given over to the sales department. Who pays this? Why, the railroad! This traveling expense is an overhead and in order that the supply people may live the railroads must pay. Sales expenses should not exceed  $7\frac{1}{2}$  per cent, or, in other words, the railroads purchasing from this small supply concern must pay \$30,000 extra each year to secure its goods. The figure seems small until one stops to think of the thousands of railway supply companies that sell to these same railroads.

Without doubt millions are wasted annually from two principal causes. First, money expended in entertainment. Graft is a harsh word, but when one stops to think even a cigar handed to a prospective customer is graft on a small scale. (The cigar bill for the eight men previously mentioned averaged \$182.65 monthly during 1920.) It appears that the successful salesman handling a line of railway supplies is the man who always hands out the smokes and who says, "How about going out to lunch with me," "Let's go to the ball game this afternoon," or "Bring the madam downtown to dinner and I'll get some tickets for a show." Don't forget the railroad pays these bills.

### Unnecessary Delays Are Costly

The second wasteful practice is making a bench warmer of the salesman and constantly putting him off until tomorrow, day after tomorrow or a week hence. When the official passes out word that the salesman should drop in later there is only one thing for him to do and that is come back at the appointed time. He may be put off again and again, but he dare not fail to show up for fear of incurring the displeasure of the man to whom he wants to sell. The railroad salesman may never put over his proposition and still be in good standing with his concern provided he gets to see his man, but woe to him if he fails to get by the closed door. Therefore, he is going to come back and, if he is a successful salesman, he will keep coming back until he breaks down the barrier that has been keeping him out. But the railroad settles the bill!

Does the man in the private office fear that if he invites the salesman in immediately upon the card being presented that the salesman will assume he has an easy mark? If so, the officer is mistaken. How much better it would be if word were passed to the salesman that although the boss was busy, he (the salesman) could have 10 or 15 minutes' time and if that was not enough it would be well for him to come in some other time. This would give the salesman a chance and should he take advantage of his invitation to come in and

stay over his time limit then he is not due any further courtesy. (It is agreed that a great many salesmen are very much in need of instructions in department.)

Another balm which would satisfy the salesman would be for the officer to step out of his private office, shake hands, politely inform the salesman of his inability to give him time and make an engagement for a conference at a later date and then mark this engagement on the calendar, and keep it if at all possible. This gives the salesman an opportunity to handle business in the interim and is a legitimate excuse to his employers as to the necessity of his staying over a day or two. Putting off the inevitable (the salesman) merely wastes time. He is going to come back, and the railroad certainly pays for this.

A certain road department officer has become so imbued with this put-off attitude towards salesmen that it has become a habit with him and even when heads of other departments (lesser lights) are invited into conference at a certain hour they have to join the bench warmers for an hour or two before getting in. This officer was representing his company in entering a contract with an outside engineering contractor to take over certain railroad work. The outside man (one of the biggest) was invited to attend a conference in the officer's office at 9 a. m. on Monday. He travelled 17 hours to keep the appointment and was on hand at the specified time. The private secretary took in the card and came out with the information that it was impossible to see Mr. Contractor that day; make it 9 a. m. tomorrow. Again he showed up and again was requested to come in later. After three appointments he was received on Saturday morning and the business was wound up in less than half an hour. This was not only unfair to the individual but to the railroad as the railroad will pay this bill.

### Little Courtesies Count

One railroad officer does not believe in making his reception room comfortable. Hard benches and dim lights are in vogue. Why? He believes that by making the salesman comfortable he will become a frequent caller. Another never invites the salesman to have a seat when he calls; if he sits down he is liable to stay too long. Still another seldom invites a salesman into his private office but comes out and stands up to the railing to talk business, even though several other salesmen may be present.

Some railway officers are of the opinion that courteous treatment to the man who sells would result in not having any time to conduct the business of the railroad. This condition would actually exist unless the problem were systematized the same as other problems are. System is needed above all. Lack of it is responsible for the statement that the salesman is a necessary evil.

### A Satisfactory Arrangement

One purchasing agent has a well planned system and it is really surprising to note the simplicity with which it works out. Immediately upon entering the reception room one is greeted with a neat placard which reads: "The Purchasing Agent will receive salesmen between the hours of 9 and 12 a. m. (except on Saturdays), unless by appointment." The rule is inflexible. The salesmen come in and are received in the order of arrival. If the calendar for the morning looks

big it is suggested to them that they be as brief as possible.

The purchasing agent personally handles the major dealings and several assistants the minor ones. But the salesman on his first call is invited in to see the big boss. He is given ample time to state his proposition and if the purchasing agent is interested and the proposition is of minor importance the salesman is courteously referred to one of the assistants. Each and every salesman is given his opportunity. Suffice to say, if he is handling an article of merit and his price is right he can sell.

The principal advantages of this system are: First, the purchasing agent is not constantly interrupted throughout the day receiving visitors. Second, his superiors and subordinates are aware of the hours devoted to salesmen and seldom if ever interrupt him. Third, the uniform treatment of all salesmen disarms criticism. It does not take long for the news to travel through the selling fraternity that a certain salesman can always get an audience with Mr. So-and-So. Fourth, the cost of selling to this company is naturally reduced and if every railroad executive would adopt a similar system there is absolutely no reason why prices would not be reduced and the railroads would not have to pay excess baggage.

## A New Ticket Printing and Recording Machine

A NEW DEVICE has recently been perfected by J. W. Hubbard, president of the United States Switch Company, Eau Claire, Wis., for printing and recording local and inter-line tickets as sold on steam and electric railroads, which makes it unnecessary to carry a stock of local ticket forms. Each ticket is produced on safety ticket paper which is inserted in the machine in the form of a roll, the paper being fed forward for the proper space and then cut off automatically as each ticket is produced. The entire printing is done in the machine, the roll being merely a blank strip of safety paper. The ticket turned out in this machine shows on its face the number, date, destination, price, routing, name of the issuing line, the customary statement showing the time within which the ticket must be used, and the name of the general passenger agent of the issuing line. A coupon, which is attached to every ticket, is perforated so that it can be conveniently removed when desired by the first conductor.

In addition to producing the tickets themselves, the machine makes a complete record of each sale. This statement, which is automatically printed on a record sheet, gives data for every ticket, including its number, the exact number of miles from issuing point to destination, routing, rate, war tax and the number of miles and the rate applying to each state through which the passenger travels. The ticket is produced and delivered on a small shelf near the right hand end of the machine and the record is printed near the top of the left hand end on a roll of paper which can be removed at the end of the day's business. A glass door at the upper left hand corner of the machine, through which the record is withdrawn, has a bottom edge which serves as a knife, and on being closed, cuts off the daily record from the roll, which is left in place in the machine.

In making a ticket, the operator takes hold of a small knob fitted into the right end of the machine and by turning in either direction, indexes the machine to the desired destination. When this operation has been performed, it is necessary only to press an electric button in order to produce a ticket with all the customary printing and at the same time to make the complete record and ticket charge distribution. When the machine is to be used in smaller stations where no electric current is provided, the ticket and record are pro-

duced by making one complete turn of a crank fitted into the right hand end of the machine. Tickets are numbered in consecutive order automatically as they are produced and each ticket is dated on its face instead of on the back. When the ticket seller finds it necessary to sell a ticket some days in advance, he can make use of a dating device on the machine which enables him to adjust an individual ticket for any date desired. Trials have proved that tickets can be produced, delivered to the patron, and change made as rapidly by the Hubbard machine as under the old system of ticket racks and windows.

Very few working parts are involved. At the same time the completeness of the device is demonstrated by the fact that when a change in rate is announced, the printing drums can be removed by a simple operation and new drums carry-



The Hubbard Ticket Printing Machine

ing the correct rate can be inserted. The printing drums are light in weight, being of aluminum construction, and are easily handled. The United States Switch Company, which will handle the distribution of the machines, will market them in several different sizes. The smallest machine will carry 50 stations, the next larger 150 stations, a third size 300 stations, and the largest size to be carried in stock will print tickets for 600 destinations although it is possible to secure a machine on special order which will carry any number up to 1,200 stations.

The new device, it is said, will effect large savings for ticket departments by doing away with all local ticket stocks. Its use will also prevent the sale of tickets out of numerical order and will make it impossible to dispense any tickets without a complete record of the transaction, together with the price received. The use of the machine makes such errors as overcharges or undercharges in the price of tickets nearly impossible, since the passenger sees for himself the price, including the war tax, on the face of the ticket. The date is also included on the face instead of on the back as at present, so that the conductor can see at a glance the date when the ticket was sold. The machine is also of advantage to auditing and statistical departments, since the record it produces can be accepted by these departments without checking, not being liable to any errors which an agent might make.

THE UNITED STATES Department of Agriculture has sent west a carload of exhibits to be displayed at state fairs at Sedalia, Mo.; Milwaukee, Wis., and Topeka, Kan.; and at Wichita, Kan., in connection with the international wheat show.

# General News Department

The Telegraph and Telephone Section of the American Railway Association will meet in Cleveland, Ohio, at the Hotel Cleveland on September 21, 22 and 23.

The Southern Pacific is installing telephone train dispatching circuits in Texas and Louisiana; 20 stations on the Louisiana Western, 30 on Morgan's Louisiana & Texas, between Echo, Tex., and New Orleans, La., and 27 stations on the Houston, East and West Texas, between Houston and Shreveport. All are to be equipped with Western Electric apparatus. Telephones are to be installed at a number of blind sidings.

The Bridge and Building Supply Men's Association held a meeting in Chicago on August 25. Arrangements were made to receive applications for membership and space for the exhibit of this association to be held at the Hotel McAlpin in New York City on October 18, 19 and 20, in connection with the convention of the American Railway Bridge and Building Association. A. J. Filkins, 3346 S. Artesian avenue, Chicago, is secretary.

The question of resuming hearings in the general railway investigation before the Senate committee on interstate commerce has been postponed, to be decided at a meeting of the committee following the Congressional recess. There is some sentiment in the committee for discontinuing the hearings, but strong pressure is being brought by others to hear testimony from the labor and other interests not represented at the hearings so far.

The American Association of Railroad Ticket Agents held its annual convention at St. Paul, Minn., last week. A resolution was adopted to the effect that the members believe the Government ought to accord them a higher classification than that of "clerks." The president of the Association for the ensuing year is F. J. Burton, the secretary, W. G. Fershel, both of Chicago. It is intended to hold the next annual convention at Savannah, Ga.

## Chairman Clark Ends Career with Commission

Chairman Clark of the Interstate Commerce Commission completed his work with the commission on August 31 and prepared to engage in his new work in private practice on commerce matters in Washington. His successor on the commission, Frederick I. Cox, was expected to take the oath of office on Thursday and enter upon his duties.

Mr. Clark has given a statement that the speculative rumors that friction between the President and the commission or between the President and himself had anything to do with his resignation have no foundation in fact. He said he was controlled entirely by personal reasons and that the President not only expressed regret that he wanted to retire but asked him to withdraw his resignation and even after he had accepted it gave him an opportunity to withdraw it. He also said the President has not in any way indicated any desire or disposition to dictate to or direct the commission or even to suggest how the commission should act in any matter before it.

## Railway Earnings for July

Preliminary compilations of railway returns for the month of July, the first month since the wage reduction took effect, show an improvement over previous months. The net operating income for 172 roads was \$57,254,000. In June all the Class I roads earned about \$51,000,000. To earn at the rate of 6 per cent, all the Class I roads should earn about \$90,000,000 for July. The total operating revenues of 172 roads show a decrease of 13.1 per cent, while their operating expenses show a decrease of 29 per cent.

For the 10 months since the rates were increased last year Class I roads have earned a net operating income of \$368,093,000, according to a compilation by the Bureau of Railway Economics. This is at the annual rate of 2.5 per cent on the valuation tentatively fixed by the commission for rate-making purposes. For the first six months of 1921 the roads earned \$141,000,000, or 1.8 per cent. For the 10-months period the average under a 6 per cent return was \$516,977,000.

## Franco-Canadian Exhibition Train

To advertise the life and industries of France, a traveling exhibition, occupying eight cars, is now being shown in the principal cities of Canada. The train was at Montreal August 20. Its itinerary includes Three Rivers and Quebec and thence to Toronto. It will complete its journey at Montreal on November 4.

The eight exhibition coaches are assigned as follows. First coach, "La Pensee Francaise" (The French Thought), which will include some of the finest treasures of French art and literature as well as relics of the wars of France. Second and third coaches: Industrial exhibits, including travel, photography, civil engineering, mines and mineral products, mechanics, etc.

Fourth coach: "La Mode," including dresses, silks, laces, etc. Fifth coach: Leather industries, chemical products, drugs, perfumes, electrical appliances, brushes, toys. Sixth coach: Agricultural, horticultural and alimentary products. Seventh coach: Decorative art, bronzes, watches and clocks, jewelry and cutlery.

## Too Much Regulation

"The fact is that under government regulation, of railroads or of any other business, the power of control is given almost entirely into the hands of men who are ignorant of the practical problems of the enterprise. Some of the regulators have studied books on the subject—law books and theoretical treatises—but few of them know anything about the subjects from practical experience. This applies not merely to the members of the commission, but also to the vast army of advisers and assistants who do the real work of the regulatory body. It would be foolish in the extreme to expect anything like satisfactory results from that kind of regulation; and yet, it is the only kind of regulation that can be had under the power of government.

"To suggest that the Interstate Commerce Commission be abolished would lay one open to the charge of being a 'reactionary'; yet it may be doubted whether the shippers, the government, the railroads, or consumers of commodities would be any worse off if the whole business were wiped off the statute books. They certainly couldn't be much worse off and in some particulars they might be better off.

"In any event, the net beneficial results of government regulation of the railroads, when disadvantages are also taken into consideration, are so slight as to leave the country not in a mood to sanction any extension of the policy of government regulation to other lines of business. President Harding struck a popular chord when he declared for more business in government and less government in business."—*Albany Evening Journal*.

## Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Penthus, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

(Continued on page 466)

Operating Statistics of Large Steam Roads—Selected Items for the Month of June, 1921,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles			Car-miles		Ton-miles (thousands)			Freight Service Average number of locomotives on line daily							
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Service-able	Un-service-able	Per cent un-service-able	Stored						
													Service-able	Un-service-able	Per cent un-service-able	Stored		
<b>New England Region:</b>																		
Boston & Albany.....	1920	394	243,687	262,603	29,513	4,366	63.6	235,293	91,918	122	29	19.4	...					
Boston & Albany.....	1921	394	325,431	345,940	33,532	5,899	68.8	328,773	153,512	133	32	19.2	...					
Boston & Maine.....	1920	2,469	507,466	560,399	46,723	10,703	68.8	506,236	231,969	343	118	25.6	73					
Boston & Maine.....	1921	2,469	772,216	864,519	85,642	15,575	72.0	825,134	365,076	366	97	21.0	3					
N. Y., N. H. & H.....	1920	1,359	483,891	488,891	3,891	3,891	100.0	483,891	301,033	83	83	100.0	39					
N. Y., N. H. & H.....	1921	1,938	512,100	534,885	38,140	11,114	72.8	567,606	257,338	280	81	22.4	...					
<b>Great Lakes Region:</b>																		
Delaware & Hudson.....	1921	880	337,717	432,930	41,002	8,222	59.4	560,818	273,600	295	20	6.3	136					
Del., Lack. & Western.....	1920	858	440,955	622,165	45,718	13,724	69.8	767,341	469,539	268	33	11.0	13					
Del., Lack. & Western.....	1921	997	493,782	600,310	11,451	14,851	67.0	839,641	390,098	302	57	15.9	47					
Del., Lack. & Western.....	1920	997	598,706	670,785	126,511	16,855	70.7	963,142	485,373	286	79	21.6	2					
Erie (inc. Chic. & Erie).....	1921	2,259	748,111	896,281	44,677	25,844	66.2	1,519,271	687,324	547	150	21.5	122					
Erie (inc. Chic. & Erie).....	1920	2,259	1,073,112	1,212,183	38,214	37,245	72.5	2,172,616	1,090,152	585	106	15.3	10					
Lehigh Valley.....	1921	1,431	519,626	576,703	58,448	14,733	62.6	913,309	428,826	420	121	22.4	135					
Lehigh Valley.....	1920	1,429	589,800	663,946	67,672	17,110	71.1	1,077,779	586,762	394	192	32.8	123					
Michigan Central.....	1921	1,829	424,612	435,499	16,667	12,563	61.5	696,981	262,360	331	86	20.6	116					
Michigan Central.....	1920	1,826	497,262	541,971	17,944	17,707	77.2	901,154	430,009	344	70	16.9	...					
New York Central.....	1921	5,655	1,866,492	1,720,706	116,663	52,824	61.3	3,139,555	1,323,307	1,005	618	30.0	306					
New York Central.....	1920	5,646	1,834,447	2,141,902	171,413	73,398	66.8	4,319,649	2,073,028	(*)	(*)	(*)	(*)					
N. Y., Chic. & St. L.....	1921	572	308,558	309,634	364	9,506	65.3	490,345	183,133	113	52	31.5	41					
N. Y., Chic. & St. L.....	1920	573	343,187	349,012	1,675	10,960	78.3	543,106	260,450	97	58	37.4	16					
Perc Marquette.....	1921	2,196	493,816	409,187	3,245	6,246	65.8	380,665	6,717	166	47	16.6	21					
Perc Marquette.....	1920	2,200	369,993	384,602	6,362	9,896	80.9	511,723	269,842	156	44	21.9	...					
Pitts. & Lake Erie.....	1921	225	70,171	79,810	3,321	2,282	64.2	159,505	93,159	62	22	26.2	20					
Pitts. & Lake Erie.....	1920	225	92,214	96,387	1,354	3,646	72.9	246,752	151,132	63	20	24.1	27					
Wabash.....	1921	2,474	467,324	450,738	16,586	13,019	68.8	720,151	301,129	279	69	19.8	53					
Wabash.....	1920	2,418	555,386	551,380	6,197	17,148	79.7	867,548	422,792	263	77	22.6	4					
<b>Ohio-Indiana-Allegheny Region:</b>																		
Baltimore & Ohio.....	1921	5,185	1,654,036	1,911,405	134,123	39,828	59.2	2,637,723	1,312,635	991	424	30.0	150					
Baltimore & Ohio.....	1920	5,154	1,879,650	2,232,425	136,491	47,621	62.9	3,259,570	1,767,670	1,074	272	20.2	26					
Central of N. J.....	1921	679	307,481	338,729	39,013	6,831	62.9	454,295	236,731	214	56	20.7	...					
Central of N. J.....	1920	679	307,481	338,729	39,013	6,831	62.9	454,295	236,731	214	56	20.7	...					
Chicago & Eastern Ill.....	1921	1,131	209,042	210,002	2,464	4,742	62.3	281,813	146,791	125	46	26.9	52					
Chicago & Eastern Ill.....	1920	1,131	298,609	308,822	5,445	7,514	69.5	444,661	235,230	127	66	34.2	1					
C., C., C. & St. L.....	1921	2,393	705,398	737,259	189	20,490	67.6	1,228,973	600,019	299	105	26.0	3					
C., C., C. & St. L.....	1920	2,393	705,398	737,259	189	20,490	67.6	1,228,973	600,019	299	105	26.0	3					
Elgin, Joliet & Eastern.....	1921	837	76,599	82,825	4,589	2,273	65.8	165,811	86,793	98	10	9.3	36					
Elgin, Joliet & Eastern.....	1920	834	168,998	190,837	12,141	5,391	69.4	384,132	208,799	94	13	12.1	...					
Long Island.....	1921	395	419,669	429,869	37,736	9,547	75.8	579,901	285,497	35	13	12.1	...					
Long Island.....	1920	395	419,669	429,869	37,736	9,547	75.8	579,901	285,497	35	13	12.1	...					
Pennsylvania System.....	1921	10,875	3,907,596	4,237,527	300,664	101,183	61.3	6,979,635	3,451,230	2,632	787	23.0	849					
Pennsylvania System.....	1920	10,837	4,990,725	5,509,727	423,968	133,616	68.1	8,477,044	4,509,973	2,162	877	28.9	19					
Phila. & Reading.....	1921	694	499,605	563,379	69,715	12,139	61.7	429,446	376,819	81	17	17.7	167					
Phila. & Reading.....	1920	691	556,674	640,186	88,212	13,480	68.3	895,026	503,196	279	89	24.2	5					
<b>Potomac Region:</b>																		
Chesapeake & Ohio.....	1921	2,545	830,054	895,530	23,115	24,215	55.9	1,971,182	1,072,786	441	114	20.5	35					
Chesapeake & Ohio.....	1920	2,530	845,399	952,833	25,396	25,481	61.2	1,889,644	1,039,845	418	114	21.5	9					
Norfolk & Western.....	1921	2,140	431,381	474,847	32,431	32,431	100.0	431,381	400	96	28	19.8	199					
Norfolk & Western.....	1920	2,190	833,389	1,072,705	54,212	25,256	66.1	1,815,515	1,011,994	475	199	21.5	9					
<b>Southern Region:</b>																		
Atlantic Coast Line.....	1921	4,887	578,976	579,697	7,736	13,161	62.0	683,610	251,673	303	120	28.4	36					
Atlantic Coast Line.....	1920	4,889	711,229	713,353	12,894	15,266	67.0	778,505	314,464	298	140	28.4	36					
Central of Georgia.....	1921	1,908	248,631	249,711	3,337	4,919	66.1	264,794	111,635	109	24	18.0	...					
Central of Georgia.....	1920	1,913	265,629	268,525	5,142	5,373	74.9	268,063	123,021	106	15	12.4	...					
I. C. (inc. Y. & M. V.).....	1921	6,151	1,541,461	1,546,630	36,607	39,205	63.1	2,453,295	1,057,489	681	102	13.0	8					
I. C. (inc. Y. & M. V.).....	1920	6,151	2,029,416	2,039,387	37,736	42,053	68.8	3,190,749	1,480,647	724	139	23.9	23					
Louisville & Nashville.....	1921	5,024	1,525,126	1,632,940	58,730	26,069	59.4	1,684,824	784,349	544	107	16.4	28					
Louisville & Nashville.....	1920	5,024	1,583,877	1,715,838	57,130	28,625	63.5	1,723,901	837,740	520	126	19.5	...					
Seaboard Air Line.....	1921	3,537	375,925	380,375	4,951	7,988	68.5	404,091	162,200	167	22	35.4	...					
Seaboard Air Line.....	1920	3,537	488,520	494,128	8,674	10,934	71.7	532,972	241,381	163	85	31.1	...					
Southern Ry.....	1921	6,942	1,363,811	1,566,861	27,072	31,634	64.4	1,316,733	332,900	383	239	18.0	68					
Southern Ry.....	1920	6,942	1,534,613	1,566,861	41,983	35,301	71.9	1,812,095	824,798	909	199	18.0	4					
<b>Northwestern Region:</b>																		
C. & N. W.....	1921	8,299	1,336,126	1,356,769	14,063	27,327	63.6	1,532,254	636,619	852	239	21.9	129					
C. & N. W.....	1920	8,318	1,336,126	1,356,769	14,063	27,327	63.6	1,532,254	636,619	852	239	21.9	129					
C., M. & St. F.....	1921	10,618	1,313,505	1,346,474	59,600	31,798	65.6	1,713,140	747,753	830	223	21.2	176					
C., M. & St. F.....	1920	10,626	1,619,494	1,677,353	73,409	41,652	73.0	2,165,109	1,049,421	662	273	29.2	9					
C., St. P., M. & O.....	1921	7,282	267,066	278,218	10,167	4,918	71.3	249,796	106,167	162	51	23.9	50					
C., St. P., M. & O.....	1920	7,282	267,066	278,218	10,167	4,918	71.3	249,796	106,167	162	51	23.9	50					
Great Northern.....	1921	7,985	861,739	892,760	38,622	26,778	70.9	1,542,314	824,707	485	190	28.1	53					
Great Northern.....	1920	7,985	861,739	892,760	38,622	26,778	70.9	1,542,314	824,707	485	190	28.1	53					
M., St. P. & S. Ste. M.....	1921	4,225	371,767	488,591	4,516	8,477	72.1	410,678	183,991	319	51	12.8	53					
M., St. P. & S. Ste. M.....	1920	4,227	526,557	534,251	7,603	12,099	74.6	600,308	293,049	327	71	17.8	27					
Northern Pacific.....	1921	6,408	627,943	656,742	43,716	17,881	70.6	968,384	454,391	531	153	22.4	141					
Northern Pacific.....	1920	6,405	803,192	847,629	58,020	23,675	78.0	1,258,019	644,684	512	127	19.9	38					
Ore.-Wash. R. R. & Nav.....	1921	2,198	162,270	173,895	17,577	3,986	74.4	217,321</										

Compared with June, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Average number of freight cars on line daily				Gross tons					Pounds of coal per ton of freight				
	Home	Foreign	Total	Per cent un-service-able	Stored	per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net tons per car-day	Cars-mile per car-day	Net tons per ton-mile of road per day	1,000 gross ton-miles, including locomotive and tender	Passenger service ton-miles	Passenger service ton-car-miles
New England Region:														
Boston & Albany.....1921	3,575	4,224	7,799	6.8	908	966	377	21.1	393	29.3	7,778	203	367,691	1,083,560
1920	584	8,651	9,235	4.6	.....	1,010	472	26.0	554	31.0	12,990	197	318,564	2,074,729
Boston & Maine.....1921	18,278	12,793	31,071	20.0	3,091	1,164	457	21.5	249	16.7	3,132	147	867,147	4,733,413
1920	7,305	29,954	37,259	8.4	.....	1,069	474	23.5	347	19.3	9,491	147	867,739	4,733,413
N. Y., N. H. & H.....1921	24,810	14,532	39,342	20.8	1,900	3,231	1,222	22.2	190	13.5	11,382	161	1,401,382	6,877,899
1920	8,206	36,219	44,425	6.3	.....	1,108	503	23.2	193	11.5	4,426	187	1,170,506	7,438,443
Great Lakes Region:														
Delaware & Hudson.....1921	11,044	4,783	15,827	12.0	1,532	1,661	810	33.3	576	29.2	10,359	176	195,609	1,051,073
1920	3,698	14,790	18,488	5.7	.....	1,740	929	34.1	738	31.1	15,904	169	195,295	1,023,998
Del., Lack. & Western.....1921	17,763	6,416	24,179	9.3	774	1,700	790	26.3	538	30.6	13,046	166	400,175	3,641,819
1920	4,784	19,780	24,564	5.1	.....	1,755	885	28.8	659	32.4	16,232	131	481,243	3,377,762
Erie (inc. Chic. & Erie).....1921	40,520	14,775	55,295	18.9	13,070	1,904	861	26.6	414	23.5	10,143	132	668,169	5,066,239
1920	8,521	53,637	62,158	7.1	.....	2,025	1,016	29.3	585	27.6	16,088	139	601,322	4,977,659
Lehigh Valley.....1921	32,235	8,786	41,021	18.3	3,957	1,758	825	29.1	349	22.1	13,688	169	368,292	2,723,155
1920	9,732	26,553	36,285	7.2	.....	1,827	995	34.3	539	29.1	13,688	164	368,292	2,723,155
Michigan Central.....1921	19,812	12,404	32,216	17.1	2,092	1,642	618	20.9	272	21.2	4,781	117	573,442	5,028,171
1920	4,083	34,915	38,998	6.8	.....	1,812	865	24.3	358	19.6	7,852	111	613,225	5,753,182
New York Central.....1921	90,018	46,086	136,104	14.7	31,673	2,004	845	25.2	324	21.1	7,806	112	2,491,359	19,746,684
1920	27,576	133,365	160,941	7.5	.....	2,329	1,118	28.2	429	22.8	12,238	98	2,491,359	20,176,889
N. Y., Chic. & St. L.....1921	5,655	5,379	11,034	15.5	1,618	1,589	594	19.3	553	44.0	10,670	98	86,802	535,190
1920	1,086	8,676	9,762	6.0	.....	1,583	759	23.8	889	47.8	15,163	107	82,717	506,682
Pere Marquette.....1921	11,436	8,608	20,044	16.4	1,000	1,296	535	24.7	286	17.7	2,608	134	314,071	1,563,114
1920	3,823	21,200	24,923	6.2	.....	1,383	729	27.1	361	14.4	4,088	152	312,623	1,601,676
Pitts. & Lake Erie.....1921	17,736	7,198	24,934	25.2	1,931	2,273	1,328	40.7	125	4.8	13,824	96	107,096	572,645
1920	3,128	20,566	23,694	10.3	.....	2,676	1,639	41.5	213	7.0	22,434	81	112,495	575,681
Wabash.....1921	13,166	9,642	22,808	19.2	1,159	1,528	639	21.9	440	29.2	4,152	154	516,314	2,752,472
1920	4,632	23,112	27,744	8.3	.....	1,562	761	24.7	508	25.9	5,829	158	532,259	2,787,141
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohi.....1921	72,087	27,939	99,826	11.3	6,892	1,595	794	33.0	418	22.5	8,439	175	1,356,941	8,622,487
1920	8,696	111,311	120,007	6.5	.....	1,733	940	35.8	529	21.8	11,434	175	1,334,708	8,116,158
Central of N. J.....1921	20,498	8,421	28,919	23.8	4,801	2,121	1,089	22.3	311	14.9	2,922	131	39,932	1,736,282
1920	5,003	19,516	24,519	8.9	.....	1,477	770	34.7	322	14.8	11,626	164	364,263	1,604,676
Chicago & Eastern Ill.....1921	17,137	2,826	19,963	9.2	4,861	1,348	702	31.0	245	12.7	3,426	146	217,614	1,412,660
1920	7,932	20,157	28,089	7.8	.....	1,489	788	31.3	389	17.9	6,933	131	227,568	1,481,450
C. C., C. & St. L.....1921	18,098	15,721	33,819	11.8	5,991	1,668	885	26.2	334	26.7	5,856	131	702,864	4,372,450
1920	4,135	32,893	37,028	7.7	.....	1,742	851	29.3	540	27.3	8,357	167	764,307	4,558,670
Elgin, Joliet & Eastern.....1921	9,993	3,368	13,361	7.3	3,387	2,165	1,133	38.2	217	8.6	3,458	115	( )	( )
1920	7,852	6,099	13,951	7.0	.....	2,273	1,236	38.7	499	18.6	8,344	( )	( )	( )
Long Island.....1921	2,304	3,443	5,744	2.5	1,231	1,368	235	24.7	63	4.6	819	382	219,640	1,255,828
1920	585	4,739	5,319	3.0	.....	584	240	21.7	56	5.5	820	188	219,640	1,255,828
Pennsylvania System.....1921	221,453	67,999	289,452	11.9	62,515	1,786	883	34.1	397	19.0	10,579	128	4,940,678	32,617,410
1920	98,222	256,381	334,603	5.4	.....	1,712	911	33.8	449	19.3	13,872	167	5,367,156	35,859,091
Phila. & Reading.....1921	28,377	10,444	38,821	7.7	7,874	1,660	860	35.4	369	16.9	20,624	168	518,311	2,360,312
1920	6,056	30,751	36,807	3.9	.....	1,608	904	37.3	455	17.9	24,279	158	437,739	2,378,430
Peachabon Region:														
Chesapeake & Ohio.....1921	41,652	12,000	53,652	8.8	2,114	2,375	1,292	44.3	667	26.9	14,050	116	433,785	2,463,447
1920	11,603	42,046	53,652	11.4	.....	2,235	1,230	40.8	499	38.0	13,755	147	427,333	2,430,617
Norfolk & Western.....1921	36,366	5,800	42,166	8.6	2,603	2,222	1,208	29.3	293	20.3	13,743	152	394,337	2,471,169
1920	11,344	21,888	33,232	8.6	.....	2,205	1,229	40.1	1,015	38.3	15,404	152	395,992	2,570,424
Southern Region:														
Atlantic Coast Line.....1921	22,298	7,076	29,374	19.6	.....	1,181	435	19.1	286	24.1	1,716	123	716,762	4,368,952
1920	23,233	22,256	29,749	13.5	.....	1,090	442	22.7	352	25.5	2,142	131	734,489	4,040,048
Central of Georgia.....1921	5,344	4,237	9,581	16.0	.....	1,065	449	22.7	388	25.5	1,950	141	315,566	1,525,666
1920	1,546	7,947	9,043	4.0	.....	1,009	463	22.0	453	26.2	2,144	141	304,015	1,550,653
I. C. (inc. Y. & M. V.).....1921	47,899	17,212	65,111	12.0	8,376	1,592	686	27.0	541	31.8	5,703	127	1,480,521	8,091,672
1920	18,439	48,373	66,812	10.0	.....	1,572	780	28.4	804	42.3	8,023	127	1,385,228	8,206,083
Louisville & Nashville.....1921	39,620	15,120	54,740	25.9	108	1,576	814	30.1	478	26.7	5,702	159	935,500	5,462,924
1920	13,553	28,066	41,619	10.3	.....	1,488	529	29.3	671	34.6	5,588	176	981,378	5,261,610
Seaboard Air Line.....1921	11,794	6,987	18,781	26.2	.....	1,075	432	20.3	288	20.7	1,529	176	542,482	3,132,269
1920	3,863	16,429	20,292	9.9	.....	1,142	494	22.1	395	24.9	2,275	173	553,349	2,776,393
Southern Ry.....1921	40,339	16,441	56,880	13.8	9,662	1,572	818	31.0	317	22.2	5,557	187	1,388,794	7,467,298
1920	10,928	50,241	61,219	5.0	.....	1,181	537	23.4	422	24.4	3,960	151	1,415,616	8,752,595
Northwestern Region:														
C. & N. W.....1921	49,579	22,381	71,960	8.9	6,500	1,155	480	23.3	295	19.9	2,557	172	1,664,756	10,414,546
1920	25,077	35,323	40,400	7.7	.....	1,268	538	24.3	378	23.5	3,652	153	1,643,027	10,551,067
C., M. & St. P.....1921	44,912	17,889	62,801	18.2	3,400	1,304	609	23.5	367	20.9	3,829	155	1,472,629	9,372,809
1920	21,150	65,498	86,648	7.7	.....	1,337	648	25.6	440	21.9	3,292	140	1,404,029	9,363,430
C., St. F. M. & O.....1921	4,426	10,899	15,325	13.3	2,949	933	397	21.6	231	15.0	2,050	175	313,904	1,817,762
1920	1,054	13,663	14,717	7.7	.....	1,003	476	24.1	421	22.2	3,058	167	308,551	1,893,009
Great Northern.....1921	46,866	5,427	52,343	21.4	4,424	1,639	780	28.4	339	18.9	2,220	146	974,870	6,230,468
1920	20,466	23,120	43,586	7.5	.....	1,790	957	30.8	631	28.9	3,443	142	980,770	6,400,461
M., St. P. & S. Ste. M.....1921	18,278	5,327	23,705	10.9	4,433</									

- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Dert, Philadelphia & Reading, Philadelphia, Pa.
- AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 29 S. La Salle St., 332 South Michigan Ave., Chicago.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, November 21 and 22, Carolina Hotel, Pinehurst, N. C.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Annual convention, October 3, Atlantic City. Exhibits this year will be omitted.
- AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill. Next convention September 12-14, Hotel Sherman, Chicago.
- AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, 1921.
- Division I—Operating.  
Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.  
Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.
- Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association), J. C. Caviston, 75 Church St., New York, N. Y.
- Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents), W. A. Fairbanks, 75 Church St., New York, N. Y.
- Safety Section. J. C. Caviston, 75 Church St., New York. First annual meeting, Boston, Mass., September 26.
- Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.
- Division III—Traffic. J. Gottschalk, 143 Liberty St., New York.
- Division IV—Engineering. E. H. Fritch, 431 South Dearborn St., Chicago, Ill.
- Construction and Maintenance Section. E. H. Fritch.  
Electrical Section. E. H. Fritch.  
Signal Section (including former activities of the Railway Signal Association). H. S. Ballet, 75 Church St., New York, N. Y.
- Division V—Mechanics (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. No meeting this year.
- Equipment Painters Section (including former activities of the Master Car and Locomotive Painters' Association), V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Division VI—Purchases and Stores (including former activities of the Railway Purchasers' Association). J. J. Murphy, General Storekeeper, New York Central, Collinwood, Ohio.
- Division VII—Freight Claims (including former activities of the Freight Claim Association), Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichtig, C. & N. W. Ry., 319 Waller Ave., Austin Station, Chicago. Next convention, October 18-20, 1921, New York City. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November, 1921, Chicago.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisman, 4600 Prospect Ave., Cleveland, Ohio. Next convention, September 19-24, Indianapolis, Ind.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings, 1st and 3rd Wednesdays in month, except July and August, 33 W. 39th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next annual meeting, May 19, 1922, Montreal.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next convention, October 18-21, Hotel La Salle, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXHIBITORS.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.
- ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division 2.)
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koneke, St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill. Next convention this year has been postponed.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.
- CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio.
- EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.
- FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division 7.)
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 E. Wabasha Ave., Wichita, Mo. Next convention, which was to have been held September 12-15, Hotel Sherman, Chicago, has been postponed.
- MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, which was to have been held October 4-6, 1921, at Buffalo, N. Y., has been canceled.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division 5.)
- MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division 5.)
- NATIONAL ASSOCIATION OF RAILWAY TOOL FOREMEN.—Walter C. Nixon, Equipment Building, 905 S. Wacker Drive, St. Louis, Mo.
- NATIONAL ASSOCIATION OF RAILWAY UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, October 31, Atlanta, Ga.
- NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.
- NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meeting, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting, 2d Thursday in month, alternately in San Francisco and Oakland.
- RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.
- RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Oakland, Philadelphia, Pa.
- RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, American Club House, Pittsburgh, Pa.
- RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
- RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.
- RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 18-20, Hotel Sherman, Chicago.
- RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.
- RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division 4, Signal Section.)
- RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division 6.)
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Broadway, New York.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Auditorium Hotel, Chicago. Exhibit by Track Supply Association.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meeting, 2d Friday in month, except June, July and August.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.
- SOUTHERN AND WESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.
- SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, 935 Peoples' Gas Bldg., Chicago.
- TRACK SUPPLY ASSOCIATION.—C. Kidd, Ramapo Iron Works, Hibernia, N. Y. Meets with Roadmasters' and Maintenance of Way Association.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Business meeting, September 6, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association has been canceled.
- WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Meeting third Monday each month except June, July and August.

## Traffic News

### Export Grain via Montreal

The movement of grain through Montreal to Europe this season has been very heavy and it is predicted that all previous records will be exceeded. Wheat, corn and oats have all been moving in large volume. Now, however, there is a decided congestion both at Montreal and at ports on Georgian Bay, and some shippers at Chicago are fearing an embargo. It is said that 17 vessels are now afloat for Georgian Bay ports, and the elevators there are filled. These ports have facilities for unloading only three or four vessels a day. Winnipeg shippers are reported as fearing that the present congestion will interfere with free movement of Canadian wheat, which is expected to begin to move in volume to the Eastern ports early in September.

### To Regulate St. Paul Live Stock Shipments

At a conference recently held at St. Paul, Minn., railway traffic officers met with the representatives of the bureaus of markets of Minnesota, South Dakota and North Dakota, to see if shipments of live stock into this territory could not be distributed more uniformly throughout the week. The railroads deliver 25 per cent of the weekly hog supply on Tuesday, about 34 per cent on Wednesday and comparatively small amounts on other days. The market being flooded, the farmers estimate that they lose about five cents a hundred pounds on all hogs arriving on Wednesday. Similar examples may be found in the other classes of live stock. It is proposed to give the zone system a trial. Under the zone method (as in effect at Chicago), stock originating within 200 miles is accepted on Tuesday and Thursday, and from other territory on Monday and Wednesday; and receipts are thus regulated to the advantage of the farmers, the packers and the railroads. A second conference will be called soon to consider rearrangements of stock train schedules.

### Boston & Maine Competes With Motor Trucks

The Boston & Maine has announced radical reductions—in some cases more than 50 per cent—in its miscellaneous express rates applying to various local points within a radius of 50 miles from Boston. Some of the changes go into effect September 10; others are already in effect. These rates apply to "express matter, miscellaneous shipments of contents unknown or not stated." They are used by industries and by the local express companies operating to communities out of Boston. The rates apply "only when an individual car is assigned exclusively to this service." The method of handling the traffic under these rates is of many years' standing.

To Amesbury, 43 miles, where the rate has been 36½ cents per lb., the new rate is 13 cents; but the minimum charge per car has been advanced from \$15 to \$20. To Concord, N. H., 73 miles, the rate is 30 cents, minimum \$45 a car. Concord does not appear in the previous tariff. Manchester, 56 miles, and Nashua, 40 miles, are two other New Hampshire towns now appearing in this tariff for the first time. To Springfield, Mass., about 100 miles, the rate, 34½ cents per 100 lb., is not changed. To Lawrence the decrease is from 18 cents to 9 cents; to Lowell, 26 miles, from 20½ cents to 9 cents. To Lynn, ten miles, 7½ cents, there is no change. To Peabody, 18 miles, the reduction is from ten cents to six cents; carload minimum advanced from \$15 to \$20.

It is understood that a further reduction will be made in the rate to Lynn to five cents per 100 lb., and that this rate will apply each day, even if a full carload is not shipped.

Ever since the congestion in railroad freight traffic which was caused by war conditions, freight between Boston and the cities within 50 miles has been carried largely by automobile trucks, until now it is said that probably 80 or 90 per cent of the business between Boston and Lynn has of late been carried in that way. To Salem, 16 miles, the percentage is believed to be about the same.

## Foreign Railway News

### Disastrous Collision Near Rome

Thirty persons killed and over 100 injured is the report following a collision near Magliano, Italy, ten miles north of Rome, on the night of August 27. An excursion train, in which were many children, collided with a freight.

### Railways of Siam Ask Bids on Bridges

Tender forms, including general terms and specifications for the supply of superstructures of eight steel bridges for the Siamese State Railways, have been transmitted to the Department of Commerce, according to a cablegram from Consul James P. Davis, at Bangkok. The total length of these bridges will be about 1950 ft. The arrival and availability of the specifications will be announced later by the Department of Commerce.

### A Short Lived Strike in Ireland

Enginemen on the Great Northern of Ireland went out on a strike at midnight of August 29, but returned to work the following afternoon on the advice of J. H. Thomas, general secretary of the National Union of Railwaymen, according to the New York Times. Mr. Thomas advised the men to go back to work after the company agreed to participate in the Irish railway arbitration now in progress. The Irish railways were returned to their owners on August 15 at the same time as the British railways were returned, but legislation similar to that provided for the roads of Great Britain has not been extended to the Irish railways.

### The Service of the Department of

### Commerce to Foreign Trade

Commerce Reports, the daily publication of the Department of Commerce, which contains news sent to Washington by cable and by mail from representatives of the government all over the world and which is an important source of information for American concerns who are seeking opportunities to sell their goods abroad, is to be changed to a weekly publication. In this form, it is believed that the information published can be systematized and each item of news shown more nearly in its proper perspective than in the daily publication. "Commodity experts" are being appointed to handle specific information interesting to various industries such as textiles, fuel, chemicals, etc., and it is expected that Commerce Reports in its new form will be of considerably greater value to American business than it formerly has been.

### China Seeking to Free Itself from

### Foreign Domination of Railways

The extent to which foreign-owned railways dominate the territory they serve is a source of annoyance to the Chinese government, according to a correspondent writing in the Public Ledger (Philadelphia), and an attempt to internationalize these carriers may be expected to feature the disarmament conference to be held at Washington. British, French, Japanese and Russian interests would, it is said, be affected by such a move. The principal foreign-owned railways are the Chinese Eastern, the South Manchurian, the Shantung, the Yunnan and the Hong Kong-Canton.

An example is given of the methods employed by some of these railways: "A few years ago a British group conceived the idea of building a railway in Yunnan. In order to freeze out British competition, the French set up a tariff on railway materials which made it impossible to transport them. The only way the British could have built the proposed railway was to establish steel mills of their own in the region of the line."

**Proposed Subway and Tunnel for Havana, Cuba**

Plans for the subway system and tunnel proposed for the city of Havana have been exhibited to a representative of the American consulate general at Havana, Cuba, according to Commerce Reports. Consul General Carlton Bailey Hurst's representative was shown documents indicating that the necessary concessions for the work had been approved by the Cuban Railroad Commission, and that the Cuba North & South Railroad Co., organized to promote this project, had been completed in accordance with Cuban laws governing the organization of companies for railroad construction. A representative of the firm of engineers in charge (Sr. Serafin Sanchez Govin, No. 62 Villegas street, Havana), holding a full power of attorney to act for the Cuba North & South Railroad Co., declared his intention of going to New York in October or November to arrange for the necessary capital and expressed a desire to receive correspondence from persons in the United States who may be interested in either the structural or the investment possibilities of the project.

**The New Railway Regime in Great Britain**

The railways of Great Britain were returned to their owners on August 15. Just prior to the return, the Ministry of Transport's Railway Bill (*Railway Age*, May 27, page 1209) as amended was passed by Parliament. The amendments to this bill were not of a fundamental nature, with the exception of the groupings for compulsory consolidation. In the original bill there were six groups; in the bill as passed, four. The principal carriers constituting the groups are as follows:

**SOUTHERN GROUP.**—London & South Western; London, Brighton & South Coast; South Eastern; London, Chatham & Dover; South Eastern & Chatham.

**WESTERN GROUP.**—Great Western; Alexandra Docks & Railway; Barry; Cambrian; Cardiff; Rhymney; Taff Vale.

**NORTHWESTERN GROUP.**—London & North Western; Midland; Lancashire & Yorkshire; North Staffordshire; Furness; Caledonian; Glasgow & South Western; Highland.

**EASTERN GROUP.**—North Eastern; Great Central; Great Eastern; Great Northern; Hull & Barnsley; North British; Great North of Scotland.

**Exports of Track Materials in June**

The June exports of steel rails totaled 20,308 tons, valued at \$1,083,344. Track spikes valued at \$79,434 and miscellaneous track materials valued at \$568,134 were the other totals. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Railroad spikes		Rails of steel		Switches, frogs, spikes, bars, etc.
	Pounds		Tons		
France	.....	.....	.....	.....	\$260
Gibraltar	.....	.....	.....	.....	166
Italy	.....	.....	1,219	\$79,635	16,780
Netherlands	.....	.....	.....	.....	250
Portugal	.....	.....	.....	.....	1,441
Rumania	.....	.....	.....	.....	19
Spain	.....	.....	32	3,085	17,407
Sweden	.....	.....	16	832	565
England	.....	.....	.....	.....	372
Scotland	.....	.....	.....	.....	2,210
Ireland	.....	.....	.....	.....	13,301
Canada	321,680	\$11,882	1,046	56,212	32,017
Costa Rica	17,500	794	187	11,500	2,052
Guatemala	2,000	125	.....	.....	.....
Honduras	.....	.....	1,002	57,809	4,957
Salvador	10,000	345	.....	.....	1,104
Mexico	602,316	25,978	220	14,986	10,937
Trinidad and Tobago	3,000	195	.....	.....	180
Cuba	70,400	2,577	294	11,335	8,815
Haiti	.....	.....	.....	.....	980
Dominican Republic	29,468	1,522	650	28,856	44,130
Argentina	2,414	150	.....	.....	314,910
Brazil	.....	.....	.....	.....	25,171
Chile	370,782	29,303	37	.....	22,083
Colombia	14,800	792	3	1,880	1,017
Peru	4,442	270	146	7,155	4,492
China	.....	.....	.....	.....	6,120
Kwantung, leased territory	.....	.....	.....	.....	122,736
Chosen	2,500	149	.....	.....	137
British India	.....	.....	1,001	85,600	1,423
Dutch East Indies	.....	.....	2,541	145,508	5,886
Japan	30,600	1,676	7,673	338,378	20,143
Siam	.....	.....	1,000	60,021	.....
Australia	.....	.....	.....	.....	4,017
New Zealand	.....	.....	50	4,750	1,129
Philippine Islands	80,658	3,676	177	8,111	2,713
Portuguese Africa	.....	.....	300	14,775	403
Total	1,566,050	\$79,434	20,308	\$1,083,344	\$568,134

**Equipment and Supplies**

**Car Orders and Deliveries in July**

The number of freight cars delivered for domestic service in July totaled 3,892 and for foreign service 433. The passenger cars delivered totaled 90, all for domestic service. On July 31, the companies had on hand undelivered orders for 6,145 freight and 218 passenger cars for domestic service and 2,088 freight and 46 passenger cars for export. Car repairs were made in July on a total of 2,281 cars for domestic service and at the end of July car repairs on order and undelivered totaled 16,765, all for domestic service, as compared with 13,752 at the end of June.

The July summary as prepared by the Railway Car Manufacturers' Association from the report of 26 car building companies follows:

NEW CARS DELIVERED		
Freight	Domestic	Foreign
Passenger	3,892	433
	90	...
ON ORDER AND UNDELIVERED		
Freight	Domestic	Foreign
Passenger	6,145	2,088
	218	46
CAR REPAIRS		
Delivered—July	2,281	
On order and undelivered, July 31	16,765	

**Freight Cars**

THE MATHIESON ALKALI WORKS, 25 West Forty-third street, New York City is inquiring for 20, 30 ton cars for handling tanks.

THE BANGOR & AROOSTOOK has renewed its inquiry for cars and is now asking for 200 single sheathed box cars of 40 tons' capacity.

THE PITTSBURGH STEEL COMPANY, Pittsburgh, Pa., is inquiring for from 15 to 25 all steel gondola cars, of 75 tons capacity.

THE FLEISCHMANN TRANSPORTATION COMPANY, Chicago, is inquiring for from 10 to 20 underframes for tank cars of 50 tons capacity.

THE ERIE has entered into a contract with the Youngstown Steel Car Company, Niles, Ohio, for the repair of 400 coal cars, of 50-ton capacity.

THE BALTIMORE & OHIO, reported in the *Railway Age* of June 17, as inquiring for 500 hopper car bodies, is now inquiring for 1,000 box car bodies of 40 tons' capacity, and for 1,000 hopper car bodies of 50 tons' capacity.

THE NEW YORK CENTRAL has given an order for the repair of 250 steel cars to the Cleveland Car Company, Cleveland, Ohio, and for 500 steel cars to the Ryan Car Company, Chicago. This is in addition to the repairs reported in the *Railway Age* of July 30 and August 6 for a total of 6,500 cars.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of August 27, as asking for price on the repair of 1,250 cars, has placed orders for repairs as follows: 254 ballast cars and 500 box cars with the Pullman Company; 360 gondola cars with the Haskell-Barker Car Company; 500 box cars with the American Car & Foundry Company, and 400 box cars with the Ryan Car Company.

**Iron and Steel**

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has placed orders for 900 tons of steel, of which 200 tons will be used for bridge renewals, and about 700 tons for track elevation work at Indianapolis, Ind.

THE MEIKI ELECTRIC RAILWAYS, of Japan, is asking for bids through Mitsui & Company, New York, for 25 miles of 60-lb. A. S. C. E. rail and accessories. This railway will buy rails later for an additional 29 miles.

## Supply Trade News

The **Interstate Car Company**, Indianapolis, Ind., will build an addition to its foundry in that city, 91 by 126 ft., at an approximate cost of \$25,000.

**H. S. Durant** has been appointed sales agent, and **M. W. Floto** assistant sales agent, at the Detroit office of the **American Steel & Wire Company**, Chicago, to succeed **M. Whaling** and **T. J. Usher, Jr.**, resigned.

The **Western Electric Company**, New York, has re-zoned its sales territory, and a new district, called the Atlantic district, has been established with **R. W. Van Valkenburgh** as manager with headquarters at Philadelphia, Pa. It includes the area covered by the Philadelphia and Pittsburgh houses, which formerly was part of the Western district.

**Robert D. Black** has been appointed manager of the Philadelphia branch office of the **Black & Decker Manufacturing Company** with headquarters at 318 North Broad street. He succeeds **W. C. Allen** who has been appointed special factory representative, with headquarters at the Cleveland branch office, 6225 Carnegie avenue. Mr. Black was formerly assistant sales manager of the company.

**Horace G. Hides**, who for the past 20 years represented **Wm. Jessop & Sons**, Sheffield, England, has been appointed general sales manager in the United States for **Thos. Firth & Sons, Ltd.**, Sheffield. This firm recently terminated its agency arrangement for the sale of sheet steel with **Wheelock Lovejoy & Co.**, of New York and Cambridge. Mr. Hides will have his headquarters in Hartford, Conn., where a joint office has been opened by **Thomas Firth & Sons, Ltd.**, and an associate company, the **Firth-Sterling Steel Company**, New York; **Henry I. Moore** will represent the latter company at Hartford.

## Obituary

**Edward A. Craig**, manager of the export department of the **Westinghouse Air Brake Company**, Pittsburgh, Pa., died on August 28, at his home in Edgewood, Pa. Mr. Craig was

born in January, 1873, at Allegheny City, Pa., and was educated in the public schools of that city. He began work in 1888 with the **Westinghouse Air Brake Company** as a messenger. He subsequently served as secretary to the general superintendent of the works. He later was appointed assistant auditor and then served as auditor and assistant secretary. In 1906, the company established the Southeastern district, with Mr. Craig as manager. He remained in that position until the export department was organized in January,

1920, and since that time he served as manager of the export department.

**Daniel Sellinger** for over 20 years in charge of rail inspection for **Robert W. Hunt & Co.**, at the south works of the **Illinois Steel Company**, Chicago, died on August 24, at the age of 63.

## Railway Construction

**BOSTON & MAINE.**—This company has awarded a contract to the **McClintic Marshall Company**, Pittsburgh, for the construction of a bridge over the **Winnipisseege** river, **Tilton, N. H.** The bridge will have 5 deck plate girder spans averaging 35 ft. in length and will cost approximately \$17,000.

**CANADIAN NATIONAL.**—This company will receive bids until noon September 7 for the construction of the sub-structure for a single track bridge over the **Coffee** river, 41 miles from **Doucet** on the **St. Maurice** division.

**CHICAGO, BURLINGTON & QUINCY.**—This company is accepting bids for structural steel to be used in building a new freight house at **Chicago**.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company has awarded a contract to **Roberts & Schaefer Company**, Chicago, for the construction of a concrete coaling station at **Morris, Ill.**, and to **Fairbanks, Morse & Co.**, Chicago, for a coaling station at **McFarland, Kan.**

**LOUISIANA & ARKANSAS.**—This company is contemplating the erection of a one-story brick and reinforced concrete locomotive shop at **Stamps, Ark.**, to cost about \$150,000.

**NEW YORK CENTRAL.**—This company has awarded a contract for the construction of a 30-stall roundhouse and annex buildings at **Solvay, N. Y.**, to the **W. M. Ballard Company**, Syracuse, N. Y. Construction was resumed recently on this project. The same company has been awarded a contract for the construction of a 1,000-ton coaling station exclusive of machinery at **Solvay**. The **Walsh Construction Company**, Syracuse, N. Y., has been awarded a contract for the construction of a 400-ton coaling station at **Waynesport, N. Y.** The **Link Belt Company** has been awarded a contract for the machinery of both of these coaling stations and the **Edward Joyce Company**, Syracuse, N. Y., has been awarded the contract for the electric lighting and power wiring of the **Solvay** coaling station.

**PACIFIC GREAT EASTERN.**—On this railroad, owned and operated by the Province of **British Columbia** and which is now in operation to **Williams Lake**, about 300 miles north of **Vancouver**, track has been laid to **Quesnel**, about 50 miles beyond **Williams Lake** and about half the distance thence to **Fort George, B. C.**, the proposed northern terminus, which is on the **Grand Trunk Pacific**. The Minister of Finance of the Province has lately sold bonds to the amount of \$1,000,000 to provide funds for continuing the work of construction north of **Quesnel**. The bonds, running 20 years, and bearing interest at six per cent, are said to have been sold for 93.59.

**Texas & Pacific.**—This company has revised its plans for the construction of a new passenger station at **Ranger, Tex.**, and has issued another call for bids to be closed on **September 15**.

**CENTRAL VERMONT.**—This company has awarded a contract to the **Roberts & Schaefer Company**, Chicago, for the construction of a gravity sanding plant and a 300 ton coaling plant equipped with a 30,000 ton drag scraper and a mechanical storage plant at **St. Albans, Vt.**, to cost \$40,000.

**TONOPAH & GOLDFIELD.**—This company has applied to the **Interstate Commerce Commission** for authority to construct an extension 18½ miles long from a point near **Coaldale Station** in **Mineral county, Nevada**, on its main line, to a point in **Fish Lake Valley**, **Esmeralda county, Nevada**. The extension would serve what is believed to be a "potential oil field," according to the application.

**WESTERN MARYLAND.**—This company opened bids on August 25 for the construction of additions to its grain elevator and facilities at **Port Covington, Baltimore, Md.**, to cost approximately \$1,000,000. The additions will be of reinforced concrete construction and will provide storage space for 1,500,000 bushels of grain in addition to the present facilities.



E. A. Craig

## Railway Financial News

**BOSTON & MAINE.—Loan Approved.**—The Interstate Commerce Commission has approved a loan to this company of \$3,049,000 for 15 years from the revolving fund to assist it in meeting maturing indebtedness.

**BULLFROG GOLDFIELD.—Authorized to Issue New First Mortgage Bonds.**—The Interstate Commerce Commission has granted authority to this company to deliver to W. A. Clark not exceeding \$143,000 of new first mortgage 5 per cent bonds, in exchange for par, for a like aggregate amount of first mortgage 6 per cent bonds and second mortgage income bonds now outstanding; and also to deliver not exceeding \$5,000 of new first mortgage 5 per cent bonds, at par, in partial settlement of unpaid interest accrued on outstanding first mortgage bonds.

**CHESAPEAKE & OHIO.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**COWLITZ, CHEHALIS & CASCADE.—Application for Loan.**—This company has applied to the Interstate Commerce Commission for a loan of \$45,500 to meet matured obligations for equipment.

**DELAWARE, LACKAWANNA & WESTERN.—Asks Authority to Lease Road.**—An application has been filed with the Interstate Commerce Commission for authority and approval of the lease to this company of the property of the Sussex Railroad, of which it owns a majority of the capital stock.

**DULUTH, SOUTH SHORE & ATLANTIC.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the preceding year as follows:

	1920	1919
Total operating revenue (Mar. 1 to Dec. 31).....	\$5,142,519	
Total operating expenses (Mar. 1 to Dec. 31).....	4,606,212	
Net operating revenue.....	536,307	
Railway tax accruals.....	250,435	
Net operating income.....	285,865	
Income from lease of road (Jan. and Feb., 1920; year 1919).....	93,725	\$530,059
Estimated amount of government guaranty due Mar. 1 to Aug. 31).....	281,174	
Due from U. S. Gov't. for deficit incurred in operation of road during guaranty period (Mar. 1 to Aug. 31).....	71,013	
Gross income.....	782,023	596,706
Deduct—Interest on funded debt.....	876,770	879,760
Total deductions from gross income.....	1,111,706	1,010,214
Net loss.....	329,683	413,508

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES		
	1920	1919
Freight.....	\$3,576,909	\$2,815,493
Passenger.....	1,369,903	1,235,685
Total operating revenue.....	\$5,949,891	\$4,758,601
OPERATING EXPENSES		
Maintenance of way and structures.....	\$1,153,841	\$925,068
Maintenance of equipment.....	1,063,889	874,679
Traffic.....	65,572	65,518
Transportation.....	3,076,865	2,368,609
General.....	151,078	168,433
Total operating expenses.....	\$5,598,701	\$4,461,300
Net operating revenue.....	\$351,189	\$297,301
Tax accruals.....	356,028	48,999
Operating income.....	Def. \$5,275	\$27,761
PASSENGER TRAFFIC		
Number of revenue passengers carried.....	908,478	894,880
Number of passengers carried one mile.....	46,641,206	43,840,356
Average distance carried (miles).....	51.34	48.99
Average receipts per passenger per mile (cents).....	2.937	2.819
FREIGHT TRAFFIC		
Number of revenue tons carried.....	3,755,912	3,362,297
Number of tons carried one mile.....	355,596,169	296,982,503
Average distance haul of one ton (miles).....	94.68	88.33
Average receipts per ton per mile (cents).....	1.126	1.078

**ERIE.—Loan Approved.**—The Interstate Commerce Commission has approved a loan of \$1,733,750 from the revolving fund to assist the company in financing additions and betterments, including a considerable amount of work in reconstructing freight cars.

**GEORGIA RAILROAD & BANKING COMPANY.—Bonds Offered.**—Spencer Trask & Co., New York, and William E. Bush & Co., of Augusta, Ga., are offering at 99 and interest \$1,500,000, 30-year, 6 per cent refunding bonds. The bonds will mature October 1, 1951, and are non-callable.

The bonds are being offered subject to the approval of the stockholders, the Interstate Commerce Commission and the Railroad Commission of Georgia. This issue, which ranks equally with the \$1,000,000 4 per cent bonds of 1947, 5 per cent bonds, maturing January 1, 1922. Upon completion of this financing, the total funded debt of the company will amount to \$2,500,000.

The Georgia Railroad & Banking Company was incorporated in 1833 and owns 315 miles of railroad, including the shortest link (171 miles) connecting the Louisville & Nashville and Atlantic Coast Line railroads operated by either road. All the traffic between the two systems, except that to and from Florida, must pass over this connecting link, which extends from Atlanta to Augusta, Ga. It is also interested in 247 miles of adjacent lines through security ownership and is practically the sole owner of the Georgia Railroad Bank.

The railroad property is leased jointly to the Louisville & Nashville and Atlantic Coast Line for 99 years from April 1, 1881, and together with the railroad companies in which it is interested, is operated as the "Georgia Railroad" system, which system forms an integral part of both systems.

**GULF PORTS TERMINAL.—Application to Extend Line Denied.**—The Interstate Commerce Commission has denied the application of this company for a certificate to construct an extension of its line in Baldwin County, Ala., to Mobile, approximately 25 miles. The cost of the proposed extension was estimated by the applicant at \$650,000, including \$350,000 for a trestle, 7 miles in length. The commission, in its opinion, stated that the financial success of the proposed loan would depend chiefly upon the ability of the carrier to secure a considerable volume of traffic moved between Pensacola and Mobile. The applicant's plans indicate a line of light construction, heavy grades and inadequate terminals. Any through business which it might obtain obviously would constitute a diversion of traffic from existing transportation facilities.

**HOCKING VALLEY.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**INTERNATIONAL & GREAT NORTHERN.—Authorized to Deliver Equipment Notes and Pledge Receiver's Certificates.**—The Interstate Commerce Commission has authorized the receiver to deliver 24 notes for \$8,601 each, aggregating \$206,444 to the Baldwin Locomotive Works in part payment for eight locomotives; and to pledge receiver's certificates aggregating \$194,300 with the Secretary of the Treasury as security for a loan from the revolving fund.

**MAINE CENTRAL.—Loan Approved.**—The Interstate Commerce Commission has approved a loan of \$400,000 to aid this company in providing itself with equipment and other additions and betterments. The loan will be used in connection with the purchase of eight locomotives and miscellaneous equipment and the rebuilding of 110 rack cars.

**MINERAL RANGE.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the preceding year, as follows:

	1920	1919
Total operating revenue (March 1 to Dec. 31).....	\$562,590	
Total operating expenses (March 1 to Dec. 31).....	717,801	
Net operating revenue.....	155,211	
Railway tax accruals.....	43,336	
Net operating deficit.....	198,570	
Income from lease of road (January and February, 1920; year 1919).....	24,001	\$140,579
Estimated amount of government guaranty due (March 1 to Aug. 31).....	72,003	
Due from U. S. Gov't. for deficit incurred in operation of road during guaranty period (March 1 to Aug. 31).....	76,865	
Gross income.....	50,793	150,580
Deduct—Interest on funded debt.....	85,027	88,322
Total deductions from gross income.....	90,947	103,901
Net income or loss.....	Def. 39,253	46,679

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919, as follows:

OPERATING REVENUES		
	1920	1919
Freight.....	\$327,984	\$316,069
Passenger.....	3,938	4,490
Total operating revenues.....	\$669,620	\$753,226
OPERATING EXPENSES		
Maintenance of way and structures.....	\$183,741	\$165,420
Maintenance of equipment.....	254,460	256,233
Traffic.....	4,188	4,786
Transportation.....	408,914	406,358
General.....	15,646	15,515
Total operating expenses.....	\$866,948	\$846,313

Net operating revenue.....	Def. 197,329	Def. 93,086
Tax accruals .....	62,147	48,060
Operating income .....	Def. \$259,498	Def. \$141,147

PASSENGER TRAFFIC		
Number of revenue passengers carried.....	11,298	13,414
Number of persons carried one mile.....	129,025	147,915
Average distance carried (miles).....	11.42	11.03
Average receipts per passenger per mile (cents)	3.052	3.035

FREIGHT TRAFFIC		
Number of revenue tons carried.....	1,934,087	2,697,662
Number of tons carried one mile.....	22,858,722	31,492,496
Average distance haul of one ton (miles).....	11.82	11.67
Average receipts per ton per mile (cents).....	2.790	2.360

**NORFOLK & PORTSMOUTH BELT LINE.**—*Authority to Issue Notes Granted.*—This company has been granted authority by the Interstate Commerce Commission to issue a 90-day, 6 per cent promissory note for \$35,000, payable to the order of the Merchants & Farmers Bank of Portsmouth, Va., in renewal of a note for a similar amount; and to issue from time to time notes in renewal thereof for like amounts payable to that bank 90 days after date, but not later than August 25, 1922, with interest at 6 per cent.

**PERE MARQUETTE.**—*Asks Authority to Abandon Line.*—This company has made application to the Interstate Commerce Commission for permission to discontinue service and take up its tracks between Harrison, Mich., and Leota, a distance of approximately 10 miles. This northerly portion of the Harrison branch was originally built to take care of the lumber business, which is now practically exhausted.

**Final Settlements with the Railroad Administration**

The Railroad Administration announced on August 31 that it had made final settlements with the following carriers for the amounts stated:

Carolina & Northeastern.....	\$15,000
Joliet Union Depot Company.....	2,307
Lackawanna & Montrose.....	4,000
Manistique & Lake Superior.....	50,000
Meridian Terminal Company.....	702
New York, Chicago & St. Louis.....	3,000,000
Sussex Railroad.....	26,000

The Ann Arbor has paid the Railroad Administration \$600,000.

**Partial Payments of Guaranty**

The Interstate Commerce Commission certified to the Treasury partial payments of guaranty to the following roads:

Terminal R. R. Association of St. Louis.....	\$65,000
Trinity & Brazos Valley.....	35,000

**Treasury Payments**

The Treasury has announced the payment of a loan of \$65,000 from the revolving fund to the Central Vermont and partial payments of guaranty to the following roads:

American Railway Express Company.....	\$425,000
Atlantic, Birmingham & Atlantic.....	90,000
Bullfrog Goldfield.....	30,000
Chicago, Indianapolis & Louisville.....	250,000
Kansas, Oklahoma & Gulf.....	130,000
Lorain Railroad.....	5,700
Middle Tennessee.....	41,893
Mineral Point & Northern.....	6,500
Missouri Pacific.....	2,000,000
New York Dock Railway.....	50,000

The Treasury has also announced a partial payment of \$114,000 to the Atlantic Coast Line and Louisville & Nashville Railroads, joint lessees of the Georgia Railroad.

**Dividends Declared**

- Boston & Albany.—\$2.00, quarterly, payable September 30 to holders of record August 31.
- New York, Chicago & St. Louis.—2nd preferred, \$5.00, payable September 16 to holders of record September 3.
- Pittsburgh, Ft. Wayne & Chicago.—Common and preferred, 1 3/4 per cent, quarterly, payable October 1 to holders of record September 10.

THE VETERANS in the service of the Chicago, Milwaukee & St. Paul will hold their annual reunion at Minneapolis on September 15 and 16, at the Curtis Hotel.

THE CHICAGO GREAT WESTERN has awarded a contract for the repair of its cars in its Kansas City and St. Paul shops to Hecker & Co., Cleveland, Ohio, who will do the repairing on a piece-work basis. This plan is somewhat similar to that of the Erie, at Marion, Ohio, except that the Great Western retains control over its plant, and only giving out the work to contractors.

**Railway Officers**

**Financial, Legal and Accounting**

**A. H. Orci** has been appointed general counsel of the National Railways of Mexico with headquarters at Mexico City.

**I. J. Terroba** has been appointed general auditor of the National Railways of Mexico with headquarters at Mexico City. **J. R. Gamez** has been appointed auditor of passenger receipts with the same headquarters.

**Operating**

**J. M. Carpio** has been appointed assistant to the general manager of the National Railways of Mexico with headquarters at Mexico City.

**M. T. Vela** has been appointed superintendent of car service of the National Railways of Mexico with headquarters at Mexico City. **C. M. Durazo** has been appointed superintendent of the sleeping car department and **J. M. Del Campo** has been appointed superintendent of telegraph, both with headquarters at Mexico City.

**M. Acosta**, superintendent of the Pacific division of the National Railways of Mexico, has been transferred to a similar position on the Guadalajara division with headquarters at Guadalajara, succeeding P. S. Alvarez. **J. Mejia**, superintendent of the Oaxaca division, succeeds Mr. Acosta and **P. W. Caballero** succeeds Mr. Mejia.

**C. W. Coe**, general superintendent of the Wheeling & Lake Erie, with headquarters at Brewster, Ohio, has been appointed assistant general manager in charge of operation and maintenance with headquarters at Cleveland, succeeding **F. P. Barr**, who has been appointed general traffic manager. The office of general superintendent has been discontinued, effective August 15.

**Traffic**

**A. G. Roel** has been appointed traffic manager of the National Railways of Mexico with headquarters at Mexico City.

**S. M. Jackson** has been appointed commercial agent of the Cincinnati, Indianapolis & Western, with headquarters at St. Louis, Mo.

**E. L. Blandford** has been appointed commercial agent of the Louisville & Nashville with headquarters at New York, effective September 1.

**C. A. Swope** has been appointed general Eastern freight agent of the Louisville & Nashville with headquarters at New York, effective September 1.

**F. P. Barr**, assistant general manager in charge of operation and maintenance of the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, has been promoted to general traffic manager with the same headquarters, effective August 15.

**Obituary**

**John Sayer**, formerly secretary and treasurer of the Lehigh & Hudson River, died on August 24, at Warwick, N. Y., at the age of 76 years. Mr. Sayer retired in 1917 after 52 years' active service with the company.

**Frederick U. Adams**, a mechanical engineer and scientific writer, who at one time conducted experiments for the Baltimore & Ohio on the effect of atmospheric resistance on the speed of trains, died at his home at Larchmont, N. Y., on August 28.

F. F. Gaines, formerly superintendent of motive power of the Central of Georgia, died at Washington, D. C., on August 26. Mr. Gaines was born on March 28, 1871, at Hawley, Pa. He entered railway service in 1888 as a freight and ticket clerk for the Erie. Two years later he resigned to enter Cornell University, at which institution he studied for the following four years. Upon leaving the university he served in the shops of the Erie for a time and in August, 1895, became a draughtsman for the Lehigh Valley and the following year was appointed engineer of tests. In April, 1897, he was promoted to mechanical engineer and in November, 1902, he was appointed master mechanic. Two years later Mr. Gaines became mechanical engineer of the Philadelphia & Reading and in 1906 he went to the Central of Georgia as superintendent of motive power. In 1917 Mr. Gaines resigned as superintendent of motive power on account of ill-health but continued in the service of the company. In July, 1918, he was appointed a member of the committee of standards of the Railroad Administration and the following year was elected chairman of the Board of Wages and Working Conditions. He subsequently served as a member of Railway Board of Adjustment No. 3. Mr. Gaines was president of the American Railway Master Mechanics' Association in 1914 and 1915.



F. F. Gaines

Louis Pierre Alexandre Weissenbruch, General Secretary of the Permanent Commission of the International Railway Association, whose death at Brussels, Belgium, on August 7, was noticed briefly in the *Railway Age* of August 27, had been connected with the International Railway Congress since its first session, in 1885, having begun as a private secretary. He was well known to many railroad men in America, having visited this country in 1904 and 1905 in connection with the seventh session of the Congress, which was held at Washington in the latter year. He was a general inspector of the Belgian State Railways, interested more particularly in signalling; and his writings have appeared occasionally in the *Railway Age*. The last was in the issue of July 2, 1920, an abstract of an exhaustive article on cab signals in Europe. Since the great war, Mr. Weissenbruch had been engaged in the organization of the International Railway Association (the old organization, the "Congress" having been declared defunct by the Belgian Government) and the preparations for the Ninth Congress, to be held at Rome, Italy, next April, had been well advanced.



L. P. A. Weissenbruch

Mr. Weissenbruch was 64 years old, and was born at Liege, Belgium. He was graduated from Brussels University and from the military school of Brussels and was breveted lieutenant of engineering in 1879. He served three years with the artificers of engineering at Antwerp, and in July, 1882,

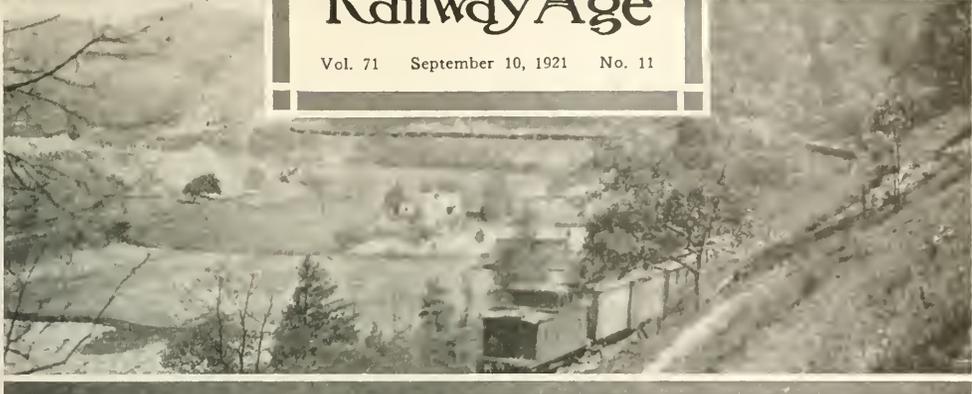
was appointed to a position with the ministry of railroads at Brussels. In a short time he was appointed railroad engineer and private secretary to the Minister, and thence was successively promoted to be engineer; chief engineer in the traction department; specialist in the department of commercial administration; chief of section in the railroad department, and (1901) director of the safety appliances department. Mr. Weissenbruch had been "reporter" for the Congress on various technical subjects, having presented papers to the Congresses of 1885, 1887, 1889, 1892 and later. He is also the author of numerous technical articles in the Bulletin of the Congress and in other publications. As editor of the Bulletin (one of his duties as secretary) he has with marked discretion enriched its pages with many valuable reprints from technical periodicals of all countries. He was one of the editors of the French edition of the History of Russian Railroads down to 1892, which was published by the Russian Government.

One of his friends in England, Mr. T. S. Lascelles, has sent us an appreciation, from which we quote:

"Monsieur Weissenbruch passed out of the Military College with first class rank in the special arms section. In the maintenance of way department of the State Railways, he specialized on signalling questions and was appointed assistant signal engineer in 1898. This position he occupied until 1901 when he became chief signal engineer. In this capacity he executed a complete reformation of the signal system on the State Railways on principles elaborated by himself, after an exhaustive study of the methods in use in every other country. The result was a very sound and efficient system extremely well suited to the conditions of working obtaining in Belgium. A great admirer of English practice he incorporated the best of it with the best German practice, notably the Siemens alternating current lock-and-block apparatus. He adopted the upper quadrant semaphore and the yellow light for the caution indication and extensively employed power distant signals. Under his direction some ten or eleven all-electric interlockings were put in, including large ones at Antwerp, Brussels, Ghent and Louvain. These were Siemens pattern and were specially designed to answer to Belgian requirements, set forth in a specification due to him. Fogs being rather prevalent in many parts of Belgium he gave special attention to the fog-signalling problem and directed numerous experiments with cab-signals. He investigated carefully almost every one that had reached a practical stage. Although no cab signal was adopted by the State Railways he overcame the fog difficulty by installing repeating light-signals on the crowded Brussels-Antwerp main line; and it is interesting to note that the same thing has since been adopted on the London electric lines, in a modified form, with great advantage. Automatic stops also formed the subject of many experiments which he was actively prosecuting when the war broke out. He was one of the founders of the International Railway Association. He understood American methods, many of which he admired.

"When the great war came he and his family had to leave Belgium and he resided at Bexhill, England, on the seacoast about 30 miles east of Brighton, until the liberation of his native country. While there, his time was occupied with studying English signalling and other features of railway operation, upon which he made a report to the Belgian Government. Returning to Belgium after the war he addressed himself energetically to the rehabilitation of the railways and was appointed general inspector. He introduced a special system of absolute block working by telephone to safeguard train operation until the lock-and-block system could be reinstated, much of the apparatus having been destroyed by the Germans. In the midst of these activities death overtook him at the comparatively early age of 64.

"Mr. Weissenbruch was president of the National Railway Schools of Belgium, a member of the Order of Leopold, of the Order of the Crown, Chevalier of the Legion of Honour, a member of some eight or nine foreign orders, honorary member of the Signal Section, American Railway Association, and of the Institution of Railway Signal Engineers in England. He was a man of wide knowledge, a profound student and a capable linguist. His death removes one of the ablest figures in the field of railway signalling."



A Freight Train on the Virginian Between Moloake and Rock W., Va.

## Contents

What Has Henry Ford Done With the D., T. & I.?	Page 481
Freight Revenues Have Been Increased About 40 Per Cent. With Less Revenue Traffic Movement—Reasons for Improved Conditions.	
Virginian Builds Double Track to Relieve Congestion	487
Steep Grades and Sharp Curves in Mountainous Region Necessitate Heavy Construction—Tunnel Widening Necessary.	
The Grain Rate Hearings Are Concluded	491
Utilities Commissioners and Farmers Make Final Pleas for Rate Reductions—A Unique Proposition by the Farmers to Railroad Employees.	

### EDITORIALS

Mr. Ford's "Railroad Miracle"	473
Why Require Signatures to Train Orders?	474
Our Dwindling Exports	475
Quality vs. Quantity Shop Output	475
Are Creosoted Bridges Good Fire Risks?	475
Loss and Damage as a Factor in Transportation Costs	475
Michigan Central	476
Chicago & Alton	477

### LETTERS TO THE EDITOR

A Substitute for the Detail, by J. Beaumont	478
Stop and Proceed Rule Defended, by C. Radford Sands	478
Signatures to Train Orders	479
Revive the M. M. and M. C. B. Associations	479
Value of College Men to Railroads, by F. E. Hanson	480

### GENERAL ARTICLES

What Has Henry Ford Done With the D. T. & I.	481
Virginian Builds Double Track to Relieve Congestion	487
The Purchase, Inspection and Distribution of Cross Ties	490
The Grain Rate Hearings Are Concluded	491
Pennsylvania Officer Outlines New Labor Policy	493
Freight Car Loading	494
New Locomotives for the Missouri Pacific	495
Increasing Locomotive Mileage, by F. P. Roesch	498
Present Freight Rates Do Not Restrain Commerce, by C. F. Balch	499
N. C. & St. L. Creosoted Bridge Survives Fire	500
Ease of Operation Features New Coach Seat	501
New Type of Car Stop	502
A Flooring for General Railway Service	502
GENERAL NEWS DEPARTMENT	503

Published weekly and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.

Cable address: Ursagimcc, London

WASHINGTON: Home Life Bldg., NEW ORLEANS: Maisoo Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
H. B. ADAMS  
H. F. LANE  
R. E. THAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STUEBING  
C. W. FOSS  
K. E. KELLENBERGER  
ALBERT G. OHLER  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

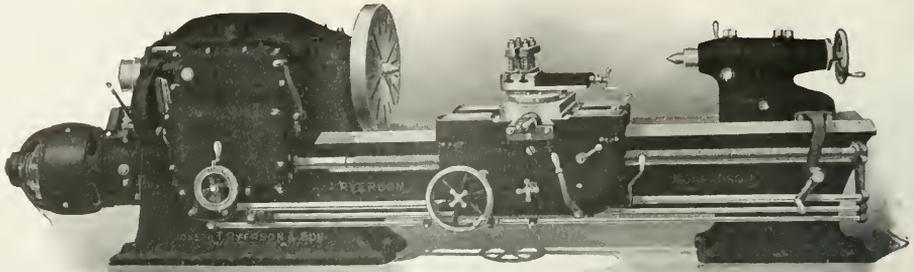
MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LAYNE  
J. H. DUNN  
D. A. STEEL  
K. H. KOVCH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free (United States, Mexico and Canada, \$8.00). Foreign Countries (excepting daily editions), \$10.00. £2 0/6. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 15 cents each.

WE GUARANTEE, that of this issue, 5,000 copies were printed; that of these 2,000 copies, 8,034 were mailed to regular paid subscribers, 35 were provided for dealer and news company sales, 344 were mailed to advertisers, 65 were mailed to contributors and correspondents, and 502 were provided for new subscriptions, 500 copies lost in the mail and office use; that the total copies printed this year to date were 347,190, an average of 9,642 copies a week.



Ryerson-Conradson lathes speed production

## For Roundhouses—the Versatile Lathe

For want of a modern lathe in the roundhouse, light repairs often delay and overload the main shop.

The great variety of work roundhouses are called upon to handle emphasizes the advantage of the unusual versatility of the Ryerson-Conradson Railroad Lathe.

The twelve speed changes and twenty-eight feed changes, made with gears always in mesh, eliminate any chance of gears stripping.

Where work comes in great variety this is an important factor in speeding production.

*Other radical improvements are described in  
Bulletin 1301*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

## Mr. Ford's "Railroad Miracle"

THE credulousness of the American public regarding fairy tales about the railways is almost beyond belief. Recently somebody who knew more about miracles than about railroads began attributing to Henry Ford the working of a miracle in the management of the Detroit, Toledo & Ironton Railroad. Wide publicity was given to reports that he had taken a property which was moribund physically and bankrupt financially, waved his magician's wand over it, and within a few weeks, or a few months at the most, converted it into a fine property physically and a highly prosperous property financially. A large part of the public believed these reports. It apparently drew from them the inference not only that Mr. Ford was a genius, but that the managers of most of the railways were incompetents. If they were not incompetents, why did they not do with the other railways what he had done with the Detroit, Toledo & Ironton?

The *Railway Age* had its doubts as to whether even Mr. Ford could strike the stone of railroad operation and make floods of profits immediately burst forth. He has demonstrated in the manufacturing business that in certain ways he is one of the greatest geniuses of the age. His success in the automobile business has been such as to indicate that if there is any man in any other line of business in this country who could step into the railroad business and soon gain extraordinary results, it is Henry Ford. We were somewhat skeptical, however, as to whether it was possible within the short time he had owned the D. T. & I. for even Mr. Ford to work such a miracle as was attributed to him. Therefore, we have made our own investigation of the facts. We sent two of our editors to Detroit to call upon the men Mr. Ford has placed in direct charge of the management of his railroad and asked them what they have done and what results they have obtained. Be it said to their credit that Mr. Ford's representatives of the D. T. & I. were perfectly frank. They answered as well as possible every question asked them.

The results of the investigation made upon the ground and of a study of the official figures regarding the operations of the D. T. & I. are given in an article elsewhere in this issue. The facts show that under the Ford management the financial results of the Detroit, Toledo & Ironton have been very greatly improved. They also show that no miracle has been worked. The results obtained thus far have been due almost entirely to the circumstance that the ownership of the Detroit, Toledo & Ironton has been acquired by one of the largest manufacturers in the country, and that Mr. Ford has used his position as a very large shipper in the country to do things on the D. T. & I. which neither he nor anybody else could have done without being such a large shipper.

The Detroit, Toledo & Ironton now has much the same relationship to the Ford Motor Car Company that the Duluth & Iron Range, the Duluth Missabe & Northern and the Bessemer & Lake Erie have to the United States Steel Corporation. These steel corporation railways have been for many years among the most prosperous railways in America. They have been very well managed, but their prosperity has been largely due to the fact that they have been owned by an industrial concern which controls a vast amount of freight.

The facts about the Detroit, Toledo & Ironton may be summarized as follows: Mr. Ford bought it in August, 1920. He assumed complete control of its operation through men of his own choosing—most of them, men who were connected with his motor car business—in March, 1921, when he himself was elected president. During the four months, September to December, 1920, inclusive, after the present railway freight rates were fixed, the D. T. & I. handled an average of 49,246,000 ton-miles of revenue freight per month and had freight earnings averaging \$493,800 a month. In the months of April, May and June, 1921, the road handled an average freight business of 37,093,000 ton-miles a month and earned from it an average of \$694,203 a month. In other words, its average freight business in these three months was *almost 25 per cent less* than in the last four months of 1920, while its average monthly freight earnings were *over 50 per cent greater*. This large increase in freight earnings, in spite of a big decline in the total freight handled, could have been due to only one cause, and that was an increase in its average rate. And there was a very extraordinary increase in the average rate per ton per mile—a thing to which public attention never has been called before. In the last four months of 1920 its average rate was one cent per ton per mile. The average rate per ton per mile in April, May and June, 1921, was 1.88 cents, *88 per cent greater* than in September, October, November and December, 1920. The average rate of all the railways in the country is only 1.23 cents.

If no change whatever had occurred on the D. T. & I. except this enormous increase in its average rate per ton per mile its financial results would have been revolutionized. To what was this remarkable increase in the average rate per ton per mile due? Chiefly to two things: First, to a great change in the character of the traffic handled. Mr. Ford began giving his railway practically all of his freight business; and the freight handled directly and indirectly for his motor works consists largely of relatively high grade commodities which pay a rate much higher than the average. Meantime, the amount of coal handled by the railroad greatly decreased. Coal being a bulky and cheap commodity, it pays

a rate much smaller than the average. This change in the character of the traffic alone would have caused a large increase in the railway's average rate.

Secondly, the D. T. & I. has been able to use the large volume of traffic originated by the Ford interests to secure larger divisions of the through rates on all traffic hauled partly over its line and partly over other railways, and the great bulk of the D. T. & I.'s business consists of this through traffic. Both the change in the character of the traffic and the larger divisions of the through rates obtained by the D. T. & I. have tended to increase its average rate per ton per mile.

Furthermore, the management of the D. T. & I., in common with all the other railways, was able, partly because of the smaller traffic handled by it and partly owing to other causes, to make large reductions in its operating expenses. A study of these reductions in expenses indicate that in proportion to the reduction in traffic handled they were slightly greater on the D. T. & I., but only slightly greater, than those made on the railways in general.

The only really great change which had been made on the D. T. & I. up to July 1 was in the conditions which determined its average rate per ton per mile. But how about the reduction of 20 per cent in its local rates and the advance in the wages of its employees which have been so widely advertised? Neither of these went into effect until July 1 or later, and therefore neither of them had anything whatever to do with the increases in the railway's net earnings which have been so widely exploited. We shall have to get later data that are now available before anybody can say what is the effect of these changes in important policies.

It may be said, however, that Mr. Ford is so completely convinced of the desirability of a general reduction in rates that he has proposed that a reduction of 20 per cent be made in the rates of all railroads. It is not our purpose to impugn Mr. Ford's motives, but there are certain important facts about this proposed reduction in rates which are pertinent. The freight earnings of the Detroit, Toledo & Ironton are now running at the rate of approximately \$8,000,000 a year. Therefore, other things remaining equal, a reduction of 20 per cent in them would reduce the road's earnings by about \$1,600,000 a year. On the other hand, the freight bills paid by the Ford industries to all the railways amount to from at least \$15,000,000 to \$20,000,000 a year. Therefore, a reduction of 20 per cent in freight rates by all the railways would reduce the freight bills of the Ford Motor Company by \$3,000,000 to \$4,000,000 a year. In other words, Mr. Ford as a shipper would be sure to gain millions of dollars more by a reduction in rates than he could possibly lose as a railroad owner. Most of the other railways of the country are not intimately connected with large manufacturing concerns which would save millions of dollars annually by a reduction of their freight bills.

The *Railway Age* is glad Mr. Ford has entered the railroad business. We are glad to see him try the policies in which he believes on the Detroit, Toledo & Ironton. We wish he would buy a really large railroad system and try them on it. The Detroit, Toledo & Ironton is now practically nothing but a plant facility of the Ford Motor Works and the results obtained by it are no measure of what results would be obtained by the use of the same policies on a large

railroad system. The changes in wages and changes in working conditions Mr. Ford has made on the Detroit, Toledo & Ironton have apparently completely broken the grip of the railroad labor unions on his railroad. We should especially like to see his policies tried on a large railroad system because we should like to see what results he would get in dealing with the labor unions on a large system.

Meantime, no man who is capable of studying the facts about the management and operation of a railroad and drawing rational conclusions from them will say that Mr. Ford has as yet worked a miracle on the Detroit, Toledo & Ironton. Furthermore, his own representatives on the railroad do not claim that he has. He has done little or nothing on it that could not have been done if the Detroit, Toledo & Ironton had acquired the ownership of the Ford Motor works and thereby acquired control of all the traffic of the motor works. The fact that so many newspapers and people have accepted without question stories to the effect that he has worked a "railroad miracle" merely illustrates their willingness to believe any story reflecting upon the efficiency of management of the railways in general which may be irresponsibly put into circulation.

The desirability of using train order Form 19 wherever possible, instead of the time-consuming Form 31, is a question that recurs frequently, and a letter on the subject, printed

#### Why Require Signatures to Train Orders?

on another page, reminds us that it is an important one. This matter was quite fully set forth in the *Railway Age* several years ago\* but the discussion did not seem to settle anything. What can be done? For one thing, the facts which go to make up the arguments for and against taking signatures ought to be more generally known; that is to say, ought to be distinctly stated and so clearly set forth that any superintendent or dispatcher could put the whole question before his own mind, easily and quickly; and could study and review the subject as fully and at as much leisure as he might deem desirable. Those dispatchers who have most strongly advocated Form 19 have dealt more with opinion than with facts; at least that is the impression that has been made. Operating officers who realize the need of saving the time of their trains but cannot induce their managements to abolish signatures would do well to form themselves into an investigating committee, *a la* Congress, and, having fully informed themselves by visiting prominent roads which have made the change, get out a convincing report for general circulation. An investigating committee would have the duty of reporting not only opinions, but all of the details of present practice, so far as such details could be learned. For example, a road that allows operators to sign conductors' names to orders is pretending to use a safeguard which in fact is not used. It is necessary to get rid of all false issues if a fair comparison of methods is to be made. Our correspondent makes out a strong case. Who can show the best practice with clearance cards and middle orders?

\*Discussions of Train-Order Form 19 in the *Railway Age*, with names of writers:

1912	March 8	Page 418	J. P. Finan	A. T. & S. F.
	March 15	466	H. W. Forman	Western Pacific
	March 22	675	An Officer	N. Y., N. H. & II.
	April 5	788	T. Fay	Southern Pacific
	June 7	1235	Numerous dispatchers	
	Sept. 26	150	Wm. Nichols	Southern Pacific
	July 6	419	J. P. Finan	A., T. & S. F.
1917	June 22	1425	J. F. Mackie	Secretary, Disps' Ass'n
1918	Feb. 1	280	T. H. Meeks	Southern Pacific

In July of this year 30 steam locomotives built in this country were exported for use on foreign railways; in the same month of last year 134 were exported. For the seven months ending July 31, our total exports of steam locomotives totaled 692, as compared with 1,025 for the same period of 1920.

### Our Dwindling Exports

Similarly for freight cars: for the seven months ending the last of July, 5,579 had been sent abroad as compared with 13,708 for the same period of 1920. These figures indicate something more serious than a general business depression, because many foreign railways in spite of decreased traffic are still inadequately equipped and are in the market for equipment. The decrease in our exports reflects not only a less active foreign market but also the successful competition of foreign manufacturers for business which during and immediately following the war was diverted to this country. The exchange situation in most countries is against America and enables foreign competitors in many instances to underbid our manufacturers. Fortunately for America, however, we are in a better position to extend credit to foreign purchasers than almost any other country. The fact of the matter is, nevertheless, that our position in this regard is not taken full advantage of. With practically nothing having been done in the way of extension of the world's railway facilities during the past few years there exists abroad a vast potential market for railway supplies. Foreign manufacturers may underbid Americans in some cases where the prospective customer can give cash or short term notes in payment. Time, with the consequent rise in the value of foreign money, is the only remedy for this situation. If America fails, however, to compete successfully when long term credits, or permanent investments are involved, it will be because of lack of vision and skill in the machinery of finance rather than because of inadequate financial resources.

The reopening of several important railroad repair shops and the gradual building up of shop forces to normal at other

### Quality vs. Quantity Shop Output

points makes the present an opportune time to look into the future and impress upon shop organizations the importance of quality as against quantity output.

Under the stress of heavy demands for power and car equipment at various times in the past, there is no question but that the quality of railroad repair shop work has been sacrificed in favor of maximum output. But a locomotive, for example, requires something more than a coat of paint in order to operate efficiently and safely. A defective car sill or draft gear cannot be covered up forever. It is a serious question if, even under the most pressing demands for locomotives and cars, it pays to slight repair work in any important detail. It costs almost as much to do an inferior job which will subsequently give trouble as it would to take a little more time and do the job right in the first place. In addition, there is serious danger of accidents resulting from inferior workmanship and the practical certainty of locomotive failures and costly train delays. If, as is often the case, a locomotive or car has to be returned to the roundhouse or back shop and have repair work done over, the total cost is many times greater than the initial cost of doing the work right. Too much emphasis cannot be placed on the need for painstaking, careful repair and maintenance work in all shop departments. It is surprising how fast the idea will propagate itself among shop men that a railroad wants output and does not care so much for quality. The higher mechanical department officers should make extremely plain to their subordinates and through them to the shop employees the false economy of turning out any but the best work.

On May 27, as told elsewhere in this issue, hot coals from a passing locomotive set fire to a timber trestle on a southern railroad. Under the influence of a high wind the flames were spread over the entire structure, and the fire burned fiercely for some time, then died out practically of its own accord. Yet the

### Are Creosoted Bridges Good Fire Risks?

bridge, far from being destroyed, experienced scarcely more than a thorough scorching. This is an unusual incident when it is recalled that timber trestles, once set fire, have seldom escaped destruction. But more than this, it would seem that the circumstance has about it a significance meriting the close attention of the engineer. It is a well-known fact that, as mentioned in the article in question, much opposition is manifested in some quarters to the use of creosoted timber in railway trestles, largely in the belief that creosoted timber offers very little resistance to fire. But here it seems is a case of a timber trestle which survived a destructive fire for the very reason that its timber was saturated with creosote. This conclusion may or may not meet with the agreement of those who look unfavorably upon the creosoted timber trestles, nor will it necessarily alter the practice in bridge construction. It has, however, operated at least to confirm the favorable opinion of creosoted trestles held by the road upon which the fire, the first in ten years, occurred; in any event it bears evidence to the fact that the question—are creosoted bridges good fire risks?—is anything but a dead issue.

### Loss and Damage as a Factor in Transportation Costs

POST-WAR READJUSTMENT has required every manufacturer to place his house in order. Production costs have been investigated with the result that unprofitable lines have been dropped or manufacturing processes have been studied with a view to eliminating waste. As manufacturers of transportation, the railways can well study their operations to make sure that all costs incidental to the handling of the various classes of traffic are taken into account. Although the railroads are not in the fortunate position of the manufacturer, who can cease operation with respect to any product that is found unprofitable, they can at least endeavor to obtain a readjustment of rates with respect to the particular classes of traffic that are being handled at a serious loss.

As the money spent in satisfying claims for loss and damage must justly be considered as a part of the cost of transportation, it would be well to consider the relation between claims arising from the handling of a particular class of traffic to the revenue derived therefrom. As a case in point, an l. c. l. shipment of silk that brought the railroad a gross revenue of \$1.58 was destroyed in transport, giving rise to a claim for \$21,000. A simple operation in division demonstrates that this railroad would have to handle 13,000 similar shipments without loss or damage in order to make up the outlay for the damage claim in this single case without taking into consideration any of the other expenses which must be allocated to the service performed.

If this were a matter which concerned only the transportation of silks and a few other exceptionally high priced commodities, the situation would not be so serious, but unfortunately it concerns the entire l. c. l. traffic. In 1920 the losses incurred by the railroads as a result of loss and damage to l. c. l. freight, including claims, cost of claims investigation, and adjustment amounted to approximately \$52,300,000, while the total revenue derived from l. c. l. freight on the basis of 10 per cent of the total freight revenue was about \$431,000,000. This means that 12 per cent of the entire revenue derived from l. c. l. traffic was expended in satisfying claims for loss and damage to this class of traffic alone.

This is in sharp contrast to the situation with respect to

carload freight wherein the loss and damage amounted to about \$62,000,000 in comparison with a total freight revenue of \$3,880,000,000. In other words, the expenditure for freight claims in the case of carload freight was only 1.6 per cent of the gross revenue.

The problem of loss and damage is not new, although the record of 1919 and 1920 has imposed a problem on the railroads by comparison with which all previous experiences pale to insignificance. The comparison given above, which demonstrates the relationship between freight claims and freight revenues, is not made so much with the idea of suggesting changes in rates which would compensate for the losses as to call attention to the need of concentrating efforts to reduce losses on those items for which they have been the greatest. As another factor to be considered in this regard, it is of special interest to note that practically 70 per cent of total claims arising from l.c.l. traffic are chargeable to shortages, i. e., a moral rather than a physical hazard. The subject is one well worthy of further analysis and attention and into which the question of adequate police surveillance must enter quite largely. These conditions and others which are being developed by the Freight Claim Division of the American Railway Association will be fruitful in indicating those measures that will be most effective in reducing loss and damage.

## Michigan Central

THE MICHIGAN CENTRAL'S location in the busy automobile manufacturing district of southern Michigan enabled that carrier to prove a good money-maker for the government during the period of federal control. The standard return for the road was set originally at \$8,052,127. In 1918 it earned a net railway operating income of \$15,606,480, approximately 50 per cent over the standard return. In 1919 it earned \$16,934,173, double the government rental. In January and February, 1920, the last two months of federal control, it approximated the standard return. This rate of earnings, however, was not continued for long during the remainder of the year. Increased wages, a heavy increase in the cost of fuel and similar increases in cost such as characterized the year 1920, prevented the road from realizing on a heavy traffic, considerably in excess of that carried in 1919. The net railway operating income for 1920, as given in the December, 1920, monthly report to the Interstate Commerce Commission was only \$4,668,280. It happened, however, that this falling off in earnings was compensated for by the guaranty for the months March to August. The net return to the corporation was in excess of that for 1919, as we shall see below.

The Michigan Central at the present time seems to have succeeded to a considerable degree in restoring its earning power—or, in other words, in overcoming the disadvantages with which it was confronted during 1920. At present it is carrying only about two-thirds or three-quarters as much traffic as it was carrying at this time last year. Its net, however, is showing a progressive increase month by month. In June, 1921, the net railway operating income was \$1,459,699, as compared with a deficit in June last year of \$793,062. For the first six months this year its net was \$4,809,464, or more than half the average annual earnings for the period July 1, 1914, to June 30, 1917, on which the standard return was based. The net for the first six months of 1920 was only \$1,000,186. A showing of this kind evidenced in June and the first six months of the present year—a period of comparative industrial inactivity—may be taken as a good indication of the Michigan Central's earning power and of what may be expected when business is again revived.

The Michigan Central total freight revenues in 1920 were \$55,215,123, an increase of \$3,561,213 over 1919. The

total operating revenues were \$87,790,799, an increase over 1919 of \$8,946,414. As against this increase in operating revenues, there was an increase in operating expenses, 1920 over 1919, of \$15,528,435. The total operating expenses were \$77,370,249. The net operating revenues of \$10,420,551 compared with \$21,002,572, a decrease of \$10,582,021 from 1919. This decrease in net with an increase in gross is hardly sufficiently exceptional from the experience of most roads during 1920 to need extended comment.

The tons of revenue freight carried in 1920 were 30,203,776, as compared with 26,578,110 tons in 1919. The largest single factor in this increased business was the increased tonnage of bituminous coal. In 1920 the road moved 181,331 carloads of that commodity and a tonnage of 8,174,625, an increase of 3,712,675 tons over 1919. The Michigan Central also carries a large tonnage of anthracite coal—in 1920, 1,352,354 tons—a large part of which it receives from the anthracite roads reaching the Buffalo district. The total revenue ton-miles of all freight carried in 1920 was 4,824,739,972, the average haul being 160 miles; in 1919, the revenue ton-mileage was 4,718,763,911, the average haul, 178 miles. The Michigan Central has a comparatively high traffic density, the tons of revenue freight carried one mile per mile of road in 1920, being 2,637,363. Another of the distinguishing features of the road's operations is its heavy train load. In 1920, the average revenue train load was 761 tons as compared with 736 tons in 1919.

In the editorial review of the annual report of the New York Central which appeared in these columns a few weeks ago considerable attention was paid to the large amount of new equipment which had been acquired by that road and by the New York Central system as a whole in recent years. The point was made that the New York Central being one of the main arteries to the port of New York had been obliged to expend large sums for new equipment and facilities to keep up with the constantly expanding demands upon it for transportation. The same has been true on a smaller scale of the Michigan Central. That road received from the government 30 of the U. S. R. A. standard locomotives and 2,000 cars. The company is also to receive, or already has received, from the New York Central, 26 locomotives, 38 passenger train cars and 1,950 freight cars, covered by the New York Central's equipment trust of 1920. The estimated cost of this equipment is \$9,356,839. The Michigan Central receives it under a sub-leasing arrangement and as sub-lessee is to assume its pro-rata share of the equipment trust certificates, principal and interest, etc., and at the fulfillment of the trust is to become the owner. The amount of the trust was 75 per cent of the total cost, the other 25 per cent being obtained from the New York Central as a loan, covered by fifteen 6 per cent notes maturing from 1921 to 1935.

The Michigan Central also secured from the New York Central in a similar manner \$613,000 for additions and betterments to way and structures. The result of all this financing was an increase in the funded debt of the Michigan Central from \$57,793,931 on December 31, 1919, to \$72,501,446 at the end of 1920. The interesting manner in which the New York Central secured funds from the revolving fund administered by the Interstate Commerce Commission and then loaned in part to the various subsidiary companies—as here briefly outlined in the case of the Michigan Central—is further detailed in the editorial review of the New York Central heretofore referred to.

Referring now to the corporate income account of the Michigan Central, it will be noted that the total income from railway operations in 1920 was \$10,508,670, including compensation for January and February of \$1,342,021, additional compensation for completed additions and betterments of \$91,063; guaranty for the guaranty period of \$4,162,855 and net railway operating income for the last four months of the year of \$4,912,730. The total of \$10,508,670 com-

pared with the standard return for 1919 of \$8,699,813, an increase of \$1,808,857. The net corporate income for the year 1920 was \$3,805,785; for 1919, but \$67,230. The regular four per cent dividends were paid leaving a surplus for the year of \$3,056,329. The surplus for 1919 was \$67,230, the dividends for that year being paid out of surplus.

The operating results for 1920, as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,866	1,862
Freight revenue	\$55,215,123	\$51,653,910
Passenger revenue	23,557,853	20,070,337
Total operating revenue	87,770,799	78,844,386
Maintenance of way expenses	12,614,090	9,627,843
Maintenance of equipment	22,150,404	15,682,093
Traffic expenses	1,074,701	788,066
Transportation expenses	38,521,215	29,506,855
General expenses	1,737,874	1,459,291
Total operating expenses	77,370,249	57,978,857
Railway tax accruals	4,642,111	2,650,500

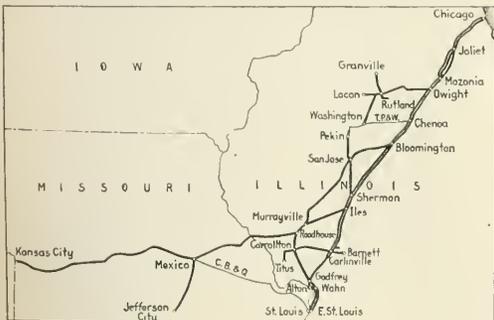
The corporate income account follows:

	1920	1919
Compensation, January and February, 1920; full year 1919	\$1,342,021	\$8,052,127
Additional compensation account, completed additions and betterments	91,063	647,685
U. S. Government guaranty, March 1 to August 31	4,162,855	.....
Net railway operating income, September 1 to December 31	4,912,730	.....
Total (compared with compensation accrued in 1919)	10,508,670	8,699,813
Total other income	1,129,833	858,187
Gross income	11,638,503	9,558,000
Total deductions from gross income	7,830,499	7,062,567
Net corporate income	3,805,785	67,230
Dividends declared (4 per cent each year)	749,456	.....
Surplus for the year	3,056,329	67,230

\*Dividends in 1919, aggregating 4 per cent charged to accumulated surplus.

## Chicago & Alton

THE CHICAGO & ALTON operates 1,050 miles of road including a line double tracked for almost its entire length between Chicago and St. Louis and a single track line from a point north of St. Louis to Kansas City. The road is thus able to offer direct service between Chicago and St. Louis and Chicago and Kansas City. The route from St. Louis to Kansas City is somewhat roundabout, but is shortened considerably for passenger traffic by a joint service with the



The Chicago & Alton

Chicago, Burlington & Quincy using the tracks of the latter company from Mexico, Mo., to St. Louis.

The greater part of the Alton's main line mileage is laid with 90-lb. rail. Of the remainder there is a considerable mileage laid with 80-lb. rail and some 56 miles of 100-lb. which is being used for renewals. Rock ballast is used for most of the main line roadbed. Of the total tonnage carried in 1920, 53.19 per cent was made up of products of mines. Bituminous coal, received principally from mines in central Illinois, made up 5,258,883 of a total revenue tonnage of 12,070,934.

The Alton is naturally well situated from a point of view of passenger traffic and an efficient traffic department and loyal service on the part of employees have done much to aid it in maintaining its position in spite of adverse conditions, the greatest of which doubtless is an inadequate supply of modern all-steel equipment. The company provides good service between Chicago and St. Louis and also between Kansas City and St. Louis jointly with the Chicago, Burlington & Quincy over the latter's cut-off from Mexico, Mo., to St. Louis. Competition with other shorter and better equipped lines has prevented the same development of the Chicago-Kansas City business, although even on this line the traffic is fairly heavy.

The Chicago & Alton has been rather adversely affected by the recent tendencies in railway operations and earnings. It had a standard return for operations during federal control of \$3,178,315. In 1918 it had a net railway operating income of \$1,776,749, or \$1,400,000 less than the government rental. In 1919, due to a sharp falling off in traffic and to the increased costs of operation in that year, operations resulted in a net deficit for the year of \$299,224; in 1920 there was a net deficit of \$278,319.

The busiest year in the Alton's history was 1917. In that year it carried 12,262,489 tons of revenue freight. In 1918 it carried 11,795,507 tons; in 1919, 10,312,152 tons and in 1920, 12,070,934 tons. The revenue ton-miles in 1920 were 2,252,431,641, and the average haul 187 miles. Considering the percentage of coal carried, the Alton does not secure a heavy train load, although it has been making considerable progress along these lines in the past few years. The revenue train load in 1920 was 539; this compared with 525 tons in 1919 and with 524 tons in 1916. In 1918, however, the figure was 515 tons.

The Alton, because of the very nature of the conditions with which it is confronted, has not been making marked progress in getting on its feet financially. Its corporate income account in 1920—that is, including the standard return for January and February and the guaranty for the guaranty period—showed a deficit for the year's operations of \$634,647. In 1919 the property had a deficit of \$997,469; in 1918, \$1,429,319. The income account for 1918, however, included an item of \$782,240, representing expenses prior to January 1, 1918. The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,051	1,051
Freight revenue	\$20,818,536	\$17,330,784
Passenger revenue	6,950,081	6,404,081
Total operating revenue	30,374,934	25,272,334
Maintenance of way expenses	4,583,276	4,297,871
Maintenance of equipment	8,655,184	7,359,875
Traffic expenses	485,296	292,179
Transportation expenses	14,068,980	10,069,752
General expenses	779,513	645,801
Total operating expenses	28,672,222	23,617,902
Net revenue from operation	1,697,712	1,654,432
Taxes	786,503	743,654
Operating income	909,383	908,184
Net railway operating income	Def. 278,319	Def. 299,224

The corporate income account is as follows:

	1920	1919
Rental from U. S. Railroad Administration	\$330,710	\$4,178,315
U. S. Government guaranty period claim	3,105,524	.....
Total income from railroad properties	4,412,748	3,101,409
Net income from railroad properties	3,355,860	2,830,356
Total income from all sources	3,455,116	2,936,181
Deduct—Interest on funded debt, etc.	4,109,763	3,933,691
Net deficit	634,647	992,469

ROCH LANCOT, a prominent French-Canadian member of the Canadian Parliament, in a recent speech at St. Edouard de Napierville, Quebec, declared that the Government of Canada would be wise to rid itself as soon as possible of the publicly owned railways. "What is the use of adding to an investment that produces nothing but deficits?" asked Mr. Lantot. "I would prefer to sell the whole thing to the Canadian Pacific for a dollar. The government is not capable of running railways on a business basis; there is too much temptation."

## Letters to the Editor

### A Substitute for the Derail

LONDON, Eng.

TO THE EDITOR:

In the *Railway Age* of July 16 appeared an article by A. H. Rudd, chief signal engineer, of the Pennsylvania System on "The Elimination of Derails." Mr. Rudd is a recognized authority on signaling matters and no doubt anything he may write will always be given serious attention; I feel that he is absolutely right as to the derail. It is a source of great danger and is directly responsible for great economical loss in railway work, being a costly item to install and maintain, and, at best, it is a menace to safety. It is a relic of bygone days when the only means of stopping a train passing a signal at danger was to throw it from the track. Very true, the train passing the signal at stop was penalized, but at what a cost; not only in damage to the equipment, but also many times to the passengers who were not in any way responsible.

The question that naturally arises after reading Mr. Rudd's article is: What is the remedy? If we eliminate the derail, what shall we substitute? The answer naturally is automatic train control, to prevent a train running past a stop signal. It is quite evident that before a train can stop it must be slowed down, and considering this fact it is quite obvious that the substitute for the derail is a scheme of automatic train control that includes speed control; a system that will impose speed restriction when approaching a stop signal and a stop at a stop signal without a dangerous overrun; a scheme that will control a train in accordance with signal indications and act to prevent accidents, but functioning only when the engineman fails. When the railroads are equipped with a train control of this character, there will be no need for derails at interlocking plants and trains will stop at stop signals without danger of destruction.

The only objection to Mr. Rudd's article is that evidently one paragraph is missing. Perhaps it is the last one, and, like the shortest verse in the Bible, it may be brief but most eloquent: automatic train control.

J. BEAUMONT.

### Stop-and-Proceed Rule Defended

BOSTON, Mass.

TO THE EDITOR:

A. H. Rudd's article in the *Railway Age* of August 6, commences with an excellent abstract defining the purposes which a modern railway signaling system should be made to serve. The main discussion, however, consists of an emphatic denunciation of the stop and proceed rule.

Analysis of some of the points made by the author raises a number of interesting issues which are not readily disposed of, and in several instances it is quite difficult to trace how the facts lead to the conclusions reached. Let us consider Mr. Rudd's contention with the case which is at once simplest and most typical, viz., a double-track line equipped with upper-quadrant three-position automatic block signals.

The author says: "Some of us believe . . . the stop and proceed signals should be eliminated; and stop signals displayed *only where stops are required*," describing this condition as follows: "i.e., when protection is needed against opposing movements, and at grade crossings, junctions and crossovers where side collisions might otherwise occur."

What is the proper point to stop a train which has entered a block occupied by a preceding unit? Safety demands that a sufficient interval be preserved at all times between trains,

and it is generally understood that signals are located with due regard for the efficient performance of this function. It indeed seems incredible that the author intended to exclude the stop signal from the situation that I mention. Surely he does not mean that the only stop signal should be those auxiliary or reserve instruments, torpedoes, flags, and the like. "Let us tell the engineman to stop only where necessary and when we say stop let us mean it. Less variations in stops and all real stops. *Stop-and-Stay*; this because it is *necessary*."

Now both the "real" stop and the stop-and-proceed indication have been barred from our case. Accordingly our three-position signal must become a two-position indicator (proceed slowly prepared to stop short of train or obstruction, or clear), affording less information than it did formerly. And Mr. Rudd has explicitly advocated supplying the engineman with as much knowledge as possible concerning the track ahead.

But suppose that only the stop and proceed rule is eliminated, and we substitute a "stop-and-stay" indication. What is the result? *Hold* trains where they had paused. And yet we are given to understand in definite terms that the stop and proceed rule works against the expediting of traffic.

Continuing, the article points out that the reason for the *stop* in the regulation criticized, is "because it is presupposed that without it, the second requirement (proceed at slow speed prepared to stop short of train or obstruction) may be disregarded." It is my belief, however, that there are other important factors effective. The stop and proceed rule is superior to the proceed at slow speed indication, for:

1. *It makes unmistakable* the requirement that the engineman bring his train under control. There is a fundamental difference between making a stop and reducing speed. The first is a fact incapable of modification; slackening of speed to an estimated rate per hour is an act in which judgment is an important element, and it is well known to what extent judgment varies with individuals.

2. *It compels* the attention of the train crew to an irregularity in the running of the train.

Furthermore a desirable feature of the stop-and-proceed rule is that it automatically tends to space trains as nearly as is consistent with safety. It is to be questioned if the time consumed by the stop could generally be advantageously utilized. For without the stop the train would commonly close up too quickly upon the preceding unit and would summarily be required to halt.

We have now reduced the issue to the question of what is ordinarily the more desirable place for the stop, at block limits or anywhere within the block. The answer seems unmistakable.

Possibly shortening the length of blocks may sometimes be a better means of accomplishing what Mr. Rudd and every other progressive transportation man is seeking, than would abolition of the stop and proceed rule. The advisability of contracting blocks, however, is dependent upon a variety of factors, and often the presence of special operating conditions is decisive. Moreover, expense of re-installation is not always an incidental consideration.

To my mind the stop and proceed rule is at present the method par excellence of keeping trains moving with a maximum of safety where dense traffic conditions prevail. The three indications now in general use I believe satisfy all the requirements which Mr. Rudd sets forth. In brief, the 45-degree indication keeps a train moving when it is safe, the 90-degree indication stops a train when a stop is necessary. It is the *stay* that is useless. Perhaps I may suggest that it would be interesting to know of a collision in which the stop and proceed rule has been at fault.

Given additional precautions, I will not deny that the proceed at slow speed direction as Mr. Rudd would use it, is worthy of experiment. For example, let the engineman approaching a block which is occupied, reduce speed to a

prescribed rate, at the same time whistling for the attention of the conductor, or preferably a regularly appointed brakeman, of his train: Responsibility might be divided between the engineman and the brakeman for the conduct of the train according to special regulations, from the time of passing the entrance of the occupied block until the passing of the first clear signal. Trainmen would be enjoined to respond to engineman's call, with notice to proceed into occupied block only when satisfied that necessary speed reduction had been effected. Also instructions might provide that such brakemen remain upon car platform ready to communicate at once with engineman if the required caution were not being exercised. A further check would be produced if brakeman noted on a special form the time of passing entrance and end of block, noting whether or not block was found occupied.

Doubtless there are logical objections to such an innovation. Particularly radical would be the responsibility accorded the brakeman. Paramount in importance, however, is the insistence that understanding of signals shall be complete. Not only do those in the engine know what is taking place; they know that the train crew in the rear is bound to watch for any exception in the running of the train.

Assurance of proper signal indication observance increases with the number of observers.

But admittedly this plan is rather clumsy. Nevertheless I do think that these principles, of exchanging understandings, and of giving a larger place to the interest of the crew in the operation of the train, offer profitable material for discussion.

In conclusion let us remark that the stop-then-proceed rule has stood the test of years' experience. Let it stand—stop and think (they go together) then proceed—a good rule always.

C. RADFORD SANDS.

## Signatures to Train Orders

CLEVELAND, Ohio.

TO THE EDITOR:

"Signals keep trains moving." This familiar maxim of one of your advertisers is endorsed by everybody. But there are many roads which have not as many signals as they would like, and so they continue to keep trains moving, as best they can, by dispatchers' orders. The dispatcher's office, however, has many handicaps, which it is desirable to do away with, and the problem how to accomplish that important end continues to agitate progressive minds.

The stopping of trains, especially long and heavy freights and heavy and fast passenger expresses, for the single purpose of receiving train orders is a serious element of cost in the operation of a busy railroad; and the use of train order Form No. 31, with which stops are necessary because of the requirement that the conductor shall sign the order before it can be completed, is subject to increasing criticism. A few roads have for a number of years made almost exclusive use of Form 19, requiring no signature, and have thus greatly reduced the number of train stops, promoting celerity and regularity in the movement of trains, and thereby reducing expenses; while at the same time, a satisfactory degree of safety has been maintained. The practice of these few roads has been commended and academically approved, and the advantages of the exclusive use of Form 19 have been discussed in considerable detail; and yet general practice is not much changed. Conservative railroad officers stick to Form 31—either because they believe that signatures are essential to safety or that the saving in delays is not of much value—and so the advocates of the non-signature form continue to address their arguments to deaf ears. Cannot something be done?

The main points of the argument against Form 31 are

pretty clear; but, as already suggested, not a great many dispatchers (or higher officers either) have got them well fixed in their minds. One fact needing to be emphasized is that the delays necessitated by getting signatures are growing worse, year by year, as very long trains are becoming more common. For a freight train of 85 cars it is impossible to take signatures and make delivery in less than 20 minutes, because the conductor, or someone, must walk the length of the train, either from the caboose to the engine or from the engine to the caboose.

The presence of the conductor in the telegraph office is to be regarded as at least a potential safeguard; and in giving up such safeguard, however small it may seem, the careful officer naturally seeks to assure himself that all other possible safeguards are kept in full force. There are two well-known safeguards which are not yet well enough appreciated: (1) the clearance card, to be given to the conductor in every case, bearing the numbers of all of the orders which he is required to receive at that point; and (2), the "middle order"; the placing of meeting orders at the station at which the trains are ordered to meet each other.

If we rigidly enforce the rule requiring clearance cards, every conductor will be constantly trained in habits of carefulness; and by having the cards numbered by the dispatcher, in the same way that he numbers train orders, lazy operators can be prevented from issuing cards carelessly and then claiming, untruthfully, that the dispatcher's approval had been given.

The middle order is universally approved—"if practicable." Why can we not require it invariably? If east-bound train No. 2 and westbound train No. 1 are to meet at B, the placing of the order at A for No. 2, at C for No. 1, and at B with the operator, makes a combination of safety which many dispatchers regard as almost absolute. This assumes, of course, that the train-order signal at B is so located as to stop the superior train before its locomotive reaches the switch where the inferior train enters the side track.

These two safeguards are well spoken of by all who have used them; and the success of any propaganda for the more general use of Form 19 would seem to depend on a vigorous campaign for their adoption. To advocate the relaxation of the signature rule only on lines having automatic block signals can hardly be expected to lead to any real advance in practice. To insist on the complete abolition of signatures is also a waste of time, for every dispatcher has cases occasionally where he must work at long range—as when sending an order to a train which is remote from the telegraph or telephone station—and cannot do less than get an acknowledgment in writing. This can be done, however, with Form 19. There is no need of two forms.

DISPATCHER

## Revive the M. M. and M. C. B. Associations

TO THE EDITOR:

In the *Railway Age* of August 20, we read that the Association of Railway Executives has decided that "in view of the imperative need for the exercise of all possible economy, annual or special meetings or conventions of all organizations under the supervision of this body should be indefinitely postponed or curtailed in every possible way." The officers of the Mechanical Division of the A. R. A. evidently decided that a convention would not save the roads what it cost and therefore cancelled it. Now the question arises why not make this decision permanent and abolish the conventions indefinitely?

It has always been my understanding that the meetings

of the Master Mechanics' and Master Car Builders' Associations and their so-called successors, Section III or Division V, were held because the men who attended got enough ideas and inspiration to make the meetings a good business proposition for the roads. The Master Mechanics' and Master Car Builders' conventions were certainly worth while, largely because the members were free to act and were interested in the associations and were able to do big things by free and concerted action. The present organization apparently has become a mere rubber stamp for the higher executives and the members have lost interest in it.

At the time Section III, Mechanical, was formed and affiliated with the American Railway Association it was hoped that it would open a wider field of usefulness and enlarge the work instead of curtailing it. It seems, however, that the merger of the old mechanical associations was one of the big mistakes of federal control. That being the case, why should it be perpetuated? The value of the old associations was generally recognized. Their names meant a great deal to the membership who were strongly opposed to having the associations lose their identity. It is generally believed that one man who had conceived an antipathy for one of the organizations used the Railroad Administration as a tool to kill that association. It is generally understood that the Master Car Builders' Association was forced into the merger and never legally became a party to it because the unanimous vote required for such action was not secured until two officers had resigned.

The two grand old associations now have their identity hidden behind a meaningless number. Interest is waning and the work of the committees seems to lack almost entirely the forward looking, constructive viewpoint that marked the work a few years ago. It is pertinent to inquire whether the present organization has justified its existence. I believe those who have followed the earlier work of the mechanical association will answer in the negative.

Fortunately, the spirit of the Master Mechanics' and Master Car Builders' Associations is still alive. The only way to get results seems to be to revive the old associations. There is no reason why they could not make a working arrangement with the American Railway Association just as the American Railway Engineering Association now co-operates with that body, yet still retains its identity. The old associations would be assured of the loyal support of the former members and with a generous influx of new blood, which the present association has not had since it was formed, they would be in a position to get down to business and tackle the big problems confronting the mechanical department that are so often referred to in your columns, but which Division V, Mechanical has not yet waked up to. Let's show the railroad world that the mechanical department is not made up of a lot of dead ones. Let's have a regular convention on the pier next year, with the electric sign flashing as it did in the old days, "Welcome M. M. and M. C. B."

MECHANICAL ENGINEER.

## Value of College Men to Railroads

BOSTON, MASS.

TO THE EDITOR:

I have read the letter in the *Railway Age* of August 20, 1921, page 323, by Vice-President Ennes of the Wheeling & Lake Erie, on "Is the College Graduate Properly Equipped for Railroad Work?" From the viewpoint of the college man it appears that the article, while it in general shows more generosity toward college men than they have come to expect from the railroads, admits a lack of progressiveness, on the part of the railroad, which has been shown on the part of other industries and suggests a possible weakness in railroad organization.

Whether or not the college can amend its curriculum in such a way as to turn out a finished transportation product is questionable. That it can teach the fundamental elements of railroading, including transportation, the ultimate object of all railroading, as medicine, law, engineering and the other professions are taught, there is no reasonable doubt. It is a long step from the college campus to the position of a successful physician or surgeon, an eminent lawyer or a competent practising engineer. Why then should the railroads look to the college for a made-to-order transportation or operating man? Moreover, if it is possible that such a ready-made product could be provided by the college, would it not necessarily be at the expense of curtailment of other fundamental knowledge, which, though not an absolute essential to successful transportation as such, would make for well rounded railroad organization and economic proficiency? Should not the railroads, as other corporations have very largely come to do, place some value on a fundamental knowledge of the component parts of its plant; and by definite policy mold the possessors of such knowledge to the ultimate benefit of the entire plant rather than remain so rigidly devoted to departmental caste?

That, under the present railroad attitude, the young college man, after a total of eight years of school and service, would not ordinarily be as well equipped for the service of transportation as would the young man who, on finishing high school, had entered railroad service as a fireman, brakeman, yard clerk, telegraph operator or kindred occupation, is without doubt very true. But is not this condition to the discredit as well as disadvantage of the railroads rather than an indictment against the college man or the college which trains him? It would seem reasonable to believe that a man having intimate knowledge, both by education and experience, of the requirements and underlying technical and business principles making possible the plant which produces the transportation, would develop into as competent a transportation man as would the one who has no fundamental knowledge of the plant which he operates.

Net revenue is the ultimate object of all railroading. Transportation is the product which produces revenue. To furnish transportation in such a way as to produce net revenue is the greatest problem at the present time. Could this not be done more readily by the man, college or self-educated, who is not merely a transportation man, but is a railroad man whose right hand knows what his left hand is doing? That the colleges would gladly do their part in furnishing the raw material for such a railroad man, if the railroads would adopt a definite policy for passing him through the school of experience, and thereby create a demand, is a foregone economic conclusion.

I am still of the opinion that the railroads want college men and that when that desire is felt, with sufficient force, by those officials who direct corporation policies to stir them to co-operation with the colleges, and to recognition of the worth of the college training supplemented by a definitely outlined opportunity for practical training, there will be little complaint "that the college man does not come up to expectations in most cases."

F. E. HANSON.

"CHILD HEALTH SPECIAL" is the name of a train that is touring Canada. It is managed by the Child Welfare Association of Montreal and has received the endorsement of the Provincial Red Cross, McGill University and other organizations. It consists of two coaches, equipped with a child welfare exhibit, consisting of posters, panels and various displays. Parents with babies, and children up to 14 years of age, are invited to attend and to have their children examined, weighed and measured by the professional staff aboard, consisting of physicians, nurses and a social worker.

# What Has Henry Ford Done With the D, T. & I.?

Freight Revenues Have Been Increased About 40 Per Cent, with  
Less Revenue Traffic Movement

HENRY FORD'S entrance into the field of steam railway transportation, through his acquisition of the Detroit, Toledo & Ironton, has aroused a more intense public interest than any other single recent event in railroad history, not excepting the advent of federal control at the beginning of 1918. His success as a manufacturer in a field in which, through great ability and highly standardized factory methods, he has built up a vast business, has given him an international reputation such that his opinions on any industrial subject are received with great respect by the public.

Mr. Ford has purchased a railroad which never before had demonstrated that its existence as a common carrier was economically justified. He raised the wages of his railway employees when other roads were adopting reduced wage scales. He has made a 20 per cent reduction in local freight rates and has started a movement for a general rate reduction.

In February, 1921, the D. T. & I. produced an operating deficit of \$104,923. Mr. Ford became president on March 4. In April the road produced a net operating revenue of \$301,675, which has increased steadily for the succeeding three months. Hence, when Mr. Ford was asked, "What is the first thing you would do if you were given all the railroads to run?", and he is said to have replied, "Slash rates, boost wages, let a lot of men go," the connection between cause and effect seems to be established and it is not unnatural that Mr. Ford is credited with having worked a miracle in the transportation world.

But a chronological statement of the facts does not justify belief in so simple a relationship between cause and effect. The most talked of Ford policies such as the new wage scale based on a minimum of \$6 a day, the eight-hour day and six-day week in train service and the abolition of off-line traffic agencies, did not become effective until July 1, 1921, and the reduced freight rates became effective still later. The latest published returns for revenues and expenses are for the month of June, 1921. It is evident, therefore, that these policies have not

been a direct factor in the results on which public opinion has been formed.

These policies and the favorable operating results have been made public by the daily press at the same time, giving the erroneous impression of cause and effect.

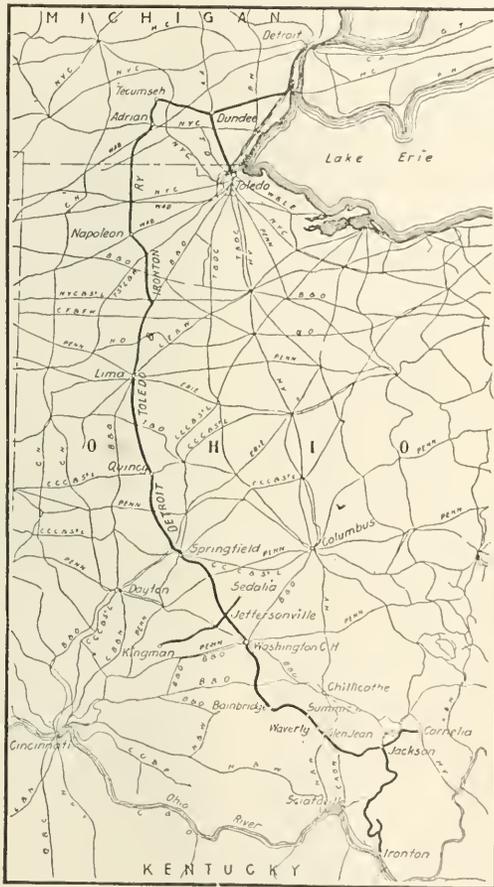
It is not the purpose of this article to speculate on the effect likely to be produced by these policies. Time will make available the facts from which their wisdom may be judged with assurance. With the facts already available, however, it is possible to determine the principal causes for the spectacular improvement in operating results which has so closely followed the assumption of complete control of the railroad by Mr. Ford.

## How Revenues Have Been Increased

From September to December, 1920, inclusive, the Detroit, Toledo & Ironton handled an average of 49,246,000 net ton-miles of revenue freight per month. During this period the freight revenues averaged about \$493,800 a month, giving an average revenue of one cent per revenue ton-mile. During January and February there was a marked falling off in the volume of traffic; the net ton-miles for the latter month scarcely exceeded ten million. In March, following Mr. Ford's accession to the presidency of the road, the traffic movement showed a marked improvement in the face of a pronounced depression on other roads. This increase continued through the months of April and May with a slight falling off in June, which is the latest month for which operating statistics are available. The volume for May, however, is 16.5 per cent below the average for the last four months of 1920.

In April the traffic movement amounted to 31,000,000 revenue ton-miles and freight revenues were \$674,692. The May movement amounted to 41,090,000 revenue ton-miles and the freight revenues for the month were \$721,562. In June revenue ton-miles dropped to 38,589,000 with a freight revenue for the month of \$686,355.

It is evident, therefore, that instead of the one cent per



The Detroit, Toledo & Ironton and Its Connections

ton-mile, received during the last four months of 1920, the D. T. & I. received 2.13 cents in April, 1.76 cents in May and 1.78 cents in June. For the three months the receipts averaged 1.88 cents per ton-mile. During the same period the average revenue per ton-mile for all Class I roads increased only from 1.1 cents to 1.33 cents.

In December, 1920, the Detroit, Toledo & Ironton handled 44,396,000 net ton-miles, for which it received \$470,350. Total operating revenues amounted to \$508,666 and operating expenses to \$686,736, or 134.4 per cent of the total operating revenues. To demonstrate the effect of the increase in revenue per ton-mile on operating results, had these 44,396,000 net ton-miles produced revenue at the same rate as the business handled in June, the freight revenue for the month of December would have amounted to \$790,250 and the total revenues to \$828,550. Instead of 134.4, the operating ratio would then have been 82.5, with no change in operating economy.

### The Traffic Situation

This marked increase in the price received by the railroad for its commodity reflects two conditions. One is a marked increase in the volume of high grade traffic with a simultaneous decrease in the volume of low grade traffic; the other is the strengthened position of the road with respect to through rate divisions.

REVENUE TONS OF FREIGHT HANDLED BY THE D. T. & I., CLASSIFIED BY COMMODITIES

	Net tons loaded and received			
	Average per month, Sept. Oct. and Nov. 1920		April, 1921	May, 1921
	Products of agriculture.....	24,271	8,671	7,419
Products of animals.....	986	2,164	1,554	1,554
Products of mines.....	308,635	132,374	175,932	9,973
Products of forests.....	12,357	9,964	9,973	232,584
Manufactures and miscellaneous (total).....	100,662	157,988	232,584	
Iron, pig and bloom.....	15,965	9,323	8,524	50,165
Bar and sheet iron, structural iron and pipe.....	8,287	20,920	18,554	4,724
Castings, machinery and boilers.....	3,149	15,024	18,554	4,724
Chemicals and explosives.....	9,701	3,658	76,098	5,813
Auto and auto trucks.....	668	65,691	76,098	68,706
Merchandise and l. c. l.....	3,211	4,302	5,813	68,706
Other manufactures and miscellaneous.....	59,781	39,030	68,706	
Total, all commodities.....	446,911	311,161	428,430	

One of the tables presents the salient facts relative to the change in the character of the traffic. The large volume of coal traffic moving during the late months of last year has been replaced by a growing volume of high grade semi-finished products and automobiles, largely but not entirely controlled by the Ford Motor Company. At its Highland Park plant alone this company controls a daily movement in and out, of about 300 car loads of freight. Of approximately 6,000 cars a month shipped out of Detroit by all of the Ford industries, more than 5,000 are now being routed via the D. T. & I.

The Detroit, Toledo & Ironton, with its poor location and the meager volume of through traffic originating on its line, had never been in a position to secure what it considered adequate percentages of the through rates in which it participated. The road now has a large and growing volume of high grade traffic at its disposal at a time when traffic is scarce. This complete reversal of conditions undoubtedly is already reflected to some extent in the increased ton-mile revenues, and its complete effect on rate divisions will be a strong factor in maintaining a high average ton-mile revenue when normal business conditions increase the movement of coal and other low grade products.

### Attitude of the New Management

Another factor having more or less effect on the traffic of the D., T. & I. is the purchasing power of the Ford interests. Instances are said to have occurred where Ford Motor Company purchases, either actual or prospective, have been the controlling influence in routing business, other than that

controlled by Mr. Ford, over the rails of the D. T. & I.

While the Ford interests acquired possession of the D. T. & I. in August, 1920, the present management did not assume complete control of the property until March 4, 1921. From that time until July 1, 1921, no marked innovations were inaugurated, although considerable study was given to the operating organization and progress made towards its rearrangement and simplification according to general principles which Mr. Ford believes apply equally as well to railroading as to the conduct of an industry. On July 1 the first real operating innovations, already referred to, went into effect and on July 18 the road filed a freight schedule with the public utilities commission of Ohio providing for a 20 per cent reduction in rates between all points on its own line. None of these changes has been in effect long enough to supply any data relative to their effect on revenues or expenses.

In taking over the active handling of the property Mr. Ford's management has approached the problem with a full appreciation that it has little knowledge of the details of the railroad business and any intention to "show up" other railway managements is disclaimed by it. It is Mr. Ford's belief, however, that through years of development many practices and details of organization have been perpetuated in the railroad business which a close analysis would show to have little to justify them except precedent. Certain records, for instance, once established possible for a special purpose, continue to be compiled long after that purpose has been served and after their usefulness has ceased. In the matter of organization it is his belief that there has been a tendency towards the development of bureaucratic methods with an amount of red tape which tends to stifle the initiative of the man on the ground who is directly responsible for results.

In view of this conception of the situation, a lack of what is commonly termed expert knowledge of the details of the railroad business is considered by Mr. Ford an asset rather than a liability on the part of the new management, which approaches the problems involved in operating the property with a firm conviction that as a business, railroading does not differ essentially from any other industrial venture. The human element is believed to constitute the largest single factor in the operation of a railroad, just as it does in the conduct of an industry, and Mr. Ford believes that the same principles and methods of dealing with men which have led to satisfactory industrial relations in the plants of the Ford Motor Company will produce the same results in dealing with railway employees.

### The Ford Labor Policies

The purpose of the labor policies established by the Ford Motor Company is the development of a stable force of satisfied employees. The advantages of stability with a minimum turnover are generally well recognized. The stability and efficiency of the force depends upon its loyalty; and loyalty, in the opinion of Mr. Ford, is only rightly to be expected from employees who are satisfied with their wages and working conditions.

The policies adopted by the Ford Motor Company with respect to wages and working conditions are founded on the belief that it is better to pay a minimum number of employees a wage high enough to justify the individual in giving to the management his unqualified support and the utmost effort of which he is capable, rather than to spend the same or a larger amount of money to meet a payroll of larger numbers of less satisfied men, who feel justified in giving considerably less than their best efforts. In this connection it is pointed out that the purpose of the restrictive working conditions imposed by labor unions is primarily to increase labor earnings—that they are not an end in themselves. Hence, if the men are satisfied with their wages, these waste-breeding restrictions can be abolished.

These reasons have been considered sufficient to justify the extension of the policies in force in the plants of the Ford Motor Company to the Detroit, Toledo & Ironton. Accordingly, on July 1, instead of putting into effect the reduced wage rates established by the United States Railroad Labor Board, Mr. Ford established the \$6 a day minimum wage scale which had the effect of a general advance in wages. The rates affecting some of the more important classes of employees, compared with those established by the Labor Board, are given in one of the tables. In paying these wages the management has adopted the policy of refusing to hire experienced railroad men who are employed by other roads.

In addition to the increased wage scale, a bonus is to be paid periodically, varying with length of service and rate of pay from \$50 to \$150 a year for employees receiving \$6 a day, and from \$170 to \$270 a year for employees with a rate of \$10.80 a day. The bonus also applies to salaried employees whose salaries do not exceed \$250 a month.

The six-day week with no-train movement from 6 o'clock Saturday night till 6 o'clock Monday morning, except as required by live stock or perishable shipments, has been inaugurated in order that as nearly as possible all employees may have one day of rest in seven, and have it on the same day as men in other lines of work. This has been worked out so that as low as 40 men on the entire line are required to work on Sunday. These include about 10 bill clerks who work a few hours in the morning on shipments received late Saturday, two yard engine crews and the men employed in the operation of joint railroad crossings.

Employees are paid on the basis of eight hours' work per day, 26 days a month, or 208 hours a month. As far as possible, train service employees and others whose duties subject them to call, are laid off at the completion of 208 hours' service, if completed before the end of the month.

In reorganizing the forces the central idea has been simplification and the elimination of duplication of effort, closer co-ordination of the different departments and the elimination of as many of the intermediate agencies in the control of the forces as possible. At the time Mr. Ford acquired control of the property in August, 1920, there were 2,723 employees on the road. In March, 1921, the number had been reduced to 1,326. In the rearrangement of runs necessary to provide for the eight-hour day and the six-day week in train service, it was necessary to increase the number of employees. There was also a seasonal increase in the maintenance of way department. There were 1,822 employees in the roll for July.

**Reduction in Maintenance Forces**

A classified list of the employees on the road during these three months is shown in one of the tables. It will be noted that the largest decreases were in the maintenance departments. The August, 1920, roll is said to have been about 500 above a normal average, nearly 300 of this number being accounted for in the maintenance of way department, which averaged about 1,000 employees during federal control. The reduction in the number of employees in this department has been effected largely by reducing section gangs to a foreman and two men each, the foreman being required to work with the men. These gangs, however, are not expected to take care of all of the routine maintenance work on their territories the year around, while heavier work is performed with floating gangs of 15 or 20 men which are moved from section to section as conditions require. Considerable work is also accomplished by utilizing the idle

time of such men as crossing watchmen and pumpers on minor track maintenance, such as cutting weeds, repairing road crossings, looking after joint bolts, spikes, etc.

Through the late summer to the end of last year about 3,000 tons of 85-lb. rail was laid on the north end of the line. A considerable amount of 56-lb. and 60-lb. rail further south was replaced with relaying rail, about 200,000

During the four months, September to December, 1920, inclusive, after the present railway freight rates were fixed, the D. T. & I. handled an average of 49,246,000 ton-miles of revenue freight per month and had freight earnings averaging \$493,800 a month. In the months of April, May and June, 1921, the road handled an average freight business of 37,093,000 ton-miles a month and earned from it an average of \$694,203 a month. In other words, its average freight business in these three months was almost 25 per cent less than in the last four months of 1920, while its average monthly freight earnings were over 40 per cent greater.

WAGE RATES ON THE D. T. & I., COMPARED WITH LABOR BOARD SCALE

Class of employee	Average daily rates	
	D. T. & I.	Decision 147, U. S. Labor Board
Clerks	\$150—\$225*	\$4.21—\$4.77
Section foremen	6.40—6.80	4.34
Sectionmen	6.00	3.02
Other unskilled laborers	6.00	3.05
Carpenters	7.20	5.03
Crossing flagmen and gatemen	6.00	2.65
Signal maintainers	6.80	5.74
Foreign, mechanical department	220—270*	6.37—9.13
Machinists	7.60	6.18
Boilermakers	7.60	6.25
Blacksmiths	7.20	6.28
Carmen	7.20	5.84
Helpers	6.00—6.40	4.36
Passenger engineers	375*	6.00
Passenger firemen	375*	4.50
Freight engineers	375*	7.05—7.44
Freight firemen	275*	5.25—5.38
Yard engineers	375*	6.51
Yard firemen	275*	5.03
Passenger conductors	375*	6.40
Passenger brakemen	275*	4.40
Freight conductors	375*	5.80—6.32
Freight brakemen	225*	4.48—4.88
Yard conductors	375*	6.32
Yard brakemen	225*	5.84
Telegraph operators	6.40	4.82

\*Monthly basis for eight-hour day and six-day week.

NUMBER OF EMPLOYEES ON THE D. T. & I. IN AUGUST, 1920, AND MARCH, AND JULY, 1921

	August, 1920	March, 1921	July, 1921
General and accounting	128	135	111
Maintenance of way	1,291	377	646
Mechanical	638	345	466
Station forces	276	210	223
Trainmen	229	167	225
Enginemen	171	122	154
Total	2,723	1,326	1,816

ties were renewed and some ballast inserted. This work was done with three extra gangs of 45 to 60 men each. Since the middle of May this year, four gangs of 15 men each have been renewing ties at the rate of 20,000 a month and putting from 12 to 15 fifty-ton cars of stone ballast a day under the track.

During this same period last year, the Jackson, Ohio, shops averaged a monthly output of four locomotives with heavy repairs. During the past few months with about 60

per cent of last year's force, the output has averaged at the rate of slightly more than four locomotives a month. In comparing the total number of employees in the department during the two periods, however, account must be taken of the fact that an abnormal volume of car repair work was in progress during the earlier period.

**Reorganization of Accounting Department**

The accounting department, organized on the divisional system, formerly maintained three offices, one at Jackson, Ohio, the location of the principal repair shops, one at Springfield, Ohio, and one at Detroit, Mich. The work of these three offices has been consolidated successively by moving the Jackson office to Springfield and finally moving the Springfield office to Detroit, where all of the work of the department is now conducted. Centralizing the work of this department has brought to light a number of duplications, the elimination of which has made possible a reduction in the clerical forces from 66 to 50 and the dropping of one supervisor.

All original documents, such as time slips and material slips, are sent direct to the auditor's office for distribution. Instead of making out the usual payrolls, pay checks are made out from the distribution sheets in case of time slips and where time clock cards are used, from them direct. This has made it possible to pay on the fifth of the month following the close of the payroll period, instead of the fifteenth as was the former practice. Also instead of maintaining a rate clerk in the auditor's office to check rates on interline way-bills, this work is now done by the rate clerk in the traffic department, to whom all questions of the correctness of rates or divisions must be referred for settlement in any case. This has saved two rate clerks and a mail boy. In all, 73 monthly reports between the divisional and general offices or between departments, have been found to be duplications and have been eliminated.

**The Station Agent's Opportunity**

One of the simplifications of the organization which the new management is developing is the utilization of local station agents in the settlement of freight loss and damage claims. It is believed that the best interests of the road demand that the local agents be among the biggest men in their communities and that all matters affecting the relations of the railroad with the community should be handled by the agent if he is to justify his title. Furthermore, placing this responsibility on the agent is expected to effect a material saving in legal fees, which will be confined as far as possible to cases requiring technical legal advice. It is the belief of the present management that the legal department is too frequently made a dumping ground by other departments for many difficulties which, were they required themselves to settle, they would be more careful to prevent.

Local agents are given complete jurisdiction over their territory. If a small force of car repairers, or an inspector, are employed at an interchange-point where conditions do

not provide enough work to keep them steadily engaged, they are subject to the orders of the agent for warehouse work, or clerical work if they prove adaptable for such duties and as circumstances require.

**No More Off-Line Traffic Agencies**

The discontinuance of off-line agencies, effective July 1, is based on the belief of officers of the Ford Motor Company from their own experience, that off-line traffic representatives seldom represent their railroads effectively. Few of such representatives, they believe, have an adequate knowledge of the percentages of through rates accruing to their railroads or of the kind of service their roads can render economically. They are, therefore, neither in a position to serve the best interests of their roads intelligently or to guarantee the performance of the service they will promise in order to secure the routing of a few car loads of freight over their lines.

Expressing the belief that competition for traffic should aim at the development of a freight movement along natural channels and that solicitation should be based purely on the service which the road can render, the present management proposes to substitute for the frequent calls of a local representative, out of touch with the actual conditions on the property, the less frequent calls of an officer thoroughly conversant with the operation of the road, the class of traffic it is best adapted to handle and the kind of business producing the best revenue—an officer who can represent the company adequately and who knows that the kind of service promised can and will actually be performed. In order to provide close co-operation between the traffic and operating departments, the head of the traffic department has been

made an assistant to the chief operating officer, with duties somewhat similar to those associated with the title of superintendent of transportation.

The freight earnings of the D. T. & I. are now running at the rate of approximately \$8,000,000 a year. Therefore, other things remaining equal, a reduction of 20 per cent in them would reduce the road's earnings by about \$1,600,000 a year. On the other hand, the freight bills paid by the Ford industries to all the railways amount to from at least \$15,000,000 to \$20,000,000 a year. Therefore, a reduction of 20 per cent in freight rates by all the railways would reduce the freight bills of the Ford Motor Company by \$3,000,000 to \$4,000,000 a year. In other words, Mr. Ford as a shipper would be sure to gain millions of dollars more by a reduction in rates than he could possibly lose as a railroad owner.

**OPERATING STATISTICS**

Reported by the D. T. & I. January to June, 1920, and 1921, and September to December, 1920

	Passenger train miles	Freight train miles	Gross ton miles (1,000)	Per cent net to G. T. & I.	Cars per loaded train	Gross tons per train	Transportation expense per mile (pass. and freight)	Transportation expense per train mile (pass. and freight)
1920								
January	29,000	56,000	50,103	57.0	42.0	1,422	\$237,055	\$2.79
February	26,000	54,000	81,542	60.0	40.0	1,510	190,278	2.38
March	29,000	53,000	75,864	57.7	39.2	1,419	172,276	2.10
April	28,000	48,000	71,172	58.5	38.8	1,470	159,461	2.10
May	28,000	54,000	87,445	59.6	36.7	1,613	183,901	2.24
June	28,000	49,000	78,112	58.4	38.0	1,632	200,736	2.62
September	30,000	57,000	92,874	58.3	42.1	1,630	247,078*	...
October	30,000	60,000	94,196	59.7	45.5	1,570	271,726*	...
November	28,000	61,000	92,355	57.4	42.2	1,510	254,540	2.86
December	30,000	60,000	82,164	53.4	38.9	1,370	224,183	2.49
1921								
January	28,000	34,000	35,613	46.5	52.4	1,042	159,226	2.58
February	25,000	31,000	27,441	44.0	26.9	894	126,741	2.26
March	30,000	44,000	57,216	48.0	25.8	1,300	170,196	2.30
April	27,000	59,000	79,871	47.5	24.1	1,354*	183,831	2.14
May	28,000	67,000	98,537	50.2	27.4	1,463	189,236	1.99
June	27,000	68,000	95,361	48.5	25.7	1,395	188,517	1.98

\*Some back pay, incidental to the wage award of July 20, 1920, included in this month's accounts.

### What Have the New Policies Accomplished?

There are two distinct possibilities for changes in the net operating return under the new management. The marked improvement in revenues is a matter of business relationships which would not have been essentially different had the D. T. & I. purchased the Ford Motor Company. The effect of the policies of Mr. Ford's management on the cost of operating the property is quite a different matter and must be studied apart from consideration of the revenues. A comprehensive judgment of the effect of the more distinctive Ford policies must await the returns from several months' operation. But the effect of the reductions in the number of employees and changes of organization which have been referred to above should already be reflected in the operating expenses for April, May and June.

Owing to the inability to allocate operating expenses to freight and passenger service and because of the fact that maintenance expenditures over a short period may have little relation to the volume of traffic, it is impossible to compare total operating expenses to determine with any degree of accuracy what effect certain policies may have had on operating costs. A rough comparison of the train mile cost of conducting transportation, however, indicates that there has been a well-defined tendency toward improvement since last October. By referring to the table of operating statistics it will be seen that since October there has been a steady decline in the transportation expense per train mile (passenger and freight) from \$3.01 to \$1.98 in June of this year. This well-marked decrease has been steadily maintained, except for increases in January and March, through a period during which there has been both a sharp decline and a sharp increase in the volume of traffic, and a decrease followed by an increase in the gross tons per train. It is evident that well-defined improvements had been made prior to the time when Mr. Ford assumed active control of the property on March 4, 1921, but the reduction of transportation expense per train mile to \$1.98 in June, as compared with \$2.10 in March and April, 1920, under lower wage scales, marks a distinct accomplishment.

Aside from the effect of the decreased payroll, one of the factors entering into the decreased transportation expense is the fact that a large part of the traffic during recent months has moved over the Northern division, which extends from Detroit to Springfield, Ohio, with a branch from Dundee, Mich., to Toledo, Ohio. During a recent month the total car movement on this division amounted to about 42,000, while that over the Southern division was about 12,400. The greatest improvement in the track has been made on the north end of the line. Furthermore, the nature of the traffic permits the delivery to interchange points of a considerable portion of the movement in train-load lots.

Another important factor is a decrease in unit coal consumption, amounting to about 20 per cent as compared with

the same months last year. This is largely owing to a marked improvement in quality; the freedom from confiscation, generally practiced last year, has also tended to reduce the prices.

The important question with respect to maintenance is not so much the relation of expenditure to volume of traffic as whether or not the property is being currently maintained. An extensive program of track improvement was inaugurated under the former management. J. A. Gordon, the former president of the road, is quoted in the Wall Street Journal to the effect that up to the fall of 1920 most of the 220 miles between Detroit and Springfield, Ohio, was laid with 60-lb. rail over 25 years old. Its rehabilitation to a standard justified by the present prospects of the property has not yet been completed. It is not the policy of the present management to carry out this rehabilitation faster than is justified by the earnings of the property. The railroad must pay its own way.

During 1919 the total maintenance of way expenditures ran at the rate of \$2,490 per mile of line. Last year with a considerable amount of rehabilitation work, they averaged \$4,170 per mile of line, the greater part of which were made after Mr. Ford acquired control. For the four months since Mr. Ford has had active charge of the property, they have run at the rate of \$2,540 a mile per year. Tie renewals and ballasting are being carried on at a rate which, except for that during the last half of last year, is probably a record for the property. Track conditions are improving rather than deteriorating.

Maintenance of equipment expenditures have followed a general course similar to those in the maintenance of way department. A comparison of the Detroit, Toledo & Ironton with all Class I roads shows that the average expenditures for locomotive maintenance have closely approximated the average for all of the Class I roads, indicating a fair average condition. But the expenditures per unit of freight and passenger car equipment have been decidedly less than the Class I average. Retirements have been especially heavy during the past two years, for, from an ownership of 3,006 freight cars in 1918, the number has now decreased to a total of only about 1,700 in revenue service.

During the four months of the current year since March 1, the expenditures for maintenance of equipment were \$334,479; during the same period of 1920 the amount was \$317,836. During the last four months of 1920 maintenance of equipment expenditures aggregated \$46,314. Here again Mr. Ford has the benefit of an intensive maintenance program of several months' duration, particularly with respect to cars, carried out by the former management, but the amount of work being obtained for the present expenditures is probably meeting current requirements.

While these general conclusions can be drawn on the basis of the data available, no adequate comparison of the effectiveness of maintenance expenditures can be drawn until the

The facts show that under the Ford management the financial results of the Detroit, Toledo & Ironton have been very greatly improved. They also show that no miracle has been worked. The results obtained thus far have been due almost entirely to the circumstance that the ownership of the Detroit, Toledo & Ironton has been acquired by one of the largest manufacturers in the country, and that Mr. Ford has used his position as a very large shipper in the country to do things on the D. T. & I. which neither he nor anybody else could have done without being such a large shipper. \* \* \* \* Furthermore, the management of the D. T. & I., in common with all the other railways, was able, partly because of the smaller traffic handled by it and partly owing to other causes, to make large reductions in its operating expenses.



# Virginian Builds Double Track to Relieve Congestion

Steep Grades and Sharp Curves in  
Mountainous Region Necessitate  
Heavy Construction

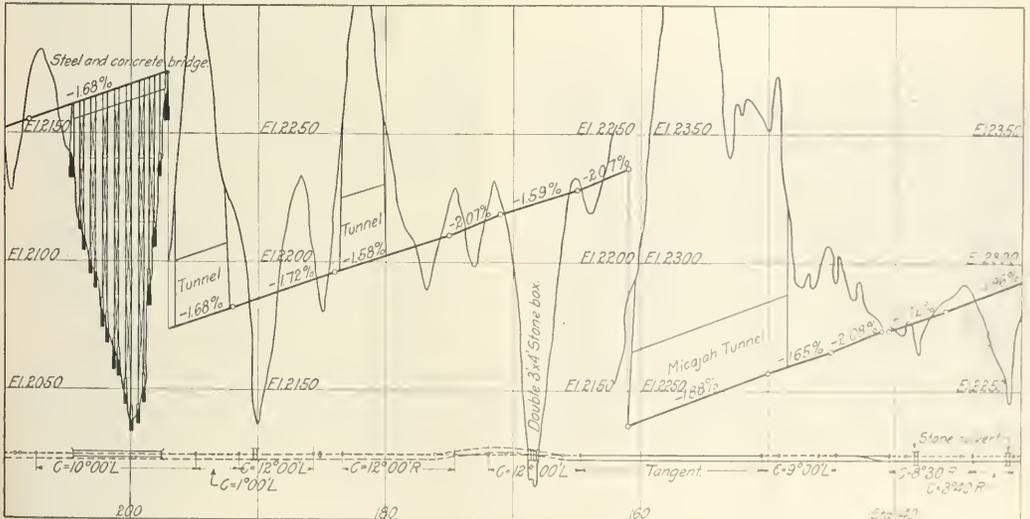


*Rounding One of the Many Curves in the Way to Tidewater*

THE VIRGINIAN RAILWAY now has under construction a second track between Elmore, W. Va., and Algonquin or Clark's Gap as it is more commonly called, to relieve the congestion of this section of about 15.5 miles of heavy grades and sharp curvature through the mountains lying to the west of Princeton, W. Va., which section was limiting the capacity of the road. This work has been carried out in three stages, two of which have now been completed, while the third and heaviest, started in 1918, is now nearing completion. The double-tracking of this last section, which totals approximately five miles of line on a grade of 2.07 per cent compensated for curvature includes the widening of five tunnels, and the reconstruction of an equal number of high steel viaducts for an additional track. As this work was carried on under many difficulties, construction methods were developed which are more or less unusual, chief among which is the manner in which a steel shield was developed and utilized in the driving of the tunnel headings for the second track.

The Virginian operates 442 miles of main line between

track line with its heavy grade has proved a serious hindrance to the expansion of the road's business. All eastbound loaded cars from both the main line west of Elmore and the Winding Gulf branch, as well as west-bound empties destined for the coal mines, are received at Elmore yard where they are made up into trains and dispatched. An average of from six to seven heavy "drags" in addition to local and merchandise freights and two passenger trains are dispatched



Profile of a Typical Section of the Clark's Gap Work

Deepwater, W. Va., and tidewater at Sewalls Point near Norfolk, Va., as well as a considerable mileage of branch lines in the section of West Virginia between Deepwater and Elmore. Its traffic consists almost entirely of coal originating in this section.

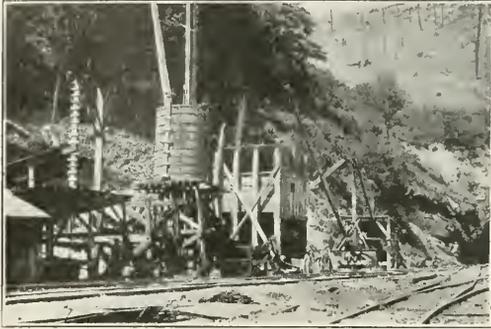
As the main characteristic of the Virginian's method of operation is its heavy train loading, as described in the *Railway Age* of May 27, page 1201, this section of single

eastward over Clark's Gap will daily with approximately the same number of trains moving west.

The eastbound coal trains contain from 70 to 80 cars. These are hauled up the mountain to the summit at Clark's Gap by one 2-6-6-0 Mallet at the head end and two 2-10-10-2 Mallets, cut in as helpers, which are released at the summit and return to Elmore. The run up this hill usually takes from 1½ to 2 hrs. for these heavy drags, mak-

ing a slow eastbound movement out of the yard. The return of the helpers further complicates the operating problem, since it adds to the number of west bound movements.

It was in anticipation of the problems that would be imposed by such a traffic that the Virginian started to double track this Elmore-Clark's Gap section several years ago. To date a second track has been completed and is in operation between the junction of the Winding Gulf branch with the main line a short distance west of Elmore and a point about



Setting Up the Concrete Plant at the Micajah Tunnel

two miles east of Herndon, a distance of about 9 miles, as well as between the east end of the Micajah tunnel and the west end of Clark's Gap tunnel, a distance of 2½ miles. The work of widening the tunnels for second track on the remaining section has been completed except for a short section at one end of the Clark's Gap tunnel where the removal of the bench has not been entirely finished. Track has either been laid or is being laid on the remainder of the work and it is expected that the entire section of double track will be in operation within a short time. Automatic



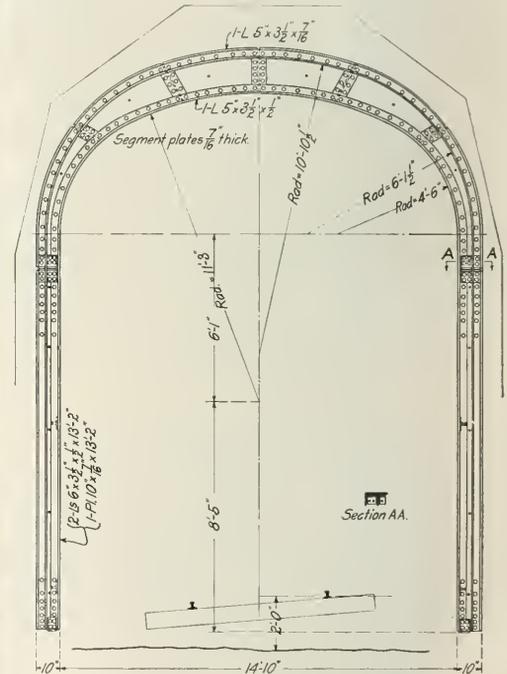
A Pair of the Tunnel Shield Arches Before Applying the Laggings

block signals are being installed between Elmore and Algonquin as a further aid to the movement of traffic over this section.

The work on the lower end, i. e., that part which has been finished between Elmore and Herndon was comparatively light and while it contained a few high trestles and heavy cuts and fills it did not begin to approach in magnitude the remainder of the work on Clark's Gap hill. On this upper section there are five steel viaducts ranging in height from

125 ft. to 150 ft. and with an aggregate length of 2,853 ft.; five tunnels with an aggregate length of 3,680 ft.; one rock fill 110 ft. in height and an almost constant succession of heavy cuts and fills varying in depth or height from 25 ft. to 60 ft. The curves are very sharp and have all been spiralled. The effect of the topography of this country on the alignment is well shown by the fact that in all cases but one the tunnels, either in whole or in part, are on curves most of which are 10 deg. and 12 deg.

In two instances high viaducts lead directly to the portals of the tunnels and this condition was the chief factor in the decision to widen the existing tunnels rather than to drive separate bores. The viaducts had been constructed for double track originally, although only two lines of girders had been placed to carry a single track. This imposed a limiting condition upon the distance which the tracks could be spread



The Frame for the Steel Tunnel Shield

without undue cost of building new viaducts to fit the alignment necessary for separate tunnels. While studies were made covering the construction of double track by using separate tunnels it was finally decided to widen the original ones and use the viaducts as they were.

The five tunnels to be widened vary in length from 347 ft. to 1,252 ft. and are all through rock which is chiefly shale or hard sandstone stratified and often underlaid or intermixed with slate and coal seams. It was of course essential to maintain uninterrupted traffic and as the rock required blasting it then became necessary to provide some form of shield to prevent rock, old lining or miscellaneous construction and other materials from falling down or working out on the line. To meet this requirement a sectional shield was developed which could be set up inside the old tunnel without any changes in or disturbance to the old lining and which could be moved ahead quickly as the work progressed. Each section of the shield consisted of two arched ribs

fastened four feet apart and supported by light steel posts. Each arch rib was built up by riveting steel plates, cut to shape, to steel angle bars bent to the desired radii as shown in the drawing. The total inside width is 14 ft. 10 in. and the maximum overhead clearance is about 18 ft. 2 in. from top of rail. The lagging, consisting of 4-in. by 8-in. planking cut into 4 ft. lengths is bolted to the ribs, thus making unit sections 4 ft. long and completely enclosed over the top and sides.

The old tunnels, which were timber lined, had a clear width inside of 18 ft. and an overhead clearance of 21 ft. 6 in. from top of rail, while the double track tunnel gives a clear width on curves of 32 ft. and on tangents of 30 ft. 6



One of the Many Heavy Cuts Which Had to Be Widened

in. and an overhead clearance of about 24 ft. from the top of rail. The design is that of a three-centered arch of reinforced concrete with a minimum thickness of 2 ft. 2 in., backed up with the usual timber lining consisting of 12-in. by 12-in. posts supporting 12-in. by 12-in. ribs and completely enclosed by 3-in. lagging on the sides and 4-in. over the top. Thus in order to obtain the necessary clearance from the center line of the existing track it was necessary to excavate about 2 ft. of the side wall of the tunnel beyond the limit of its old lining on one side while the remainder of the necessary width for double track was secured by excavation on the opposite side of the center line.

In carrying out the actual work of widening a tunnel, 15 of these steel sections were erected by the aid of a hand derrick mounted on a flat car, inside the regular lining of the old bore. This gave a length of 60 ft. over which the work could be carried on with complete protection to the operating track beneath. With the protective shield in place, the driving of a heading of the necessary double track width was started. On this work the heading was driven through for the entire length of the tunnel before any work was started on the removal of the bench. This plan was followed in order that the excavated material could be hauled out in the most economical way. The work of removing the 2 ft. section on one side, the section over the top of the old arch and approximately 18 ft. on the second track side was carried on simultaneously.

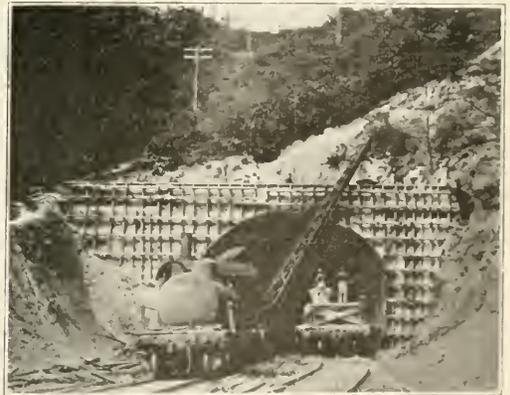
Air drills were used for this work, the lighter or hand-type being employed in preference to the tripod type. From four to six were in operation on each heading. As the rock was very hard in most cases, the material was blasted out, after which it was loaded into narrow-gage dump cars which were operated over a track laid along the bench as excavated. A platform was constructed at the portal on which the cars could be run and their contents were trapped into standard-gage cars. On an average about 22½ cu. yd. of material was removed per lineal ft. of tunnel. Of this about 13 cu.

yd. was from the heading, including the small section on one side and 9½ cu. yd. from the bench. Progress at times was exceedingly slow, long stretches being excavated at a rate of not over one lineal foot per day.

As the removal of the heading was accomplished, the new timbering was erected and one or more sections of the shield moved ahead, the face of the heading being kept approximately three sections behind the forward end of the shield. With the heading driven through, the bench was broken or shaken up by blasting where needed and the material removed with a steam shovel which unloaded it into air dump cars operating on the main line between regular trains. The cuts along the line were widened by blasting where necessary and the material removed with steam shovels and standard-gage dump cars. All the material excavated from the cuts and tunnels, amounting to about 250,000 cu. yd., was used in widening fills for the double track.

The compressed air to operate the various tools as well as the necessary current for the lighting equipment used in the tunnel work and at the camps was furnished by two separate compressor and electric lighting installations, one located to handle the work at the upper end including the Clark's Gap tunnel and a shorter one nearby, and the other to supply the equipment at the Micajah tunnel and two others at the lower end of the work. Air was supplied through a 4-in. main from each of these plant installations, the maximum length of pipe being approximately 1¼ miles.

Three of the tunnels have been lined with concrete and the portals finished while the work of pouring the remaining two at Clark's Gap and Micajah is now under way. Two separate concrete plants have been set up to supply the material for the work at Micajah and at Clark's Gap. Each of these plants has a one-yard mixer and is completely equipped with derricks and cranes to handle the raw material and the mixed product. The concrete for pouring is discharged by the mixer into clamshell buckets which are



The Way the Concrete for the Portals Was Handled

picked up and unloaded on a scaffold car. About two cubic yards are carried into the tunnel at each trip of the scaffold car where it is placed in the forms by hand shoveling after which it is well rammed into the space between the ribs and against the underside of the lagging. The concrete is reinforced with 78-in. rods placed both vertically and horizontally. Locomotive cranes are used for conveying and depositing the material in the forms for the portals, handling the buckets direct from the mixer to the forms.

The work of adding the second track on the viaducts involved no particular difficulties but in some instances called

for careful planning and fast work. Where the old-line followed one side of the trestle it was only necessary to place two new lines of girders and lay the decking and rails. In two instances where the old track was located on the center line of the viaduct new girders were placed on each side and connected up. An entire new set of bridge timbers was then cut and framed complete for insertion after which the old track was quickly torn out, the new timbers laid and the track made ready for traffic. In working in this manner there was little or no delay to trains. The new second track is being laid chiefly with 130-lb. rail, a substantial increase over the 100-lb. rail ordinarily used in this section.

The work of double tracking Clark's Gap Hill has been



One of the Few Stretches of Tangent

planned by and the construction has been carried out under the direction of the engineering department of the Virginian Railway, H. Fernstrom, chief engineer; A. M. Traugott, assistant chief engineer, and J. C. Guion, resident engineer in direct charge of the work in the field. The contractors on this work are J. V. Boxley & Co. and Boxley, Goodwin & Bray, subsidiary companies of W. W. Boxley & Co., Roanoke, Va., to whom the original contract was let.

## The Purchase, Inspection and Distribution of Cross Ties\*

PRIOR TO THE RETURN of the railroads to their owners on March 1, 1920, some of them had started toward normalcy in the procurement of their cross-ties by making tentative arrangements along the lines of their former methods of purchase. In not a few instances the practice established during federal control of dealing direct with any producers of ties along a railroad was continued where it had not been in vogue before 1918. All railroads which adopted the sight-draft method of paying for ties during 1918-1919 continued the practice. Most railroads which learned during the war that their local production could be stimulated persisted in keeping in touch with the supply along their lines. Some railroads which got the habit of co-operation while the government insisted on it, found it possible to acquire ties of the groups they did not desire and to transfer them together with their surplus production, to roads which used such ties, and which in return did not compete with the local road for any ties produced along its lines.

Cross-tie buying became normal soon after March 1, 1920, and the strenuous competition which developed in certain

fields during the summer resulted in exorbitant prices. It is now seen, even by the producers who profited thereby, that the prices paid were the result of ruinous competition, were not justified, and were not good for the tie industry. A central purchasing agency could prevent a repetition of this vicious competition for ties among railroads, but the committee regards such an agency as impracticable. It believes that the sentiment against unwise competition is developing steadily and that 1920 saw less of it than might have been expected from past performances under similar conditions of supply and demand.

As practices of general application which have been tried under conditions of control and of freedom, the committee recommends the adoption of the following:

That each railroad adopt all means compatible with its conditions and organization to procure along its own lines as large a portion of its tie requirements as possible.

That each railroad adopt a method of paying cash for its ties, as a means for maintaining production at a maximum.

That each railroad along which ties in excess of its own requirements are produced endeavor to make arrangements with railroads needing such ties for their sale and shipment under conditions which will be mutually satisfactory.

That all railroads purchase cross-ties under the uniform requirements of the standard specification for cross-ties of the American Railway Engineering Association.

The preservative treatment of wood to prevent decay yearly becomes a more important factor in the economical maintenance of railroads. This is especially true in cross-ties.

During 1920 there was less than the usual variation in the inspection of cross-ties by competing railroads. This was undoubtedly the result of the marked change in the manufacture of ties which resulted from nearly two years of adherence to a uniform standard applied everywhere quite consistently. The full benefits of a standard specification are not to be had if the specification ceases to be a standard through lack of uniformity in the application of its requirements by inspectors.

This committee is aware of a well-defined conviction in the minds of some members that only by an American Railway Association control of the inspection of forest products purchased by railroads can the disadvantages to all concerned of the present competitive system be avoided. Undoubtedly a central supervision of inspection would result in greater uniformity in practice, in lower costs through fuller use of fewer inspectors, and in more prompt service for the shippers, and the committee can advance no valid argument against the creation of a Bureau of Forest Products in the American Railway Association, charged with the supervision of inspection and the dissemination of information of value to members in connection with the purchase and storage of forest products, but the committee feels that it is unfair to railroads generally to assume that practical uniformity in cross-tie procurement cannot be had prior to a trial under the new conditions brought about through the existence of a standard specification worked out and adopted by an independent railroad association and agreed to and adopted in all essential respects by the producers' association.

The report is signed by J. H. Waterman (chairman) Chicago, Burlington & Quincy; John Foley, Pennsylvania System; G. H. Jenkins, Grand Trunk, and A. H. Young, Seaboard Air Line.

A minority report, signed by M. J. Collins, Atchison, Topeka & Santa Fe, stated in effect that while there was much in the committee's report that would be of value to roads which had not already developed their own specifications and methods, he did not believe that the Atchison, Topeka & Santa Fe would be benefited by changing from its present specifications and that he could not, therefore, concur in the report as a whole.

\*Abstract of a report presented at the meeting of the Purchases and Stores Section, American Railway Association, at Chicago, June 9, 10 and 11, 1921.

# The Grain Rate Hearings Are Concluded

## Final Argument Before I. C. C.—Relation of Rates and Wages Receives Much Attention

WASHINGTON, D. C.

HEARINGS before Commissioner Lewis of the Interstate Commerce Commission on the application of the Western state commissions for a general reduction in the rates on grain, grain products and hay in Western territory were concluded on September 1 and oral arguments were made on September 2 and 3. A number of the other commissioners sat during the hearing of testimony and the argument was held before the full commission. Arguments for the complainants were made by J. E. Benton, solicitor for the National Association of Railway and Utilities Commissioners; Clifford Thorne, representing the American Farm Bureau Federation, and C. M. Reed, chairman of the Kansas Public Utilities Commission, while the railroads were represented by R. H. Widdicombe of the Chicago & North Western and J. N. Davis of the Chicago, Milwaukee & St. Paul.

### J. E. Benton Speaks for Railway and Utilities Commissioners

Mr. Benton argued that the rates on grain as made by the railroads had always been disproportionate to the rates on other commodities and that the relationship of grain rates to other rates has not been greatly changed. This disproportion has been greatly increased, he said, by the increase in the rates on grain at the same time that the farmer's costs have been greatly increased and his prices have fallen. The farmers receive only a small return for their labor and no return on their land, while the railroads ought to encourage the development of agriculture.

Mr. Benton also contended that the commission is free to make reasonable rates in spite of Section 15-a of the Transportation Act, which, he said, does not require a particular percentage of return under all circumstances and at all times because that is impossible. The law merely requires the commission to aim at that percentage "as nearly as may be within the bounds of reason." He thought the reduction in rates would operate as a conservation of revenues rather than tend to reduce them, but in any event it is the commission's duty to reduce them if unreasonable. The railroads have been allowed in the past to earn hundreds of millions of surplus to tide them over such periods of depression.

Two factors entering into the reasonableness of the rates, Mr. Benton said, have changed. The value of the product has been cut in two and consequently one element in the cost to the carriers, the risk of loss and damage claims, has also been reduced. Mr. Benton devoted some time to his argument that the commission is not bound by the action of the Railroad Labor Board, saying that it is its duty to fix reasonable rates regardless of whether wages may be unreasonably high. Neither board, he said, can be bound by the action of the other, although each must give due weight to the findings of the other.

Commissioners Potter and Daniels asked if the commission is not entitled to consider the expenses of operation in fixing rates. Mr. Benton said the commission should not be bound by anything that shocks its sense of justice and neither board should consider the findings of the other as necessarily final, although the findings of either board would only be persuasive. If an order of the commission should require the carriers to make a new request for wage reduction, they would have an opportunity to make such application in view of the new conditions, and if the commission proceeds on the theory that the Labor Board can

make proper orders it can decide rate cases properly. He admitted that if both parties proceeded independently the result might be a miscarriage of justice, but said that it was not to be presumed that they would act in that way. The legal presumption is that a miscarriage of justice will not occur, but that the decision of the two boards will be consistent. Therefore, the commission must form its own judgment as to whether the wages are proper in deciding what are reasonable rates.

Mr. Benton said that shippers were barred from appearing before the Labor Board, which must form its own conclusion as to the amount the carriers should receive from the shippers, whereas the commission has to decide the amount the shippers must pay the carriers and should form its own judgment as to what wages are proper. The carriers, he said, have been subjected by the law to this double standard and the event must prove whether the machinery created by law will work properly.

Commissioner Daniels asked whether the commission was bound by the effect on wages of the Adamson law. Mr. Benton replied in the affirmative on the ground that the commission is bound by the act of Congress, but not by that of a co-ordinate board. Commissioner Potter asked if the commission had a right to reduce rates on the basis of its own conclusion that wages are too high, without hearing the side of labor. To this Mr. Benton replied in the affirmative.

### Clifford Thorne Represents the Farmers

Clifford Thorne said that after each war there has been a substantial decline in prices, which each industry naturally resists. In the past year there has been an unusually precipitous decline in prices, but the agricultural industry was the weakest in resisting declines and its prices have been reduced to pre-war levels, while the railroads have been the strongest in resisting such declines and their freight rates are higher than ever before. The result has been the creation of a panic condition in the agricultural industry, the bulk of which is on the verge of bankruptcy. It is up to the industry, he said, to get its costs down and he did not claim that transportation was the only cost to be considered, but said that it is one of the most important and one which is properly to be presented to the commission.

Mr. Thorne said that the railroads take the position that no reduction in rates can be made without a reduction in wages and that the general economic situation is not an issue to be decided by the commission, but the ability of the shippers to pay is not among the things named in the law which the Labor Board is to consider in fixing wages. He asked whether the result was to be that the government should shield one industry from a development which is being demanded of every other line of business. Mr. Thorne also argued that the 5 1/2 per cent provision of the law is qualified by a proviso giving the commission latitude to prescribe reasonable rates in particular cases.

In conclusion, Mr. Thorne said he wished to submit a proposition to labor and a question to the railroads in the hope that it might point to a solution. "We are confronted with a dilemma," he said, "because the conditions in the agricultural industry are intolerable and yet the railroads claim they cannot consent to any reduction in rates without a reduction in wages. On the other hand, railroad labor is thoroughly opposed to any reduction in wages." He

lieved that railroad labor might probably oppose any further decrease in wages that would go to the railroad corporations, but he would like to ask what would be its attitude if assured that the entire wage decrease would accrue to the farmer, and he asked, whether if railroad labor should consent to a reduction in wages for the specific purpose of reducing rates on grain, the railroads would consent to the reduction. He pointed out that a 5 per cent reduction in wages on the Western roads would amount approximately to the estimated amount of a 25 per cent reduction in the grain rates, or about \$63,000,000.

In reply to questions by the commissioners, Mr. Thorne said that for the purpose of this proceeding he believed the inquiry should be confined to grain in the Western districts, but if it appears acceptable it could well be enlarged to include livestock and cover the nation. A 7½ per cent reduction in wages, he said, would permit a 25 per cent reduction in the rates on these basic food commodities.

Glenn E. Plumb, who was sitting in the audience, was observed to smile slightly as Mr. Thorne asked his question, but the railroad counsel made no reference to it in their arguments, which followed those of Mr. Thorne. In his closing argument Mr. Thorne returned to the subject, saying that the failure of the railroad counsel to reply to his question laid the foundation for further argument on his part. Asked whether labor had made any reply, Mr. Thorne said he had submitted his proposition to a representative of the labor organizations, who had promised to submit it to his associates. He also said that during the noon hour a vice-president of a prominent Western road had said he would agree to it. Mr. Thorne then made the point that the carriers refrained from answering his question, although it would not affect their net earnings, and added that labor has also refrained from answering it, but that it has really had no opportunity to do so. Commissioner McChord asked why Mr. Thorne criticized the carriers for not answering a mere suggestion on his part when it was hardly to be expected that their counsel would be in a position to answer it, and Commissioner Aitchison asked if they were not there for the purpose of meeting the particular issues in the case.

### The Railroad's Argument

R. H. Widdicombe, in the opening argument for the railroads, said that the difficulty of the producers lies in the fall in the price of grain. There was no complaint, he said, of the grain rates while the farmer was getting what he thought his wheat was worth. The evidence in this case, he said, shows that a reduction in the rates will not increase the movement of the traffic and that the effect on the acreage to be planted next year is purely speculative. The acreage in past years has fluctuated at times when rates were stationary, because it was governed by supply and demand. The reason for the low price of wheat is the lessened demand for it in Europe. Mr. Widdicombe said that what the farmer needs most right now is to be let alone. If he is, he said, he will come out all right. Commissioner Aitchison asked who is bothering the farmer now. Mr. Widdicombe said he meant that the papers the farmers read are overflowing with statements that rates are too high and should be reduced, and that the farmer has been led by such reasoning to believe that a reduction in freight rates would be a remedy for his troubles.

To reduce freight rates on grain, grain products and hay without a reduction in operating expenses would be "disastrous" to the railroads of the United States in view of their present financial condition and would throw "many if not a majority of the western carriers into bankruptcy," while no substantial relief would be afforded the farmers. J. N. Davis, assistant general solicitor of the Chicago, Mil-

waukee & St. Paul, told the commission. Mr. Davis said that if the question of rates is left to traffic officials the problems confronting the farmer will shortly be solved. Mr. Davis said in part:

"The evidence of the railroads shows that at the present time the rate of return to western carriers on freight is but 2.54 per cent, and on passenger 3.43 per cent, or 2.78 per cent total. This per cent is regardless of any question with reference to deferred maintenance or consideration of any saving in operating expenses by the recent wage reduction by the Labor Board. If consideration is given to deferred maintenance and the reduction of operating costs by reason of the Labor Board's decision, the percentage on investment would be 1.15. If consideration is not given to deferred maintenance and only consideration is given to the amount that would be saved in operating expenses by reason of the wage reduction, this percentage would be 3.5.

"Without consideration of deferred maintenance, there was a net for all roads operating in the western district under consideration of 42 million, and if consideration was given to the maintenance that had been deferred and not performed, this 42 million would be wiped out completely.

"The operating ratio for the lines in the western district for the year 1921 was 95.04, which shows conclusively an unhealthy condition, financially speaking of the roads here under consideration.

"These figures conclusively prove, we believe, that there can be no general reduction in the rates. And we believe that there is no one that will contend that under the present conditions, under which the railroads operate, there could be a general reduction in rates.

"There is no evidence to prove that the rates on these commodities are unreasonable, but the carriers have shown that the rates are not unreasonably high.

"Witnesses have also shown that the benefit to the farmer would run from \$8 to \$56 per farmer per annum. No one will contend that this is a substantial aid to the farmer in his present condition, but a 25 per cent reduction in those rates would mean an annual loss in revenues of over \$63,000,000 to the carriers in the western district alone and would cut their annual net return to 1.42 per cent in their tentative valuation as fixed by the Interstate Commerce Commission. Not only would this reduction be disastrous to the roads as a whole, but it would operate to put many if not a majority of the carriers in the western district into the hands of receivers.

"It is contended that a bushel of grain today will not purchase as much transportation as it did in former years, especially prior to the war. This is obvious because of the decline in the price of grain and the increase in freight rates. But, what commodity is not in relatively the same situation as is grain. If what the complainants contend is a justification for a reduction in the rates on grain and grain products, the same would hold equally true in most any other commodity moving in volume.

"They evidently overlook the fact that the railroad dollar does not go as far now as it did prior to the war. Also evidently they overlook the fact that during practically the entire war period their dollar went materially further than did the railroad dollar.

"There are other seats of trouble confronting the farmer than freight rates, that if properly adjusted in relation to the farmers' condition at this time would give some relief.

"We feel that we are not called upon to point out that there rests no power with this commission to reduce rates to enhance the profits of shippers if such rates are not shown to be unreasonable. This of course is the law. The Transportation Act does not delegate such power to the commission, and we know of no case wherein the commission has decided that it would so make rates. The carriers' revenues, as is shown by the evidence in this case, are now inadequate,

and what revenues the carriers receive should not now be diverted to assist an industry.

"The question has been propounded by opposing counsel as to whether the railroads should not forego the 5½ per cent contemplated by the Transportation Act, and give a helping hand to the industry. It is quite obvious that the railroads should not.

"The transportation system not only has its rates regulated, but a major portion of its operating expenses regulated, by governmental agencies, and in no case under the present law can the transportation company earn for itself a greater return than 5½ per cent. Regardless of whether it be a fat year or a lean year this 5½ per cent applies.

"With the farmer no such regulations exist. He can often recoup and offset that which he has lost in the lean year by what he may make in the fat year.

"For this reason alone we believe that the transportation system should not be asked to forego its just earnings to lend aid and help to any industry, whether it be agriculture or otherwise.

"The carriers are not unmindful of the conditions that now exist in the agricultural industry and the traffic manager is wide-awake to the situation, and is not only capable

of dealing with the situation as it exists, but will see that the interest of his company as well as the interest of those patrons of his road are not neglected.

"One of the disturbing elements in this case is one that is wholly beyond the railroads' control. It is a fact that cannot be disputed that the freight rate must necessarily have a direct relationship with the operating expenses, and unless the operating expenses can be curtailed or reduced there is no way that we know of by which rates can be reduced. And when operating expenses are considered it at once is shown that the major portion of the operating expenses of any transportation company is wages.

"This operating expense is by Congress delegated to the Labor Board. At the same time Congress has delegated the regulation of the rates that the transportation companies should receive for the service performed to the Interstate Commerce Commission. We thus have the rates that we are to receive regulated by one governmental body, while the major portion of the operating expense, namely wages, is regulated by another and different governmental body. And it seems to be obvious that a reduction in the rates cannot possibly be made without a reduction in the operating expense."

## Pennsylvania Officer Outlines New Labor Policy

Elisha Lee, Vice-President, Sketches the Gist of the Recent Controversy with the Wage Board

THE PENNSYLVANIA'S VIEW of the authority of the Railroad Labor Board to rule as it has in the recent controversy between that carrier and its shop and clerical forces, was clearly outlined by Elisha Lee, vice-president of the Pennsylvania, in a recent address before the Delaware Bankers' Association at Rehoboth, Del.

Mr. Lee explained in detail the carrier's plan for the peaceful and friendly settlement of labor differences by conferences between the management and elected representatives of the employees. He predicted success for it if it were not blocked by the interference of outside agencies, and said it had the endorsement and support of a great majority of the company's employees.

Mr. Lee criticized the Railroad Labor Board for intervening and declaring void the recent elections held under the plan. He dwelt particularly upon the feature of the board's order directing the carrier to hold new elections and submit to the employees the choice of labor organizations, instead of co-workers only, to represent them in conferences with the management.

In asserting the company's right to insist upon dealing directly with its own employees, Mr. Lee stated that the Pennsylvania had been advised by counsel that the Labor Board had altogether exceeded its authority in denying that right.

Discussing further the Pennsylvania's controversy with the Labor Board, Mr. Lee said:

"The Labor Board's order, in all likelihood, would compel us to conduct our conferences with strangers—with labor union general officers who were not our employees and who might not even be railroad men. It would defeat the very fundamental purpose of employee representation which is based upon the principle of face-to-face discussion between management and men.

"We do not think we can successfully settle the employment questions of the Pennsylvania Railroad with strangers. We do believe that we can adjust them with our own employees, if we are permitted to go ahead, free from gratuitous and unwarranted interference. We are perfectly willing to leave it

to public opinion whether our view or that of the Labor Board is right.

"Our differences with the Labor Board arise out of the fact that while Congress plainly created it as a board of mediation to act in disputes which railroad managers and railroad employees were unable to settle between themselves, the board has gone far beyond that scope and assumed very largely the role of an administrative or managerial body with respect to the labor affairs of the railroads. This, we contend, under the Transportation Act, it has no right to do, and that is the gist of our differences with the board.

"We are not fighting the right of our employees to organize, nor are we trying to destroy the existing unions, as has often been falsely represented; neither is the question of collective bargaining in any way at stake. All we are insisting upon is the right to meet with our own employees and talk over our mutual troubles with them, and we do not think that such a right can fairly be construed as an assault upon unionism or a denial of the right of collective bargaining. In fact, it is a direct affirmation of the right of collective bargaining, as we specifically request our employees to get together and elect their representatives to bargain collectively with us.

### Collective Bargaining and Collective Coercion

"We do insist, however, that there is a very important difference between collective bargaining and collective coercion. In this connection I wish to direct attention to the practice, by certain labor organizations, of three forms of coercion which, we believe, public opinion will not support and will ultimately compel those organizations to repudiate if they are to survive. I refer to: (1) restriction of output; (2) the closed shop; and, (3) the sympathetic strike.

"It is no secret that in the past the Pennsylvania Railroad, while maintaining no unfriendly feeling toward the four train service brotherhoods and certain other independent organizations of railroad workers, always refused to have any official relations with organizations embraced in the American Federation of Labor. Nor is it any secret that we regarded with

the greatest disfavor those policies of the Railroad Administration, during federal control, which resulted, for the first time, in introducing those organizations among our employees. Our objection to the federation has been due simply to the fact that it stands for the three coercive practices to which I have alluded and which we hold to be unjustifiable.

"The fight which we on the Pennsylvania Railroad are carrying on today is largely a fight against domination and virtual management of our employee relationships by the American Federation of Labor. It is not a fight against labor unionism, but only against labor union autocracy.

"We want to establish a truly democratic system of employee representation on the Pennsylvania Railroad, one in which the power and authority of the representatives sent to negotiate with us proceeds from the bottom up and is not imposed from the top down.

"We want to know that they really have been chosen by the workers from their own number, that they have the authority of the workers to speak and negotiate for them, and that when they give us an answer on any question submitted for their consideration, it is the answer and judgment of our own employees and not the dictum of some international labor union president who is not one of our employees, has no personal familiarity with our problems and may not even be a railroad man at all.

"Our labor policies and purposes are an open book. We have nothing to conceal. We welcome inquiry and scrutiny. We think we are engaged in a constructive work promising important results to the whole country, and we gladly submit to public judgment the sincerity and soundness of our plans. In turn we ask public support in the effort to secure for these plans a fair and adequate trial."

#### Committees Representing 120,000

#### Employees Established

In a recent circular the Pennsylvania announced that committees, consisting of equal representation of the employees and of the management, have now been established for the settlement of all controversial questions affecting approximately 120,000 employees.

The groups included in the new arrangement are: (1) Train and engine service; (2) maintenance of way and structures; (3) signal department; (4) mechanics' helpers and apprentices, maintenance of equipment and telegraph and telephone, eastern region; (5) clerical forces, eastern region; (6) miscellaneous station forces, eastern region.

In describing the manner in which these committees will function, the circular said in part: "For each of the first three groups a System Reviewing Committee, constituting a court of review upon all questions that may arise between the management and the employees affected, is now in effect. For each of the three other groups a Regional Reviewing Committee has been established.

"The questions to be taken up by these committees include grievances, rules and working conditions, and the administration of discipline. The votes of all members, whether representatives of the management or of the employees, are of equal power. Not less than two-thirds vote is necessary to reach a decision upon any question presented.

"In all matters except individual discipline cases, the full committee will vote and its decisions will constitute precedents which will be binding equally upon both sides with respect to similar existing or future cases. In discipline cases, which involve a personal element, the representatives of the management and the representatives of the employee directly interested in the case merely act as counsel for the presentation of their respective claims and do not vote on the case.

"A method of appeal to the division superintendent, general superintendent and general manager is provided so that all cases which cannot be settled on the division may receive expeditious attention by the Reviewing Committee. Regular

meeting dates are fixed for the division superintendents, the general superintendents and the general managers, to meet representatives of the employees under their jurisdiction, and appeals may be taken in this order, the employees participating in every step in decisions affecting their interest.

"The formation of these committees carries out the policy announced on May 20, 1921, of giving all employees an opportunity to have a voice in the management in matters affecting their welfare. Following this announcement elections were held throughout the system to determine the employees' choice of representation to formulate new rules and working conditions to take the place of the National Agreements.

"It was announced at that time that it was the hope of the management that these employee representatives would form the nucleus of committees which should frequently confer with the management on all matters concerning the employees. Accordingly, as soon as the new rules were agreed upon, the employee representatives and the management held a series of conferences which resulted in the formation of these committees.

## Freight Car Loading

WASHINGTON, D. C.

**A**N INCREASE of 13,273 in the number of cars loaded with revenue freight during the week ended August 27, compared with the previous week, is shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 829,709 cars. This is the largest week's loading since December 11, 1920, but as compared with the corresponding week of 1920 it shows a loss of 171,599 cars.

The principal increases as compared with the week before were in the loading of merchandise and miscellaneous freight and in coal. The total number of cars loaded with merchandise and miscellaneous freight was 499,421, an increase of nearly 8,000 as compared with the week of August 20, but 35,000 less than for the corresponding week of last year.

Loading of grain and grain products was 59,505, a decrease as compared with the week before of 370, but 13,000 cars more than for the same week in 1920. The loading of live stock amounted to 28,070 cars or a decrease of 1,040 under the preceding week and slightly less than for the corresponding week of 1920.

Coal loading amounted to 161,612, an increase of 7,472 as compared with the week before, but 50,000 cars less than for the corresponding week of 1920. The loading of forest products was 46,460, an increase of 1,877 over the week before, but about 1,000 cars less than the loading for the corresponding week of 1920. The ore loading was 30,035, a decrease as compared with the previous week of 2,355, while the loading of coke was 4,606 cars, an increase of 170.

Compared by districts, there were increases as compared with the week before in all except the Pocahontas and Northwestern districts, but in all districts the loading was below that for the corresponding week of 1920.

THE LONDON & BIRMINGHAM RAILWAY, now a part of the London & North Western, was one of the pioneer railways of the world and the story of its inception and construction—1830-38—is the subject of a sketch of absorbing interest in the Scientific American Monthly for August. It is by Herbert T. Walker, whose historical articles are always accurate and entertaining. One of the terminals, that at Kilsby, cost three times what the engineers had estimated, and numerous other construction problems were as baffling as this; but the fact that the locomotive, in a few short years, increased the speed of passenger travel by two or three hundred per cent sustained the enthusiasts; and the conservatives, who declared that railroads would destroy society, were silenced.



*Mikado Type Locomotive Equipped with Booster*

## New Locomotives for the Missouri Pacific

Harter Circulating Plates Applied to Improve Boiler Capacity—  
Booster Increases Tonnage 13 Per Cent

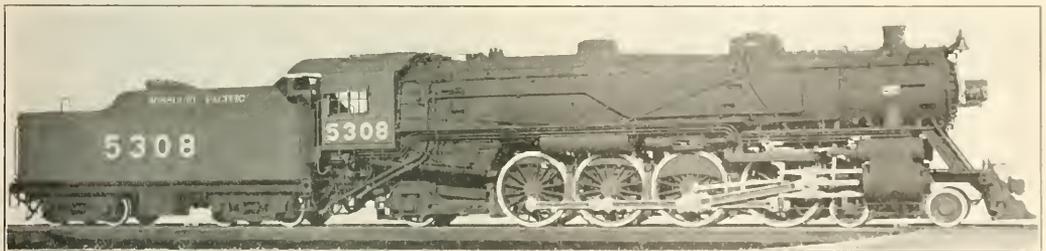
**T**HE MISSOURI PACIFIC has recently added to its equipment 50 locomotives built by the American Locomotive Company. These include 15 six-wheel switchers (0-6-0 type), 25 Mikado (2-8-2 type), 5 Pacific (4-6-2 type) and 5 Mountain (4-8-2 type) locomotives, none of which types are new on this road. The six-wheel switchers are of the same design as those received about a year ago; the Pacific type engines are practically duplicates of those previously built, while the Mikado and Mountain types are of entirely new design.

### Mikado Type

The Mikado locomotives previously used were of the government light, or U. S. R. A. 2-8-2-A type allocated to the

of application, convenience in maintenance and reduction of fire hazards.

The boilers of the Mikado type as well as the other locomotives are equipped with the Harter circulating plate which, it is estimated, has added 10 per cent to their capacity. This device consists essentially of a horizontal plate, slightly below the center line, extending entirely across the boiler from a point just behind the feedwater inlet to within about six inches of the back tube sheet. Outlets for steam are provided by pipes placed at intervals on either side which lead from below the plate to the steam space at the top of the boiler barrel. On the Mikado locomotives the boiler horsepower is 93.9 per cent of the cylinder horsepower without allowance for the circulating plate and on the Mountain type the rated



*An Efficient Mountain Type Locomotive of Medium Weight*

road during the war. These locomotives are of 54,600 lb. tractive effort, have 26 in. by 30 in. cylinders, the total weight being 290,800 lb., with 221,500 lb. on drivers and 63 in. wheels. The new locomotives have 10 per cent greater tractive effort and an equivalent increase in weight and are handling 10 per cent greater tonnage. Among the special features are floating bushings for the middle connection bearings which are giving much better satisfaction on locomotives of this size than the stationary bushings previously used, also power reverse gear, Duplex type D stokers, Franklin grate shakers and adjustable driving box wedges, Chicago flange lubricators and Jemco unit spark arresters which are said to be an improvement over the Master Mechanics' design in ease

boiler power is even less. All of the locomotives have, however, proved to be free steamers.

Delta trailing trucks, equalized with the drivers and equipped with brakes, are used on all road engines. Of the 25 Mikado locomotives, two are equipped with boosters and provision is made for their future application to the other engines. In actual service it has been found that the locomotives equipped with boosters can handle 13½ per cent more tonnage than the same design without the booster. The booster increases the tractive effort 10,000 lb. and adds 3,500 lb. more weight on the trailing truck, 4,500 lb. more on the drivers and 1,000 lb. less on the front truck.

The ruling grade on the line where the boosters are used



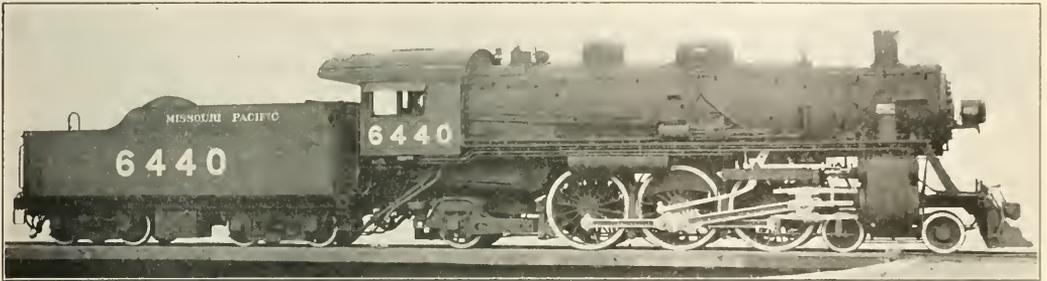
is five miles long so that the demand on the boiler for steam to supply the boosters as well as the locomotive cylinders is severe and prolonged and any lack of capacity would be developed quickly. In actual tests the locomotives have handled full tonnage over the ruling grade at a speed of approximately 10 m.p.h. With the reverse lever in the corner, the booster in operation, the throttle wide open and the injector on, full boiler pressure was maintained.

**Mountain Type**

The Missouri Pacific has been using for some time a number of U. S. R. A. 4-8-2-A light Mountain type locomotives

locomotives were to be used necessitated limiting the weight on the drivers to 226,000 lb.

The size of the driving wheels was increased to 73 in. to fit them better for the speeds at which the passenger trains are scheduled and lateral motion driving boxes were applied on the front pair of drivers to lessen the rigid wheel-base and eliminate the trouble with hot bearings. These modifications naturally necessitated a longer boiler, which would tend to increase the weight beyond that allowable. The previous locomotives had a rated boiler horsepower capacity of 97.5 per cent of the cylinder horsepower. In order to keep the weight within the maximum allowable, it was decided to re-



Pacific Type Locomotive of 40,000 lb. Tractive Effort

which have a tractive effort of 53,900 lb., 27 in. by 30 in. cylinders, a total weight of 327,000 lb., 224,500 lb. on drivers and 69 in. wheels. The new locomotives were designed for the same service and to correct some of the troubles which have been experienced with the older ones. In attempting to make pronounced changes in the design, an interesting problem was encountered owing to the fact that the condition of bridges and structures on the section of the road where the

duce the boiler size so that its rated horsepower was only 85.3 per cent of the cylinder horsepower. This it was thought could be done safely by using Harter circulating plates to increase the boiler capacity.

The new Mountain type locomotives are being run in a pool with the older locomotives and consequently both are handling the same trains on the same division. Both designs have the same size cylinders. Despite the smaller boiler,

**DIMENSIONS AND RATIOS OF THE MISSOURI PACIFIC'S NEW LOCOMOTIVES**

	0-6-0 Switcher	2-8-2 Mikado <sup>†</sup>	4-6-2 Pacific	4-8-2 Mountain
Tractive effort (85 per cent boiler pressure).....	39,100 lb.	59,800 lb.	39,500 lb.	53,500 lb.
Cylinders, diameter and stroke.....	21 in. by 28 in.	27 in. by 32 in.	26 in. by 26 in.	27 in. by 30 in.
Valves.....	10 in. piston	14 in. piston	14 in. piston	14 in. piston
Weight in working order:				
On drivers.....	163,000 lb.	233,000 lb.	166,500 lb.	226,000 lb.
On front truck.....	.....	30,500 lb.	49,000 lb.	57,500 lb.
On trailing truck.....	.....	56,500 lb.	52,000 lb.	56,500 lb.
Total engine.....	163,000 lb.	320,000 lb.	267,500 lb.	335,000 lb.
Total engine and tender.....	287,800 lb.	510,000 lb.	435,700 lb.	527,800 lb.
Wheel base, driving.....	11 ft. 6 in.	16 ft. 6 in.	13 ft. 0 in.	16 ft. 7 in.
Total engine.....	11 ft. 6 in.	36 ft. 3 in.	33 ft. 7 in.	41 ft. 4 in.
Total engine and tender.....	43 ft. 10 1/2 in.	71 ft. 1 1/2 in.	67 ft. 34 in.	77 ft. 2 in.
Wheels and journals:				
Driving, diameter over tires.....	51 in.	63 in.	73 in.	73 in.
Driving journals, main.....	9 1/2 in. by 12 in.	12 in. by 13 in.	10 1/2 in. by 12 in.	12 in. by 13 in.
Driving journals, others.....	9 in. by 12 in.	10 in. by 13 in.	10 in. by 12 in.	10 in. by 13 in. and 10 in. by 19 in.
Boiler, style.....	Ext. wagon top	Straight top	Ext. wagon top	Conical c. n.
Diameter.....	64 1/2 in.	88 in.	72 3/8 in.	76 1/2 in.
Steam pressure.....	190 lb.	190 lb.	193 lb.	210 lb.
Firebox, length and width.....	78 in. by 70 1/4 in.	114 1/4 in. by 84 1/2 in.	108 in. by 66 in.	114 1/8 in. by 84 1/2 in.
Grate area.....	38 sq. ft.	67 sq. ft.	49.5 sq. ft.	87 sq. ft.
Tubes, number and diameter.....	158—2 in.	195—2 1/2 in.	207—2 in.	182—2 1/2 in.
Flues, number and diameter.....	24—5 1/2 in.	14 ft.	32—5 1/2 in.	40—5 1/2 in.
Tubes and flues, length.....	14 ft.	19 ft.	20 ft.	22 ft.
Heating surface, firebox.....	145 sq. ft.	263 sq. ft.	207 sq. ft.	300 sq. ft.
Heating surface, tubes and flues.....	1,629 sq. ft.	3,464 sq. ft.	3,076 sq. ft.	3,634 sq. ft.
Heating surface, total.....	1,774 sq. ft.	3,727 sq. ft.	3,283 sq. ft.	3,934 sq. ft.
Superheater surface.....	393 sq. ft.	1,051 sq. ft.	778 sq. ft.	1,034 sq. ft.
Equivalent heating surface*.....	2,363 sq. ft.	5,303 sq. ft.	4,450 sq. ft.	5,560 sq. ft.
Tender:				
Water capacity.....	6,000 gal.	10,000 gal.	8,000 gal.	10,000 gal.
Coal capacity.....	10 tons	16 tons	14 tons	16 tons
Ratios:				
Weight on drivers ÷ tractive effort.....	4.3	3.9	4.2	4.
Total weight ÷ tractive effort.....	4.3	5.3	6.8	6.
Tractive effort ÷ equivalent heating surface.....	16.5	11.3	11.3	9.
Tractive effort × diameter drivers ÷ equivalent heating surface.....	84.4	71.1	82.3	70.2
Equivalent heating surface ÷ grate area.....	62.3	79.2	89.9	83.1
Weight on drivers ÷ equivalent heating surface.....	68.9	43.9	37.4	40.6
Total weight ÷ equivalent heating surface.....	68.9	60.4	60.1	69.3
Firebox heating surface ÷ equivalent heating surface, per cent.....	6.1	5.0	4.6	5.4
Volume of cylinders, cubic feet.....	11.2	21.18	15.96	19.86
Equivalent heating surface ÷ volume cylinders.....	211	250	278	280
Grate area ÷ volume cylinders.....	3.4	3.2	3.1	3.4
Superheater surface ÷ evaporative surface, per cent.....	22.1	28.2	23.7	27.8

\*Equivalent heating surface = total evaporative heating surface ÷ 1.5 times the superheating surface †Weights and ratios for those with booster

the new locomotives steam just as freely as the older ones, are running with  $\frac{3}{4}$  in. larger exhaust nozzles, are making better fuel records and take the same train 30 miles further for water.

The locomotives are provided with floating bushings in the middle connections and the same attachments furnished on the Mikado type. Boosters were not applied but provision was made for their attachment in the future.

As has been stated, the Pacifics and switch engines are practically the same as previous designs but are provided with Harter circulating plates. The Pacific type locomotives are operating with exhaust nozzles from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. larger than was previously possible and are showing an improved fuel record and better performance in general.

A table showing the principal dimensions and ratios of the four types of locomotives is given for comparison with other designs.

## Increasing Locomotive Mileage

By F. P. Roesch

**T**HERE NECESSARILY must be a locomotive terminus at each end of a division, a place where power is turned back. It may be at the end of the line, or it may be an intermediate terminal, but in either case both terminals are not main terminals. The intermediate or minor terminal deserves more attention than is generally given to it, especially where winters are severe.

Standing locomotives earn no revenue. A locomotive requiring terminal attention during the winter months must be housed—repairs cannot be made outdoors; therefore any delay in housing means that much time lost. From this it follows that the track layout leading into the house, including cinder pits, coaling, sanding and watering facilities constitute the neck of the bottle, regardless of housing capacity.

On many railroads facilities insofar as minor terminals are concerned are woefully deficient. In the majority of cases not only is there insufficient house room, but the outside facilities have not kept pace with the growth of power. This means that when repairs are required the locomotive is often held twice as long as would have been the case with proper facilities.

Why make such strenuous efforts to save at one end only to lose time at the other? Furthermore, due to the conditions mentioned, many repairs, if made at all, are only done in a perfunctory manner, "just good enough to take the old mill home," thereby adding another burden to the already overtaxed main terminal.

This is not an argument to bring the minor terminal facilities up to those of the main terminal. On the contrary, the underlying thought is the abolition of the minor terminal entirely or as far as practical, considering the needs of the service.

Habit is a potent factor. Where enginemen report repairs, necessary or fancied, habit prompts them to report something every time they reach a terminal. Were the division twice as long, the locomotive would doubtless negotiate the remaining miles just as satisfactorily as it did the preceding distance, regardless of the real or fancied defect.

### Longer Runs Possible With Modern Power

In the gradual evolution of the locomotive, the weaker or troublesome parts have been almost wholly eliminated so that the present day locomotive can be classed as a thoroughly reliable machine insofar as mechanical road failures are concerned, and where physical conditions of the service are similar, *i. e.*, character of the water, coal, permanent way, etc., there is no reason why the modern locomotive, either

passenger or freight, should not successfully cover from 200 to 400 miles without attention other than that given by the enginemen, such as lubrication, etc.

A close study of the present practice of short runs indicates the following as the controlling factors:

The condition of the fire.

The condition of the water in the boiler.

The effect of long runs on journal temperature.

Assignment of power.

An analysis of the above indicates that where locomotives are hand-fired and especially where they are not equipped with power grate shakers or power-operated fire doors, the physical limitations of the fireman precludes the possibility of maintaining a clean fire with the average locomotive coal when the time on the road exceeds eight or ten hours. The consequence is low steam pressure toward the end of the runs with resultant loss of time, waste of fuel and frequently firebox leakage. Oil-burning locomotives that normally are worked to nearer their maximum capacity than coal-burning locomotives are being successfully operated over two or more divisions.

While there will always be more manual labor required from the fireman on a coal-burning locomotive, the application of stokers and power grate shakers so reduces this labor that the fire can be maintained in a practically perfect condition indefinitely without undue exertion on the part of the fireman. This in turn results in a maintained maximum steam pressure, a maintained speed and better boiler condition. From the above it is clear that the application of the labor saving devices mentioned will practically put the coal-burning locomotive in the oil-burning class.

### Feed Water

On many railroads the character of the water on connecting divisions is radically different. In other words, they cannot safely be mixed. Where such conditions prevail there is, of course, no other remedy except correct water treatment. If the water on any division is bad, treatment is the logical thing, and where it prevents the operation of a locomotive over both divisions, water treatment becomes practically imperative.

Frequently, however, a difference in feed-water is an asset instead of a liability. Instances exist where the water on one division contains a solvent for the scale deposited on another division. In such cases, if the locomotives are operated over both divisions right from the beginning, *i. e.*, after receiving new tubes, etc., the life of the tubes and firebox is extended, and failures due to leakage correspondingly reduced. It is clear that water conditions present no insurmountable difficulties.

### Lubrication

In the past, when small drivers were in vogue, with their attendant high peripheral journal speed and oil lubrication, a locomotive capable of maintaining a fairly high speed for a distance of from 100 to 150 miles, would become heated at the end of this distance to such an extent as to make a further mileage somewhat uncertain unless opportunity were offered for cooling the journals. With modern grease lubrication, floating rod bearings, and radial valve gear, hot bearings can be almost wholly overcome, providing they receive proper attention before the locomotive is dispatched. Therefore, journal friction can also be cast aside as limiting continuous mileage possibilities.

### Assignment of Power

There remains, therefore, only one other factor, *viz.*, assigned locomotives. The assignment of power, or what is generally termed regular engines, has been a much mooted question among mechanical men since pooling of power was introduced. Where locomotives are kept on one division,

good arguments in favor of regular engines can be advanced; arguments that, backed by statistics, cannot be refuted. On roads which already have power pooled, a further pooling cannot prove objectionable and would appear logical by running the locomotives over two divisions at least, changing crews where necessary.

This would result in the following economies: The practical elimination of a number of minor terminals which have become much more expensive to operate since the re-classification of labor; increased mileage per locomotive during a given time, as the locomotives will be making mileage where previously they were standing in the roundhouse; economy

in fuel owing to decreased fire knocking and rebuilding; decreased maintenance expense, especially as regards boiler maintenance; reduction in capital investment as a smaller number of locomotives will be required to move a given tonnage; last but not least, if trains are built up so that crews can be changed on the main line without cutting the locomotive from the train, an accelerated traffic will result with a marked reduction in intermediate switching.

However, in order to realize the full economies to be obtained by extending locomotive mileage, the locomotives must be designed with this end in view and must be equipped with the necessary labor saving devices.

# Present Freight Rates Do Not Restrain Commerce

## Comparison of Transportation Charges with Commodity Prices Shows Complaint Against Rates Unsound

By C. F. Balch

Assistant General Auditor, Chicago & North Western

THERE IS CONSIDERABLE discussion at this time of the effect of the present freight rates upon commerce in the United States. There are many angles from which this subject may be attacked, and much is to be said from the standpoint of the shippers as well as from the side of the carriers. My purpose at this time, however, is to call attention to the ultimate relation, as I understand it, of transportation to the goods transported. This may not be the sole governing factor, but it is certainly pertinent to a correct understanding of the subject.

To introduce my viewpoint let me quote from an address by J. Kruttschnitt, chairman of the board of the Southern Pacific, which he made in the autumn of 1919. Mr. Kruttschnitt at that time said in part:

The cumulative effect of all steam railroad freight charges, which in their remotest ramifications could affect the values of commodities, for the year 1914, which marked the opening of the war, has been weighed, and the same has been done for 1919. As we seek to establish the comparative effect of freight charges on commodity prices in two years six years apart, the commission's methods used in computing tonnage and revenue statistics, and ours in establishing prices being the same in both periods, will not affect the soundness of our conclusions.

Average commodity value per ton of "freight originated" .....	\$119.00	\$56.00
Freight charges per ton originated .....	2.80	2.00
Percentage of charges to value .....	2.4%	3.6%
Increase in cost to consumer, 1919 over 1914 .....	63.00	...
Increase in freight charges, per ton .....	.80	...
Relation of freight increase to cost increase .....	1.3%	...

In other words, only 80 cents out of 63 dollars, or 1.3 cents out of every dollar of increase in values of commodities in 1919 was caused by increased freight charges: the responsibility for the remaining \$62.20, or 98.7 cents of every dollar, must be sought elsewhere; it was not caused by freight charges.

In order to present a different point of view from that given above, I will use the value of transportation as \$56 and \$119 as given by Mr. Kruttschnitt, and will take the value of \$100 as standard for 1917, and \$84 as a normal in 1921, giving the table shown in the next column.

The idea to be presented in this chart, taking the first illustration, is this: In the year 1914, the average revenue per ton per mile in the United States was 0.733 cents. The market value per ton of miscellaneous freight traffic is given as \$56. At a distance of 25 miles, the freight charges at 0.733 cents would aggregate 18 cents per ton, and if that amount were paid for transportation and the produce sold at \$56, the shipper would net \$55.82. At 250 miles, which is the average haul, the shipper would pay \$1.83 for trans-

portation and net \$54.17 per ton. When the illustration is carried out to a distance of 7,000 miles, the transportation charge would be \$31.31, netting the shipper \$4.69. Beyond this, of course, the produce sold would not pay the transportation charges.

In the year 1917, the average revenue per ton per mile in the United States was 0.715 cents. In the meantime, the average price of goods had increased, and is here shown at \$100 per ton. The illustration shows that under these conditions, the produce could be shipped a distance of 13,000

TYPICAL ILLUSTRATION VALUE OF MISCELLANEOUS FREIGHT TRAFFIC AT VARYING DISTANCES FROM POINT OF PRODUCTION

Value per ton at market	1914		1917		1919	December, 1920
	\$56	\$100	\$100	\$100	\$100	\$84 estimated as 150% of 1914
Miles distant	Rate per ton per mile, 0.733 cent	Rate per ton per mile, 0.715 cent	Rate per ton per mile, 0.715 cent	Rate per ton per mile, 0.973 cent	Rate per ton per mile, 1.209 cents	Rate per ton per mile, 1.209 cents
25	\$0.18	\$55.82	\$0.18	\$99.64	\$0.24	\$83.70
50	.37	55.50	.36	99.28	.49	83.40
100	.74	55.27	.72	98.93	.97	82.79
150	1.10	54.90	1.07	98.93	1.46	81.58
200	1.47	54.53	1.43	98.21	1.95	80.98
250*	1.83	54.17	1.79	98.21	2.43	80.98
300	2.20	53.80	2.15	97.85	2.92	80.98
500	3.67	53.33	3.58	96.42	4.87	80.98
1,000	7.33	48.67	7.15	92.85	9.73	80.98
2,000	14.53	41.34	14.30	88.70	19.46	80.98
3,000	21.90	34.01	21.45	78.55	29.19	80.98
4,000	29.32	26.68	28.60	71.40	38.92	80.98
5,000	36.65	19.35	35.75	64.25	48.65	80.98
6,000	43.98	12.02	42.90	57.10	58.38	80.98
7,000	51.31	4.69	50.05	49.95	68.11	80.98
8,000	58.64	...	57.20	42.80	77.84	80.98
9,000	65.97	...	64.35	35.65	87.57	80.98
10,000	73.30	...	71.50	28.50	97.30	80.98
11,000	80.63	...	78.65	21.35	107.03	80.98
12,000	87.96	...	85.80	14.20	116.76	80.98
13,000	95.29	...	92.95	7.05	...	80.98

\*Approximate average distance freight is hauled in U. S. See entire department B-Q-12, May 18, 1921

miles, and after paying the transportation charge, would net the shipper \$7.05. Similar calculations are shown for the year 1919, and for the conditions prevailing in December, 1920. The value of merchandise in December, 1920, is taken as 150 per cent of its pre-war value, assuming that this will be recognized as standard when economic conditions have reached a new normal in 1921. The rate per ton per mile is that published by the Interstate Commerce Commission. From a study of this chart, it will be seen that when the average of all prices has declined to a point where it is 150 per cent of the price prevailing in 1914, transportation over

the average distance of 250 miles has very nearly the same relation to the value of the goods as the transportation charge had in 1914, and, therefore, according to my theory, the freight rates and charges prevailing in December, 1920, would not affect the commerce of the country to any more appreciable extent than did the transportation charges in 1914. In the meantime, during the year 1917, the transportation charge was slightly decreased, giving the shipper a large advantage as compared with 1914. In 1919, the freight rate was advanced over 25 per cent, and yet the shipper enjoyed a condition comparatively better than in 1914. In 1921, the shipper does, and will enjoy an advantage until such time as prices decline to a point where they will be 150 per cent of the value of 1914. Since we have not reached as yet the condition represented by the right hand column of the chart, there is, theoretically, no cause for the shipper to complain of high freight rates, or to declare that he is suffering from the transportation conditions which prevail.

**Advantage on Side of Shipper**

Discussing the results at the average point, we find that in 1914, the shipper would realize \$54.17 per ton at the market. Assuming that the cost of production was \$30 per ton, he would then net \$24.17 per ton. Assuming that in December, 1920, the cost of production had increased to \$45 per ton (150 per cent of 1914 costs), he would then net ton in December, 1920, the commodity would net him \$29.98 per ton as compared with \$24.17 per ton in 1914. This \$35.98 per ton as compared with \$24.17 in 1914. But if we suppose that the cost of production had increased to \$60 per result, however, is not the result of the transportation charge, but of the economic conditions connected with production. In fact it is quite probable that much of the present difficulty can be traced to conditions other than transportation. The general public, however, finds that the easy way to seek relief from all of these conditions is by appealing for a reduction in transportation charges. There is, however, no justice in undertaking to adjust through a reduction in transportation charges, economic conditions resulting from causes other than those of transportation.

During the years 1917 and 1919, the shipper enjoyed a distinct advantage which, it is plain, he appropriated for himself. He maintained his prices regardless of the low transportation charges, and it is a natural inference after a contemplation of this chart, that the governing authorities might well have advanced the freight rates to a point where the transportation facilities of the United States would have been self-supporting by placing the burden upon the shipper, who received the benefit, rather than upon the general public. Inasmuch as the average of present prices is considerably above 150 per cent of those prevailing in 1914, the shipper is not now being adversely affected by what are termed the present high freight rates.

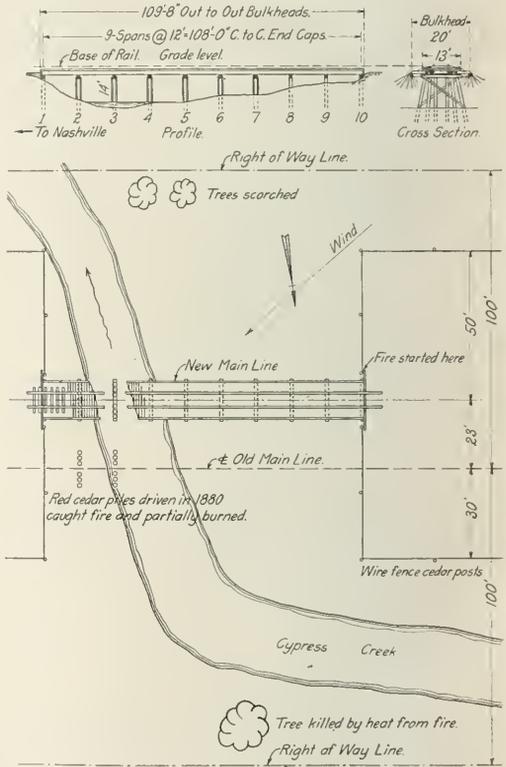
There are, of course, many instances where prices have changed in ways not represented by this chart, but for every instance of prices lower than those quoted in December, 1920, there is a corresponding circumstance where the prices are higher, and a close investigation from this point of view will disclose that some of the parties making the most noise are really those who are least hurt.

FRAUDULENT AGENTS, professing to be employment agents of road contractors, have been working among the unemployed in Minneapolis, Minn., soliciting labor for railroad work and collecting the railroad fare in advance from men whom they ostensibly employed. When the victims appeared at the railroad station for their transportation, they found neither the transportation nor the employment agent. Solicitors pretending to be obtaining advertising for railroad guide books have also been active in this city, defrauding many small advertisers.

**N. C. & St. L. Creosoted Bridge Survives Fire**

**A**N INCIDENT commanding widespread attention for its significance occurred on the afternoon of May 27 when a 108-ft. nine-span creosoted timber ballasted deck trestle on the Nashville, Chattanooga & St. Louis survived a fire which at the time was thought to have completely destroyed it. Starting at one end of the trestle and fanned by a high wind the fire spread over the structure rapidly and burned intensely for some time. Following the fire an examination revealed the fact that with the exception of the charring which the timbers suffered and the burning of a few braces to a degree which necessitated their renewal, the structure was little the worse for its experience.

The incident merits particular attention in view of the fact



Location of the Bridge

that much opposition has been raised in recent years to the use of creosoted timber in trestles and that largely in the belief that creosoted structures are poor fire risks, it has become the established practice on a number of roads to build in reinforced concrete although the cost of this construction is about double that of creosoted timber construction. As a result of the fire it would appear that weaknesses attributed to creosoted timber in its relation to fire have been somewhat exaggerated. At any rate on the Nashville, Chattanooga & St. Louis, on which 35,845 ft. of creosoted trestle have been built since 1910, the incident is interpreted as a confirmation of the opinion to which the company has consistently held

that such structures do not constitute extraordinary fire hazards.

All indications pointed to the conclusion that the fire started at the west end of the structure on the south side from hot coals which had been dropped by a locomotive a short time before and had lodged between the mud sill of the abutment and a post of the right-of-way wing fence. The timber at that point once afire and a high northeast wind blowing, together with the film of creosote oil on the surface of the timber, soon had created a hot blaze.

That the fire burned intensely for a time was borne out by the statement of those who witnessed it and by evidences found after it had died out. Dense smoke formed by the burning oil was seen by farmers 10 miles distant. Leaves on trees about 60 ft. from the trestle on the south side were scorched although the wind was blowing in the opposite direction and the leaves on trees 100 ft. to the north of the trestle were completely killed. Untreated cedar piles standing on the old alignment about 25 ft. to the north were set on



The Piles Suffered Little Loss of Strength

fire and a bucket gang fighting the fire could not approach within 50 ft. until it had in large part died out.

The fire lasted about 2½ hours. During this time practically all parts of the trestle caught fire and all burned portions of the trestle were found charred to a depth of ½ to ¾ in. with the exception of some of the cross-bracing which suffered more severely.

It was plainly evident that the fire had smothered itself, the explanation for this being that as the creosote oil burned it left a residue which accumulated on the surface of the timber to a point where the oxygen necessary to continue the combustion could not reach the unburned wood. This was substantiated by setting on fire a pile of the chips cut from the face of the charred piles when fitting cross-sectional bracing to the bents, a fire which also showed that a sufficient quantity of oil still remained in the structure to preserve it from decay. Repairs cost only \$75.

We are indebted for the information concerning this trestle to Hunter McDonald, chief engineer of the Nashville, Chattanooga & St. Louis, and to the reports of Carter L. Wilson, assistant engineer in charge of bridges, and J. H. Ryan, division engineer.

## Ease of Operation Features

### New Coach Seat

ONE OF THE special features of a coach seat recently developed by the Scarritt Car Seat & Manufacturing Company, St. Louis, Mo., is freedom from jamming and ease of operation. This is secured by carrying the



Fig. 1—View of Coach Seat Operating Mechanism

operating mechanism on four rollers, two on each side, operating in channels in the side plates, as shown in Fig. 1. The double automatic foot rest is designed to afford ample clearance for luggage beneath the seat, and, although it is



Fig. 2—Scarritt Coach Seat with Parts Assembled

mechanically operated, becomes inoperative when obstructed and allows the back to be reversed freely without injury to the seat mechanism or the obstructing baggage. The aisle arm is made of steel and can be enameled in any desired

color and fitted with a wooden arm rest to match the finish of the car interior.

The seat can be equipped with any type of back cushion with or without a headroll. Fig. 2 shows the new type of back cushion with the Scarritt invisible headroll designed to afford maximum comfort to the passengers. The plush is applied without stitching and therefore can be renewed at a nominal labor cost, the elimination of all gimp and seams making this a sanitary type of cushion. The seat cushion is of the full spring type with flexible edges and is designed to meet the most severe service conditions. The hand-stitched upper edge of the curled hair assures maximum life from the plush or other covering material. This seat was designed for first-class coaches and conforms to modern ideas of car equipment.

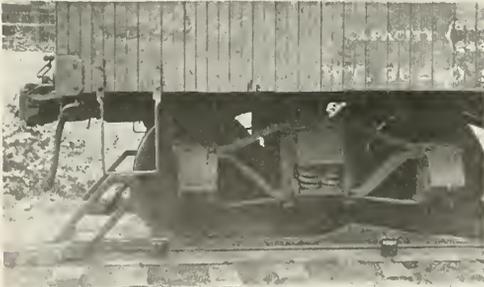
## New Type of Car Stop

**A** NEW TYPE of car stop has recently been introduced which relies upon sliding friction to prevent cars from passing beyond the ends of stub tracks rather than upon the impact characteristic of the rigid bumping post. The device, called the Breyley bumper, consists of two



A Pair of Breyley Bumpers in Place

cast steel shoes, each of which has a long base capable of sliding on the rail (to which it is held by lugs engaging the rail head) and an upper surface shaped in such a manner that when in place on the rail a wheel striking the shoe mounts it and is prevented from overrunning it or rolling back. With the forward wheels of the moving car thus car-



Breyley Bumper Shown Holding the Car and Abutting the Stop Block

ried on the two shoes (or the entire forward truck, if the large sized shoes are used) the shoes are simply carried along bodily by the moving car until the energy in the movement is absorbed by the friction created by the sliding of the shoes on the rails under the weight imposed upon them.

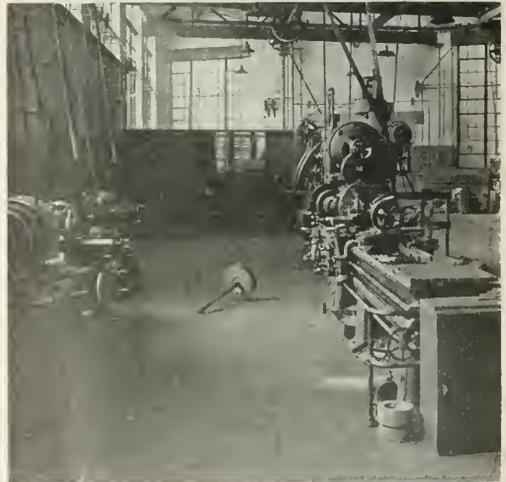
The principle underlying the design of this type of car stop is, of course, one of stopping cars without the damage that might result if a dead stop should be effected. To permit the sliding movement to take place when a moving car engages the shoes they are placed a distance from the end

of the track varying from 10 ft. to 30 ft., depending upon the conditions, a length of 30 ft. usually being sufficient for all purposes. As an indication of the action that takes place when moving cars strike the shoes it was found that when two 50-ton hopper cars loaded with coal struck the shoes at a speed of eight miles an hour the shoes were moved about 30 ft. while a third car of similar capacity striking these two cars, at a speed of about four miles per hour, moved the shoes an additional 6 ft., all of which was accomplished without damage to cars or car stops.

In order to guarantee a certain stop under all conditions the equipment also includes two stop blocks, which are attached to the ends of each rail, and for cases where more than 30 ft. of rail length is desired for sliding distance, special fish plates are provided for installation at the intervening rail joint to permit of the passage of the lugs which hold each shoe to the rail. Aside from affording a certain stop to moving cars without damage, this type of car stop is said to be of advantage in affording a warning to trainmen before the cars are beyond control inasmuch as a car in mounting the shoes experiences a decided although not injurious shock. About 100 of this type of car stop has now been in service experimentally for periods up to about two years on the Nickel Plate, Baltimore & Ohio, and other roads. It is sold by the Maintenance Equipment Company, Chicago.

## A Flooring for General Railway Service

**A**BOUT FOUR YEARS AGO a new type of flooring was introduced which embodied the advantages of both the wood block and the tongue and groove plank floor. This floor, which is known as Bloxonend, was described in the *Railway Age* of October 20, 1916, page 707, and has since had wide application on railroads under a variety of conditions. This service, together with extended use in other



Bloxonend Flooring in the Rutherford Shops of the Philadelphia & Reading

industries, has demonstrated the characteristics and adaptability of this construction to specific purposes.

The flooring consists of blocks of southern yellow pine  $2\frac{1}{2}$  in. by  $3\frac{1}{2}$  in. by 2 in. deep, dovetailed to a 1-in. board to form a unit  $2\frac{1}{2}$  in. deep by  $3\frac{1}{2}$  in. face and from 7 to 8 ft. long. Each side of the unit is grooved to receive a spline  $\frac{3}{8}$

in, thick by 11/16 in. wide so that the units may be assembled to make a floor the same way as any tongue and groove floor is constructed. In general this flooring may be used anywhere that a plank flooring may be laid, that is, directly on joists where the spacing is suitable for the loadings to be encountered or on subplanking or on furring strips laid in or on a suitable base such as concrete. These floors have been laid with advantage on top of old floors. This flooring material is available either in the natural state or after being subjected to open tank preservative treatment with carbosota.

The advantages claimed for this flooring include a high resistance to wear obtained by the end fibre exposure, ease of placing either on new or old construction, greater security against buckling or displacement of the blocks and a smooth surface since the blocks are milled after they have been assembled as a unit. It is said that the floor may also be readily taken up to be relaid elsewhere.

A recent improvement in this floor facilitates laying it as a mat floor over a flat surface like concrete, where for any reason the furring strips are not permissible. The floor is assembled in this case by nails driven horizontally into one groove and out through the opposite one so as to connect it through the spline to the adjacent unit. Special nails with flat shanks and chisel points are provided for this purpose,

and have been subjected to rain and snow without serious effect.

Another interesting development has been carried out on the Chicago, Milwaukee & St. Paul in the use of the Bloxon-end in baggage and express cars. Cars so equipped have been in service for three years without damage or repairs to floors and it is now the intention to apply this flooring to mail cars as well. This flooring is handled by the Carter Bloxonend Flooring Company, Chicago.

ADMIRERS OF HENRY FORD who believe that he can convert any weak railroad into a strong one seem at least to have the virtue of sincerity; a party of them have journeyed all the way from Arkansas to Michigan to see if they can get him to revive the Missouri & North Arkansas, a 300-mile road which numerous experts have found beyond their powers. The "committee," said to represent several towns, had to deal with Mr Ford's secretary, the "wizard" himself being absent.

UNITED STATES SENATOR DAVID I. WALSH, of Massachusetts, has written a letter to Governor Channing Cox of that State calling upon him to attack the New England railroad problem. Senator Walsh suggests that the Governor call a conference of the New England Governors to discuss ways and



As a Trucking Floor in the Santa Fe Freight House at Argentine, Kans.

the units being furnished with the nails already in place in holes drilled partially through the strips so that the labor of driving is greatly reduced.

This flooring has been used for a variety of services. Typical railroad installations include the Lang machine shop of the Detroit & Toledo Shore Line where the floor has been in service for 4½ years. A floor of this kind was also laid in July, 1918, in the Philadelphia & Reading's shop at Rutherford, Pa. Freight houses with installations include a Chicago, Milwaukee & St. Paul house at Davenport, Ia.; the Chicago, Rock Island & Pacific house at Little Rock, Ark.; the Illinois Central houses at Kankakee, Ill. and East St. Louis, a Santa Fe house at Argentine, Kan., one on the Michigan Central at Detroit, Mich., and one at Dearborn, and a Pennsylvania freight house at Chicago.

As an indication of the adaptability of this flooring to outdoor use it is of interest to note that it is being used on the car loading platforms, bridges and galleries of the Armour & Co. plant at South St. Paul, Minn., where it is said that the floors have passed through wide variations of temperature

means for aiding the railroads and make recommendations to Washington for special legislation if necessary. The senator continues:

"Some reports coming to me recently from official government sources indicate an impending crisis in our transportation system. Even in the face of extreme government assistance, the roads seem to be on the verge of economic breakdown. Reputable banking houses have already refused to make further financial advances to at least one of the big New England roads, and so bad apparently is the status that only with reluctance and against the advice of the treasury security expert has the Interstate Commerce Commission authorized a loan. Holders of equipment trust obligations may compel the sale and liquidation of that part of the equipment securing these obligations. . . . Even with greatly increased rates the railroads in New England are not able to hold their own and they have already drawn out of the government revolving fund more than their proportionate share. It is doubtful if the government will advance the more important New England roads any more money in loans.

# General News Department

The American Association of Freight Traffic Officers will hold its annual meeting on September 19, at the Drake Hotel, Chicago.

Oliver H. Shoup, governor of Colorado, on August 30, invited the governors of 16 western states to join Colorado in efforts to reduce railroad rates.

The American Association of Traveling Passenger Agents will hold its annual convention at Salt Lake City, Utah, on September 12, 13, 14 and 15. The Chicago, Milwaukee & St. Paul will furnish a special train leaving Chicago September 8.

Railroads entering the city of Des Moines, Iowa, have signified their willingness to co-operate with the Des Moines Town-Planning Commission in consideration of plans for a new union station. It is believed that no action will be taken until financial conditions improve, although plans will be carefully developed in the meantime.

Eastbound passenger train No. 34 of the Pennsylvania System, was derailed two miles west of Coshocton, Ohio, on the night of September 2, and 13 passengers were injured. The train consisted of two locomotives and 13 cars. The tender of the second locomotive was derailed and six cars were derailed and overturned.

Edgar E. Clark, formerly chairman of the Interstate Commerce Commission, and Wilbur La Roe, Jr., have formed a partnership under the firm name of Clark and La Roe for the handling of matters before the agencies of the government, including the committees of Congress. Their offices will be in the American National Bank Building, Washington, D. C.

Westbound passenger train No. 3, second section, of the Delaware, Lackawanna & Western, was derailed on a curve one mile east of Apalachin, N. Y., on September 3, and the locomotive fell down a bank. Two coaches were badly damaged and two overturned. One passenger, standing in a vestibule, was killed, and 13 were injured. The engineer and fireman were injured.

Trains on time (passenger trains) on the Pennsylvania Railroad in July numbered 94.2 per cent of the total passenger trains operated; and 96.8 per cent made schedule time. This is an improvement of 16.8 per cent and 9.0 per cent respectively over the figures for March, 1920, the first month after the property was returned to the Pennsylvania management. Engine failures and car failures have been reduced.

Passengers riding free on the Central Pennsylvania Division of the Pennsylvania Railroad are liable, if they don't "watch out," to receive from the conductor, when the train is filled, a small card bearing the following inscription and signed by the division superintendent: "PAY PASSENGERS ARE STANDING. It, therefore, seems appropriate to remind the holders of passes of their duty to refrain from occupying seats when pay passengers are standing."

C. L. Bardo, general manager of the New York, New Haven & Hartford, on September 5, sent out a notice to all employees advising that not one employee had been killed during the month of August, and congratulating them on their successful adherence to "safety first" in their work. It appears that once before—in May, 1920—a similar record was made. This road operates about 2,000 miles of lines with about 1,200 locomotives.

The "Suwanee River Special" is advertised to begin running on November 6 between Cincinnati, Ohio, and St. Peters-

burg, Fla., over the Southern Railway and the Seaboard Air Line; the first through train to be operated between the Ohio river and the West Coast of Florida. The route via Hampton, Fla., is 552 miles long, approximately 50 miles shorter than any other combination of existing routes. This will be a solid train between Cincinnati and St. Petersburg, with through sleeping cars to and from Chicago, Detroit, Cleveland, Louisville and Cincinnati. Southbound it will leave Cincinnati at 8:10 p. m. It runs via Chattanooga, Atlanta and Macon.

## Welding Society Meeting

The Metropolitan Section of the American Welding Society will hold its first fall meeting in the Engineering Societies' building, 33 West Thirty-ninth street, New York, on Tuesday, September 20. The subject of the evening will be "Practical Applications of the Electric Arc Welding Process," with a paper by E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific. Mr. Wanamaker is one of the few who can handle this subject so that it will be understandable and interesting.

## No Alternative Funding Plan Considered

The Railroad Administration and the White House have denied newspaper reports that an alternative plan for financing the settlements with the railroads in place of that represented by the Winslow bill as passed by the House is under consideration. It is proposed to proceed along the lines originally planned and to pass the Townsend bill through the Senate after Congress convenes after the recess. Meanwhile the Railroad Administration continues to make settlements with the railroads without funding, to the extent of its ability, as it had been doing before the funding proposition was formulated.

## September Meeting—New York Railroad Club

A MIGHTY TIMELY SUBJECT!

"WHAT FIXES THE LEVEL OF WAGES?"

A BIG SPEAKER

DR. CHARLES A. EATON

*Why Was He Selected?* Because there is no more important subject before our railroads today. Because Dr. Eaton made a remarkable record during the war in awakening the thousands of men in the Emergency Fleet Corporation to the importance of their work and their patriotic duty.

*Who Is He?* He is one of the country's leading sociologists. He was the head of the National Service Section of the U. S. Shipping Board Emergency Fleet Corporation. He is a man's man with unusual executive ability and magnetic personality—and a forceful orator.

*Where Is the Meeting and When?* Engineering Societies' building, New York City, Friday evening, 8 o'clock, September 16.

## A.S.C.E. Discusses National Port Problems

The American Society of Civil Engineers held this week a series of three meetings at the Engineering Societies Building, New York, to discuss national port problems. The first conference was held on Wednesday evening, the speakers being: F. W. Cowie, chief engineer, Harbor Commissioners, Montreal, Can.; Major General Lansing H. Beach, chief of engineers; F. H. Fay, consulting engineer, Boston, Mass.; and M. A. Long, Baltimore, Md. The speakers on Thursday afternoon were: John Meigs, consulting engineer, Philadelphia, Pa.; W. W. Pagon, consulting engineer, Baltimore,

Md.; E. J. Clapp, New York; and C. R. Thompson, assistant director, Department of Wharves, Docks and Ferries, Philadelphia; while those for the evening session were: J. A. Bessel, consulting engineer, New York; W. J. Wilgus, consulting engineer, New York; B. F. Cresson, chief engineer, the Port of New York Authorities, New York; and H. McL. Harding, designing terminal engineer, New York.

### The Chicago Safety Council

Ten (10) Chicago railroads are now reporting regularly to the Chicago Safety Council notable cases of reckless conduct by automobile drivers at railroad crossings in that city and district, using a blank which is standard with the council. The report is turned in promptly by the crossing attendant; and Secretary H. J. Bell, acting only in the interest of general safety in the Chicago district, at once communicates with the individual who is shown by the report to be at fault. The railroads which have joined in this movement are the Atchison, Topeka & Santa Fe, the Baltimore & Ohio Chicago Terminal, the Belt Railway of Chicago, the Chesapeake & Ohio, the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago, West Pullman & Southern, the Elgin, Joliet & Eastern, the Illinois Central and the New York Central. The Chicago Safety Council, acting in co-operation with the Chicago Association of Commerce, is endorsed by numerous prominent manufacturers; and it has committees actively at work on general questions connected with safety on the highways and to expedite the movement of congested traffic anywhere in the city. Secretary Bell estimates that the total loss by accidents and fires in the Chicago district in 1920 was twenty-five million dollars.

### Railway Earnings for July

The net railway operating income of the railroads for July makes a more favorable showing than has been reported for any month since last October. Returns from 202 Class I roads, with only one Class I line missing, show a net operating income of \$69,485,000, as compared with a deficit last July of \$11,878,000. The total operating revenues were \$462,953,000, which is a decrease of 12½ per cent as compared with July, 1920, while the operating expenses were \$362,776,000, a decrease of 29.4 per cent. Fifty-seven of the 202 roads had deficits for the month. The preliminary report is as follows:

	1921	1920	Per cent of increase 1921 over 1920
Total operating revenues:			
Eastern District .....	\$208,043,000	\$241,399,000	d 13.8
Southern District .....	71,202,000	79,111,000	d 10.0
Western District .....	183,708,000	208,337,000	d 11.8
United States .....	462,953,000	528,847,000	d 12.5
Total operating expenses:			
Eastern District .....	167,007,000	247,414,000	d 32.5
Southern District .....	58,988,000	79,796,000	d 26.1
Western District .....	136,781,000	186,577,000	d 26.7
United States .....	362,776,000	513,787,000	d 29.4
Net railway operating income:			
Eastern District .....	27,336,000	Def 17,807,000	....
Southern District .....	8,368,000	Def 3,175,000	....
Western District .....	33,781,000	9,104,000	271.1
United States .....	69,485,000	Def 11,878,000	....

### Railroad Administration Establishes

#### Short Line Section

The American Short Line Railroad Association has announced to its members what it considers an important victory in its negotiations with the Railroad Administration. Following the conference of officials of the association with President Harding, after which a long memorandum setting forth their condition was laid before the President, a letter was received in reply from Director General Davis, saying that the President had instructed him to receive and consider the claims of the short line roads for the first six months of 1918, and with that end in view a short line section has been created in the Railroad Administration for the purpose of receiving and considering these claims. The Railroad Administration had taken the position that a large number of the short lines were never actually under federal control for this

period. Mr. Davis' letter said that as at present advised the administration does not expect to consider any claim for compensation by any short line under federal control that did not have a railroad operating income during the test period. In addition, certain short line roads have entered into what is known as the short line form of contract, waiving any claims against the government. Unless the proper court shall decide that there is a liability on the part of the administration notwithstanding this contract, the claims of roads which have entered into contracts of this character will not be considered.

### A Vermiform Appendix

Abolition of the Railroad Labor Board was urged by John M. Glenn, secretary of the Illinois Manufacturers' Association, in a recent address to students of the University of Chicago. Mr. Glenn said:

"The United States Railroad Labor Board is a vermiform appendix that should be removed. It is costing railroads and shippers of this country \$2,000,000 a day for each working day in the year. The railroads asked that the \$700,000,000 wage grab of July 20, 1920, be wiped out. The Board, dominated by the brotherhoods, reluctantly and timorously reduced wages \$400,000,000 a year, leaving \$300,000,000 excess war wages which the railroads—and the public—have to pay. The railroads asked for abrogation of the working conditions, which add another \$300,000,000 in a year to railroad payrolls, most of it squandered for work that is never performed. The Railroad Labor Board has not abolished these burdensome working agreements. Neither has it taken any steps to do away with the basic eight-hour day which is joyously used by the railroad brotherhoods to exact time and a half and double time wage grabs amounting to more millions.

"This daily \$2,000,000 toll for which the Railroad Labor Board is directly responsible, is added to the cost of food, building material and every other commodity for which the consumer has to pay. It is one of the causes for high rents, high fuel, idle factories and general stagnation of business. This useless Board is a political parasite established as a sop to the blustering, bluffing railroad brotherhoods. Its operation is contrary to economic principles. \* \* \*

### The "Port of New York Authority"

Major Elihu C. Church, transportation engineer of the Port of New York Authority, in an address before the Community Leadership Council of the University of Wisconsin at Madison, recently, gave a succinct account of the constitution and purposes of that bi-State establishment.

The Port of New York Authority has the biggest problem of its kind in the world. London and Hamburg have nothing to compare to it. The Island of Manhattan is not the Port of New York. The metropolitan district, with which the Port Authority is concerned, is roughly the area within twenty-five miles of the Statue of Liberty, part in New Jersey, part in New York. The two States have signed a treaty to work together. The district embraces several cities. Its population is about 8,000,000. Within this district are more industrial establishments than in Philadelphia, Chicago, Cleveland and St. Louis combined. The freight cars that enter and leave during a year would fill eight tracks across the continent from New York to San Francisco. An ocean-going ship comes in and one goes out of the harbor about every twenty minutes of daylight every day. The foreign commerce averages over \$10,000,000 a day. The port has 800 miles of shore line.

The Port Authority will have the right to own and operate property, and expects to go into the public money market for the funds necessary to carry on its undertakings. The railroad problem is the principal one. The situation is now so complicated that the roads cannot solve it individually. It is only by an authority that can co-ordinate all their activities that any real betterment can be secured. The solution involves joint use of terminals and other facilities, construction of belt lines and marginal railroads along the deepwater front.

"The motor truck of today," said Major Church, "is at the stage of development that the railroads were two generations ago, and it is quite probable that motor highways radiating out from the port may be constructed on a scale hitherto undreamed of."

## Traffic News

The Southern Pacific has shortened the time of the Sunset Express, between San Francisco and Los Angeles, 1 hr. and 40 min.

The California State Railroad Commission on August 25 denied the application for a reduction in rates on rice grown in the Sacramento Valley in the case of the Pacific Rice Growers' Association against rail and river carriers.

The Baltimore & Ohio announces that it will continue to make the Pennsylvania station at 7th avenue and 32nd street, New York City, the eastern terminus for its passenger trains, having concluded a new contract with the Pennsylvania.

The Central of Georgia reports that in the month of May its passenger trains made a record of 99 per cent on time; that is to say, 2,779 trains out of 2,814 arrived at their destination on time. And in June the same percentage was accomplished.

The Public Service Commission of Alabama has ordered reductions in freight charges on coal, coke, iron ore and limestone, carried to the furnaces of Birmingham, amounting to about 30 per cent, and to go into effect on or before October 1.

The Illinois Central has leased to the War Department an incline and cradle at Cairo, Ill., for a rental of \$25 a year. This incline will be used in the interchange of freight between railroads and the river barges operated by the Government.

The Cincinnati, Indianapoli & Western has put on a new fast freight from Decatur, Ill., to points east. It is train No. 95 and leaves Decatur at 9 p. m., arriving at Indianapolis at 7 a. m. The time from Decatur is 21 hr. to Hamilton, Ohio, and 24 hr. to Cincinnati.

In a referendum conducted by the American Wholesale Lumber Association on the proposed change in demurrage rates, whereby the present sliding rate will be superseded by a flat charge of \$3 a day, 47 out of 55 replies favored, and eight opposed, the change.

A total of 45 new industries, representing an investment of \$4,430,100, were located along the line of the Chicago & Eastern Illinois during the past year, according to W. J. Jackson, receiver. It is estimated that the new industries will furnish employment for 2,109 persons and will give the railroad 11,000 cars of freight yearly.

The trans-continental railroad lines have agreed on the advisability of making important reductions in freight rates on iron and steel products from eastern points of manufacture to the Pacific Coast, and efforts are being made to get the concurrence of lines east of Chicago to the reductions so that they may be put into operation on October 3, when the new westbound trans-continental rates become effective.

The Southern Pacific has adopted uniform terms to designate its freight line between Pacific Coast points and New York, via New Orleans or via Galveston. Hitherto "Sunset Gulf Route," "Southern Pacific-Morgan Lines," "Sunset Gulf Atlantic Steamship Lines," and many other terms have been used rather loosely. Under the new ruling "Sunset Route" will be the designation for all through eastbound business and "Morgan Lines-Sunset Route" for all through westbound business.

In addition to the reductions in transcontinental rates on canned goods, dried fruits and other California products, which took effect August 22, there will be reductions on other products from the Pacific Coast points to eastern destinations ranging as high as 50 per cent on some articles. These reductions will take effect October 1 and will affect cabbage, potato, wild cherry bark, desiccated and frozen shelled eggs, with other eggs and dairy products; vegetables, tallow, malt, oil-well supplies, children's toys and storage batteries.

## Advances in Hudson River Ferry Fares

The Pennsylvania Railroad has advanced its passenger fares between Manhattan (New York) and Jersey City from 3 to 4 cents. The ferry service showed a deficit of \$438,273 for 1920. Children, under the new tariff, must pay 3 cents instead of 2 cents, but adults may purchase 10-trip ferry tickets for 30 cents, which is 5 cents above the present 10-trip rate. Increases in rates for horse-drawn vehicles range from 5 to 24 cents; on four-passenger automobiles the rate is increased from 40 cents to 56 cents; eight-passenger from 75 cents to \$1.05, and automobile trucks from 16 to 28 cents.

## Department of Commerce Creates

### Transportation Division

The Department of Commerce has announced the appointment of E. S. Gregg as chief of the transportation division of the Bureau of Foreign and Domestic Commerce, which has been created by the department to assist American business men in their overseas work insofar as it relates to the movement of freight by land or water. Mr. Gregg, formerly of Galveston, Tex., is a graduate of Austin College, Texas, and also took the graduate course in transportation at the University of Chicago. During the war he was connected with the shipping section of the general staff of the War Department. He has since been associated with the American International Corporation at New York as advisor on shipping conditions. He is the author of numerous articles on shipping subjects.

## Grain Rates to Gulf Ports Reduced

Acting on the carriers applications, the commission on August 31 granted authority for a reduction of 5½ cents per 100 lb. on five days' notice, on grain for export from Missouri river and Mississippi river points; also certain territory between the two rivers and in Illinois, to Gulf ports, Mobile to Galveston, inclusive. Authority was also granted to publish on five days' notice reductions ranging from one cent to 5½ cents per 100 lb. from the territory lying west of the Missouri river in Nebraska, Kansas, Colorado and Oklahoma to Gulf ports. Numerous protests were received against these reductions but after considering all of the facts and arguments the commission thought best to grant the authority. The reduced rates are to apply only during the remainder of the calendar year 1921. The present action does not constitute approval of the relative adjustment of rates either as between the Gulf ports on the one hand and Atlantic ports on the other or with respect to the relative rates from interior western points as compared with Missouri river points.

## A National Perfect Package Campaign

A "perfect package campaign," endorsed by the National Industrial Traffic League, will be inaugurated during the month of November under the auspices of the railroad and express companies and the American Railway Association. This campaign is designed to bring about the co-operation of all concerned for the better handling of freight packages. The plan was carried out on a small scale in St. Paul, Minn., last June, in what was known as "Perfect Package Week," when out of 22,248 express packages handled during that period, only 103 were found faulty; with the assumption that the remainder were perfect packages, the proper packing record for that week was 99.54 per cent.

The campaign is to be managed in co-operation with local chambers of commerce. Each railroad agent will be given printed forms which he is to fill out either daily or weekly and present to the chamber of commerce in his locality. This form contains a report, listing each defective package according to three classes of errors, bill-of-lading, marking, and packing. Railroad agents are to be particularly vigilant, and any imperfection in the railroad transportation service will be traced to its source.

This campaign, when first proposed by the National Industrial Traffic League, was to be confined to the New England states, but with its success in St. Paul, it was decided to place such an educational program on a national basis.

## Commission and Court News

### Interstate Commerce Commission

The commission has reopened the Cleveland passenger terminal case, in which it recently dismissed the application of the New York Central, and has assigned it for rehearing before Commissioner Campbell and Attorney Examiner Clarke at Cleveland on September 20.

The commission has suspended from September 3 until January 1, 1922, the operation of schedules published in a Northern Pacific tariff proposing increases and reductions in rates on cedar poles from certain points in Minnesota to destinations on the Canadian Pacific and Grand Trunk Pacific in Canada.

The commission has suspended from September 5 until January 3, 1922, the operation of schedules published in a Chicago, Rock Island & Pacific tariff which provide that the rates on forest products, from points in Arkansas and Louisiana, to destinations in Central Freight Association territory and Canada, applying through Memphis, Tenn., and Louisville, Ky., will not be subject to transit privileges en route.

The commission has suspended from September 6 until January 3, 1922, schedules which propose reductions in the carload commodity rates on cotton and cotton linters from transcontinental territory on and west of the Mississippi river generally, to Pacific Coast ports for export to points in the Orient. On cotton and cotton linters to Pacific Coast ports it is proposed, if compressed after delivery to carrier, to reduce from \$1.50 to \$1.35, and if compressed before delivery to carrier from \$1.36½ to \$1.21½.

The Interstate Commerce Commission has issued a decision upon reargument of the case involving rail and water rates from Atlantic seaboard territory to Texas points. The commission finds unduly prejudicial class rates from seaboard territory to Houston made by the use of differentials over the rates to Galveston, which are lower than the differentials applied in making rates from Galveston higher than those from Houston to points in Texas. Otherwise proposed reductions in class and commodity rates from Atlantic seaboard territory to Texas points, the commission finds, are not shown to be unjustly discriminatory, unduly prejudicial or otherwise unlawful.

### State Commissions

The Southern Pacific has filed an application with the Public Service Commission of Nevada, asking authority to abandon its Metropolis branch, which extends from Tulasto to Metropolis, in Elko county, a distance of eight miles.

The railroad commission of Georgia has called upon all the railroads of the state to appear on September 13 and show cause why intrastate freight rates should not be revised to eliminate discrimination, due to disregard of the long and short haul rule as described in the federal law.

The California State Commission has ordered the crude oil rates on the Oil City-Parque Branch Line reduced from 5½ cents to 3 cents per 100 lb., with a minimum charge of 1½ a car. This line runs from Oil City and Airof, Cal., to Waits, and is owned jointly by the Southern Pacific and the Santa Fe.

### Personnel of Commissions

Frederick I. Cox, the new member of the Interstate Commerce Commission appointed to succeed Edgar E. Clark, took the oath of office on September 1 and made his first public appearance as a member of the commission at the hearing in the western grain rate case.

## Foreign Railway News

### New Zealand's Premier Favors British Manufacturers

W. F. Massey, prime minister of New Zealand, speaking at Darlington, England, is quoted by the Times (London) Trade Supplement as saying that in his dominion British goods are now given preference and that he hopes that more can be done in that direction in the next few months. He states further that New Zealand is coming to Britain soon to place orders for 2,500 freight cars, 45 locomotives and a quantity of rails.

### Track Material Exports in July

The downward trend of the exports of railway equipment and supplies continues in the July totals for the exports of track materials, when compared with similar totals for June. In July 928,272 lb. of track spikes, valued at \$36,026 were exported as compared with 1,566,050 lb., valued at \$79,434 in June. July exports of steel rails totaled 20,070 tons, valued at \$1,018,859, as against 20,308 tons, valued at \$1,083,344 for the preceding month. Miscellaneous track materials slumped off from \$568,134 in June to \$146,464 in July. Detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Railroad spikes		Rails of steel		Switches, frogs, splice bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Norway	.....	.....	.....	.....	1,960
England	.....	.....	30	1,671	4,273
Canada	15,615	739	4,992	285,348	37,284
Costa Rica	11,400	518	.....	.....	1,368
Guatemala	.....	.....	.....	.....	1,113
Honduras	131,250	4,102	1,874	91,059	9,573
Nicaragua	40,000	1,372	.....	.....	1,369
Panama	.....	.....	.....	.....	975
Salvador	.....	.....	.....	.....	683
Mexico	125,000	5,313	224	10,842	75
Jamaica	.....	.....	.....	.....	8,045
Cuba	151,208	5,400	305	15,926	14,309
Dutch West Indies	.....	.....	.....	.....	160
Dominican Republic	22,000	913	.....	.....	.....
Brazil	1,200	90	31	19,567	23,596
Chile	.....	.....	341	20,030	3,457
Colombia	7,410	406	6	430	60
Ecuador	3,000	143	25	1,185	436
Peru	17,000	767	.....	.....	.....
Venezuela	.....	.....	.....	.....	90
China	118,644	6,172	7,761	75,496	8,096
Kwantung, leased territory	.....	.....	4,713	195,442	5,649
Dutch East Indies	.....	.....	3,455	195,049	8,850
Japan	74,960	2,856	694	32,421	1,398
Siam	.....	.....	1,091	60,114	192
Australia	.....	.....	.....	.....	4,750
New Zealand	.....	.....	.....	.....	9,690
Philippine Islands	209,480	7,235	.....	.....	.....
Total	928,272	36,026	20,074	1,018,859	146,464

### Reorganization of the Hungarian State Railways

LONDON

The Hungarian State Railways have under their management 4,382 miles of which 1,863 miles are State owned. The present condition of the track is only adequate for the requirements of the reduced traffic; and buildings and bridges are in urgent need of restoration. The total amount needed for this purpose is estimated at \$1,620,000. It is also stated that a sum of about \$5,300,000 will be required for repairing old locomotives and new locomotives. Of the 2,237 locomotives claimed by the Hungarians under the stipulations of the Reparations Commission, only 1,717 have been received and the majority of these are in a worn-out condition and of low efficiency. On June 30, there were only 2,348 passenger cars available out of a total of 8,846, and it is estimated that in order to develop the passenger traffic 1,000 cars will be needed. This coupled with the need for repairs will call for a sum of about \$2,300,000. A similar state of affairs is encountered in the case of freight cars, for which a sum of \$5,550,000 will be required. It will therefore be seen that in order to put the Hungarian railways on a sound basis an estimated total of \$18,000,000 will be needed.

The reorganization of the Hungarian railways depends to a large extent upon the agreements with regard to mutual traffic which are made with contiguous States, such as the settling of

the frontier and terminal stations, upon which the building of water stations and so forth is based. Should the lately designated boundaries be definitely decided upon, it would be necessary to make considerable alterations to the various classes of stations and buildings.

As to general traffic conditions, the great need of coal, freight and passenger cars, and locomotives is the ruling factor. The coal question is especially difficult, so much so that the railways are hardly able to handle their small inland traffic.

**Railway Wages in Great Britain**

The average weekly earnings of railway employees in Great Britain prior to the war in 1914 was 25 shillings a week (about \$6 at par exchange). Many increases were granted as living costs rose—at first by granting bonuses and later by making these bonuses a part of the regular weekly wage. By April, 1919, the average weekly rate had been increased to 63 shillings (approximately \$15.75 at par exchange). At this time it was agreed to add one shilling (approximately 25 cents) to the rate for every increase of 5 points in the index of the cost of living and a similar deduction for every decrease of 5 points. Permanent standards or "stop" rates were fixed at a point approximately 100 per cent above pre-war wages. Beyond this "stop" wages may not fall. The average "stop" is 53 shillings (approximately \$13.25).

Under the sliding scale of wages, with increases of one shilling for each increase of 5 points in the cost of living index, wages were increased \$2 a week above the 1919 rate. Since living costs have dropped, wage rates under the sliding scale have been decreased \$2.25 a week. Generally speaking, therefore, wages are now about \$15 a week, or 150 per cent above the pre-war level. "Stop" rates for some occupations are given in the following table. To arrive at the present rates \$2.50 should be added to the "stop" rate.

Guards (Trainmen)	Shunters (Switchmen)
First year .....\$12.50	Class 1 .....\$16.25
Second year .....12.50	Class 2 .....15.00
Third year .....13.75	Class 3 .....13.75
Fourth year .....13.75	Class 4 .....12.50
Fifth year .....15.00	Station Foremen
Sixth year .....15.00	Class 1 .....\$16.25
Seventh year .....15.00	Class 2 .....14.50
Eighth year .....16.25	Porters, Lampmen and Crossing
	Watchmen from \$10.00 to \$12.00
	Ticket Collectors,

NOTE—Shillings to dollars at .25. from \$13.50 to \$15.00

The total wage bill of the British railways in 1920 amounted to \$798,106,000, as compared with \$228,725,000 in 1913, or an increase of 250 per cent. Fifty-two cents of every dollar spent by the railroads in 1920 went for wages, as compared with 35 cents in 1913. The *Railway Age* is indebted to the Bureau of Railway Economics for the data herewith presented.

**Training of Apprentices on the Victorian Railways**

The State Railways of Victoria, Australia, have in operation a comprehensive system of training apprentices, according to the Engineer (London). To quote: "Under these regulations it is possible to obtain a very good class of youths who, after a training in technical and practical work, are well prepared to become first class tradesmen, and eventually foremen. In some cases, when the ability of an apprentice is outstanding, he may become a member of the professional staff, and in course of time may be appointed head of his branch, as has occurred quite recently, when one, who joined the service as an apprentice 15 years ago, was appointed chief electrical engineer of the Victorian railways."

Bulletins are posted in various places announcing vacancies in the occupations and applicants apply in writing. When an apprentice is employed he is placed on probation for six months at the end of which time his fitness has been determined. The period of apprenticeship is five years, during which time the apprentice performs duties of the trade he is studying at one of the shops of the system. At the same time he must attend classes in designated trade schools where his tuition is paid. Apprentices are, as a general rule, paid 75 cents a day for the first year, 93 cents the second year, \$1.31 the third year, \$1.68 the fourth year and \$2.25 the fifth year.

The school work required of all first year apprentices is the same, viz.: elementary science, arithmetic and geometry. In the second year the courses are mathematics, drawing and applied

mechanics. Different courses are provided the third year for various crafts. Some of them are algebra, solid geometry, engineering drawing, electricity, steam and design. Various prizes are offered by the company for good school work and of each third year class one student is chosen to study engineering. This student devotes the next two years, full time, to this work and receives \$650 a year in lieu of wages besides his free tuition. If he completes the course satisfactorily he is given the position of engineering assistant at an entrance salary of \$1,125 per annum.

**Bids on Equipment for China**

Frank Rhea, trade commissioner at Peking, has prepared an interesting analysis of the recent bids of equipment concerns for cars and locomotives for China. The successful bids were not accepted on a basis of price alone, but also on strict adherence to the specifications. The bids were as follows:

30 PRAIRIE TYPE LOCOMOTIVES			
Nationality		Nationality	
Belgian .....	\$35,610	German .....	\$49,215*
Japanese .....	40,296	British .....	50,878
American .....	44,200*		
6 BRITISH TYPE LOCOMOTIVES			
Belgian .....	34,201	British .....	43,805
American .....	43,230*	German .....	49,540*
3 PACIFIC TYPE LOCOMOTIVES			
American .....	50,880*	British .....	53,348
Japanese .....	39,822	German .....	53,910*
Belgian .....	40,525		
2 MIKADO TYPE LOCOMOTIVES			
American .....	52,000*	British .....	\$5,567
Belgian .....	43,170	German .....	\$7,000*
Japanese .....	47,408		
100 OPEN CARS			
Belgian .....	2,464	Japanese .....	2,844
German .....	2,283	British .....	3,786
American .....	2,550*		
100 COVERED CARS			
Belgian .....	2,674	American .....	2,620*
German .....	2,509	British .....	4,325

NOTE—Shanghai Taels shown as dollars at .645.  
\*Original bid in dollars.

From the above tables it will be noticed that the Belgian and Japanese bids are usually lowest and the British and German the highest with the American bids intermediate. The successful bidders in each case were as follows:

Orders	Successful bidders	Manufacturers
30 Prairie locomotives.....	Société Belge pour l'Export. Ind.	Various Belgian manufacturers.
6 British locomotives.....	Société Belge pour l'Export. Ind.	Various Belgian manufacturers.
2 Mikado locomotives.....	Mitsui Bussan Kaisha.	American Locomotive Company.
3 Pacific locomotives.....	Mitsui Bussan Kaisha.	American Locomotive Company.
100 Open cars .....	Fearon, Daniel & Co.	Cie. Général de Construction, Belgium.
100 Covered cars .....	Fearon, Daniel & Co.	Cie. Général de Construction, Belgium.

It will be noted that the greater part of the business went to Belgium, because these bids were in most cases the lowest conforming strictly to specifications. The factor of exchange, of course, enters largely into these bids. According to Mr. Rhea, if the Belgian franc would increase from 8 cents to 10 cents in exchange value the Belgian bids would in most cases cited above have been higher than the American bids.

**Government Ownership Scathingly Denounced in Australia**

That the output of primary products in Australia is decreasing is the statement of A. W. Pearse, editor of the *Pastoralists' Review* in an article in the *Railway Gazette* (London). Mr. Pearse lays the blame for this unhealthy condition at the door of the state owned railways. Mr. Pearse says:

"The fact is that when the Australian states determined on a state owned railway system they took the wrong turning, the one that naturally led to stagnation. It meant that the country could only get railways constructed through already populated districts, and then only by political intrigue. It meant centralization at the termini of the one system of railways. It meant cutting off from all country districts their rightful means of tax-

tion, which was needed by them for their local requirements, and it meant that only a very few immigrants would be brought in, and those mostly of poor quality. It further meant a railway monopoly of the worst description, viz., a political one, with the very worst accommodation. In fact, there being no competition, it meant that the public had to put up with anything the government could afford or intended to give them. Further than that it meant that, when all the state's assets were pawned and no more money could be borrowed, railway construction would cease. And, after all these drawbacks, the one reason given, viz., that the railways belonged to the people, is found to be a fallacy, because they are pawned over and over again to the bondholder, and have to be run to produce his interest. There is not one single redeeming feature in state ownership of railways."

Mr. Pearce goes further to compare the Australian railways with the Canadian Pacific. The value of that company to Canada in building up industries and encouraging the immigration of desirable foreigners is compared with the lack of interest of the Australian railways in all such matters. Continuing he says:

"There is another blot against our system. The railways are not liable for robbery, damage, or bad treatment of livestock or anything else. Employees, because they have votes, can almost do as they like, and no one dare 'sack' them. On private railways discipline must reign; and here comes in the main reason why politicians like to own the lines. Discipline and good conduct are abhorrent to a large section, and the votes of that section have to be pandered to."

### Continuous Brakes in Germany

"It is well known," says the *Railway Gazette* (London), "that Germany is one of the countries where prior to the war the Westinghouse air-pressure brake was in general use. During the war conditions suffered a change, inasmuch as the Prussian authorities in their triumphant state of mind decided to introduce something different in detail from the Westinghouse air brake, in order to avoid foreign influence in this line of business and with a view to eliminating as far as possible foreign enterprise in the German territories. To find possible opportunities for alterations in the Westinghouse brake system the patents of this company were carefully studied, with the result that the fundamental idea in one of these patents—which happened to have just expired—was selected and developed into a so-called differential brake by introducing a very complicated new kind of valve.

"Letting alone for the present its technical features, it must be said that the innovation was effected by the Knorr Company in direct co-operation with the railway authorities themselves and their high officials; in fact, the name of the so-called new brake system includes the name of one of these officials. The Prussian government then decided to replace the Westinghouse brake by this newly-prepared system, pushing ahead the introduction of the so-called Kunze-Knorr brake with the greatest energy. Thus a fact was established to compel their enemies (after Germany emerged victorious from the war) to adopt the same kind of innovations that they themselves were going to introduce. The government went ahead so precipitately that as early as 1917 the means necessary to fit up the entire rolling-stock of their goods wagons (i. e. freight cars) with this new brake were afforded by the Prussian Diet. The execution of the program was taken up without delay. As a second step the Prussian government went on to eliminate Westinghouse, assigning to the Knorr company practically the whole of the repairs on cars equipped with the Westinghouse brake proper, the brake parts being provided from the stores of the Knorr company as "Knorr-West brake parts," as they were called, and at prices which are fixed in an official catalogue.

"Both England and America think that these peculiar ways are neither in accordance with the aims of the International Commission, which in itself has been shunned by the Prussian authorities, nor with certain stipulations of the Peace Treaty. It would be interesting if the German Government would explain why, in spite of its heavy financial obligations, it is spending such enormous sums for new equipment, which expenditure could not be afforded even by the victorious parties for similar purposes."

## Equipment and Supplies

### Locomotives

THE ARGENTINE STATE RAILWAYS are inquiring through the locomotive builders for prices on 6 locomotives.

THE TOLEDO, ST. LOUIS & WESTERN has ordered 5 Consolidated type locomotives from the Lima Locomotive Works.

### Freight Cars

THE INTERSTATE RAILROAD contemplates having repairs made to 200, 50-ton steel coal cars.

THE DELAWARE, LACKAWANNA & WESTERN is asking for prices on 1,600 steel hopper cars of 50 tons' capacity.

THE WELLMAN-SEEVER-MORGAN COMPANY, Cleveland, Ohio, is inquiring for prices on 2, 50-ton cast steel trucks.

THE PERE MARQUETTE has awarded a contract for the repair of 350 wooden box cars to the International Car Company, Chicago.

THE BALTIMORE & OHIO, reported in the *Railway Age* of September 3, as inquiring for prices on 1,000 box and 1,000 gondola car bodies, is also asking for prices on 400 refrigerator cars, and on the repair of 1,500 box cars, 500 steel gondola cars, 500 hopper cars and 500 coke cars.

THE SOUTHERN PACIFIC, on account of the return of bad order cars to its lines, in larger numbers than could be expeditiously handled by its own forces, is having repairs made to some of these cars at the shops of the Southern Dry Dock & Shipbuilding Company at Orange, Tex. Up to the present time 100 cars have been repaired at these shops.

### Passenger Cars

THE BOLIVAR RAILROAD (Venezuela) is inquiring through the car builders for 5 passenger cars.

THE COLUMBIAN NATIONAL (South America) is inquiring through the car builders for cars for passenger train equipment.

THE TIENSIN-PUKOW, reported in the *Railway Age* of April 22, as inquiring through the car builders for from 30 to 50 passenger cars, has ordered from the Pressed Steel Car Company 10 first-class sleeping cars, 10 second-class sleeping cars, and 10 third-class sleeping cars, 5 dining cars, 5 drawing-room cars, 5 baggage, 5 postal and 3 private cars.

### Iron and Steel

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, September 21, 1921, for: 75,000 lb. soft steel bars, 71,000 lb. welding steel, and 280,000 lb. steel shapes.

### Miscellaneous

THE BOSTON & ALBANY will receive bids, until 12 o'clock noon September 6, at Boston, Mass., for 1 trailer truck; 1 engine truck; 1 foot plate; 2 steam pipes; 4 steam pipe flanges; 1 pair cylinders for locomotives, and 2 relief valves.

THE PANAMA RAILROAD, 24 State Street, New York, will receive bids until 12 o'clock noon, September 20, for its requirements for one year from October 1, of fuel oil for steamship service. The contract calls for between 400,000 and 500,000 blgs. of oil.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon September 14 at Roanoke, Va., for 1,000 double coil steel springs;

50 bar special welding steel; 640 rods of wire fencing, and 545 kegs common wire nails, also for parts for electrical apparatus and for repairs to electrical apparatus.

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, September 14, 1921, for 1,000 double coil steel springs, 50 bars special welding steel, 640 rods of wire fencing, 545 kegs common wire nails, repairs to electrical apparatus and parts for electrical apparatus.

THE SOUTH BUFFALO RAILWAY will receive bids until 12 o'clock noon September 12, at Lackawanna, Erie county, New York, for: 200 gross tons 80-lb. rail; 50 gross tons 90-lb. rail; 100 pairs of angle bars for 80-lb. A. S. C. E. rail and 100 pairs of angle bars for 90-lb. rail, also for 50 kegs of track bolts.

THE MISSOURI, KANSAS & TEXAS has concluded a contract with the William Graver Tank Works, Chicago, for the supplying of 55,000-bbl. steel oil storage tanks, 114 ft. 6 in. in diameter by 30 ft. 2 3/4 in. high, together with four 1,000-gal. steel elevated tanks on 24-ft. steel substructures and four 20,000-gal. horizontal tanks to be installed on a 20-ft. substructure. This equipment will be used in connection with the storing and supplying of oil for oil fuel-burning locomotives which the M. K. & T. expects to put into operation on several divisions this fall.

## Railway Construction

CANADIAN NATIONAL.—This company will build a frame freight and passenger station at Barrante, Quebec. The structure will be 21 ft. by 65 ft. and will include a machinery platform 16 ft. by 29 ft.

CENTRAL VERMONT.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the erection of an electric cinder conveyor at St. Albans, Vt.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is contemplating the erection of an ice house at Manly, Iowa, to cost approximately \$10,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to the T. S. Leake Construction Company, Chicago, for the erection of an addition to its roundhouse at Eldon, Mo., to cost about \$40,000.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of August 27 (page 425), as accepting bids for electrical equipment for the sub-station to be installed in connection with its new railway terminal building, Chicago, has awarded the contract for this work to the Allis Chalmers Company, Milwaukee, Wis.

CHICAGO UNION STATION.—This company is accepting bids for the sub-structure for a viaduct at Madison street, Chicago.

TOLEDO, ST. LOUIS & WESTERN.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 300-ton steel coaling station at Charleston, Ill.

WICHITA NORTHWESTERN.—This company has applied to the Interstate Commerce Commission for a certificate of public convenience and necessity authorizing the construction of a line from Vaughn to La Crosse, Kans., 14 miles.

EIGHTY-EIGHT ALLEGED violations of the law forbidding railroads to keep train crews on duty longer than sixteen consecutive hours are cited in suits filed against the Philadelphia & Reading in the United States District Court at Philadelphia on August 17.

NEW YORK UNIVERSITY announces that the class in Freight Traffic Management will have its first session at the Wall Street Division of the University on Friday, September 23. The class is conducted by Asa Colton, lecturer on Trade and Transportation in the University. Men who are authorities on various phases of traffic work will address the class. The New York University Transportation Club holds monthly sessions with interesting speakers on various phases of domestic and foreign traffic. The next meeting of the club will be held at the Wall Street Division (90 Trinity Place) on Thursday evening, September 15. Everybody invited.

## Supply Trade News

The Conewanga Car Company, it is reported, will be organized to take over the plant and business of the Allegheny Tank Car Company, Warren, Pa.

J. E. Slimp, formerly with the Ohio Brass Company, and recently with the E. T. Chapin Company, Spokane, Wash., as sales manager with office at Chicago, has resigned.

Thomas H. Greenwood has been appointed factory manager of the McDougall-Butler Co., Inc., Buffalo, N. Y., makers of paint and varnish for railway uses. This company has appointed the Ehrlich Paint Company, Cincinnati, Ohio, as its representative in the Cincinnati district.

F. H. Sauter, formerly associate editor of the Locomotive Dictionary, has accepted a position with Gibbs & Hill, consulting engineers, Pennsylvania Station, New York City.

His work with this firm will have to do with the development of railway electrification. Mr. Sauter was born in Schenectady, N. Y., February 1, 1877, and was educated in the public schools of Schenectady. In 1894, he entered the General Electric Company's factory and completed a mechanical engineering course under private instruction during the factory employment period. In January, 1900, he entered the General Electric Company and in 1903, he worked with the



F. H. Sauter

Schenectady Railway Company as assistant master mechanic. In the fall of 1904, he served with the Peckham Manufacturing Company, Princeton, N. Y., as electric truck designer. In 1905, he entered the services of the American Locomotive Company, Schenectady, N. Y., and while with this company, he held positions as draftsman and designer of steam locomotives, electric trucks, and electric locomotives, and as electric locomotive and truck estimating engineer. In December, 1917, he entered the employ of the Simmons-Boardman Publishing Company as associate editor of the Locomotive Dictionary. He went to the Crown, Cork & Seal Company, Baltimore, in May, 1918, and in July of that year was made supervisor of Trade Machinery and in April, 1920, assistant manager of the machine erecting department. The duties of this position included adjustment of machine complaints and personal visitation of the trade in the entire territory east of the Mississippi and some of the Western states. On June 1, 1921, he resigned to accept his present position.

The J. G. Brill Company, Philadelphia, Pa., announces the formation of a new company, the Canadian Brill Company, Ltd., organized to build and sell electric and steam railway rolling stock in the Dominion of Canada. The new company has taken over the plant and equipment of the Preston Car & Coach Company, Ltd., Preston, Ontario, and has a number of orders now in process of construction. This plant is a modern car shop, having 1 1/2 acres of ground located on the outskirts of the city. The executives of the new company are: Samuel M. Curwen, president; H. K. Hauck, first vice-president; Alfred Clare, second vice-president; H. D. Scully, general manager and secretary; and E. P. Rawle, treasurer.

Fred A. Poor, Patrick H. Joyce, and Edward N. Roth, have been elected members of the board of directors of

Mudge & Company, Chicago. There has been no change in the control of the company, its management being as heretofore in charge of **Burton Mudge**, president, and **Robert Sinclair**, vice president. The other directors of the company are **Burton Mudge**, **Robert Sinclair**, **Egbert H. Gold** and **Edwin W. Sims**.

**Carl F. Dietz** has resigned as vice-president and general sales manager of the Norton Company, Worcester, Mass., effective October 1, to become president and general manager of the Bridgeport Brass Company, Bridgeport, Conn. Mr. Dietz has been with the Norton Company for ten years, first as plants engineer, then consecutively as assistant sales manager, sales manager of the wheel division and for two years general sales manager of the entire business. **W. LaCoste Neilson**, vice-president, succeeds Mr. Dietz as general sales manager. Mr. Neilson has been with the Norton Company for 14 years. He served for a few years as assistant sales manager, then was in charge of all foreign business, including sales and the management of the foreign plants at Wesseling, Germany, and at La Courneuve, France, with office in London, England. He was appointed a vice-president two years ago and will take charge of general sales at Worcester on October 1. He will also continue to direct the company's foreign affairs for the present.

## Obituary

**Kenneth F. Rushton**, vice-president in charge of engineering of the Baldwin Locomotive Works, died on September 2 at his home at Wynnwood, Pa., at the age of 59.

## Trade Publications

**CHUCKS**.—Prices and code words for the different styles of chucks manufactured by the Cushman Chuck Company, Hartford, Conn., are listed in a 16-page illustrated booklet which the company has recently issued. The booklet is neatly arranged and has an outside cover of transparent celluloid.

**ELECTRICAL EQUIPMENT**.—All Benjamin electrical products are listed and described in catalog No. 23, published by the Benjamin Electrical Manufacturing Company, New York. The catalog is a book with a stiff cover containing 252 pages, and special attention has been given to the grouping of the products listed to add to the convenience of the user.

**SHALLOW PITS AND OTHER COALING PLANTS**.—The Roberts & Schaefer Company, Chicago, has issued bulletin No. 43 dated August 21, 1921, containing 28 pages descriptive of the coaling stations and coaling station equipment manufactured and erected by that company with particular reference to the shallow pit type of station. The bulletin consists primarily of photographs and descriptive captions concerning coaling stations recently built by that company, including the new Tulip street coaling station built for the Philadelphia & Reading at Philadelphia.

**THE TANK CAR**.—An unusually important catalog which will be of interest to owners and users of tank cars has just been issued by the Pennsylvania Tank Line, Sharon, Pa. In addition to illustrations and specifications of cars as made by the Pennsylvania Tank Car Company, the catalog contains considerable general information, such as the A. R. A. standards and specifications for tank cars, interchange rules, mileage, demurrage, car accounting records, regulations for the transportation of inflammable and other dangerous liquids, safety appliance standard, and gauge tables for contents of tank cars.

**RAILWAY CARS FOR EXPORT AND DOMESTIC USE**.—A very complete catalog of railway cars of both export and domestic types has just been issued by the joint export sales offices of the Magor Car Corporation of New York and the National Steel Car Corporation, Ltd., of Hamilton, Ontario, Canada. The book is well illustrated and metric equivalents of all dimensions are given. A private cable code is also included for the convenience of customers. It is planned to issue other editions later in Spanish, Portuguese and French. This catalog contains 155 pages, 9 in. by 13 in., and is well printed and bound.

## Railway Financial News

**ARANSAS HARBOR TERMINAL**.—*Authorized to Issue Notes*.—This company has been authorized by the Interstate Commerce Commission to issue \$50,000 of prior lien five-year gold notes at 6 per cent, to be pledged with the Secretary of the Treasury as security for a loan.

*Loan Approved*.—The commission has also approved a loan of \$50,000 to this company to assist it in reconstructing 6½ miles of its main line that were destroyed by a hurricane.

**BELFAST & MOOSEHEAD LAKE**.—*Acquisition by Maine Central Authorized*.—The Interstate Commerce Commission has approved the acquisition by the Maine Central of control of this company under lease.

**BENNETTSVILLE & CHEFRAW**.—*Authorized to Abandon Line*.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon the operation of a portion of its railroad from Brownsville to Sellers, S. C., 10.44 miles.

**CAMBRIA & INDIANA**.—*Authorized to Issue Note*.—The Interstate Commerce Commission has granted authority to issue a one-year 7 per cent promissory note for \$500,000, the proceeds to be applied toward the payment of \$800,000 of two-year gold notes, and the company has also been authorized to pledge as collateral security therefor \$750,000 of its 6 per cent general mortgage bonds.

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS**.—*Asks Authority to Issue Bonds*.—This company has applied to the Interstate Commerce Commission for authority to issue \$3,500,000 of refunding and improvement mortgage 6 per cent bonds to be deposited with the director general of railroads as security for a note for a like amount for additions and betterments which were made during the period of federal control which are to be funded.

**COLORADO & SOUTHERN**.—*Asks Authority to Abandon Line*.—Application has been filed with the Interstate Commerce Commission for a certificate authorizing the abandonment of the line from Buena Vista to Romley, Colo., 29.42 miles, which was built to serve mines that are now closed and which no longer has connection with other parts of the company's line.

**DENVER & RIO GRANDE WESTERN**.—*New Director*.—Bulkeley Wells, of Colorado, has been elected a director.

**EAST ST. LOUIS JUNCTION**.—*Authorized to Issue Promissory Notes*.—The Interstate Commerce Commission has granted authority to issue a demand note to the amount of \$92,000, payable to the St. Louis National Stock Yards with interest at 7 per cent.

**FLINT BELT**.—*Acquisition by Pere Marquette*.—See Pere Marquette.

**GEORGIA RAILROAD & BANKING COMPANY**.—*Asks Authority to Issue Bonds*.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,500,000 of 6 per cent debenture bonds dated October 1, 1921, the proceeds to be used to retire \$1,200,000 of 5 per cent bonds and \$300,000 of 6 per cent bonds. Arrangements have been made for the sale of the bonds at 95 to Spencer, Trask & Co. and William E. Bush & Co.

**GRAND TRUNK**.—*Stock Declared Worthless*.—The common and preferred stocks are described as valueless in the opinion of the majority of an arbitration board appointed to determine what the Dominion Government should pay stockholders because of its purchase of the system. The decision, given by Sir Walter Cassels, chairman of the board, and Sir Thomas White, representative of the government was made public on September 7. William H. Taft, the other member of the board, who heard arguments in the matter before becoming Chief Justice of the United States, dissents. He was selected by the company.

Mr. Taft in his minority decision fixed no value for the stock, but said the shareholders were entitled to some con-

sideration. He said the great mistake of the shareholders was the association of the old company with the construction of the Grand Trunk Pacific.

"Had the policy dictated from London been as wise and efficient as the management in Canada," he said, "the fate of the Grand Trunk would have been different."

It is expected that the Grand Trunk will exercise its right of appeal to the Supreme Court or the Privy Council against the award.

Sir Thomas White announced the following as his conclusions:

1. The actual earning power of the Grand Trunk Railway Company before, during and since the war, and so far as can be estimated for the future, does not justify the assumption that any profits would, from the date of the acquisition by the government of the preference and common shares, namely, May, 1920, ever have been available for distribution to the holders thereof, after providing for the contingent liability of the company in respect of Grand Trunk Pacific securities guaranteed by the company and dividends upon the guarantee stock.

2. Having regard to its own continuing heavy deficits, the necessity for making provision for deferred and extraordinary maintenance and the capital construction, and its heavy liabilities in respect of securities of the Grand Trunk Pacific bearing its guarantee, the Grand Trunk Railway, but for the financial support of the government since May, 1920, must have been forced into receivership.

Upon these conclusions I find that the preference and common stock of the Grand Trunk Railway of Canada has no value. Any question as to the compassionate consideration of the shareholders must be for the government and the Parliament of Canada to deal with and not for this board.

**LIBERTY WHITE.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of this company's line from Liberty to South McComb in the counties of Pike and Amite, Miss. About 25 miles of the line was abandoned two years ago and the certificate authorizes the abandonment of the remaining portion, on the ground that the company has neither funds nor income with which to pay operating expenses or to meet debts already incurred, and the road has been declared by the Mississippi Railroad Commission unsafe for operation.

**MAINE CENTRAL.**—*Acquisition of Belfast & Mooshead Lake.*—See Belfast & Mooshead Lake.

**MICHIGAN CENTRAL.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—*Bond Sale.*—Dillon, Read & Co. have sold an issue of \$10,000,000 ten-year 6½ per cent collateral trust bonds at 99½. The bonds are offered subject to the approval of the Interstate Commerce Commission. They are secured by \$12,500,000 25-year first refunding mortgage 6 per cent bonds, series A, which series is limited to \$15,000,000.

**PENNSYLVANIA.**—*Official Statement Concerning Dividend.*—Accompanying the one per cent quarterly dividend checks mailed to the more than 140,000 stockholders is a note from President Samuel Rea, which says:

A check is enclosed herewith for a dividend of 2 per cent (50 cents a share) upon stock registered in your name. This dividend is at the same quarterly rate as that paid three months ago. Prior to that date for a number of years the quarterly rate was 1½ per cent. The decrease in traffic and the unsettled condition of business generally emphasize the policy of the directors in making this reduction. They felt that, although the dividend has not been earned in the present quarter nor in the portion of the company that has elapsed, yet, having regard for the maintenance of the company's credit, and, therefore, for the best interests of its stockholders, it was desirable to declare a dividend of 1 per cent for the present quarter.

The company also sent to each stockholder an abstract of the answer made to the Railroad Labor Board, which was published in the *Railway Age* of August 27, 1921, page 399.

**PERE MARQUETTE.**—*Authorized to Acquire Control of Flint Belt.*—The Interstate Commerce Commission has authorized the acquisition by this company of control of the Flint Belt by purchase of its capital stock.

**SANTA FE, RATON & DES MOINES.**—*To Be Sold.*—Special Master Robert Lawrence will offer this road for sale at Raton, N. M., on October 18, to satisfy a mortgage held by the United States Mortgage & Trust Company, as trustee, made March 1, 1906, to secure a bond issue of \$1,000,000.

**SOUTHERN.**—*Hearing on Guaranty for Subsidiaries.*—Hearings were held at Washington on September 1, 2 and 3 before Director Colston, of the Bureau of Finance of the Interstate Commerce Commission, on the question of the eligibility of this com-

pany's subsidiaries to a guaranty for the six months following the termination of federal control, in view of the fact that the Southern Railway, the parent company, filed no application for the guaranty, although the subsidiaries did file written acceptance of the guaranty provisions. H. W. Miller, vice-president, gave testimony to the effect that the subsidiary companies were operated separately.

**TEXAS & NEW ORLEANS.**—*Ask Authority to Lease State Road.*—This company has filed an application with the Interstate Commerce Commission for authority to lease for five years the tracks, facilities and appurtenances of the Texas State Railroad, owned by the state of Texas, which extends from Rusk to Palestine, Texas, 32.6 miles. The state authorities were authorized by recent act of the legislature to sell or lease the road. Under the lease proposed the Texas & New Orleans is to pay the board of managers of the road 50 per cent of the net operating income as rental.

**TEXAS & PACIFIC.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the preceding year, as follows:

	1920	1919
Operating revenues (March 1—Dec. 31).....	\$35,112,377	.....
Operating expenses (March 1—Dec. 31).....	31,567,085	.....
Net from railway operations.....	3,545,293	.....
Railway tax accruals.....	1,113,059	.....
Railway operating income.....	2,424,787	.....
U. S. Government—standard return.....	677,748	\$4,107,432
U. S. Government—estimated guaranty, six months to Aug. 31, 1920.....	3,000,000	.....
Gross income.....	6,879,103	4,681,749
Interest on funded debt.....	1,729,870	1,578,180
Total deduction from gross income.....	3,927,188	2,790,868
Net income.....	2,951,915	1,890,881
Appropriated for investment in physical property.....	2,989,564	2,823,250
Income balance.....	Def. 37,649	Def. 932,369

The annual report of the Texas & Pacific will be reviewed editorially in an early issue.

**WESTERN MARYLAND.**—*Asks authority to Issue Bonds.*—Application has been filed with the Interstate Commerce Commission for authority to issue \$1,527,000 of first and refunding mortgage 5 per cent bonds as collateral for a loan of \$1,000,000, for which application has been made to the commission to enable the company to enlarge its elevator facilities at Port Covington, Baltimore.

### Treasury Payments

The Treasury has announced the payment of \$15,000,000 to the Great Northern and \$500 to the Bonlee & Western as partial payments on account of the six months' guaranty and loans from the revolving fund to the following roads:

Charles City Western.....	\$140,000
Great Northern.....	586,000
Main Central.....	400,000
Seaboard Air Line.....	375,000

### Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Denver & Rio Grande.....	\$800,000.00
El Paso & Northwestern.....	400,000.00
Macon Terminal.....	71,362.94
Fort Worth Union Passenger Station.....	4,529.13
Albany Passenger Terminal.....	5,679.12

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

### Dividends Declared

Fonda, Johnston & Gloversville.—Preferred 1½ per cent quarterly, payable September 15 to holders of record September 10.  
 Mobile & Ohio.—Stock trust certificates, 2 per cent, payable October 1.  
 Chicago, St. Paul, Minneapolis & Omaha.—Preferred, 3½ per cent, semi-annually; common, 2½ per cent, semi-annually; both payable September 20 to holders of record September 12.  
 New York Central.—1¼ per cent, quarterly, payable October 1 to holders of record September 30.  
 St. Louis, Rocky Mountain & Pacific.—Common, 1 per cent, quarterly; preferred, 1½ per cent, quarterly; both payable September 30 to holders of record September 19.  
 Cleveland, Cincinnati, Chicago & St. Louis.—Preferred, 1¼ per cent, quarterly, payable October 20 to holders of record September 30.  
 Lehigh Valley.—Common, 1¼ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable October 1 to holders of record September 17.  
 St. Joseph, South Bend & Southern.—Common, 1 per cent, semi-annually; preferred, 2½ per cent, semi-annually; both payable September 15 to holders of record September 10.

# Annual Report

## Michigan Central Railroad Company—Seventy-fifth Annual Report

To the Stockholders of

### THE MICHIGAN CENTRAL RAILROAD COMPANY

The Board of Directors herewith submits its report for the year ended December 31, 1920, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under federal control until 12:01 o'clock, a. m. of the first day of March, 1920, at which time the company resumed the operation of its railroad property. The Board of Directors at its meeting of March 10, 1920, authorized the acceptance on behalf of the company of the guaranty provisions of Section 209 of the Transportation Act, approved February 28, 1920, and such acceptance was filed with the Interstate Commerce Commission before March 31, 1920, as provided by the Act. The effect of this was a railway operating income not less than one-half the amount named in its contract with the Government as annual compensation.

The Interstate Commerce Commission by its order of July 29, 1920, granted an increase, effective August 26, 1920, in freight rates in eastern group territory of 40 per cent and of 3 3/4 per cent between points in eastern group territory and other territories. It also granted an increase in passenger rates of 20 per cent, with a surcharge on Pullman fares of 50 per cent in most instances, they were subsequently allowed under further orders of the Commission.

For the full year 1920 the freight and passenger revenues showed marked advances over the previous year. The return, however, was not as great as the greater part of the tonnage was carried at relatively low rates, and while the increase in total tonnage was 3,626,000 tons. There was a falling off in the shipments of grain, products of agriculture, live stock, fresh meats and packing house products, and forest products and in unclassified merchandise in less than carload lots, aggregating approximately 1,200,000 tons, while there were increases in manufactures and miscellaneous commodities of 1,950,000 tons.

The number of passengers carried during the year increased 510,219, this increase being almost entirely in local passengers. There were 8,314 more passengers than in 1919 and 89,175 fewer commutator passengers. This is reflected in the decrease of 2.85 miles in the average distance each passenger was carried. The increase in passenger rates, however, under order of the Interstate Commerce Commission, increased the average receipts per passenger per mile from 2.848 cents to 3.179 cents.

Before the Interstate Commerce Commission for some time, an order was entered by the Commission in January, 1920, establishing increase rates effective January 1, 1919. Under this order the company received as additional compensation for the period November 1, 1916, to December 31, 1917, approximately \$160,000, while the Railroad Administration received, as its share for the period of federal control, \$485,000.

During and since federal control has been created a situation which is giving the company grave concern. Besides the actual increase in wages granted by the Director General or ordered by the Labor Board there have been expense without compensating return in labor performed.

Under rule 60 of the Shop Crafts Agreement, which provided that employees who are required to check in and out on their own time will be paid an hour extra at the close of each week, and under rule 3 in the same agreement which provides that twenty minutes without loss of pay for lunch, this company incurs a substantial additional annual expense for the abolition of piece work in the shops of the company has also been the cause of heavy additional expense.

The condition of the company's equipment at the end of federal control has caused an unusual outlay of money, which are still under way.

There was a substantial increase in the cost of fuel.

Final settlement of accounts with the Railroad Administration for the period of federal control has not been effected, but the company is actively engaged in the preparation of the data necessary for use in connection with the making of such a settlement.

The settlement with the United States Government for the guaranty period—six months, March to August, 1920—in connection with the guaranty provision of the Transportation Act, is progressing.

The following is a comparative table of the mileage operated:

	1920	1919	Increase
	Miles	Miles	Miles
Main line and branches owned.....	1,186.80	1,182.97	3.83
Line jointly owned.....	71	71	...
Leases.....	578.35	578.35	...
Lines operated under trackage rights.....	100.03	100.03	...
Total road operated.....	1,865.89	1,862.06	3.83

The increase in mileage was on the Air Line Branch in connection with the construction of a cut-off from Air Line Junction to the east end of the new terminal yard at Niles.

Provision was made for financing the cost of 2,000 freight-train cars and 30 locomotives allotted to the company, during federal control, by the Director General of Railroads, all of which have been delivered, through an equipment trust (known as Equipment Trust No. 48) established by an equipment trust agreement dated January 15, 1920, providing for the payment of 75 per cent of the cost of the equipment in the company's 6 per cent equipment notes, dated January 15, 1920, maturing in equal annual installments over a period of 15 years, the balance, pursuant to an agreement, dated January 14, 1920, between the Director General and the company, to be deducted from the equipment depreciation and retirement credits comprising in the company's favor under the standard contract with the Director General. The total cost of the equipment will amount to \$7,025,283. The amount of notes issued is \$5,118,000.

In addition to the equipment allotted to it by and acquired from the Director General of Railroads, the company is to receive from the New York Central Railroad Company, under sub-lease, 26 locomotives, 38 passenger cars and 1,950 freight-train cars covered by that company's equipment trust of 1920. The netted cost of this equipment is \$9,356,838.80 and the sub-lease provides that the sub-lessee shall assume its pro rata share of the equipment trust certificates, principal and interest, and expenses of

the trust and shall pay that part of the cost of the sub-let equipment which is not financed through the trust, and that it shall, upon the fulfillment or arrangement of the company's share of the cost of the equipment sub-let to it. Under this representing approximately 75 per cent of the cost of the equipment, under the trust, \$7,014,971.25. The remainder of the cost, approximately 25 per cent, was obtained from the New York Central Railroad Company as a loan, for which this company issued its fifteen 6 per cent notes, maturing in equal installments, December 23, 1921-35, aggregating \$3,300,000.

On its ten-year 6 per cent promissory note dated December 23, 1920, given in addition and betterments to way and structures, \$613,000.

The changes in the funded debt of the company are shown in the following statement:

The funded debt outstanding on December 31, 1919, was.....		\$77,793,931.13
It has been increased during the year as follows:		
M. C. R. R. Co. Equipment Trust of January 15, 1920, notes.....	\$5,118,000.00	
M. C. R. R. Co. proportion of N. Y. C. R. R. Co. Equipment Trust of April 15, 1920, certificates.....	7,014,971.25	
15 promissory notes of the M. C. R. R. Co. dated December 23, 1920, given to the N. Y. C. R. R. Co., due serially at intervals of one year.....	3,930,000.00	
Ten-year promissory note of the M. C. R. R. Co., dated December 23, 1920, given to the N. Y. C. R. R. Co.....	613,000.00	16,675,971.35

It has been decreased during the year by payment of installments on account of equipment as follows:

N. Y. C. Lines Trust of 1907, due November 1, 1920.....	\$260,425.45
N. Y. C. Lines Trust of 1910, due January 1, 1921.....	393,960.44
N. Y. C. Lines Trust of 1912, due January 1, 1921.....	151,710.90
N. Y. C. Lines Trust of 1913, due January 1, 1921.....	262,359.54
M. C. R. R. Trust of 1915, due October 1, 1920.....	300,000.00
M. C. R. R. Trust of 1917, due March 1, 1920.....	600,000.00
leaving the funded debt outstanding on December 31, 1920.....	\$72,501,446.05

There were nominally issued during the year and pledged as collateral in connection with the ten-year promissory note given to the New York Central Railroad Company for \$613,000, this company's refunding and improvement notes, 6 per cent bonds, series B, for a principal amount of \$507,000.

In addition to the funded debt outstanding on December 31, 1920, the loans and bills payable appearing on the balance sheet are:

Director General of Railroads.....	\$3,050,000
New York Central Railroad Co.....	5,000,000
Total.....	\$8,050,000

The capital stock of the Detroit Toledo & Milwaukee Railroad Company is owned, one-half each, by the Michigan Central Railroad Company and the New York Central Railroad Company. The road of the Detroit, Toledo & Milwaukee Railroad Company originally extended from Dundee, Michigan, to Allegan, Michigan, a distance of 133.14 miles, and under an agreement dated January 1, 1905, provision was made for the operation of an agreement between the company and the Michigan Central Railroad Company and the Michigan Central Railroad Company, a distance of 39 miles, was sold to a traction company, and the Michigan Central Railroad Company and the Lake Shore & Michigan Southern Railroad Company so that the portion assigned to the Michigan Central Railroad Company was the line between Moscow and Battle Creek, a distance of 47.17 miles, and the portion assigned to the Lake Shore & Michigan Southern Railroad Company was the line between Dundee and Moscow, Michigan Central Railroad Company and the New York Central Railroad Toledo & Milwaukee Railroad Company, effective September 1, 1913, for the operation of the road based on the new division of mileage.

The old narrow-gauge across the River Rouge was found to be of insufficient strength and capacity to carry the heavy freight and passenger trains of the Michigan Central Railroad (Toledo Division) and the New York Central Railroad (Detroit Branch) and was being replaced by a double-track Strauss bascule lift bridge of 145-foot span.

Expenditures during the year for improvements on property were as follows:

Improvements on owned property used in operation.....	\$1,584,897.52
Equipment purchased and acquired less equipment retired.....	3,968,898.16
Improvements on leased property.....	155,611.03
Improvements on miscellaneous physical property.....	\$5,709,406.17
Less sale of Detroit lands, etc.....	\$8,346.32
A net credit of.....	4,007.12
The net increase in property investment during the year 1920 was.....	\$5,663,320.50

In the operation of the Pension Department 53 employees were retired and placed upon the pension rolls. Of these retirements, 36 were authorized because of the attainment of seventy years of age, and 17 because of permanent physical disability. The number of pensioners who died during 1920 was 48. The number of retiree employees upon the pension rolls at the close of the year was 374. The average monthly pension allowance was \$37.20. The total amount paid in pensions during the year was \$126,901.21.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME	Year ended	Year ended	Increase	Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration .....	53,708.47	2,428,203.27	—2,374,494.80
	Dec. 31, 1920	Dec. 31, 1919					
Compensation accrued for the possession, use and control of the property of this company and its leased lines, as stated in contract with the Director General of Railroads—January 1 to February 29, inclusive .....							
Additional compensation accrued account completed additions and betterments—January 1 to February 29, inclusive.....	1,342,021.26						
Guaranteed net railway operating income under section 209 of Transportation Act of 1920—March 1 to August 31, inclusive .....							
Less operating income items audited March 1 to August 31, inclusive, applicable to the period prior to January 1, 1918 .....							
Net railway operating income—corporate account—September 1 to December 31, inclusive.....	4,162,855.38						
Total (compared with compensation accrued in 1919 under contract with Director General of Railroads) .....	\$10,508,669.75	\$8,699,812.56	\$1,808,857.19				
<b>MISCELLANEOUS OPERATIONS</b>							
Revenues .....	\$139,827.63		\$139,827.63				
Expenses .....	82,338.15		82,338.15				
NET INCOME .....	\$57,489.48		\$57,489.48				
<b>OTHER INCOME</b>							
Income from lease of road.....	\$151.25	\$3,380.34	—\$3,229.09				
Miscellaneous rent income.....	5,845.61	14,161.59	—8,315.98				
Miscellaneous non-operating physical property .....	5,095.85	5,341.01	—245.16				
Dividend income .....	498,305.04	497,218.28	1,086.76				
Income from funded securities.....	54,064.68	54,937.86	—873.18				
Income from unfunded securities and accounts.....	563,495.98	279,355.10	284,140.88				
Miscellaneous income .....	2,875.05	3,793.00	—917.95				
TOTAL OTHER INCOME .....	\$1,129,833.46	\$858,187.18	\$271,646.28				
GROSS INCOME .....	\$11,695,992.69	\$9,557,999.74	\$2,137,992.95				
<b>DEDUCTIONS FROM GROSS INCOME</b>							
Rent for leased roads.....	\$2,774,791.59	\$2,783,598.46	—\$8,806.87				
Miscellaneous rents .....	4,119.35	8,113.86	—3,994.51				
Miscellaneous tax accruals.....	6,734.49	7,421.76	—687.27				
Separately operated properties—loss .....	132,438.11	57,577.60	74,860.51				
Interest on funded debt.....	3,059,383.17	2,389,972.30	669,410.87				
Interest on unfunded debt.....	1,668,605.49	1,615,304.29	53,301.20				
Amortization of discount on funded debt .....	59,068.79	30,934.77	28,134.02				
Maintenance of investment organization .....	1,317.50	2,344.54	—1,027.04				
War taxes .....	92,000.00	719.59	91,280.41				
Miscellaneous income charges.....	8,971.22	19,880.39	—10,909.17				
Corporate general expenses.....	29,069.27	146,699.41	—117,630.14				
TOTAL DEDUCTIONS FROM GROSS INCOME .....	\$7,836,498.98	\$7,062,566.97	\$773,932.01				
NET INCOME .....	\$3,859,493.71	\$2,495,432.77	\$1,364,060.94				
<b>DISPOSITION OF NET INCOME</b>							
Dividends declared (4 per cent each year) .....	\$749,456.00	*	\$749,456.00				
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS .....	\$3,056,329.24	\$67,229.50	\$2,989,099.74				
*Dividends in 1919, aggregating 4 per cent, charged to accumulated surplus.							
<b>BALANCE OF CREDIT OF PROFIT AND LOSS (FREE SURPLUS) ON DECEMBER 31, 1919.....</b>							\$17,512,018.33
<b>ADDITIONS:</b>							
Surplus for the year 1920.....			\$3,056,329.24				
Profit on road and equipment sold.....			234,114.37				
Profit realized on sale of so-called Detroit Lands .....			197,843.12				
Unrefundable overcharges .....			9,839.77				
Road property retired by United States Government and not replaced, originally charged to operating expenses.....			17,198.87				3,515,325.37
DEDUCTIONS:							
Depreciation prior to July 1, 1907, on equipment retired during 1920.....			\$151,533.99				
Road property abandoned .....			35,721.26				
Various adjustments of accounts (net).....			8,111.83				195,367.08
<b>BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1920 .....</b>							\$20,831,976.62

In order to preserve continuity of comparisons, operating revenues, operating expenses and other statistics have been separately shown in detail elsewhere in this report for the full calendar year 1920 regardless of federal control, guaranty period or corporate operation.

The income to the corporation, arrived at by the addition of compensation received under federal control, the guaranteed net railway operating income under Section 209 of the Transportation Act of 1920, and the net railway operating income for the four months September to December, 1920, inclusive, was more by \$1,808,857.19 than that received as compensation from the United States Government during the federal control year 1919. During 1920 the results of operation of the stockyards at East Buffalo were included in miscellaneous operations while in 1919 they were included in the operating revenue and expense accounts. This is the cause of the increase shown in miscellaneous operations.

The increase of \$284,140.88 in the income from unfunded securities and accounts is largely due to interest received from temporary investment, in United States Treasury Certificates and other securities, of cash, from the sale of equipment trust certificates of April 15, 1920, until such time as the funds were required to pay for new equipment.

Largely contributing to the increase of \$74,860.51 in charges for loss in connection with separately operated properties is this company's proportion of an increased deficit from operation of the Indiana Harbor Belt Railroad. The increase of \$669,410.87 in interest on funded debt is due to the increase of such debt as noted elsewhere in this report, while the increase of \$53,301.20 in interest on unfunded debt is mainly in connection with United States Government accounts.

The increase of \$91,280.41 in war taxes is due to the accrual of the company's proportion of federal income tax on the taxable income of the company for the eight months of 1920 ending August 31. This tax for the last four months of the year was included in railway tax accruals. The net income of the company was not taxable in the year 1919.

The corporate general expenses shown for 1920 represent only those for the months of January and February, during which the property was under federal control, expenditures of this character for the remainder of the year being included in operating expenses. This accounts for the decrease of \$117,630.14, as shown.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient cooperation and service.

For the Board of Directors,  
ALFRED H. SMITH, President.

[ADVERTISEMENT]



Reproduced by courtesy of the Guaranty Trust Company

The Krupp Works, Essen, Germany

## Railway Officers

### Executive

**J. G. Torian**, supervisor of wages of Morgan's Louisiana & Texas, has been appointed assistant to the vice-president and general manager with headquarters at Houston, Texas. Mr. Torian will continue in the same duties as heretofore and the position of supervisor of wages has been abolished.

### Financial, Legal and Accounting

**G. A. Godfrey**, assistant auditor of revenues of the Grand Trunk, Canadian lines, with headquarters at Montreal, has been appointed acting auditor of revenues of the Grand Trunk, Western lines, with headquarters at Detroit, Mich.

**J. E. Murphy** has been appointed auditor of equipment service accounts of the New York, New Haven & Hartford with headquarters at New Haven, Conn., with jurisdiction over all car accounting and M. C. B. matters, succeeding G. H. Staehle, car accountant, deceased.

### Operating

**Harry T. Kinney**, trainmaster of the Susquehanna and Tioga divisions of the Erie, with office at Elmira, N. Y., has been appointed superintendent of the Wyoming division and of the Wilkes-Barre & Eastern Railroad, with headquarters at Dunmore, Pa., succeeding A. D. Parsons, resigned. **Paul W. Johnson** succeeds Mr. Kinney as trainmaster of the Susquehanna and Tioga divisions.

**C. W. Coe**, whose appointment as assistant general manager of the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, was announced in the *Railway Age* of September 3 (page 471), was born at Norwalk, Ohio, August 6, 1867. He entered railroad service in June, 1887, as a fireman for the Wheeling & Lake Erie. He was promoted to locomotive engineer in April, 1891, which position he held until February 1903, when he was advanced to road foreman of engines. In September, 1904, he was promoted to trainmaster, and one year later to assistant superintendent, serving in that position until 1906, when he was appointed superintendent of the Toledo division, being transferred later to the Toledo and the Cleveland divisions. In April, 1919, he was promoted to general superintendent of the Wheeling & Lake Erie, which position he held until August 15, 1921, when his recent promotion to assistant general manager became effective.

**Ernesto O. Y. Llano**, whose promotion to general manager of the National Railways of Mexico, with headquarters at Mexico City, was announced in the *Railway Age* of August 13 (page 316), was born at Ahualulco, Mexico, on October 28, 1880. He entered railway service in June, 1898, with the Mexican Central which company he served as operator and station agent until 1900, when he entered the employment of the Chihuahua & Pacific as an operator and station agent. From 1902 to 1905 he held the positions of chief dispatcher, and chief clerk to the superintendent of the Chihuahua & Pacific. In November, 1905, he entered the service of the Nacozari Railroad at Nacozari, Sonora, as chief dispatcher and in 1907 was promoted to train master and acting superintendent. He remained as acting superintendent until August, 1912, when he was promoted to general superintendent in which position he was serving at the time of his recent appointment.

### Traffic

**W. H. Cobb** has been appointed commercial agent of the Atlantic Coast Line, with headquarters at Fayetteville, N. C. and **H. H. Elliott** has been appointed commercial agent, with headquarters at Wilmington, N. C.

**W. J. Murray** has been appointed commercial agent of the Erie with headquarters at New Haven, Conn., effective September 1.

**C. A. Swope** has been appointed general eastern freight agent of the Louisville & Nashville, with headquarters at New York, effective September 1.

**R. D. McGrath** has been appointed commercial agent of the Louisiana & Arkansas, with headquarters at Kansas City, Mo., succeeding L. W. Gent, resigned.

**B. Levy** has been appointed assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at San Francisco, Cal., effective September 1.

**G. B. Bush**, formerly general traffic manager of the Raleigh Coal & Coke Company, Cincinnati, O., has been appointed coal service agent of the Chesapeake & Ohio.

**T. S. Davant, Jr.**, has been appointed soliciting freight agent of the Winston-Salem Southbound, with headquarters at Winston-Salem, N. C., effective September 1.

**S. H. Cummings**, coal service agent, has been promoted to assistant coal freight agent, in charge of west-bound coal and coke traffic, with headquarters at Cincinnati, Ohio.

**E. L. Blanford**, traveling freight agent of the Louisville & Nashville, with headquarters at Pittsburgh, has been promoted to commercial agent of the same road, with headquarters at New York, effective September 1.

**O. E. Lowry** has been appointed assistant general freight agent of the Chesapeake & Ohio, in charge of the tariff bureau, with headquarters at Richmond, Va., succeeding **H. S. Smith**, who has been appointed coal freight agent in charge of all coal and coke traffic, with headquarters at Richmond.

**C. D. Thomas** has been appointed assistant general freight agent of the Southern with headquarters at Cincinnati, Ohio, effective September 1. **F. E. Godfrey**, assistant general freight agent, will henceforth perform the duties hitherto assigned to **C. H. Pearson**, assistant general freight agent, who has been appointed a member of the Southern Freight Rate Committee.

**Frank P. Barr**, whose appointment as general traffic manager of the Wheeling & Lake Erie was announced in the *Railway Age* of September 3 (page 471), was born on April 5, 1878, at Canton, Ohio, and was educated in the public schools of that city. He entered railroad service on July 1, 1895, as a clerk in the car record office of the Cleveland, Canton & Southern, which road was absorbed four years later by the Wheeling & Lake Erie. Mr. Barr was appointed chief clerk in the car record office of the Wheeling & Lake Erie in February, 1906, and was promoted to car accountant in May, 1907. He was next promoted to superintendent of car service in July, 1908, in which position he served for four years, when on May 1, 1912, he was promoted to superintendent of transportation. In February, 1918, he was appointed assistant to the general manager, and he served as assistant to the federal manager during federal control. On March 1, 1920, he was appointed assistant general manager, which position he held until the time of his recent promotion.

**E. L. Hukill**, traveling representative of the assistant general manager of the New York Central, has been appointed traffic manager of the Cleveland, Southwestern & Columbus, with headquarters at Cleveland, Ohio. Mr. Hukill was born at Newark, Ohio, on August 8, 1889, and entered railroad service in March, 1906, as a yard clerk on the Baltimore & Ohio at Sandusky, Ohio. In August, 1907, he was employed by the Lake Shore & Michigan Southern in the accounting department at Chicago, and in November of the following year he returned to Sandusky as a clerk in the local freight office. He was promoted to chief clerk to the terminal yard master at Toledo, Ohio in June, 1913, and in September, 1914, he was appointed soliciting freight agent of the New York Central with the same headquarters. From September, 1918, to March, 1921, he served as traveling representative of the general superintendent. On the latter date he was appointed traveling representative of the assistant general manager and

was serving in this position at the time of his recent appointment.

### Mechanical

**S. T. Depue** has been appointed master mechanic of the Kent division of the Erie, succeeding R. V. Bloeker, resigned. Mr. Depue has been succeeded as shop superintendent at Galion, O., by **H. W. Sasser**.

**B. A. Orland** has been appointed master mechanic of the Mobile & Ohio with headquarters at Murphysboro, Ill., effective September 1. Mr. Orland's jurisdiction will extend from East St. Louis, Ill., to Tamms, Ill.

**J. C. Nolan**, superintendent of the Texas division of the Gulf Coast Lines with headquarters at Kingsville, Tex., has been appointed mechanical superintendent with the same headquarters, succeeding J. L. Lavallee, resigned. **J. E. Callahan**, superintendent of the Louisiana division with headquarters at De Quincy, La., has succeeded Mr. Nolan as superintendent of the Texas division and **G. C. Kennedy** has succeeded Mr. Callahan as superintendent of the Louisiana division.

### Engineering, Maintenance of Way and Signaling

**W. C. Kelly**, electrical foreman on the St. Louis division of the Illinois Central, with headquarters at Centralia, Ill., has resigned to become assistant electrical engineer of the Central of Georgia, with headquarters at Macon, Ga.

**E. I. Rogers**, whose appointment as chief engineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., was announced in the *Railway Age* of August 20 (page 390), was born at St. Joseph, Mo., on August 3, 1876, and entered railway service as a track apprentice on the Illinois Central in 1897. From January, 1898, to June, 1903, he served as an instrumentman on the Tennessee division of the Illinois Central, and on the latter date was promoted to assistant engineer, with headquarters at Memphis, Tenn. He served in this position until October, 1911, when he was promoted to roadmaster, with headquarters at Vicksburg, Miss. A year later, Mr. Rogers left the service of the Illinois Central to become chief engineer of the Muskogee, Oklahoma & Gulf, with headquarters at Muskogee, Okla., and later became associated with the Lorimer & Gallaher Construction Company. From August, 1914, to February, 1916, he served as chief engineer of the Texas City Transit Company, and in July of that year he returned to the Illinois Central as an engineer in the valuation department. He was appointed assistant roadmaster, with headquarters at Fort Dodge, Ia., later in the same month, and in October, 1916, he was promoted to roadmaster, with the same headquarters. He was serving in this position at the time of his recent appointment.



E. I. Rogers

**E. J. Bayer**, whose appointment as engineer maintenance of way of the Evansville, Indianapolis & Terre Haute, with headquarters at Washington, Ind., was announced in the *Railway Age* of August 13 (page 317), was born at Cincinnati, Ohio, on April 1, 1888. He was educated at Purdue University and entered railroad service on July 5, 1910, with the Cleveland, Cincinnati, Chicago & St. Louis at Mt. Carmel, Ill. His entire railroad career has been spent in the service of this

company. From 1911 to 1914 he served as an assistant in the engineering corps at Indianapolis, Ind., Mattoon, Ill., and Galion, Ohio. He was promoted to assistant engineer maintenance of way with headquarters at Indianapolis on October 15, 1914, and also served in that position at Wabash, Ind., and Galion, Ohio, until June 24, 1918. On the latter date he was appointed acting engineer maintenance of way of the Cairo division, with headquarters at Mt. Carmel, Ill. He was transferred to Galion as assistant engineer maintenance of way of the Cleveland-Indianapolis division on August 1, 1919, and was serving in that position at the time of his recent appointment.

**J. W. Williams**, whose appointment as chief engineer of the Western Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of August 27 (page 430), was born at Milan, Ohio, in 1879. He entered railroad service in 1897 as a stakeman on an engineering corps of the Albuquerque Eastern, on location surveys in New Mexico. He was employed by this company on location and construction work until April, 1903, when he entered the employ of the Atchison, Topeka & Santa Fe as a transitman on location surveys. He was later promoted to assistant engineer in charge of location surveys and construction in Northern California, where he remained until 1906, when he was appointed acting chief engineer of the San Francisco & Northwestern, with headquarters at San Francisco, Cal. In 1907, when the Northwestern Pacific was formed, Mr. Williams was appointed assistant chief engineer, having charge of field work on the construction of a line through the Eel river canyon, which position he held until July, 1914, when he was promoted to chief engineer of construction of the Northwestern Pacific to succeed W. D. Edes. During the war he served as major of the first battalion, Eighteenth Engineers, and was in France for nearly two years, later being commissioned lieutenant colonel. Upon discharge from military service in July, 1919, he re-entered the service of the Northwestern Pacific, as chief engineer in charge of construction and maintenance and held this position until August 15, 1921, when he was appointed chief engineer of the Western Pacific.



J. W. Williams

### Purchasing and Stores

**J. M. Velasco**, assistant general purchasing agent of the National Railways of Mexico, with headquarters at New York, has been appointed purchasing agent with headquarters at Mexico City. **W. L. Wibel** succeeds Mr. Velasco at New York.

### Obituary

**George L. Connor**, formerly passenger traffic manager of the New York, New Haven & Hartford, died at New Haven, Conn., on September 3. Mr. Connor was born on August 23, 1846, in Brooklyn, N. Y. He entered traffic work in 1868 as a clerk in the treasurer's office of the Narragansett Steamship Company and served in various positions in the traffic department of steamship companies until 1893, when he resigned as general passenger agent of the Old Colony Steamboat Company and the Old Colony Railroad (now a part of the New Haven) to become passenger traffic manager of the New York, New Haven & Hartford, in which position he served until the time of his retirement in 1908.

# Railway Age

Vol. 71 September 17, 1921 No. 12



120-Ton Cars in Princeton Yard on the Virginian.

## Contents

### Lining the Canadian Pacific's Five-Mile Tunnel ..... Page 525

Highly Interesting Equipment and Method Furnish Effective Treatment of Huge Undertaking.

### Northwestern Pacific's Experience With Third-Rail ..... 531

Five Men Maintain 37 Miles of Contact System at an Annual Cost of from \$87 to \$145 Per Mile.

### Informal Meeting of Traveling Engineers ..... 533

Conservation of Supplies and Operation of Locomotive Devices Discussed—Other Reports. Including That on the Hiring and Educating of Enginemen Will Appear in a Later Issue.

#### EDITORIALS

Power Supply for Automatic Block Signals .....	517
Portable Equipment for Handling Bulk Material .....	517
Does Water Softening Pay? .....	517
Securing Good Results With Concrete .....	517
Converting Road Engines to Switchers .....	518
Straightforward, Businesslike Methods .....	518
Mr. Hoover and Railway Supplies .....	518
Third-Rail Current Collection .....	518
Rust-Resisting Plates for Cars .....	518
Reorganizing the Railways of Britain .....	519
Record Breaking Grain Traffic .....	519
English Bridge Engineers Consider American Practice .....	519
Improve the Quality of Repair Work .....	520
Robbing Peter to Pay Paul .....	520

#### LETTERS TO THE EDITOR

A Question, by A. L. De Leeuw .....	521
The Mechanical Associations .....	521
Keeping Turntables Open in Winter, by E. R. Lewis .....	522
Unnecessary Transferring of Loaded Cars, by R. R. Farmer .....	522
Railroads as Manufacturers, by G. M. Basford .....	522

Railroad Opportunities as Seen by a College Student .....	523
Non-Interlocked Railroad Crossings, by C. A. Christoffersen .....	523
The Protection of Highway Crossings, by C. Adler, Jr. ....	524
Are Derails Necessary? .....	524

#### GENERAL ARTICLES

Lining the Canadian Pacific's Five-Mile Tunnel .....	525
Tentative Valuation, Chicago, Rock Island & Pacific .....	527
Freight Car Loading .....	528
Post Office Seeks to Co-operate With Railroads .....	529
Railroad Administration Begins Sale of Equipment Trusts .....	530
Northwestern Pacific Experience With Third-Rail .....	531
Short Line Association to Hold Regional Meetings .....	532
Informal Meeting of Traveling Engineers .....	533
New Design of Position-Light Signal .....	538
Two Western Roads Secure Excellent Results from Water Treatment .....	540
"For Politics Only" .....	540
Labor Board Hears New York Central Dispute .....	541
A Heavy Duty Trailer .....	542
Flexible Metallic Packing .....	542
GENERAL NEWS DEPARTMENT .....	543

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SIEMERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building

CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Urrsigmecc, London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON	A. F. STUBING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	K. E. NELLEMBERGER	J. E. COLE
R. E. THAYER	ALFRED G. OEHLEH	J. G. LANE
C. B. PECK	F. W. KRABER	J. H. DUNN
W. S. LACIER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

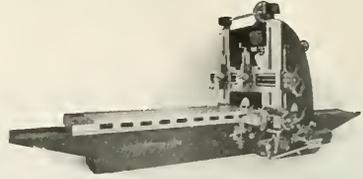
The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free United States, Mexico and Canada, \$3.00. Foreign Countries (excepting daily editions), \$10.00 £2 0s. 0d. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 9,000 copies were printed; that of these 9,000 copies, 8,000 were mailed to regular paid subscribers, 53 were provided for counter and news company sales, 345 were mailed to advertisers, 65 were mailed to employees and correspondents, and 491 were provided for new subscriptions, sample copies lost in the mail and other use; that the total copies printed this year to date were 356,100, an average of 9,604 copies a week.



Selective Head Engine Lathe



Multispeed Planer

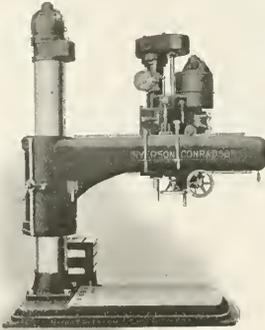
## Save Roundhouse Time

Machinist's time is more valuable in a roundhouse than in the back shop, because usually the work is wanted in a hurry.

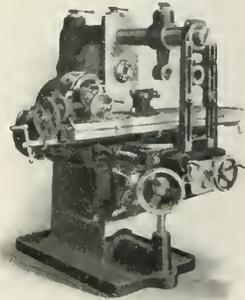
Because of their ample capacity and wide range of utility Ryerson-Conradson Railroad machine tools speed up roundhouse work and shorten the time locomotives are held for repairs.

Each tool is designed for railroad work, driven direct by motor, with liberally designed parts and bearings to take the gruelling jobs typical of railroad emergencies.

Know about these latest developments in machine tool design. Ask us.



Twin Motor Driven Radial Drill



No. 2 Universal Milling Machine

## JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

When considering the approval of estimates for signal improvements, railroad officers should take into consideration that the problem of an efficient signal power supply is changing constantly.

### Power Supply for Automatic Block Signals

The signal engineer must keep informed as to the fluctuating prices of commercial power, primary battery renewals and storage batteries, together with the cost of labor required with each of the three systems. Because of the completion of a new transmission line, that offers an excellent power supply for an alternating current system of signals, it may be desirable to revise plans for a project that had been previously developed as a straight direct current proposition. On a certain proposed installation the original estimate called for alternating current apparatus, but during the past season it was found that the local hydro-electric power company could not offer continuous service. As a result, a direct current system is being considered as the most reliable. Because the circumstances are changing from time to time it would seem advisable that the signal engineer be allowed to reconsider any estimate for a proposed signal installation that has been held up for six months or longer.

A large part of the traffic moved by the railways consists of loose bulk materials, such as sand, stone, coal, ore, grain, etc. The importance of handling such

### Portable Equipment for Handling Bulk Material

materials into and out of cars in a minimum of time is fully recognized. As a result suitable loading and unloading devices are, as a rule, provided in

localities where such commodities are handled in large quantities. There are numerous other localities, however, where the amounts of bulk materials handled are too small to warrant the installation of expensive special fixed equipment. As a consequence inefficient means are often employed in the loading and unloading of cars at these less important points. Under such conditions portable loading and unloading devices which may be easily moved from place to place have proved advantageous in many instances. Such apparatus can be employed more or less constantly and in a number of ways. Probably one of the most widely used of such machines is the locomotive crane. It loads or unloads open-top equipment with equal facility and when the occasion for such service is temporarily past it readily can be utilized in other ways. While the locomotive crane is perhaps more easily adapted to general service than certain other portable loaders and unloaders, all such apparatus offers important advantages which should not be lost sight of in the choice of equipment for such localities.

How many officers are there who, having had called to their attention some incident or obligation in connecting with the performance, operation or upkeep of

### Does Water Softening Pay?

water softening plants which saves more of expense than of economy or benefit, have not asked themselves the question—does water softening pay?

The storekeeper encounters a multitude of requisitions calling for expensive chemicals in car-load lots and, as has oc-

curred in not a few cases, he notes the increased demand upon a stock which, following the introduction of water softening, he had supposed would be needed less—the boiler compound. The superintendent has perhaps had called to his attention the amount of labor involved in keeping the plant stocked with supplies and the expense of operation and repair. He has perhaps encountered a vexing problem of sludge disposal at some points, or has been confronted with the necessity of removing accumulated sediment from one or more of his wayside tanks, or perhaps even of removing the incrustation from an entire underground piping system. Again local officers of the mechanical department unacquainted with pre-softening days or irritated by the restrictions placed upon their use of this or that water, continue to find cause for complaint about water, and finally the higher officer, hearing all this cannot but ask himself whether or not the water softening pays. It is a fair question which merits a fair answer. What then of the report appearing elsewhere in this issue that in one year water softening netted one railroad a saving of 190 per cent on the investment, and another railroad 120 per cent on an investment of more than \$200,000? Manifestly this is a performance which if true, or even partially true, supplies an eloquent answer at least to the question—can water softening pay—and thereby makes it a matter seemingly largely dependent on the railroad itself whether or not the process does pay.

A recent investigation of a concrete building failure disclosed the remarkable fact that it is apparently impossible to produce a concrete of a greater strength than 1,000 lb. per sq. in. at 28 days with the materials used because of wide variation in the results secured with the concrete materials available in

### Securing Good Results With Concrete

railroad work. Railway bridge engineers as a rule are inclined to be more conservative in their designs than are the engineers engaged in concrete building construction. They realize that good results in concrete work demand definite compliance with certain established requirements. Until within the last 10 or 15 years, failures or defects in concrete structures were commonly ascribed to poor cement and there is no denying that the cement was sometimes responsible. But it is now definitely established that nearly all objectionable conditions may be correctly explained by defects in the workmanship or in the materials other than the cement. The requisites for good results are now being established rapidly. They concern the quality of the materials, the proportions including the amount of water used, the thoroughness of the mixing and the protection afforded the concrete after it has been placed in the forms. Nearly all of these conditions are well under the control of the engineer with the possible exception of the selection of materials in which the questions of cost, length of haul, location on company's line and traffic considerations may sometimes enter with varying degrees of influence. Engineers responsible for concrete construction should impress their superiors with the fact that concrete structures in most cases are justified only through their high degree of permanence and that the problem is not one of obtaining permanence in 90 per cent of the structures built, but in a proportion that is as nearly 100 per cent as reasonable expenditures will make possible.

Some roads have made a practice of obtaining a large proportion of their requirements for switch engines by rebuilding old freight locomotives. Other roads

### Converting Road Engines to Switchers

have tried to keep locomotives in freight service until they are worn out and buy whatever new switching power they need. While the amount of local service will be a factor in determining which practice is advisable, the rebuilding of old power into switchers apparently has numerous advantages. A six-wheel switch engine costs about two-thirds as much as a Mikado locomotive. If a road, instead of buying switchers, spends the same amount for Mikados, these locomotives should release from freight service about as many locomotives as could have been bought new had the money been spent for switching power. If the locomotives to be converted were ready for retirement, the real cost of the Mikados in effect, therefore, would be only the cost of conversion. It would therefore pay to spend a considerable amount to make a thoroughly good switch engine from the old power. Under certain conditions it may be advisable to convert locomotives that are still good for a number of years in road service. This provides an opportunity for getting rid of locomotives that are poor steamers or have troublesome mechanical defects and, furthermore, enables the road to acquire efficient locomotives for road service more rapidly than would otherwise be possible.

Of the many failures in small business enterprises there is no question but that a very large proportion are the result of unbusinesslike methods—of deliveries behind time, goods not up to sample, inaccurate rendering of bills and a reluctance to adjust differences promptly. It is also clear that the

### Straightforward, Businesslike Methods

same conditions have been responsible for much of the unfavorable attitude of the public towards the railroads and other utility companies. In view of the efforts being made by the railroads at the present time to gain the sympathy and respect of the public, it is unfortunate, to say the least, if some railroads are guilty of unbusinesslike practices in their relations to the shipper and traveler. One grievance in this connection which has been brought to our notice arises from frequent inaccuracies in freight bills and the difficulty which the shipper encounters in securing adjustments of overcharges. This condition has been sufficiently prevalent to cause the formation of freight rate adjustment agencies to handle such cases for the shipper, who is charged very large commissions on all recoveries made. Surely this condition is not conducive to good will. In the first place, the billing by the railroad companies should be so accurate as to give rise to very few complaints, and in the second place, any proper claims should be speedily adjusted. When one considers the wonderful success obtained by some of the large department stores which have been operated on the principle that "the customer is always right," it would seem that the railroads should carefully review their present practices in regard to billing and adjustments for inaccuracies.

The Bureau of Foreign and Domestic Commerce is being reorganized by Secretary Hoover on a commodity basis and at the head of each division he is placing

### Mr. Hoover and Railway Supplies

an expert in the fields of commerce in that commodity. Thus far eleven such divisions have been formed. They are prepared to extend expert aid to American concerns interested in foreign commerce in iron and steel, lumber, industrial machinery, electrical equipment and supplies, foodstuffs, automotive equipment, fuels, textiles, shoes and leather products, agricultural implements

and vehicles and rubber products. Each of these divisions is expected to keep in close touch with trade associations in its branch of industry and to extend every legitimate aid toward the development of our foreign commerce in that commodity. There can be no question of the soundness of such plans. Mr. Hoover is to be congratulated upon the manner in which he has undertaken to make his department of real service to the business community. It is to be hoped that more and more of these commodity divisions will be opened from time to time. To be more specific, when will a division of railway equipment and supplies be organized? Foreign sales of these commodities in 1920 ranked high in the list of our most important exports. The decrease in our exports of these materials during the current year shows that there is a genuine need for such assistance as Mr. Hoover is in a position to give. The trade associations in the industry would doubtless give their hearty co-operation and could assist in obtaining a well-equipped personnel for the new division. There should be no unnecessary delay in extending this service to the railway equipment industry.

The successful operation and low maintenance cost of the third-rail contact system used on the Northwestern Pacific, as described in an article in this issue, is useful information. Actual operating experiences, including mistakes as well as successes, are told in a straightforward manner with no attempt at coloring the facts. Costs are given which are very low. In justice to other contact systems, however, it should be stated that the third-rail will probably be used to a very limited extent on railroads in the United States that will adopt electric operation in the future. Its use will doubtless be limited to certain tunnel operations and to private right-of-way where traffic conditions make 600-volt direct current power the most desirable. Direct current at 3,000 volts or alternating current at 11,000 volts can meet the requirements of hauling heavy trains long distances, but it is not a practicable possibility to collect such power from a third rail. The French Commission on Electric Traction has decided on 1,500-volt direct current for the French State Railways, but it is suitable only for comparatively light traffic and a 1,500-volt third-rail, discounting insulation difficulties, should not be used even on a private right-of-way because of its danger to life. Furthermore, danger to life and danger of personal injury are not due only to the high voltage. A big freight yard full of third-rails in which switchmen get on and off of moving cars is something to stagger the imagination.

### Third-Rail Current Collection

At the time steel cars were first introduced, the prediction was made that they would have an indefinitely long life. Experience has shown that this is not the case. The plates have failed after comparatively short service due to corrosion, necessitating costly repairs and in some cases complete rebuilding of the car body. Rapid deterioration due to rust is not confined to railroad equipment and engineers have given the subject attention for some time. An investigation which sheds new light on this matter has been conducted by a committee of the American Society for Testing Materials. This committee started a series of tests of sheets of various chemical compositions in 1916. Plates were exposed in three characters of atmosphere: in the industrial air of Pittsburgh, Pa., the pure air of an inland district at Fort Sheridan, Ill., and the salt air at Annapolis, Md. Practically all classes of iron and steel were included in the tests, which have now progressed to a point that enables definite conclusions to be drawn. It has been found that the presence of copper in

### Rust-Resisting Plates for Cars

amounts as low as one-tenth of one per cent causes a marked decrease in the rate of corrosion. These tests are sufficiently conclusive to warrant the expectation of much longer life from copper bearing sheets than from plain sheets used in car construction. The increase in cost is said to be comparatively small. The work already done is valuable and should go a long way toward a correct solution of the problem. However, the expenditures for equipment are so great that thorough investigation should be carried on and every promising method of reducing corrosion tried until the most economical material is found.

With the grouping of all the railways of Great Britain into four large systems, changes in organization will doubtless be necessary.

### Reorganizing the Railways of Britain

The present organization of the companies is departmental, centralized in the general manager to whom the heads of the various departments—operating, traffic, mechanical, engineering, etc.—report. There is no question but that this form of organization has in the past proved highly successful and probably no one would venture to suggest a change were it not that with greatly enlarged systems the general managers will not be able to give the same attention to detail as heretofore. The eight principal railways which go to make up the North Western group, for instance, aggregate 7,326 miles of main line,—a good sized railway even from an American point of view. The average length of the constituent railways, however, is now only a little more than 900 miles. Obviously the enlarged systems cannot reasonably expect the same accomplishment from a highly centralized management that the smaller companies can. The Railway Gazette (London) suggests as a possible solution the adoption, with certain modifications, of the form of organization in use in this country. The plan proposed provides for a president and, reporting to him, three vice-presidents. The first of these would be the “manufacturer of transport,” and would be in charge of the operating, mechanical and engineering departments; the second, the “seller of transport,” would be in charge of freight and passenger traffic; and the third, the “financial controller,” would direct the affairs of the financial, legal, accounting and real estate departments. Some such plan as the one proposed will probably be adopted eventually and the study of this problem is quite as important as many others which the British railways must solve. American experience in railway organization will doubtless be of great value to those who are undertaking this task.

### Record Breaking Grain Traffic

THE RAILROADS have made a wonderful record during the past few weeks in the handling of the grain movement, which has exceeded in volume that for the corresponding period of any previous year. For the eight weeks ending August 27 the loading of grain and grain products was 465,839 cars, as compared with 302,623 in the corresponding period of 1920 and 381,736 in 1919, and from January 1 to August 27 this year 1,486,954 cars were loaded with grain and grain products, as compared with 1,195,485 in the corresponding period of 1920 and 1,424,416 in 1919.

The fact that this heavy early movement has been handled practically without complaint of car shortage is due not only to the lessened demand for box cars for other kinds of traffic this year, but more particularly to the careful plans made to avoid a car shortage which it was feared might develop because so large a percentage of the cars are in bad order. On August 15 there were 16.6 per cent of all the freight cars in bad order and 18.2 per cent of the box cars. The plan of campaign adopted was to exert unusual efforts to confine the

cars that were fit for grain in the grain traffic and to keep them from being diverted to other traffic, which might necessitate re-coopering, if not more extensive repairs, before they could be used again for grain. Officials and inspectors both of the Car Service Division of the American Railway Association and of the Service Bureau of the Interstate Commerce Commission have been stationed at the principal centers of grain traffic and by persistent efforts to bring about an adherence to car service rules, have managed to accomplish practically a shuttle service between the grain fields and the elevators, which has enabled the record-breaking traffic to be moved with unusual expedition.

In addition to the fact that the crop in the southwest ripened this year a little earlier than usual, it is understood that the grain producers have been hurrying their shipments to market to realize the cash as early as possible. Secretary Hoover of the Department of Commerce is quoted as saying that the unprecedented exports of wheat during August should react favorably on agricultural and business conditions throughout the country, and should particularly ease the credit situation in the grain territory. The movement so early of so large a portion of the year's crop should also relieve to a very considerable extent the strain which is usually felt by the railroads during the fall months. On August 31 they still had a surplus of 68,938 servicable grain cars and in eight months of this year the roads have moved 81 per cent of the amount of grain they moved in 12 months of 1920.

### English Bridge Engineers Consider American Practices

THE DESIGN and construction of railway bridges in America and Europe have followed independent courses. Differences in the loading requirements on the two continents and marked diversity in the relations between the costs of labor and material have no doubt caused the American and European bridge engineers to feel that they had little in common and that, therefore, they could gain nothing from the study of each other's work outside the realm of pure mathematics. Because of this fact, which is well-known among American railway bridge engineers, they will learn with some elation that English engineers are now seriously considering the adoption of one American design practice which differs in a marked way from that which is now in common use in their country. This refers to the method employed in making allowance for the impact of rapidly moving loads.

While American engineers have now accomplished almost a complete transition from the old Cooper method of separate dead load and live load stresses to the use of a proportional increment in the live load, English bridge designers are governed by certain long-established Board of Trade rules founded on arbitrary rather than scientific considerations. Canadian practice has followed closely that of the United States. In fact, except for minor differences in official specifications the practices may be said to be identical. What is of even greater interest is the fact that the railways of India have been using the Puncovd impact formula for a number of years and have taken steps from time to time to keep closely in touch with the latest developments in American bridge design practices.

No doubt, it was the advanced practice by the two colonies which eventually influenced the engineers of the mother country to review their own methods of allowing for impact in the design of railway bridges. English railway engineers are now studying the results of tests made during the past year on 20 English railway bridges with a view to the establishment of an impact formula suitable to English railway conditions but which will be applied along lines similar to those prevailing in this country. In this connection, it is

of special interest to note that the Railway Engineers' Association (English) has definitely recommended the adoption of the Pencoyd or Schneider formula, which was the established standard of the A. R. E. A. until it was abandoned in 1917 in favor of the new

$$\begin{array}{r} 300 \\ \hline 300 + 100 \\ \hline 1.2 \end{array}$$

Major A. Mount, inspecting officer of the Minister of Transport, who prepared a report on the tests, pointed to the exorbitant allowance for long span bridges under the Pencoyd formula, but opposes the adoption of the new A. R. E. A. formula in favor of one of his own selection which gives values of more than unity for spans less than 30 ft. long. The justification for this is that tests made on the English bridges gave very high values for certain floor members; it is entirely possible that English bridge loading details are such that the actual impact formula adopted cannot consistently coincide with that now the standard in this country. It is, however, a matter of no little satisfaction to American bridge engineers that the methods which they were instrumental in effecting for use in this country are gradually finding application elsewhere.

## Improve the Quality of Repair Work

THE IMPORTANCE of emphasizing quality vs. quantity shop output was pointed out in an editorial in last week's *Railway Age*. The question naturally arises: How is it possible to obtain a better grade of railroad repair shop work and raise maintenance standards to the desired point? Probably the most important step to this end would be in the further development of able, conscientious inspection forces for both repair shops and roundhouses. It is absolutely essential that locomotives and cars be carefully and periodically inspected to discover which parts are subject to undue wear and which show evidences of possible failure.

After inspection, the next step is to get reported defects corrected promptly and properly. An adequate number of competent repairmen must be available for this purpose and as far as possible the work should be assigned, each man being held individually responsible for the correct performance of his particular assignment. It is only in this way that work of the best quality can be assured and equipment released from the shops in condition to make the stipulated mileage before coming in again for heavy repairs. If, due to inferior workmanship, the required mileage is not made there is a serious reduction in revenue-earning hours.

Good inspectors are needed and capable shopmen, all of whom should be made to feel that the managements expect a reasonable amount of high quality work, with emphasis on the quality. The idea which workmen have regarding executive officers is determined largely by personal contact with the foremen, but the foremen themselves can never impart an enthusiastic desire for good workmanship unless that desire is in turn transmitted to them from the higher mechanical department officers. The latter must start the ball rolling.

There is nothing so conducive to interest as competition. Why not start a competition between the various shop foremen to determine which one turns out the best work, or, at least, which one goes the longest without a failure chargeable to his department? This would provide a valuable incentive for careful work. Then again, personal pride in good workmanship may be encouraged and thus help raise the standard of locomotive and car maintenance. Very often, for example, a gang foreman becomes noted for turning out "smart locomotives," meaning by that locomotives which get up speed quickly, have square valves

with clear-cut, even exhausts and show no evidence of the "lazy" action sometimes found. Both gang foreman and repairmen take pride in the care and workmanship which make engineers praise the locomotives they have repaired. If other foremen in all departments could be imbued with the same spirit, it would be hard to estimate the number of accidents prevented, the increase in revenue-earning hours of equipment and the reduction in maintenance expense.

## Robbing Peter to Pay Paul

WE HAVE REFERRED editorially in recent issues\* to the direct interest of the railways in the extensive highway construction program now underway and have urged them to give more direct attention to the manner in which the money they are paying in taxes is being spent for the construction and maintenance of these roads. There are other phases of this highway construction program which demand equally serious attention. When the "good roads" movement was in its infancy, the support of the railways was solicited and given freely. The action of the railway executives in pointing out the value of improved roads to the farmer as an aid to him in bringing his products to the railway for shipment to market, independent of the weather, did much to create a favorable public sentiment.

Once this sentiment for improved roads was aroused, however, highway development has been carried on largely parallel to and in competition with the railways, rather than supplemental to them. The result is that this new avenue of transportation is of little aid to the farmer remote from the railway and most in need of relief. Also in return for their earlier co-operation and support the railways find the effect of the highway construction program is, in large measure, detrimental rather than otherwise.

Unmindful of this, the highway construction advocates were among the most active in their criticism of the railways for their inability to furnish cars for the moving of the large quantities of road-building materials last year. They have likewise been active in agitating for the reduction of rates on materials used in this work. Quoting from the Litchfield County (Conn.) Leader, "It seems a bit like irony for the convention of the American Road Builders' Association at Chicago, to demand that the railroads lower the price of transportation on all materials, cement, crushed stone, etc., used to build highways. The same highways, of course, are designed to make more efficient and economical the use of trucks which are fast taking away the business of the railroads. Isn't it 'crowding the mourners?'"

The direction which the highway construction program has taken also raises another question regarding the extent to which the railways should be required to contribute to the building of these thoroughfares over which other agencies can divert a large amount of the traffic now handled by the railways. This question has already been raised in the courts in a number of instances. In a decision handed down by the United States Supreme Court on June 6, 1921, on a petition brought by the Kansas City Southern against a road improvement district in Arkansas the court stated that "It is doubtful whether any substantial appreciation in value of the railway property within the district will result from the improvement." Obviously if no benefit is obtained, an assessment against the railroad based on benefits to it in common with other property owners within the district, can not be sustained. In view of the changes in the form which the highway construction program is now taking, it is to be expected that the relation of the railways to this program will be modified greatly. This subject is worthy of the most serious attention of railway officers for it has many far-reaching ramifications.

\*August 13, page 278; August 20, page 321, and August 27, page 394.

# Letters to the Editor

## A Question

NEW YORK.

TO THE EDITOR:

The rumors which are in the air at the present time about the large railroad bridge to be built across the Hudson brought back to me a short article in a French magazine (title of article and magazine forgotten) which I had read some time ago. It came back much as a tune we heard somewhere will come back a few weeks or months later to haunt us and set us wondering what it is and when and where we heard it. Though I cannot truthfully say that the article is haunting me, yet it makes me dream once in a while, and just as the dreamer, when he wakes, feels the urge to tell his dream to somebody else, so do I feel the need of unburdening myself. This is the dream:

There are now in existence certain alloys which compare in strength with mild steel, such steel as is used for structural work. These alloys weigh only about one-third as much as steel, volume for volume. Let us see how these two metals compare when we make a bar of each of them and lay them on supports such a distance apart that the bar is about to break by its own weight. Let the distance between supports be  $I$  inches; let the bar be of square section with a side  $a$  for the steel bar and  $a_1$  for the alloy bar; let the weight of a cubic inch of steel be  $w$  and of a cubic inch of alloy  $w_1 = \frac{1}{3} w$ .

This bar of steel will weigh  $Ia^2w$ , and as this is the load which is evenly distributed over a length  $I$ , the bending moment will be

$$M_b = \frac{1}{8} I^2 a^2 w$$

If the fiber stress caused by this moment is  $S$ , we find

$$\frac{1}{8} I^2 a^2 w = \frac{1}{6} S a^3$$

$$a = \frac{I}{S} \times \frac{3}{4}$$

Similarly we find

$$a_1 = \frac{I}{S} \times \frac{3}{4} \times w_1 = \frac{3}{4} \times \frac{I}{S} \times \frac{1}{3} w = \frac{1}{4} w$$

We see, then, that the side of the section of the alloy bar will be  $\frac{1}{3}$  of that of the steel bar, so that the area of the section will be  $1/9$  of that of the steel bar and, as both bars have the same length, its volume will be  $1/9$  of that of the steel bar. Remembering that its specific gravity is  $\frac{1}{3}$  that of steel, we see that the weight of the alloy bar will be  $1/27$  of that of the steel bar.

If we were confronted with the problem of laying such a bar across a long span (let us say the Hudson river), we would investigate the prices of the two kinds of material and we would come to the conclusion that the alloy is cheaper so long as it costs less than 27 times as much per pound as steel. If we had to provide the supports also we would naturally consider that they can be made much lighter and do not require such costly foundations if the alloy is used, and we would not forget that the trouble and expense of putting the bar in place would be very much less; all which factors are in favor of the alloy even if it should cost 27 times as much per pound as steel.

As nobody has ever indicated a desire to lay a bar of steel across the Hudson river, it might well be asked what this is all about. The answer is this: that a long span bridge is, in many respects, a bar laid on two supports and loaded with its own weight. But what about the live load? The heavy trains crossing the bridge? It has been remarked that the presence of a train on a long span bridge may be compared to a fly

sitting on the washline. The fly does add to the load, but not very much. There are, however, various other things which do add materially to the load, such as the roadway, the tracks, the bracing for wind pressure, etc.

Granting that there are such disturbing factors, the question remains: Does not a long span bridge resemble a bar laid on supports sufficiently to make it worth while investigating whether there are not conditions under which the lighter, though higher priced, alloys can be used to advantage? Of course, this much remains certain: That unless a very large portion of the load is the weight of the structural material itself the cheaper material is bound to win out. It might well be, however, that the proportion of load caused by the weight of the structural material is so large that lighter materials might be used to advantage.

A. L. DELEUW

## The Mechanical Association

NEW YORK.

TO THE EDITOR:

The railroad officer who signs himself "Mechanical Engineer" and who wrote the letter entitled "Revive the M. M. and M. C. B. Associations," which was published in your September 10 issue, page 479, was a mighty poor diagnostician. The trouble is not with the present organization of Division V—Mechanical, A. R. A. The fault lies much deeper than that and was just as true when the M. M. and M. C. B. Associations were in existence as it is today.

The fundamental trouble, in my opinion, is that the officers of these associations were lacking in vision when they laid out the programs and assigned the committee work. With a few exceptions, which stand out in bold relief, the reports and papers read before the mechanical associations have concerned themselves with details of design and construction, or in the development of recommended practices for operation and details of maintenance.

These are important, so far as they go. They are more or less in line also with the kind of reports and papers which in past years have been presented before our national engineering and technical associations. Times have changed, however, and even men in the strictly engineering professions have come to realize that after all, improved and more economic production requires a knowledge of the principles of good management and understanding of how to deal with men. The mechanical department has in its control large numbers of men working in various and widely different capacities. The problem before the railroads today is that of men and how to handle them, and yet where have the mechanical associations ever really shown a realization of this problem? The American Railway Engineering Association has a standing committee on the economics of labor. Is it not even more important that our mechanical associations should at least go as far as has this sister organization?

Then there is the great field of operation. Is the mechanical department entirely disinterested in indicating how to get the best results from a locomotive or how to determine what class of power should be ordered? Has it no interest in understanding, and in helping other departments to understand, the economics of operation? What have the mechanical associations ever done to throw real light on the larger problems such as these? Have mechanical department officers, like the ostrich, got their heads buried in sand?

The *Railway Age* had a long article in its issue of June 10 entitled "Mechanical Department Must Tackle Big Program," and a similar one in the issue of August 20 entitled "Will the Mechanical Department Make Good?" You tried to show what were the really big problems before the railroads mechanical world today. Did you intend to throw into bold contrast the fact that the program of Division V—Mechanical

cal hardly touches in even the remotest way upon the most important of these problems? Nor have the M. M. or M. C. B. Associations ever shown any real interest in them.

No, the trouble is not that the M. M. and M. C. B. Associations have lost their identity; the real trouble is that these associations and their successor, although they have done remarkably fine work in certain directions, have never even scratched the surface of some of the larger mechanical department problems. Is it not time that something was at least started in this direction?

WEE GA.

## Keeping Turntable Open in Winter

DETROIT, MICH

TO THE EDITOR:

The article entitled "Cover to Keep Out Snow Complicates Turntable Replacement," which appeared in your issue of August 27, page 412, suggests the importance of a positive and suitable method of eliminating heavy snowfalls from turntable pits and roundhouse tracks. Railroadng under cover is expensive, although necessary, in such extreme cases as that described at White River, Ontario.

A comparatively inexpensive expedient is an arrangement for holding and heating a considerable depth of water in the turntable pit for the purpose of melting the snow. There are two locomotive terminals so equipped in Calumet, Michigan, where the annual snow-fall frequently reaches 112 in. and where winter winds and temperatures are especially severe.

The turntable pit is of ample depth, the concave floor being of concrete and draining into a 10 in. sewer through a vertical flanged cast-iron pipe on which an extra length of pipe is coupled for winter use. The top of this inlet extension is placed at an elevation only slightly below the base of the turntable center to protect it against overflow. At the beginning of winter the extension pipe is put in use, the pit is filled with water which is heated and kept continuously hot through the use of exhaust steam from a line in the roundhouse. Any snow which falls between the turntable and the roundhouse melts readily when shovelled into the pit. This arrangement has proved so economical and has given such un-failing service under all emergency conditions that it would seem applicable in all but the most extreme climates. The chief points to be observed are the arrangements for a suitable depth of water below the turntable center and the continuous application of heat. Almost any existing turntable pit with a concrete floor can be inexpensively fitted for winter operation as described.

E. R. LEWIS.

## Unnecessary Transferring of Loaded Cars

GREENVILLE, TEXAS.

TO THE EDITOR:

Transferring of loaded cars at interchange points is one of the most abused and unnecessary practices imposed upon common carriers by the American Railway Association rules. The railroads of this country pay out millions of dollars each year for labor in unnecessarily transferring loads. This delays traffic, causes damage claims and runs up the per diem, because some narrow-minded car inspector or disinterested car foreman or bureau of interchange inspector is too technical in applying the A. R. A. rules.

Lading is transferred for slight defects to the cars that could be repaired in fifteen or twenty man-hours or less, or in many cases they could be run with perfect safety. I have found that at points where interchange bureaus are

operated this practice is more pronounced than at points where the lines interchange with their own inspectors. Cars will be carded for transfer and the receiving line pays the per diem, the delivering line paying for the labor of transferring the lading; both participate in the claims arising from such transfers and, incidentally, the shipment is delayed. I have found cars passing through the interchange which were carded by the inspector to transfer the loads; these transfers were made by the receiving line and the cars were returned empty to the delivering line; the empties were then loaded without any repairs being made to the cars and such cars have passed from three to four interchange points in the next 30 days without any exceptions being noted.

There should be a rule that all cars that could be repaired within 24 man-hours should either be run or repaired at the receiving line's expense. Of course, if a car is not safe to run it must be repaired and if it cannot be repaired within less than 24 man-hours, the load should be transferred and the delivering line billed as per A. R. A. rules 2 and 14.

There are more pernicious practices growing out of the technical application of the A. R. A. rule applying to this matter than to any other three rules in the code. This results in delayed equipment, increased per diem expense, labor expense for making the transfer, claims arising from the transfer, and delay to the commodities. Inspectors, transfer contractors, contractor laborers, etc., are, in a great many instances, vitally interested in the transfer of cars. The number of the cars transferred fluctuates with the car situation; when cars are scarce the ratio of the number of transfers to the number of cars handled decreases, but when equipment is plentiful the inspection is more critical and a more technical application of the A. R. A. rule is followed. The flash-light is then brought into use at some points.

I am sure a reasonable remedy can be found without forfeiting any of the precepts of safety.

R. R. FARMER,  
Superintendent, M. K. & T.

## Railroads as Manufacturers

NEW YORK.

TO THE EDITOR:

When in railroad service I found greatest difficulty in doing a bit of manufacturing because my plans went awry. Material was ready but the men were not. The men were ready and material was not. The cost was scandalous. I am not proud of the real cost of the standard parts I ordered but I was never called to account, because the officers I reported to wanted the road to make everything that it could make. It seemed economical; but was it?

Even in these times railroads are asking manufacturers for drawings of locomotive parts the patents for which have expired. Even in these times they are making these themselves. It is and always will be a financial mistake for anybody whose time is valuable in his particular line to deviate from that line and try to play the part of some one else. An artist on the harp seldom can be also an artist on the slide trombone. The business of the railroad is to transport. To manufacture is foreign to its ideals and also to its possibilities. Every railroad job—particularly as applied to the mechanical department—is an emergency. It is necessary to get this engine or that engine back into service as quickly and as cheaply as possible. Engines cost money. Every moment they lose in the shop or at the roundhouse increases the cost of transportation. To interfere with the repair program of locomotives or car equipment is a mistake and a costly one.

Railroad labor is high in cost. It is higher than railroad history has ever known. Railroad labor is not gifted in manufacturing. It is accustomed to work on this job or that, different work for every emergency that every day brings. It is really too much to ask repair forces or men allied with

repair work to manufacture anything on a proper cost basis. To be successful, manufacturers must get volume of work. No railroad shop can have sufficient volume to keep men steadily employed on specialties to make any money out of them. When you build fifty locomotives all alike the cost per engine is less than when you build two or three.

Manufacturers deal in volume. Naturally they can reduce costs by fitting up to use automatic machinery, to study out the cheapest methods of doing the work; and they can manufacture at less cost than anybody but specialists can reach. Time is required to find blue prints, to get material, to set up the machinery, to put the work in the machines. Time and money are required to make gages, fixtures, jigs and templates. All this goes into the "overhead" of the railroad that attempts manufacturing; but unfortunately it is concealed and the actual cost of railroad manufacturing is never known. Manufacturers must know these elements of cost or they go "broke."

Of all times this is the time for the roads to reduce the cost of transportation. It can best be done by applying every effort to reduce the cost of maintenance of equipment and by leaving manufacturing to those who are equipped with machinery, who have experience and knowledge of every detail of manufacturing. How would the railroads make good in the manufacture of rail or of bridge material? How will they make good in manufacturing anything else except transportation, which is their real problem?

This communication is called forth by your comments on page 332 of your impression of August 20, 1921, under the heading—"The Manufacture of Standard Repair Parts."

It is the subscriber's belief that no railroad can afford to make any standard repair part that it can buy. Every time railroads do any manufacturing of things they can better buy they cost their stockholders money that those stockholders cannot afford to lose, especially now.

G. M. BASFORD.

## Railroad Opportunities as Seen by a College Student

PROGRESS, Pa.

TO THE EDITOR:

As an undergraduate in the transportation engineering option of civil engineering at the Massachusetts Institute of Technology, I have been very much interested by the current discussion in your columns in regard to the railroads and college men. So far as I know, the railroads are not getting men from M. I. T.; they are not trying to get them. Other industries are getting our men; but they come after them. To me, that means railroads either do not want college-trained men, or, at best, they are satisfied with an inferior grade. If railroads do want college men, in order to get them they must make an effort equal to that of other industries. Except, perhaps, in this rather unusual year, graduates from the country's best technical schools are not out looking for a job, in which, if there is any future at all, it is doubtful and remotely placed with respect to time. This is not because the college man has an exaggerated estimation of his worth, but because for a day's work he feels entitled to a day's pay.

M. I. T. is one of the institutions which do not overspecialize on the technical ends. In its course of railroad transportation, including such subjects as economics, railroad design, railroad operation, etc., it would seem that the ideal expressed by Vice-president Ennes, of the Wheeling & Lake Erie (*Railway Age*, August 20, 1921, page 323) were reached as nearly as possible. Yet railroads do not recruit from M. I. T.

The reason railroads shun college men is apparently that they prefer to stagger along with less highly trained, less expensive, yet often inefficient help, blinding themselves to the

progress of other industries employing college trained men in responsible positions with the time-worn statement that railroading is specialized work, and that it can be learned only if you had no specialized training at the start and by years of monotonous routine at some inconspicuous job. Personally, I cannot believe that the transportation industry is so much different from the hundreds of others, which wait outside the doors of our universities and technical institutions each June to pick their future leaders.

The sooner the railroads get away from the old idea that because they always have done so and so they always will, and as the last big industry to turn the corner, find that the trained and disciplined mind, as represented by the best college graduate, can do for them what it has for the steel and manufacturing industries and construction corporations, the better it will be, both for them and for the country at large. A recruiting system as outlined by Mr. Hanson in "How Sincerely Do Railroads Want College Men" (*Railway Age*, July 16, 1921, page 121), would be a big step in this direction.

A. P. R. R. "SUMMER-CHAIRMAN."

## Non-Interlocked Railroad Crossings

ST. PAUL, MINN.

TO THE EDITOR:

On page 1165 of the *Railway Age* of May 20, 1921, appears an article entitled "Non-Interlocking, No-Stop Railroad Crossing." I was of the opinion that this arrangement was more or less common throughout the country but it seems that there are many who think it is new and that it needs to be tried out. It will therefore, no doubt, be interesting to your readers to know that on the Northern Pacific there are 24 junctions of branch lines and foreign main lines connecting to the main line, 6 of which are double-track junctions, which are protected in a manner similar to that outlined in the article above referred to.

With reference to automatic signal arrangements at crossings in lieu of interlocking; while we do not have crossings of exactly this nature, we do have gauntlet tracks over three different bridges which introduce practically the same conditions as exist at crossings. The most important of these is our gauntlet over the Yellowstone river bridge at Billings, Mont., which is used by the main line trains of the Chicago, Burlington & Quincy and the Northern Pacific. There are also a great number of switching movements over this bridge. The movement of trains over the gauntlet is treated as single track operation. The normal position of the distant signals on both the eastward and westward tracks is "Caution." The normal position of the home signals is "Stop." The circuits are so arranged that the clearing of one home signal holds the other at block, but after the train using the cleared route has passed out of the track circuits involved in the gauntlet operation, a second home signal will clear if there is a train on its preliminary section.

We have never had the slightest trouble or any near accidents with this signaling arrangement. There is no difficulty in designing a circuit that will take care of any railroad crossing and that will work at all times. In fact, it is not quite so difficult as a great many of the absolute-permissive-block circuits for single track, and as far as safety is concerned, I consider a railroad crossing automatically signaled safer than a piece of single track automatically signaled. On a single track automatically signaled, if two trains should get away from stations at the same time, heading towards each other, they would be stopped by intermediate signals and one of them would have to back up to a siding to let the other pass. At a railroad crossing, or a gauntlet track, if two trains should strike the preliminary or clearing section at the same time, the signals for one train only would

clear and after that train had gone the other route would clear and no flagging would be necessary.

It is my opinion that for automatic signaling at a crossing, the signaling should be arranged so that a distant signal would show "Stop" if the home signal were at "Stop," and be a permissive signal to permit trains to stop and then proceed with caution to the home signal. The train would then proceed over the crossing when the home signal cleared or would have to flag over if there was a signal failure. It will be seen that under a good system of automatic crossing signaling, trains could get out of each other's way much quicker and with more safety than they can when they meet between sidings on single track.

In 1899 the Rowell-Potter Signal Company installed an automatic interlocking at a crossing of the Peoria, Decatur & Evansville with the St. Louis, Peoria & Northern at Hawley, Ill. This interlocking was in full operation for some time and I believe was approved by the Railroad Commission of Illinois.

In the earlier days of signal devices on railroads, when the discipline among the trainmen was very poor, it was necessary to install derails to enforce the observance of signals, but today with good discipline on the majority of roads, there is no more need of installing derails to enforce the observance of home signals at interlocking plants than there would be to install a derail back of every automatic block signal and particularly on single track.

C. A. CHRISTOFFERSON,  
Signal Engineer, Northern Pacific.

## The Protection of Highway Crossings

BALTIMORE, Md.

TO THE EDITOR:

Various means have been devised to educate the motorist to exercise caution when approaching a railroad crossing. At all highway crossings signs are displayed, and in many cases a watchman or automatic signal is provided to give warning. Although many crossings are protected by watchmen, the highway crossing signal has been widely adopted because of its comparatively low cost.

The most universal form of highway crossing signal is the audible alarm, commonly known as the crossing bell, consisting of an electric bell mounted on a post and connected through a relay to a track circuit. Such a device has two serious drawbacks. The first (not of much importance 25 years ago) is that it is sometimes impossible to hear the bell when riding in a closed automobile or when driving a car with a noisy engine. The second objection to the audible signals in use is the fundamental principle upon which they are operated, namely, that it takes energy for the signal to display its restrictive indication; should the source of energy fail, the signal would give no indication that it is out of order. In other words, it would fail on the side of danger.

In view of the drawbacks to the audible signal, a number of railroads are replacing this type of warning with a signal that will give a visual indication. There are four principal types of visual crossing signals: (1) the swinging disk, operating on an open circuit; (2) the three-aspect swinging disk giving a failure indication; (3) the flashing light signal, and (4) the strictly closed circuit position-signal, its restrictive indication being displayed by a banner released by gravity and a flashing light.

Due to the importance of the function which the crossing signal must perform, it must be more than mechanically perfect. It must be psychologically perfect. That is, it must be of such a design as to attract the attention of the most careless motorist. The light signal, though on the open circuit principle, is, because of the absence of moving parts, mechanically perfect. But is it psychologically perfect? Will the motorist, driving at forty miles an hour, observe this red light? How will he construe it, especially at night?

A moving or a flashing light attracts the eye, but a crossing signal should do more than merely attract attention. It should convey a definite meaning—*stop*. The flashing or moving light is a bait to attract the motorist's attention. But it must do more. It must awaken him to the seriousness of the occasion; and this can be done only by utilizing the English language; by displaying a banner lettered with the word "STOP."

A crossing signal of this nature, combining the effectiveness of the flashing light and the definite warning as expressed by a banner displaying "stop" on the approach of a train, is both mechanically and psychologically perfect. The operation of an arrangement of this sort is very simple. The flashing light, necessarily operating on an open circuit, is connected to its electrical source through the back contact of a track relay; while the banner mechanism, operating on a closed circuit so as to display the warning by gravity, is connected to the same electrical source through the front contact of the track relay. An approaching train, de-energizing the relay, will cause the stop banner to be displayed by cutting off the current from the banner mechanism, and at the same time displays the flashing light by making a connection from the electrical source to the lamp by means of the back contact of the relay. In this arrangement we have a device that lives up to the three requisites of a crossing signal, namely: the flashing light to attract attention, the definite warning, "stop," and the closed-circuit banner mechanism which, in the event of a failure of any part of the device, will cause the display of the stop indication.

The railroads in installing highway crossing signals are spending large sums of money solely for the benefit of the public. And yet it is a known fact that many motorists willfully disregard crossing signals. If an accident occurs the railroads are usually blamed, when in reality it is the result of carelessness on the part of the motorist. The public should be made to realize what is being done for its protection by the railroads. The motorist should be made to obey crossing signals as he is made to obey police-operated traffic signals in city streets. Let the various state legislatures take it upon themselves to co-operate with the railroads. It is their duty to inspire the officers of the law with the energy, vigilance and courage necessary to enforce the law requiring proper observance of highway crossing signals; do this and the number of accidents at such crossings will be very greatly reduced.

CHARLES ADLER, JR.,

Signal Engineer, Maryland & Pennsylvania R. R.

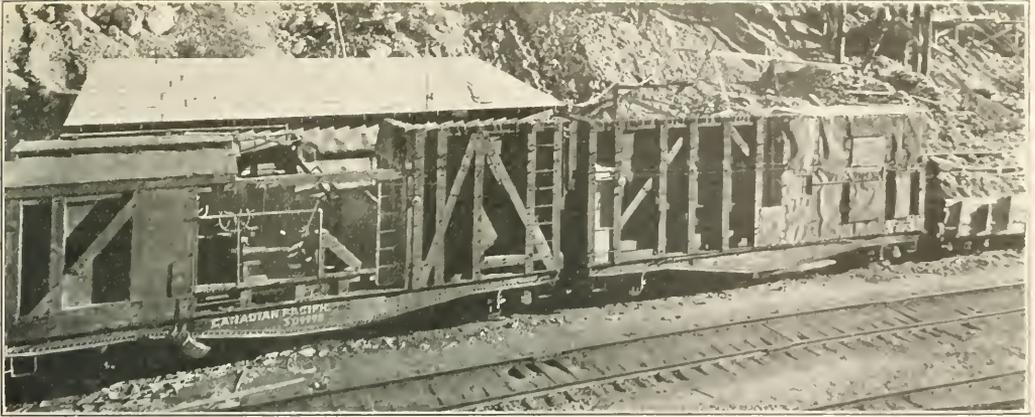
## Are Derails Necessary?

LONDON, ENG.

TO THE EDITOR:

In his article in the issue of the *Railway Age* for July 16, page 112, A. H. Rudd raises a question about the utility of derails which is interesting to English readers, since in this country we have, for a long time, been in the position he suggests, that is, without derails on passenger tracks, although they are used in certain circumstances on freight tracks. We find it better so to arrange our signals and block working that trains are kept back a safe distance from fouling or crossing movements and to do without the derail, which, as Mr. Rudd observes, may easily lead to a worse accident than the one it is supposed to prevent; or may actually cause one where none would have happened. There seems no reason to suppose that, with proper attention to the subject, the same thing could not be carried out in the United States. There are circumstances, indeed, in which a derail is useful in a passenger track. It should, however, not be a derail as it is ordinarily understood in America, but a proper catch siding with a reasonable degree of over-run.

T. S. LASCELLES



Portable Concrete Mixing and Placing Apparatus

## Lining the Canadian Pacific's Five-Mile Tunnel

Highly Interesting Equipment and Method Furnish Effective Treatment of Huge Undertaking

**T**HE CONNAUGHT tunnel of the Canadian Pacific is located on the main line at Glacier, B. C., about 420 miles east of Vancouver, where it pierces the Selkirk mountains and replaces the old high line over Rogers Pass. The old line had curvature amounting to about seven complete circles, long and heavy grades, a succession of snow-

sheds aggregating about five miles in length and an elevation at the summit of about 4,300 ft. The tunnel reduces the summit elevation by about 500 ft., eliminates all of the curvature and snowsheds and reduces grades to one per cent against westbound traffic. In a country where the annual snowfall averages around 40 ft. in depth, the advantages arising from the existence of the tunnel are apparent without much study.



Blaw Form Ready for Blowing. Completed Tunnel in Background

sheds aggregating about five miles in length and an elevation at the summit of about 4,300 ft. The tunnel reduces the summit elevation by about 500 ft., eliminates all of the curvature and snowsheds and reduces grades to one per cent against westbound traffic. In a country where the annual snowfall averages around 40 ft. in depth, the advantages arising from the existence of the tunnel are apparent without much study.

The tunnel itself is a double track-tangent five miles long.

It was opened for traffic in December, 1916, after extraordinarily rapid construction made possible largely by the use of small pioneer tunnels. The later system consisted of small tunnels driven parallel to and 50 ft. distant from the line of the main tunnel with cross tunnels at intervals of 1,500 ft., from each of which headings were driven each way on the main tunnel line. Materials for the various headings and spoil from the main tunnel were handled effectively through the pioneer tunnels, as described in the *Railway Age* of December 11, 1914, page 1083.

When the tunnel was put into operation the construction had been carried only to the point of lining a limited portion, particularly that near the entrances, and of installing a powerful crude oil driven ventilating fan system at the west portal, it being the desire to realize the advantages of the work with the least delay. Meanwhile consideration was given to lining the balance of the tunnel, about 18,000 ft., in order to effect complete and permanent construction and to avoid any possible danger of falling rock. The south track of the tunnel was set apart for lining operations and except in this respect it was required that the lining work should interfere in no way with train movement.

The first consideration therefore was that of providing plant and equipment for installing a concrete lining extending over the entire side walls and tunnel arch and reinforced with steel, both longitudinally and at right angles to the tunnel section. It was estimated that approximately three cubic yards of concrete would be required per tunnel foot. At the same time all equipment was to be designed to provide an unobstructed passage for trains, minimize fire and other hazards, permit normal operation of signals and to furnish enough light and power in the working zones for rapid and economical construction.

Various combinations of air and electric apparatus were considered, both along the lines of entirely portable, self-contained plants, mounted on cars and of a stationary plant located outside of the tunnel. It was ultimately concluded that conditions would best be met by a stationary central electric plant located outside the tunnel, adapted to supply

power to a portable concrete mixing and placing apparatus operating inside the tunnel.

Accordingly, a 300 kw. power house was located near the west portal, in which are employed locomotive type coal burning boilers equipped with the necessary breeching, individual stacks and blowers. Coal is delivered from standard coal cars running on an overhead trestle. Storage for several hundred tons of coal for use during the winter months is provided. Feed water for the boilers is obtained from a nearby mountain stream, the delivery being accomplished by gravity or, in an emergency, by pumps.

Two direct-connected units of 150 kw. capacity each deliver power through a simple switchboard from which the power is conducted in two three-phase circuits of 2,300 volts over a wooden pole line up to the entrance of the west pioneer tunnel. The power is then carried through the pioneer tunnel for about 9,000 ft. on bare wire. As the

A phase of the lighting problem equally important to that of providing adequate light in the presence of smoke was that of arranging the system so that the intensity of the light could be reduced as the smoke cleared away, thus avoiding the blinding effect of excessive light on the workmen. The lights have largely cut down the time which would otherwise be lost in waiting for smoke to clear. With approximately 125 men working, this loss of time would be a very considerable item.

The actual mixing and placing of concrete is accomplished by two 75-ton pit flat cars coupled together. On one car there is a 1,290 ft. motor-driven compressor, while on the other car is a motor-driven concrete mixer emptying into a pneumatic placer from which successive charges of concrete are shot by air under about 80 lb. pressure into the forms. These cars also carry sand and gravel, water and about 450 bags of cement. All storage of materials on the cars is cal-



West Portal of Tunnel, Showing Fan House and Fans; Selkirks Mountains in the Background

pioneer tunnels are entirely separated from the main tunnel they provide an ideal space for the stringing of these high tension lines and have made it possible to effect material savings over the cost of lead covered cables. From the last or sixth crosscut between the pioneer and main tunnel, the transmission line is carried in cable along the side of the main tunnel for about 3,600 ft. to the first working zone. Here the power is lowered by transformers set in niches in the side wall to 110 volts for light and 550 volts for power. This low tension distribution system is provided with outlets every 100 ft. to which the power and light apparatus can be attached readily.

After numerous experiments had been conducted in connection with the lighting of the working areas and particularly with a view to overcoming the effect of the smoke following the passage of trains, flood lights of 500 watts capacity each were installed. These lights are portable and can be arranged singly or in batteries as may be desired.

culated on a basis of blowing one complete form or 21 ft. 6 in. of completed tunnel without going outside the tunnel for recharging.

In operation, the cars are spotted under the form to be blown, electrical connections made with the power line and flexible hose projected into the form, after which the power is turned on and mixing and blowing begun. A 200 hp. motor is used to drive the compressor but no difficulty has been encountered from vibration or rocking of the cars in spite of the large capacities of the apparatus placed upon them. A 27-ton gasoline locomotive is used to handle the cars in and out of the tunnel and to do a variety of switching of material cars from the main line to the various storage bins. This gas locomotive is supplemented at times by a steam locomotive, particularly during the winter under snow conditions.

The concrete is blown into collapsible steel forms, there being six of these units, each giving 21 ft. 6 in. of completed

tunnel at one setting. These units are set up, filled, collapsed and rolled forward to their new position in rotation, the schedule calling for one complete form to be blown every day. These forms clear all traffic. Each form is preceded by a so-called pioneer form, or movable platform, spanning both tracks from which all advance work is done, including a considerable amount of overhead work arising from roof scaling, the completing of false forms where the tunnel section is over-broken, the packing of the space behind these false forms with lagging and finally the placing of reinforcing preparatory to concreting.

Outside the tunnel a camp has been built, complete in all details, as the work is in the heart of the mountains and has to be entirely self-contained. Bungalows have been erected



View Showing Pioneer Form, also Mixing Apparatus Ready for Placing Concrete

for sleeping quarters, subdivided into units of four men each. Separate small houses have been built for the married men and there are also provided a community dining room, bath house and laundry, kitchen and storehouses—in all about 55 buildings. All quarters are electrically lighted and provided with water, and the camp includes a drainage system and a septic tank.

Near the power house there is a small motor-driven machine shop and blacksmith shop in addition to sheds for the storage of cement, reinforcing steel, lagging and lumber. These are particularly necessary on account of the heavy snowfall which buries everything deeply during the winter. A 5,000 yd. gravel bunker handling its material by gravity is also installed. Steam heat is provided to prevent the gravel from freezing.

This work is being done under the direction of W. A. James, assistant chief engineer; Frank Lee, engineer maintenance of way, and H. Rindal, district engineer of the Canadian Pacific, Mr. James having previously represented the railway on the ground as engineer of construction in charge of the driving of the tunnel. The Sydney E. Jenkins Company, Ltd., Winnipeg and Vancouver, is doing the construction work. We are indebted to the latter company for this article.

DAN SMITH, colored station porter of the Southern Railway at Wagoner, S. C., aged 35, recently established a record for fast work by loading sixty 500-lb. barrels of rosin into a freight car in forty minutes. Each barrel was rolled from the platform into the car and placed on end.

## Tentative Valuation of the Chicago, Rock Island & Pacific

WASHINGTON, D. C.

THE first tentative valuation report to be served by the Interstate Commerce Commission in the case of one of the larger railroad systems was made public on September 10, covering the Chicago, Rock Island & Pacific and its subsidiary and affiliated lines. The used property devoted to common carrier purposes is given a "final value" of \$322,277,596 as of the valuation date, June 30, 1915. This represents a total main track mileage of 7,218 against which the company had issued securities which were outstanding in the hands of the public to the amount of \$307,637,422. The property which is valued at \$322,277,596 does not, however, include the affiliated Chicago, Rock Island & Gulf, 455 miles, which is given a final value of \$13,212,667. While the fact that the commission has found a value greater than the amount of the securities held by the public may come as a surprise to those whose ideas of the Rock Island capitalization were based on the total of the securities issued by the railway company and its two holding companies which controlled the operating company, it is to be noted that the capitalization of the Chicago, Rock Island & Pacific Railway was not affected by that of the Chicago, Rock Island & Pacific Railroad Company of Iowa, which owned most of the railway stock, nor of that of the Rock Island Company of New Jersey that held the stock of the Iowa company. The report of the commission is as of a date while the railway company was in the receivership which preceded its reorganization and during which the holding companies were wiped out.

The total outstanding capitalization of the Chicago, Rock Island & Pacific Railway on June 30, 1915, is stated in the report as \$377,395,738, of which \$69,758,315 was held by or for the carrier and \$307,637,422 was held by the public.

The commission, in its tentative valuation report, does not show how its final value is made up. The report says that "after careful consideration of all the facts herein contained, including the excess cost of the carrier lands, appreciation, depreciation, going concern value, working capital, including material and supplies, and all other matters which appear to have a bearing upon the values here reported, the values, as that term is used in the Interstate Commerce Act, of the property of the carrier, owned and used, used but not owned, and owned but not used, devoted to common carrier purposes, are found to be as follows:"

The final value includes \$251,809,983 for the property wholly owned and used, and \$70,467,613 for the property used but not owned, leased from the Improvement Company, the Iowa Company, the White & Black River Valley, the Peoria & Bureau Valley, the Rock Island Memphis Terminal, the Stuttgart & Southern, the Rock Island & Dardanelle, the St. Paul & Kansas City Short Line, the Rock Island, Arkansas & Louisiana, the Choctaw, Oklahoma & Gulf, the Keokuk & Des Moines, and from other railroads and private parties. There is also property to the amount of \$252,937 owned but leased to other companies, so that the final value of the total owned property, 5,355 miles, is given as \$252,062,920.

It is stated that there is included in the value above stated as wholly owned and used the sum of \$8,809,983 on account of working capital, including material and supplies. The total assets stated by the carrier on its general balance sheet on date of valuation were \$318,215,217, and the investment in road and equipment, including land, was stated in the books of the carrier to be \$235,867,019. The report gives a number of readjustments in this account but says it is impossible to state one sum, in terms of cash, as representing the carrier's investment in road and equipment.

As in most of the tentative valuations, the report says, the original cost to date of each piece of common-carrier property

cannot be ascertained, but that the recorded outlay for the property as a whole appears to have been approximately \$207,445,244 in recorded money outlay and an outlay in securities of a par value of \$26,486,003. These figures do not include certain expenditures made by predecessor companies.

The cost of reproduction new and the cost of reproduction less depreciation of the common carrier property other than land are given as follows:

	New	Less Depreciation
Wholly owned and used, including carrier's portion of jointly owned property.....	\$254,164,621	\$199,974,141
Total used.....	\$30,436,710	\$60,253,674
Total owned.....	\$283,727,911	\$199,992,235

The present value of carrier lands owned is given as \$37,160,068 and the excess cost of acquisition as \$29,927,514 and of the carrier lands used, \$43,656,245 and the excess cost of acquisition \$35,068,446. The carrier also owned non-carrier lands, which, with the improvements, are given a value of \$4,156,056, and securities of other companies of a par value of \$161,027,447 carried on the books at a value of \$60,463,584.

The value of materials and supplies on hand was shown by the carrier's records to have been \$5,605,310.

Separate figures are given for the various subsidiary companies whose property is used under lease, and whose values are included in that given for property used.

The Chicago, Rock Island & Gulf, which owns 456 miles of first main track, but uses only 455 miles, is not included under the figures for the Chicago, Rock Island & Pacific, although its stocks and bonds are held by the latter or its subsidiaries. The outstanding capital liabilities of the Gulf company were \$17,248,372. Its investment in road and equipment was stated in its books at \$17,374,563. The cost of reproduction new of the property used is given as \$14,679,021 and the cost less depreciation as \$11,735,613. The present value of carrier lands is given as \$370,669 and the final value of the carrier property used as \$13,212,667.

The carrier has 30 days in which to file a protest.

### Freight Car Loading

WASHINGTON, D. C.

**A**N INCREASE of 892 in the number of cars loaded with revenue freight during the week ended September 3, compared with the previous week, is shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 830,601 cars. This is the largest week's loading since December 11, 1920, and represents the fifth consecutive week of increase, but as com-

pared with the corresponding week of 1920 it shows a loss of 131,032 cars.

The total number of cars loaded with merchandise and miscellaneous freight was 505,425, an increase of nearly 6,004 as compared with the week of August 27, but 30,000 less than for the corresponding week of last year.

Loading of grain and grain products was 60,632, an increase as compared with the week before of 1,127, but 18,000 cars more than for the same week of 1920. The loading of live stock amounted to 27,539 cars or a decrease of 1,531 under the preceding week and slightly less than for the corresponding week of 1920.

Coal loading amounted to 155,816, a decrease of 5,796 as compared with the week before, but 43,000 cars less than for the corresponding week of 1920. The loading of forest products was 45,419, a decrease of 1,059 over the week before, but about 17,000 cars less than the loading for the corresponding week of 1920. The ore loading was 31,112, an increase as compared with the previous week of 1,077, while the loading of coke was 4,658 cars, an increase of 48.

The number of surplus serviceable freight cars for the week ending August 31 was 246,440, a decrease of 23,584 cars as compared with the week before. This included 68,938 surplus box cars, a reduction of over 10,000 within a week and 130,596 surplus coal cars, a reduction of 6,385. Shortages were also reported from certain districts amounting, however, to only 739, of which 641 were box cars.

IF MONEY TALKS in America, it screams in Europe. And the secret of getting through a sojourn there at a moderate cost lies in judicious tipping. In England, for instance, before the war a railway porter was quite happy with a two-penny tip. But only "white money" goes in these days—nothing less than sixpence, and if a porter has to handle a trunk he will want more. The prevailing custom among guests of English and Continental hotels is to do the tipping in one operation on the day of departure. In the event of a prolonged stay, the servants expect to be remembered once a week. At a first-class English hotel you should count on at least a pound a week for regular tips, apportioned approximately as follows: porter, five shillings; chambermaid, five shillings; floor waiter, five shillings; boots, half a crown; bellhop, half a crown. In France you should give three francs at least where you would give two shillings in England. It must be borne in mind that in Europe it is safe to offer a tip to anybody short of a cabinet minister. In England, if you yearn for a comfortable compartment on a train look up the conductor and tell him so—say it with silver, and he will work wonders. —Gordon Stiles in Leslie's.

#### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, AUGUST 27, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded		Received from connections	
										This year	1920	Corresponding year	1919
										204,592	204,592	205,627	205,627
Eastern	1921	2,527	3,086	44,749	1,112	4,586	2,068	59,762	81,702	244,935	244,935	273,719	252,530
	1920	2,905	2,714	57,147	3,540	8,059	11,031	48,384	106,155	212,335	212,335	112,717	112,717
Allegheny	1921	3,522	3,047	44,645	2,268	2,630	7,230	44,837	57,055	165,234	165,234	153,278	149,154
	1920	3,174	3,666	66,933	7,327	3,839	13,936	39,483	74,436	212,335	212,335	13,077	13,077
Pocahontas	1921	3173	198	16,911	33	1,237	.....	2,685	5,400	26,637	26,637	20,820	18,237
	1920	251	272	23,769	749	1,727	228	3,186	6,140	36,322	36,322	61,045	61,045
Southern	1921	3,526	1,747	22,265	283	14,180	183	36,231	31,723	110,138	110,138	75,410	67,842
	1920	3,352	1,808	24,318	1,622	19,097	2,800	35,266	43,162	129,425	120,145	63,093	65,300
Northwestern	1921	19,468	7,242	9,350	484	10,794	19,012	28,440	35,162	129,952	129,952	68,973	67,946
	1920	13,657	7,179	12,291	1,701	17,711	46,172	30,360	41,415	170,846	166,848	51,670	51,670
Central Western	1921	19,253	9,953	18,682	196	6,315	831	31,197	42,134	128,553	128,553	68,973	67,946
	1920	13,209	10,506	21,996	361	7,339	4,936	32,756	47,521	139,124	128,830	46,402	46,402
Southwestern	1921	6,036	2,797	5,010	236	6,718	711	16,015	27,080	64,603	64,603	51,504	50,126
	1920	4,496	2,318	6,212	121	8,278	695	17,767	28,794	68,681	61,502	706,797	706,797
Total all roads	1921	59,505	28,070	161,612	4,606	46,460	30,035	219,165	280,256	829,709	829,709	671,135	671,135
	1920	46,403	28,463	211,766	15,921	66,580	79,709	207,202	315,623	1,001,308	1,001,308	671,135	671,135
1919	53,699	35,567	194,606	11,151	61,647	64,689	143,468	387,824	.....	.....	.....	.....	.....
Increase compared 1920	13,461	.....	.....	.....	.....	.....	.....	11,963	.....	171,599	171,599	166,482	166,482
Decrease compared 1920	.....	393	50,154	11,315	20,120	49,674	.....	.....	65,367	.....	.....	.....	.....
Increase compared 1919	6,806	.....	.....	.....	.....	.....	.....	.....	75,697	.....	.....	.....	.....
Decrease compared 1919	.....	7,997	32,994	6,547	15,187	34,654	.....	.....	107,568	121,944	121,944	130,820	130,820
August 20.....	1921	59,875	29,110	154,140	4,436	44,583	32,370	216,752	275,170	816,436	968,103	913,207	692,847
August 13.....	1921	61,560	26,835	158,260	4,286	45,333	32,942	213,046	267,702	808,965	971,269	936,439	687,614
August 6.....	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,236	263,200	784,781	935,730	\$829,073	\$82,247
July 30.....	1921	66,416	25,358	151,089	4,111	44,712	30,103	210,367	264,414	796,570	936,366	\$825,195	\$82,247

\*Detail figures for 1919 for Michigan Central not given.

# Post Office Seeks to Co-operate With Railroads

## Evidences of Changed Attitude on the Part of the Department Under New Administration

WASHINGTON, D. C.

A NEW POLICY in the Post Office Department governing its relation with the railroads has been made evident since the change in the office of postmaster general which took place on March 4. Not only is the new postmaster general, Will H. Hays, a man of a different type from his predecessor, A. S. Burleson, but he announced at the outset that he proposed to select an experienced railroad man for the office of second assistant postmaster general in charge of the railway mail service. Col. E. H. Shaughnessy, of the Chicago & North Western and later with the Transportation Corps of the A. E. F., was appointed to succeed Otto Praeger, who was formerly a newspaper man.

One of the first steps taken by Col. Shaughnessy was an effort to create an atmosphere of harmony and co-operation between the department and the railroads in the furnishing of mail service to the public. For many years there had been a series of controversies between the roads and the department. Not only was the latter constantly endeavoring to reduce the compensation paid to the railroads, which they had been contending was already too low, but there was a constant succession of disputes as to the interpretation of the postal laws and regulations regarding both service and compensation, which are so voluminous and complex as to afford a wide opportunity for controversy over technical points.

The big question of rates for the transportation of mails by railroad had been settled by the Interstate Commerce Commission in its decision in the mail pay case in January, 1920, which resulted in a large increase in the rates, but this decision still left open a considerable number of questions of interpretation.

With a view to placing the relations between the department and the railroads on a new basis, Col. Shaughnessy on April 13 wrote to Ralph Peters, chairman of the committee on railway mail pay, inviting his committee to meet with representatives of the department to discuss the question of making the biennial test to determine the number of sacks of mail and outside parcels that would be considered as equivalent to the three-foot unit of space, and such other questions as they might care to bring before the department for consideration. Representatives of the American Short Line Association and the American Electric Railway Association were also invited and participated in the conference.

The first meeting was held on May 2 and the proposed arrangement for making a test being quickly disposed of, the railroad committee asked for a postponement of about 30 days to make the necessary preparation in connection with questions they desired to submit. Another meeting was held on June 6, at which the railroad committee through a sub-committee presented a docket of 18 subjects which they desired to discuss. The items were fully discussed in frequent meetings following that date, the sub-committee calling in various railroad representatives to assist.

Tentative understandings were arrived at and when the docket had been completely covered Col. Shaughnessy requested that the ideas set forth by the sub-committee be reduced to definite written requests to which replies could be made, thus properly laying the foundation upon which to build for future reference and guidance. After the time necessary for consideration the replies of the department were given in written form as an agreement of principles in the outlining of policy, the necessary administrative orders to follow in due course. In a large number of the cases agreements were readily reached on a compromise basis and in

others it was agreed to present joint petitions to the Interstate Commerce Commission for decision.

Following these conferences with the officers designated by the railroads to handle railway mail matters, Col. Shaughnessy sent a report of the conferences and of the questions and replies to the railroad executives, saying he thought the matter was important enough to be given serious consideration by the railroad organizations. He said in the letter that while the subjects treated were perhaps in themselves not of great consequence, he thought the idea of getting together and arriving at mutually satisfactory understandings, especially to the extent of presenting joint petitions to the Interstate Commerce Commission, was of great importance to every one concerned, marking the first step in a really constructive program. He said that a serious effort was being made in the department to avoid controversial technicalities and that he would like to bespeak a like attitude on the part of the railroads, feeling that the department and the railroads are dependent upon each other and must work harmoniously if they are to provide the right sort of mail service to the public. It was also suggested that it might be well for the roads to go over the mail situation with their operating organizations.

Col. Shaughnessy has received letters from the railroad executives expressing a hearty appreciation of the attitude taken by the department and expressing a willingness to meet it half-way. The idea of holding joint conferences for the purpose of settling questions in dispute as promptly as possible was especially appreciated and many of the letters commended the businesslike attitude of the department in this respect.

Col. Shaughnessy has just issued a decision in one of the important cases which was discussed at the conferences, which had been a source of controversy since September 1, 1920. This involved the question as to whether the department or the railroads should bear the expense of handling mail between the Union Station in St. Louis and the St. Louis city post office, which is located across the street from the railroad station, but is connected with it by a subway built under the street by the government, which is under the direction and control of the Post Office Department. For several years the railroads have delivered the mail at the entrance to the subway and the messenger, who trucked it through the subway into the post office building, was paid by the Post Office Department \$42,000 a year.

The Interstate Commerce Commission held that the railroads were required to perform this kind of messenger service free only when the post office was "contiguous." In 1920 Second Assistant Postmaster General Praeger issued a ruling that in this case the post office was contiguous and that after September 1 the expense of trucking the mails through the subway should be borne by the railroads. The railroads protested on the ground that by delivering the mail from trains to the entrance to the subway they were delivering them to the post office property. There was a large sign at the entrance to the subway "For Post Office Employees Only." However, the amount of the messenger expense was thereafter deducted each month from the pay of the 16 railroads involved and the railroads protested each month against the deduction.

Col. Shaughnessy suggested that any legal steps be postponed until he had an opportunity to examine the case, and, after a very careful consideration of the facts he has now

decided that the Post Office Department should take over the mail messenger service between the sub-basement of the post office and the Union Station via the subway, reverting to the practice in effect prior to September 1, 1920, and that refund should be made to the railroad companies of all deductions made since that date for the service.

One of the subjects discussed at the joint conferences was the standardization of mail cars. President Aishton, of the American Railway Association, has appointed a committee of motive power officers, consisting of J. T. Wallis, H. L. Ingersoll, C. E. Chambers and G. H. Emerson, to confer with representatives of the department regarding the standardization of R. P. O. and apartment cars to conform to the latest plans of the department.

One of the questions discussed has arisen from the decision of the commission stating space rates of pay for "separately operated" railroads. The commission has given a definition of the term "separately operated" which has been construed by the comptroller of the Treasury in a manner which the railroads consider out of harmony with the intent of the commission. It appears to be the view of the comptroller of the Treasury that if the officers of a controlling and a subsidiary line are the same, such a situation prevents the subsidiary line from being a separately operated road, while the railroads consider that a road which publishes separate tariffs in its own name and files separate reports with the commission is a separately operated road, although the officers may be the same as the officers of the controlling company. The department agreed to re-submit this question to the comptroller of the Treasury for a review.

Another question arose as to changes in authorizations by the Post Office Department en route at points where it is not practicable for the railroads to make a change in cars. In many instances the railroad committee said the points had been selected by the department on technical rather than practical grounds. The reply was that the department would accept railway passenger and freight division points to be established division terminals.

Announcement has been made by the postmaster general that after October 1 the former practice of shipping periodical mail in mail cars instead of by freight will be restored. The change will expedite the delivery of this kind of mail. The practice of sending such mail by freight was adopted by the former post office administration in order to reduce expense at a time when the railroads were compensated for the transportation of mails on a weight basis. The basis of compensation now is the amount of space authorized to be used in cars and where the authorization exceeds the usual volume of mail it will be possible to carry magazines that formerly went by freight without additional expense.

## Railroad Administration Begins Sale of Equipment Trusts

WASHINGTON, D. C.

THE DIRECTOR GENERAL of railroads announced on September 12 that he had, with the approval of the President, confirmed the sale, at par plus accrued interest, of \$7,500,000 par value of the railroad equipment trust certificates now held by the government. The purchasers are Messrs. Kuhn, Loeb & Co. The offer for the purchase of these securities was received from Messrs. Kuhn, Loeb & Co. by Eugene Meyer, Jr., managing director of the War Finance Corporation, and transmitted by him to the director general of railroads.

The equipment trust certificates bear interest at 6 per cent and mature serially from 1928 to 1935, inclusive. The securities sold are of the following railroad companies:

Atchison, Topeka & Santa Fe.....	\$1,500,000
Central Railroad of New Jersey.....	1,500,000
Chicago, Burlington & Quincy.....	1,500,000
Norfolk & Western Railroad.....	1,500,000
Southern Pacific .....	1,500,000

The Railroad Administration holds about \$381,000,000 of these certificates given by the railroads in payment for the cars and locomotives ordered by the Railroad Administration in 1918 and allocated to the various railroad companies. Under the plan proposed by the President for settling the accounts between the railroads and the government, it was proposed to authorize the War Finance Corporation to purchase these certificates as well as additional securities which would be given by the railroads to the Railroad Administration in connection with the funding of additions and betterments other than equipment made by the Railroad Administration during the period of federal control. It was the expectation that the War Finance Corporation could place cash with which to settle with the railroads at the disposal of the Railroad Administration by selling its own obligations pending the time when it would be possible for it to sell the railroad securities in the open market.

The bill authorizing the War Finance Corporation to itself acquire these securities has been passed by the House of Representatives, but is still pending in the Senate. Meanwhile the sale of some of the certificates is understood to represent a test of the market and a sort of public demonstration that the railroad securities held by the government will be salable as the market improves. Under the law the Railroad Administration cannot sell the certificates for less than par and accrued interest and it is understood that it does not consider that the certificates issued by some of the roads can be sold on that basis at the present time, but it is hoped to be able to sell possibly \$200,000,000 worth. These which were sold were issued by some of the railroads whose credit is of the highest and it is expected to be able gradually to market an additional amount of these securities. It has been officially stated that the government has received several offers for the car trust certificates, but it was not stated at what prices or for what amounts the offers had been made. The funds received by the Railroad Administration will increase the amount it will have available to make settlements.

The railroad situation was the subject of a conference on September 8 between President Harding and Alfred P. Thom, general counsel for the Association of Railway Executives, who said he had called upon the President to emphasize the necessity for early financial assistance to the carriers.

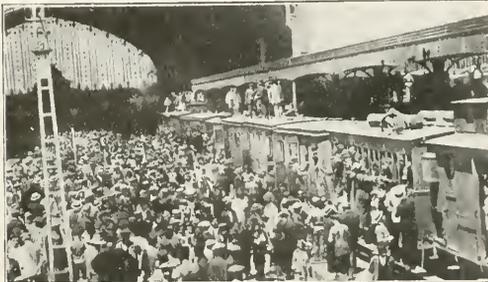


Photo by International

Spanish Troops Leaving Melilla, Spain, for the War in Morocco

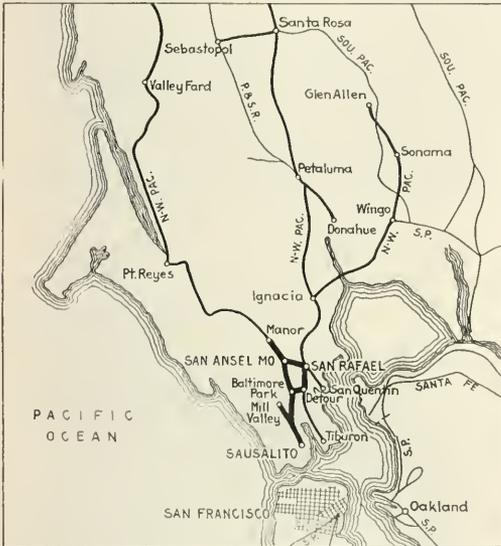
THE PROVINCIAL GOVERNMENT of Manitoba has been asked to finance the construction of a railroad to extend from The Pas to the mining district in the northern part of that province in order that the natural resources of that section may be developed.

# Northwestern Pacific's Experience With Third-Rail\*

Five Men Maintain 37 Miles of Contact System at an Annual Cost of From \$87 to \$145 Per Mile

OUR ENTIRE operation is over a private right-of-way, and therefore we will not enter into any lengthy discussion as to why the third-rail system was chosen instead of the overhead trolley. Those of us who today (after 18 years of service) have the responsibility for the up-keep of this system go to bed nights, yes stormy, windy nights, too, and sleep just as soundly as those men did who first installed it. Could you say the same for a man on a trolley system? I am afraid not.

The present system consists of six miles of single-track and 15½ miles of double-track, or a total of 37 miles of electrified



Map of Southern Part of Northwestern Pacific, Showing Electrified Sections

track. All stations carry 600 volts at the switchboard and that statement establishes our layout as a 600-volt system.

The over-running contact rail as used on the Northwestern Pacific is all regular common "T" rail and nearly all of it is either 60-lb. steel or 50-lb. iron. As an electrical conductor these two kinds of rail are considered equal, and for practical calculations are equal in conductivity of 600,000 circular mil copper, nearly three times the ordinary trolley.

In the first installation the rail was supported mainly on a large block of wood spiked to the tie and the contact rail was spiked to the block. These were continually breaking off and did not last very long. Then some patent granite blocks were tried. These were put in at the Sausalito terminal and through the Corte Madera tunnel. The leakage over them was excessive and the aura at night was at times brilliant. It was decided that the object to be obtained was a support for the contact rail and not a means of illumination. The granite blocks therefore found their way out.

\* Abstract of a paper read at the Pacific Railway Club's fifth annual electrical night by C. E. Hatch, electrical engineer at San Francisco, August 11, 1921.

At that time the present style of support block was designed and put into service and our troubles were nearly over. This type block has proven very satisfactory so far as the Northwestern Pacific lines are concerned. Every sixth tie in the track is one foot longer than the standard tie. On this extra length the support for the contact rail is placed. This support consists of a redwood block 5 in. square and 6½ in. or 7 in. long. The length depends on the size of rail in track. This block is treated with two coats of insulating paint by dipping. There is a ¾ in. through bolt at the base holding to small angle irons which in turn are lagged to the tie. On top of the block is placed a cast-iron cap upon which the rail rests. The cap is so constructed as to form an apron over the block and give a space of nearly 2 in. on the block that is always dry even in the worst rain storms. This cast-iron cap has a channel in which the rail rests, the channel running parallel with the track. The rail is not clamped or fastened to the block in any way, but is free to move with the expansion and contraction.

One of the questions that probably comes to the minds of some is that this is not adequate and the contact rail should be held down. I am free to admit that we have had the contact rail try to crawl all over the right-of-way at times, but it generally landed on the running rail and the result was fire-works and a shut-down. When this buckling has occurred



Soldering Bonds on the Running Rail. Third Rail Is Shown in Foreground

it is simply a case of breaking a joint, allowing the rail to straighten out and dropping the overlapped ends to allow safe travel of the collecting shoe on cars. This has always happened during the warm hours of the day and by morning the men could go out and place the rails back on the blocks and bolt them together. To overcome this trouble, about twice a year men go over the line and hammer the joints and pour oil around the angle bars and over a large proportion of the support block caps. When this has been properly done, the buckling feature has been eliminated. As an illustration of how successful this is, we have several sections of 3,000 ft. and one section of over 4,000 ft. of continuous run of power rail.

At road crossings and intervals in front of stations, the rail

is opened and the ends protected by approach blocks. These blocks are pieces of rail equal in cross-section to the contact rail, but with one end heated and hammered, thus allowing the contact shoes on the cars to ride up onto the rail easily. At these openings there is constructed an underground box with at least one 1,000,000 circular mil cable in it, the ends of which are soldered to the ends of the contact rail, thereby making the continuous circuit.

These undergrounds, as we call them, are constructed of one inch redwood and are made four inches square inside. The cable is supported in the box, clear of the wood by porcelain cleats every two feet. The box is then filled with an asphaltum insulating pitch. The pitch is heated and is poured slowly to avoid blow holes and the cover of the box is nailed on while the pitch is still hot. Properly installed this type of box has proved very satisfactory and has the most excellent moisture resisting qualities. Many of these boxes after years of service have had the cables disconnected and careful tests showed not the slightest leak.

In the original installation there was used a feeder placed in the web of the rail from Sausalito to San Anselmo with the exception of the section through the Corte Madera tunnel. This feeder was a 1 3/8 in. aluminum rod in 30 ft. lengths, but it proved unsatisfactory. We now have good connections to the rail and a good joint in our feeder every 1,000 ft. where before we had a poor joint every 30 ft.

One great advantage in the third-rail construction, both mechanically and financially, is our method of carrying feeders. From Sausalito to Alto power house, a distance of 4 1/2 miles, we have two one million circular mil cables on each rail, or four cables in all and the only additional expense for feeder support is the small iron clamp used to hold the cable in the web of the rail. There are at advantageous points switches so that the system can be sectionalized if necessary and in case of trouble one section be eliminated entirely. We also carry an overhead jumper on pole line over Corte Madera tunnel, and have switches installed so that the tunnel section alone can be cut out without interference with any other section.

At the stations in the double-track territory, there used to be a platform over both power rails. These center platforms have now all been discarded and platforms constructed on the outside. As a protection in lieu of the center platform there is placed a wooden guard over the power rail and a fence between them. This wooden guard is a piece of 2 in. X 8 in. pine fastened to and supported by the power rail itself. This guard rail is used also in yards and other places where employees and others are liable to stumble over the power rail.

The use of a third rail system, of course, can only be justified where, like the Northwestern Pacific, the operations are entirely over private right-of-way. There have been several cases where people struck by train have been thrown against the power rail and burned. There is but one case of human life lost that I can find, directly traceable to contact with the third rail.

There can be naturally not much argument as to maintenance between the overhead trolley and the third rail system. It will probably sound rather fishy to some trolley men to hear that for the past ten years our regular third rail maintenance crew has not exceeded at any time five men. And these five men also find time to do part of the construction work of what extensions have been made during that time.

Our maintenance costs after 13 years of service show the following averages:

For 1916.....	\$87.00 per mile
1917.....	95.00 per mile
1918.....	145.00 per mile

The differences in these costs do not reflect any change in the condition of the rails, but rather a decided change in labor and material cost. At present we are maintaining the entire

system with a crew of five men, three of whom only devote one half day to power rail work. This crew also does all track bonding.

The costs previously given take care of all track bonding. All joints on the running rail are bonded with a 300,000 circular mil soldered bond with a "T" head, soldered directly to the rail. We admit that we are without doubt cranks on solder. All joints of whatever nature, bonds, feeder cable, cross cables, are soldered direct to the rail, using half and half solder. Our results from this operation are entirely satisfactory and we make in our cable connections but one joint, where, on the other hand, with the lug method there are two joints, one where the cable is soldered into the lug and another where the lug is bolted to the rail. This method, moreover, gives a much better electrical connection between rail and copper cable.

The gage of our rail is 2 1/2 in. out from the gage line of track and top of power rail 6 in. above top of running rail. For total clearance we ask 12 in. above top of running rail, 22 in. out or more.

One of the main difficulties is in the winter from high water. Several times at certain points the water was up over the power rail, but it was fresh water and we were able to keep power on the rail and keep trains moving. When the extreme high tides come in the winter along the shores of Richardson bay with a good southwester behind them and the salt water begins to get up around the power rail, why, then we quit. This was particularly bad during one storm in the winter 1918-1919, and our traffic out of Sausalito was stopped for about three hours.

## Short Line Association to Hold Regional Meetings

WASHINGTON, D. C.

OFFICERS of the American Short Line Railroad Association are planning to leave Washington shortly for a trip of nearly a month to cover the country generally for a series of regional meetings with the officers of short line roads in various parts of the country for discussion of the present railroad situation as it affects both the short lines and the trunk lines, in an effort to bring about a more general understanding of the situation and to formulate plans for meeting it. The list of subjects to be discussed includes rates as they affect the movement of traffic and the short lines; divisions of interline rates, whether they are generally just and reasonable as between strong and weak roads; labor; valuations and consolidation; settlements with the government; the consolidated purchasing agency for short line railroads; the issuance of securities; Section 10 of the Clayton act; effect of automobile transportation on the railroads; authority of the Interstate Commerce Commission over new construction and abandonment of existing roads, and new legislation.

The officers of the association, who will make the trip in an official car so that they may take with them many of their office files, will include Bird M. Robinson, president; Ben B. Cain, vice-president and general counsel; T. F. Whittelsey, secretary-treasurer; F. C. Reilly, traffic manager, Western classification territory; J. W. Cain, manager of purchases; I. T. Hanson, manager tariff bureau, and in addition, members of the executive board will join the meetings at various points. The itinerary covers the following meeting dates: Chicago, October 4; St. Louis, October 5; Kansas City, October 6; Denver, October 8; Salt Lake City, October 10; Portland, Oregon, October 12; Seattle, October 13; San Francisco, October 17; Los Angeles, October 18; Houston, Texas, October 24; New Orleans, October 25; Atlanta, Georgia, October 27.

# Informal Meeting of Traveling Engineers

## Hiring of Firemen, Conservation of Supplies and Operation of Locomotive Devices Discussed

THE TRAVELING ENGINEERS' ASSOCIATION held an informal meeting on September 7 and 8, 1921, at the Hotel Sherman, Chicago. At this meeting, which took the place of the regular annual convention of the association, postponed on account of prevailing business conditions, the reports of a number of the committees which were to have been presented before the regular convention were read and discussed and officers were elected for the ensuing year.

In calling the meeting to order the president, W. E. Preston, Southern Railway, spoke in part as follows:

### President Preston's Address

Have you watched the sea in a great storm and noted the waves, mountain high, as they dash against the shore? And have you noted that for hours after the storm has passed and the sky is clear and the wind has ceased to blow, the waves still roll quite as high? The storm has passed, but the effects of the storm still remain.

For four years 40,000,000 men quit peaceful occupations and undertook to destroy each other, together with all the property they could reach. For those who did not go to war was assigned the great task of feeding and clothing those who fought and supplying the implements of warfare. No one has yet even guessed the cost of the conflict. We know that millions of lives were lost, and that the accumulated savings of centuries of industry were wiped away. The conflict is past, but we are left with waves of unrest, with our social and industrial life impaired, with the wreckage of a great storm to clear away.

Civilization is expensive. It costs effort and economy to create the wealth that will support modern life. The world problem is to replace that which was destroyed, that the comfort and security of civilization may be passed on to future generations. There is but one way to meet this cost. That which was destroyed was the product of labor of hands and brains, and was saved through centuries of economy. It is our task to work and save, simple virtues, but real wealth is only created when men work and save.

The contribution of the members of the Traveling Engineers' Association is to supply at minimum cost an article which the modern world stands in great need of—transportation. The world is far short of its demands. Ocean transportation was nearly swept from the seas by the great war. Transportation by highways is growing by leaps and bounds, but will never replace the service that was rendered by the railroads. During the past ten years our population has increased more than 15 per cent, but from the day the world was plunged into war the railroads have been unable to increase terminals, to better their road beds or to improve roll-

ing stock. Members of our organization occupy key positions in supplying this sorely needed commodity—transportation. We are always on the firing line, in the front line trenches. But back of us is a great army of loyal engineers and firemen, trained for their jobs, strong, ready, capable.

The great world need is that men in all walks of life shall work harder and save more of what they produce. The world needs that every locomotive shall work to its full capacity the maximum number of hours each year, at the minimum cost of operation. Not alone for this year, but for years to come, must we contribute our big share to replace what has been destroyed.

Now is the time to stick close to the rigid rules of common honesty, to remember the ten commandments and keep them. The honest man will not accept a day's pay until he has done a day's work. There must be the same honesty in dealing with the corporation as with the individual. The world needs the spirit of Christianity permeating the lives and actions of men. The measure of a man must be not how much wealth has he taken into his own safety vaults, but how much has he done in his generation to quiet the unrest, to put right the wrong, to house and feed and give comfort to a world whose civilization has been strained near the breaking point.

The world looks to us in America to safeguard the sacred right of man to own property, secure against all interference except by due process of law. It is the law that makes us free. Can you picture a railroad whose trains ran at random, at the mere whim of the engineer, who might claim that because this is a free country he had the liberty to run his train how, when and where he pleased? It is because he and all engineers obey the law that he becomes a free man. He has the freedom of the road when all obey the law.

### New Officers Elected

The report of the secretary showed a membership of 1,540, representing a gain of 87 members during the year. The following officers were elected: President, J. H. DeSalis, New York Central; first vice-president, Frederick Kerby, B. & O.; second vice-president, T. F. Howlev, Erie; third vice-president, W. J. Fee, Grand Trunk; fourth vice-president, J. N. Clark, Southern Pacific; fifth vice-president, J. B. Hurley, Wabash; secretary, W. O. Thompson, New York Central, and treasurer, David Meadows, Michigan Central. No change was made in the membership of the executive committee except the addition of W. E. Preston, Southern, the retiring president.

Abstracts of two of the reports and discussions follow. Others will appear in later issues.

## Conservation of Supplies and in Operation of Locomotive Apparatenances

The subject of the conservation of supplies is logically divided into two parts; First, the conservation at the terminal, and second, conservation on the road.

A suitable building located at the point where all engines arrive and depart, materially affects the conservation of supplies at the terminal. This is where all equipment is kept to supply engines for service. The equipment is checked to the engine crews prior to their departure, and checked in again upon their arrival. This facilitates the keeping of a complete record at all times and enables the party in charge

of equipment to account for it if any should be lost or destroyed. If the engine crews know they will be held responsible for the use of supplies upon their arrival at terminals, it will act as an incentive for them to take better care of the equipment.

Where the engines are in pool service, the engineer going out should have an opportunity of seeing the work reported by the incoming engineer. This will give the outgoing man the information that is essential for the proper care of any work that has been done. He will also have a knowledge

of defects that have been reported, which the shop forces were unable to attend to and he will thus be able to protect himself and the company from injury.

The adequate supply of lubricant for the trip should be considered highly essential to the conservation of machinery and appurtenances on the engine. Worn cylinders and valve bushings can often be charged to improper lubrication. However, this is seldom due to the fact that an insufficient amount of oil has been furnished. It is more often caused by defects that have not been reported or defects that have been reported and repairs not made. Also, instructions are not always carefully followed as to the right method of lubricating the machine, or perhaps the man in charge is indifferent.

In order to conserve supplies on the road it is imperative that engines be equipped with proper receptacles so that the different articles, such as oil, waste, lanterns, flags, water glasses, fuses and torpedoes, will not be wasted and damaged if not used. If all concerned were advised as to the cost of supplies or the enormous amount of money involved, it would be an incentive to all concerned for their judicious use and care. The co-operation of the employees is paramount. Carry no equipment on the engine that is not required. All surplus equipment should be promptly reported and removed at the home terminal.

Overloaded tenders are dangerous and extravagant, and overflowing tanks at water plugs are wasteful and expensive, for in freezing weather the water often overflows the tracks, which is very dangerous indeed, as well as expensive to clear away.

Enginemen should make intelligent reports as to locomotive conditions; that is, reports by means of which the enginehouse organization is capable of locating the precise defects. Reporting defects in a general way should not be tolerated, and enginemen should be encouraged to make proper reports by having the work done promptly or if the work cannot be done on this trip the engineman should be so advised and the work followed up and done for the next trip. This will encourage enginemen not to grow lax in making detailed reports.

### Power Reverse Gears

We wish to note particularly the air losses of the power reverse gear. In many instances adequate forces have not been furnished to maintain this appliance and there are heavy air losses as a result of improper care. With the necessary care this device would result in a saving of fuel and water, as the engineer can adjust the cut-off with so much less exertion. However, with heavy air losses around the rotary and by the cylinder packing, it is next to impossible to regulate the cut-off at short valve travel, which results in the engine being worked at a longer cut-off, with a corresponding excess of consumption of fuel.

Once the steam has been used instead of the air for operating the gear it is of no more use until the piston is repacked.

Piston packing rings improperly cut, and failing to lap properly cause creeping. Also, if they are too tight and hardened, the rubber having lost its resiliency they will not keep tight contact with the cylinder wall.

Hardened packing in the piston gland, scored rod or worn parts—any blow here will cause creeping.

Leaky drain cocks or cylinder oil cups will cause creeping.

On some gears there are cone-shaped valves for the distribution of air to the power reverse and these valves cause considerable trouble because of leaks, which will cause creeping when the reverse lever is hooked up. Leaky rotary valve will also cause this trouble; however, this seldom gives any trouble. Cases have been found where the stop pin is broken off and wedged between the rotary faces, damaging them; but under ordinary wear the rotary stands up well.

When the reverse gear valve assembly is changed, it is ab-

solutely necessary to check the length of the long connection rod to the cylinder lapping lever. In some cases it had to be changed in length as much as 1½ in. Failing to do this the links will touch bottom at one end and have too short maximum cut-off in the other end.

Lost motion in pins and connecting rods of the reverse should not be tolerated.

Owing to the fact that the gear receives most of its wear in hooked-up position, in time the cylinder increases in diameter at that part of the stroke and the piston rod decreases in diameter at the corresponding place. A gear that is worn this way will be a constant source of trouble from creeping and jumping.

Rotary, cylinder and connecting rod pins should be well oiled. Make sure that the steam shut-off valve is not leaking condensation into the reverse.

Cases have been found where the long connecting rod had several bends in it. This rod should be of sufficient size to avoid bending.

### Locomotive Headlight Equipment

Any engineer operating locomotives equipped with electric headlights should make this a part of his study, in connection with his other duties. He should see before leaving the terminal that the dynamo has been well oiled and cared for and that his headlight is equipped with incandescent globes, also that he has sufficient lights placed in proper position in the cab, in order to furnish light to all the equipment he has to handle. He should bear in mind that the dynamo is the most vital part of the equipment and that he should pay particular attention to the condition of this machine at all times, keeping constantly in mind that all the bearings should be kept oiled. The governor will get out of order once in a while and will not control the speed of the machine as it should. When this condition develops, if the engineer does not take notice, it will result in the cab lights being burned out, especially if the headlight is cut out from the switch in the cab. In order to handle this situation, the engineer should throttle the machine down by the throttle in the cab. The engineer should bear in mind that if his hours are long in making the run over the division, at night, the machine should be lubricated between terminals. He should also see that his headlight is properly focused. There is no one who has a better opportunity of keeping the headlight properly focused than the engineer. After completing the trip, if there are any conditions about this equipment causing it not to function properly, he should make an intelligent report and have conditions properly cared for at the terminal before the engine is allowed to go out again.

### The Superheater

Enginemen should be taught the disastrous effects of carrying high water with this device. It not only converts the appliance into a steam dryer, but is very apt to cause the unit joints to leak and also to form a coat of lime or sediment on the inside of the tube, which substantially affects the degree of superheat obtained. It has been discovered that in extreme cases of carrying water too high in the boiler the superheat units have become completely clogged. Moreover, superheater headers have been broken, due to an excessive amount of water or filling the boiler too full while the engine was laying up at terminals.

Enginemen should receive instructions to closely observe the operation of the damper, for if the damper does not close when the throttle is closed, the superheater units will become overheated and will not only cause the unit joints to leak, but will have a tendency to crack the return bends and thus cause a complete engine failure.

The committee deems it best to place an independent lubricator on the locomotive for the purpose of lubricating the

stoker engine or motor, placing it convenient to the fireman. We do not wish to relieve the engineer of the responsibility of caring for this machine when on the line of road, but the fireman should be held responsible by the engineer for the proper care of this machine. It will in a measure fit him for greater responsibilities in the future. The fireman should see that all parts are lubricated while on the line of road, and where the coal is not prepared he should watch closely for any foreign matter which would be liable to cause a stoker failure. The engine crew should see that the conveyor hopper is empty on arrival at the terminal and all slides closed. This will prevent the conveyor being overloaded or clogged when the engine is coaled.

The report is signed by J. P. Russell (chairman), Southern; J. A. Mitchell, N. Y., N. H. & H.; W. J. Fee, Grand Trunk; H. E. Reynolds, C. R. I. & P., and E. Von Bergen, Illinois Central.

### Discussion

The discussion of this report was confined almost entirely to the methods of handling locomotive supplies and tool equipment. E. Von Bergen (Illinois Central) described a monthly report which is being made up to show the amount of supplies issued to various engine crews, from which any cases of excessive issues may readily be determined and in-

vestigation made to learn the cause and apply corrective measures. The discussion disclosed a lack of uniformity in the methods of checking supplies on and off locomotives. In some cases they are checked both at the outgoing and the incoming terminal. In other cases they are checked out and in at the home terminal only. The use of individual tool boxes of convenient size which can be handled by the enginemen has met with considerable success in conserving the small tools required on locomotives, the engine crews showing considerable interest in taking care of this equipment. In any case the greatest trouble is experienced in looking after the tools while the engines are in the terminal. This is particularly true where the tools are assigned to the locomotive and are taken off after the crew leaves the engine by the supply room attendant.

One advantage which has developed from providing private tool boxes for the enginemen is the incentive which this provides each engineman to accumulate a few tools of his own with which he will make repairs on the road that otherwise would not be made.

The greatest difficulty is experienced in conserving the issues of torpedoes and fuses, one reason being that it is difficult to determine closely the number of occasions arising which actually require their use as intended.

## Self-Adjusting Wedge, Feed Water Heater and Booster

The present standard wedge is of the manually adjusted style. It is designed to take up the wear between the driving boxes and the shoes and wedges brought about by the up and down movement between the frame and the boxes. This wear, if not taken up, results in undue freedom of the box between the shoe and wedge. This lost motion is the cause of the so-called "box pound" due to the movement of the box backward and forward between the shoe and the wedge. This brings about a side wear of the crown brasses and a tendency to break these bearings. The hammer-like blows struck against the shoe and wedge by this backward and forward movement of a loose box may result in broken shoes and wedges, and these blows become a prolific cause of broken frames. This lost motion of the boxes, which usually affects the different wheels unequally, tends to cause a variation from the distance intended in the locomotive design in the distance between the centers of the rod bearings. The main driving boxes, due to the greater thrust brought to bear upon them, as a rule, develop the most wear. This wear of the main driving boxes throws undue strain on the side rod bearings, tending to cause rod pounds, broken side rod bushings and brasses, and possibly bent and broken side rods.

Lost motion in connection with main wheel driving boxes tends to increase the steam piston stroke and shorten the steam cylinder clearance space at the end of stroke, and when allowed to become extreme may bring about cylinder knocks due to the steam piston striking the cylinder heads with a tendency to knock them out. Lost motion of the main driving boxes is taken up by the steam piston at the beginning of its stroke and live steam is thereby permitted at any given valve cut-off to follow the piston further than intended, thus causing a loss in expansion value of the steam, and a loss of fuel.

The taking up of lost motion existing in main driving box parts through steam piston pressure moves the main driving wheels bodily back and forward to the extent of such lost motion, thus setting up a tendency for the wheels to slip during this movement. This is claimed to be a most common cause of wheel slipping and of troubles in that connection in moving heavy trains, especially where the rails are bad or conditions adverse.

That these results of failure to prevent undue lost motion

of the driving boxes in the frame are frequently the cause of locomotive failures and always a source of increased maintenance cost is too well known to require further comment.

The engineman has always been held responsible for allowing any such undue lost motion, and until within the past few years usually attended personally to the setting up of the adjusting wedges. The most that is expected of him today is that he shall report any looseness or pounding of the driving box parts, the actual work of setting up the wedges, devolving on the roundhouse forces. This condition has not brought about a change for the better.

When the engineman himself took care of this work, it was his practice to so spot the locomotive that the driving boxes were forced up against the shoes, thus giving all possible free play between the driving boxes and the wedges and permitting the wedges to be forced up to the extent necessary to eliminate all lost motion; the wedge was then slightly pulled down to provide the required freedom of movement of the box and to prevent its sticking. It is now not uncommon practice in roundhouses for employees assigned to do this work upon report of the engineman to undertake to adjust the wedges without moving the locomotive at all, thus frequently not fully accomplishing the object desired and thereby permitting the locomotive to return to service in a condition detrimental to itself and the railroad.

The value of a self-adjusting wedge, simple in its design and non-erratic in its action, will readily appeal to all who have to do with either the handling of the locomotive or its maintenance. To the engineman it would mean a more efficient and satisfying machine, to the mechanical department an incalculable benefit in the savings effected in maintenance cost through the tendency to prevent the many troubles herein mentioned as arising through failure to properly keep up the wedges and through the reduction of locomotive failures due to these causes as well as a very considerable saving in the cost of roundhouse labor now required to do the adjusting of wedges, and doing it none too efficiently. In which direction the savings would lay, would, of course, depend largely upon the previously existing conditions.

At first glance, the designing of such a wedge seems quite simple and easily brought about through the placing of a suitably arranged spring underneath the adjusting wedge

and operating on it in such manner as to gradually force up the wedge as lost motion develops in the driving box parts. It is understood that this method, without any change in the adjusting wedge other than adding to it of such a spring and the small parts necessary to give the required spring tension, has been tried out on at least one large railroad. In giving this method a second thought, however, we are likely to look for what we understand actually occurs, that of the wedge being gradually tightened until it grips the box, causing a hard riding locomotive and possible rough usage of the rail as a consequence. This, of course, means the curing of one evil at the expense of acquiring another one practically as bad.

A method of preventing this gripping of the box has been brought forward in a self-adjusting wedge now being used to an increasing extent on many of our railroads. In this device the adjusting wedge is made in two parts which might appropriately be referred to as an adjustable wedge and a floating wedge. The adjustable wedge is tapered on one side to suit the taper of the frame jaw with a reverse taper on its opposite face. The floating member is also tapered, its thickest part being at its upper end, and it fits between the adjusting wedge and the driving box. A wedge bolt, attached to the adjusting wedge as usual, passes down through the pedestal binder and has attached to it below the binder the adjusting spring and the parts necessary to give this spring the required tension. The floating wedge is made of such length that when fitted into the driving box jaw, there is not less than  $3/16$  in. nor more than  $5/16$  in. clearance or play for it to move up and down between the pedestal binder and the frame. With this arrangement, if the driving box should move up in the frame jaw, there would be a tendency for it to carry the floating wedge with it in case there was any clearance between the top of the floating wedge and the top of the frame jaw. On account of the tapers of the two wedge parts this would tend to bring about a loosening of the driving box between the shoe and wedge. Before this could be effected, however, the small clearance given the floating wedge between the pedestal binder and the top of the frame jaw would bring the top of the floating wedge up against the top of the jaw, checking any further tendency to cause undue freedom of the box as the floating wedge would then be held stationary even if the box continued to rise in the frame jaw. If the driving box should move down in the frame jaw the tendency would be to carry the floating wedge with it and at the same time there would be a tendency to force down the adjusting wedge against the spring tension. This would bring about a loosening of the driving box between the shoe and wedge. The limited clearance space of the floating wedge in the frame jaw, however, would cause the lower end of the floating wedge to strike the binder and prevent further tendency to cause undue freedom of the box, as the floating wedge would then be held stationary even if the box continued its downward movement.

Reports from several of our members located on roads having this device in use and who have had actual experience with it, as well as from several mechanical superintendents on roads having it in use, state that it gives excellent results.

While any type of self-adjusting wedge is supposedly automatic in its action, it must be remembered that none are automatic in maintenance. Like all mechanical devices they require a certain amount of attention, the labor required, for such attention being, of course, considerably less than is necessary for looking after manually adjusted wedges. The principal attention to self-adjusting wedges should be for regular lubrication, absolutely necessary with any type of wedge, and the adjustment of the adjusting spring.

It is impossible to give accurate figures on the savings in cost of upkeep of the frame, box parts and runnings gears

as between engines having manually adjusted wedges and ones with self-adjusting wedges for the reason that many troubles with these parts which could be caused by poorly maintained driving box parts might also be due to other causes. However, a table prepared by an eastern railroad shows in a general way results obtained from locomotives of same type with self-adjusted wedges of the type just referred to.

[The table gave in detail the amount of rod work required on 20 locomotives of the 2-10-2 type equipped with the self-adjusting wedges, from July 18, 1920, to January 31, 1921, during which period the engines aggregated 408,447 miles, or slightly more than 20,000 miles each. Four engines, aggregating 83,800 miles, received no rod work whatever. Eight engines, aggregating 161,865 miles, received complete rod work. On the remaining eight locomotives 12 No. 3 brasses, 8 No. 2 brasses, and one set of main bushings were renewed. No crown bearing or wedge material was used.—EDITOR.]

### Feed Water Heaters

From 55 per cent to 58 per cent of all heat generated in the firebox is lost in exhaust steam. This great loss of heat is due to the necessity of exhausting steam from the steam cylinders while still in its gaseous form and to the fact that it requires about 970 heat units simply to hold water in the form of steam, all of which, together with such additional heat units as may be in the exhaust steam, is allowed to pass out of the locomotive stack without doing any additional work other than acting as a draft on the fire.

Considerable success has been achieved in heating feed water for boiler use by means of exhaust steam. It is our understanding that this practice has long been successfully made use of in connection with stationary boilers; also, that it is used to a considerable extent in European countries on locomotives. Germany alone is said to have 10,000 locomotives equipped and to be adding this equipment at the rate of 2,000 feed water heaters per year. That this method has not received more consideration in this country in the past has probably been due to cheap fuel and lack of an efficiently developed device for the object in view.

Generally speaking, feed water heaters making use of exhaust steam are of two kinds known as the closed type and the open type. In the open type the exhaust steam either goes directly into the feed water, and in condensing gives up its heat to the water or goes through tubes surrounded by the feed water, heating this water while being itself condensed in the tubes. When it goes directly into the water it is found advisable to pass the exhaust steam through an oil separator enroute to the feed water heater to prevent lubricating oil contained in exhaust steam from entering the locomotive boiler. In this type the heater is open to atmospheric pressure and the pump is placed between the heater and the boiler check. In the closed type the water is forced through tubes in an enclosed heater, these tubes being surrounded with exhaust steam which heats the water as it passes through the tubes. In this type the heater is between the pump and the boiler check and is subject to boiler pressure.

In the open type on account of the heater being open to atmospheric pressure the feed water can be heated only to the normal boiler temperature of 212 deg. F. In the closed type it is possible to heat the water to within 10 to 15 deg. of the temperature of the exhaust steam, which may run as high as 250 deg. F.

About one-sixth or 15 per cent of the exhaust steam which would ordinarily go out through the locomotive stack is diverted to the use of the feed water heater.

One type of heater which has been applied to probably one-half of the American locomotives so far equipped has an arrangement whereby after the exhaust steam going to

the heater has been condensed, this water can be filtered, freeing it of any lubricating oils that it may contain, and be returned either to the locomotive tender or into the suction pipe of the pump carrying the feed water to the heater. By this means it is claimed that the tender water capacity is in effect increased 10 per cent to 15 per cent.

That a large fuel saving and actual increase in boiler efficiency will result from such installation seems to be generally believed. The economical results obtained are due not only to the fact that a large amount of the heat from the exhaust steam is reclaimed, but also because the rate at which the fuel is burned on the grate is reduced.

Our information is that some eighteen of our American railroads are today using or experimenting with feed water heaters, although not to exceed seventy-five locomotives all told are equipped, and that five different types of feed water heaters are being tried out. Owing to the limited number in use and the time used, reliable figures as to the average cost of maintenance of such devices are not available, but it is believed it will be well within the bounds of reason as compared to the savings which it is believed can be brought about by their use.

A summary of a number of runs made with a freight locomotive on the New York division of the Erie Railroad equipped with a feed water heater of the closed type heater, as compared with the same number of runs using the injector, is shown in one of the tables. A summary of nine runs with feed water heater and nine with the injector, in passenger service with a locomotive on the D. L. & W., equipped with the same type of feed water heater, is also shown.

SUMMARY OF ERIE RAILROAD FEED WATER HEATER TESTS

	Heater		Injector	
	West	East	West	East
Direction of runs				
Length of runs—miles.....	88.3	88.59	89.22	89.44
Actual running time—dec. hours.....	4.75	5.436	5.658	5.699
Number of cars, including dynamometer car	70	74	80	87
Actual tons, including engine and tender..	1,957	1,988	5,039	4,943
Coal fired per locomotive mile.....	211	245	263	241
Average steam pressure.....	173	172.0	173.1	172.7
Average superheat.....	579	597	571	600
Maximum superheat.....	606	641	604	640
Water evaporated per pound coal as fired, running time.....	7.917	6.867	7.697	6.529
Water evaporated, per lb. dry coal, R. T. T. Equiv. evap. per lb. dry coal, R. T. T.....	7.965	6.909	7.735	6.609
Coal fired per lb. running time.....	9.270	8.070	9.007	7.772
Average temperature of feed water leaving heater.....	183.635	217.085	184.151	214.574
H. T. U. per lb. coal as fired, running time, based on equal H. T. U.'s (13,225)	13,279	13,702	13,357	13,225
Boiler efficiency, based on dry coal, per cent coal fired, running time, to operate feed water pump.....	67.34	57.0	65.1	56.3
Per cent total coal fired to operate feed water pump.....	231	.....	225	.....
Per cent saving in coal as fired, running time, in favor of feed water heater.....	7.885	6.628	7.621	6.529
Per cent total coal fired to operate feed water pump.....	1.24	.....	1.24	.....
Per cent net saving in coal as fired, R. T. U. in favor of feed water heater.....	17.72	.....	15.48	.....
Average feed water temperature.....	71	65	71	60
Average temperature of feed water leaving heater.....	209	.....	193	.....
Average temperature of feed water leaving injector.....	.....	.....	178	169.5
Maximum temperature of feed water leaving heater.....	231	.....	239	.....
Maximum temperature of feed water leaving injector.....	.....	199	.....	190

AVERAGE RESULTS OF NINE TESTS WITH AND NINE TESTS WITHOUT FEED WATER HEATER—D. L. & W. LOCOMOTIVE 1135, ON TRAIN NO. 6

	Heater	Injector	Per cent difference for heater
Tonnage.....	527	525	1.5 per cent less tonnage
Running time.....	194	189	2.2 per cent more running time
Total coal, lb.....	9,760	12,460	21.6 per cent less coal per run
Total water, lb.....	97,919*	95,493	2.27 per cent more water per run
Coal.....	9.97*	7.79	28.0 per cent more water per lb. coal
Coal per ton train.....	18.4	23.3	21.0 per cent less coal per ton train
Water per ton train.....	186	180	1.67 per cent more water, ton train

\* 12 1/2 ins.

### The Locomotive Booster

The locomotive booster is designed to assist in starting such standing trains as the locomotive is capable of hauling on a level track when once in motion without the aid of such device, but which it would otherwise be unable to start without assistance of some kind and for helping it to haul

such trains over ordinary grades encountered between terminals; to assist in starting trains out of places where stops are necessary, as at stations, towers, water plugs, switches, etc., or where made necessary by locomotive or train troubles, and which, on account of curvature or grade, are bad places to start from and ordinarily would require the taking of the train slack, perhaps backing up to a place from which a start could be made, setting off of cars, doubling of grade, or obtaining the assistance of another locomotive.

While the addition of a booster increases the tractive effort of the locomotive and thereby makes possible the starting of additional cars and to that extent serves to increase the tonnage which can be hauled under normal conditions or serves to assist in getting heavy trains over the road without delays on grades and at bad starting places, it is in no sense intended as an aid in permitting the overloading of the locomotive to a point beyond what its normal capacity would be when in motion on a level track without this device, as this would make additional aid again necessary in starting from terminals, bad starting places enroute and on ascending grades.

The method of operation is simple. The engineman decides that he needs the booster, he raises the booster latch, which makes contact with the control valve, and the booster is automatically engaged. The booster cuts out automatically when the reverse lever is moved back from the corner, which is at a speed of approximately 12 to 15 miles an hour, or it may be cut out instantly by the engineman knocking the booster latch down, which is similar to knocking out an electric switch.

The claims made for the booster are that it puts any locomotive with trailing wheels into the next class above in starting effort, because the trailing wheels act as an additional pair of drivers; that on freight trains this means more tons handled annually because of greater starting effort and acceleration, and avoids damage to machinery and equipment because of a smooth, steady start; that on passenger trains it means smooth starting and quick acceleration to road speed, protects the equipment from damage and renders schedules more easily maintained by avoiding delays in starting; that it reduces by one-half the time required to get trains to road speed and that it pays its own fixed and maintenance charges several times in doing this through reduced wear and tear on rods, pins, cross-head keys, tires and other parts of the machinery of the locomotive that would ordinarily be caused by slipping in the effort to start, and that when the train is up to road speed it has no more effect on the locomotive's operation than so much coal on the tender.

The following record of a run made on the West Shore line will give a good general idea of the benefits claimed for the booster as shown in actual performance. Engine 3149 left Ravena with a crew that had no previous experience with the booster and the intention was to determine whether or not the full tonnage of 2,582 to 2,600 could be taken through to Weehawken without the usual reduction to 2,100 tons at Newburgh. The booster was used on all starts as well as on grades at speed.

The first test was at Catskill where water was taken, the water plug being located at the bottom of two grades, the ascending one being .39 per cent. The usual practice was to leave the train at the top of the west grade, cut off and run for water, then come back, hook up and make a run for the other grade. This practice was disregarded and the train was hauled down to the water plug. After taking water the booster was cut in and the train carried over the grade at satisfactory speed. With the booster cut in, 5 miles per hour was quickly gained with the draw-bar pull showing 41,067 lb., and for a distance of 580 ft. the speed increased from 5 to 8 1/2 miles per hour. The booster was then disengaged and the locomotive required to take the load entirely and the draw-bar pull dropped to 33,497 lb., or a difference of

7,570 lb. in favor of the booster. This represented 22 per cent increase in draw-bar pull. The throttle and reverse lever were not touched.

The train continued on to Kingston and at each stop the booster was cut in for starting and showed rapid acceleration. The ruling grade is at Haverstraw, six miles long and an average of .47 per cent. A stop was made for water and the train started with the booster. When the grade was reached the speed was 3.3 miles an hour. On the grade the first mile showed a speed of  $28\frac{1}{2}$  miles an hour; the second mile a speed of 19 miles an hour, the third mile a speed of 12 miles an hour, the fourth mile a speed of 8 miles an hour, and the fifth mile a speed of  $7\frac{1}{2}$  miles an hour.

Speed was falling very rapidly and at the end of the fifth mile the draw-bar pull registered 36,441 lb. The booster was then engaged where the grade was .52 per cent and in 432 ft. the speed was 8 miles an hour and the draw-bar pull 42,900 lb., a difference of 6,459 lb. or 17 per cent increase with the booster. The speed then gradually rose and reached 10 miles an hour in the next  $\frac{3}{4}$  mile and with tonnage of 22.6 per cent over the previous capacity of the locomotive. One and five-eighths miles of grade yet remained and when the train passed over the top the draw-bar pull showed 45,080 lb. The booster was then cut out and the train arrived at Weehawken with the original tonnage of 22.6 per cent more than this class engine had ever before taken through. A day or so later the regular crew caught engine 3,149 and, not to be outdone by the test just related, brought through 2,618 tons, representing an increase of 24.6 per cent over the ruling tonnage.

The report is signed by T. F. Howley (chairman), Eric; Frederick Kerby, B. & O.; J. P. Stewart, A. T. & S. F.; John Draney, D. L. & W., and J. A. Talty, Franklin Railway Supply Company.

### Discussion

The discussion of the self-adjusting wedge indicated that there had been little experience with locomotives having complete installations of the device among the members present. In most cases mentioned the wedges were applied on the main drivers only. The opinion was expressed, however, that to get the full benefit of the device it must be applied on all boxes and this general application seems now to be the tendency. In caring for self-adjusting wedges the most important point, according to the experience on the New York Central, was stated by J. H. De Salis to be the proper attention to the adjustment of the springs. If these are too loose the piston force at full stroke is sufficient to force the wedge down against the spring. If the spring is too tight a stuck wedge results. These difficulties are avoided by keeping the spring adjusted to a height of  $1\frac{1}{2}$  in. from the jam nut to the binder. The experience of those taking part in the discussion indicates a material increase in the mileage obtained from driving boxes and better rod conditions than have been obtained with the manually adjusted wedges.

In discussing the feed water heater, J. N. Clark (Southern Pacific) stated that this company has two open type and two closed type heaters in service, one each in a bad water district and one each in a good water district. The results obtained from these installations are, however, not yet available.

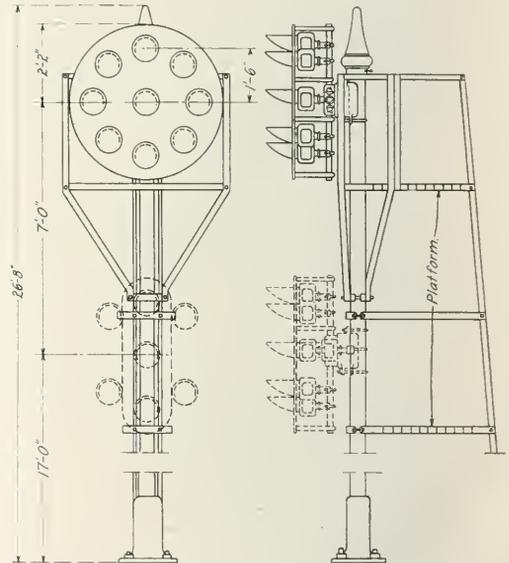
In the discussion of the locomotive booster, a number of installations of this device were mentioned, all of which have demonstrated their ability to effect considerable improvement in the handling of heavy trains. W. H. Corbett stated that the Michigan Central has three boosters in service on passenger locomotives, which have eliminated jerking and the necessity for taking slack in starting heavy passenger trains and have materially increased the rate of acceleration in starting these trains. The booster is used up to about eight miles an hour.

A trial on the Chicago & Eastern Illinois was referred to

in which a 4,383 ton train was taken over a grade, over which, without the booster with the same locomotive it was required to reduce the tonnage to 3,976. With the booster the heavier train was pulled up the grade in 19 minutes, while the light train without the booster required 23 minutes to move over the same distance.

### New Design of Position-Light Signal

THE PENNSYLVANIA Railroad now has in service nearly two thousand signals of the position-light type—925 high signals and 1,038 dwarfs; and with recent improvements and simplifications the cost of installation and maintenance of the signals has been so reduced that further and stronger claims are made for economy of operation as compared with semaphore signals. These signals, the invention of A. H. Rudd, chief signal engineer of the road, and Dr. William Churchill, of the Corning Glass Works, give their indications by uncolored electric lights, both night and day; and they have now been in use over six years. Their



Construction of the New Position-Light Signal

development has been recorded in the *Railway Age* in numerous articles, particularly those of January 8, 1915; July 21, 1916, and July 26, 1918 (page 177).

The latest improvement is a simplified and symmetrical frame and background; and with this arrangement a row (or rows) of not more than three lights in a row, now serves to give any and all indications. From a statement prepared by Mr. Rudd we take the following descriptive matter:

The position-light signal was originally designed for the purpose of signaling a portion of the four-track main line, electrified for local passenger service, while retaining the steam trains for freight and through passenger service. The experimental signals carried five lights in a row—those first installed had two rows of four lights each; the bottom row normally horizontal, so that, if the top lights were extinguished, the bottom row would indicate stop. Eight lights were, therefore, displayed at all times. The large background was no detriment on bridge signals, but on account of the

surface exposed to wind pressure ground masts had to be 7 in. or 8 in. in diameter.

**The New Design**

The illustrations show a new design which has been developed and the aspects which may be displayed. The line drawing shows the details of construction and the half-tone photographic perspective the appearance of an automatic block signal. It will be noted that in the latter the platforms are smaller than in the drawing, this change having been adopted since the drawing was made.

The indications of the aspects are in accordance with the Standard Code, as follows:

- 1—Stop.
- 2—Stop, then proceed. (Rule 509, Standard Code.)
- 3—Proceed at slow speed prepared to stop.
- 4—Proceed with caution prepared to stop short of train or obstruction.
- 5—Proceed at slow speed prepared to stop short of train or obstruction.
- 6—Proceed at restricted speed.
- 7—Approach next signal prepared to stop.
- 8—Approach next signal at restricted speed.
- 9—Proceed.
- 11—Approach home signal with caution.

Number 4 is the manual permissive block signal. No. 5 is to be used as the up-grade signal which may be accepted by tonnage freight trains without stopping, while other trains

Aspects.										
1	2	3	4	5	6	7	8	9	11	
•••	•••	•••	••	•••	•••	••	••	••	••	••
		••	••	••	••	••	••	••	••	••
		••	••	••	••	••	••	••	••	••

Position-Light Signal Aspects, Pennsylvania Railroad

stop before proceeding. No. 11 is the distant switch signal. It will be noted it is similar to No. 4, which, under the rules, may not be accepted by a passenger train without stopping. The addition of the bottom light permits passenger trains to



Position-Light Signal with Circular Background

accept it. If, at some future time, the stop requirement in Rule 509 should be eliminated, aspects Nos. 3 and 5 would be eliminated, and No. 2 substituted for aspect No. 5.

Dwarf signals may be four-position:

- (a) Horizontal for indication No. 1.
- (b) 45 deg. upper right hand quadrant for indication No. 3.

- (c) 45 deg. lower right hand quadrant for indication No. 5.
- (d) Vertical for indication No. 10, proceed at slow speed.

Aspect b being displayed in terminals, with track clear but next signal at stop.

Aspect c with track occupied, and, Aspect d with track clear and next signal clear and a and b, and rarely c, being used out on the road.

It will be noted that a background is provided for the lower row vertical only, this being a restricted speed signal (restricted speed is one-half the authorized speed) but not for the diagonal rows or the single light, as these are slow speed signals and long range is unnecessary. The reduced size of the background and wind pressure area eliminates the necessity for the large masts. Signals can be installed on existing masts, and they need less clearance than a semaphore.

Experience shows that these signals, lighted six hours a day, cost no more to operate and maintain than semaphores. Assuming the cost of current from primary batteries at \$5 per k.w.h., the signals could be lighted 24 hours and still compete if their power could be obtained for \$1.25 per k.w.h. It is claimed that it can be furnished by farm lighting outfits for 5 cents, but even if it cost 10 cents, the saving would be \$1.15 per k.w.h.

The lamps used in the high signals are 12-volt, 6 watt, burned under voltage, so that the total energy required for the three lights is 15 watts, and for the three lights and marker (aspect No. 2) 15 watts when the signal is at caution or clear and 20 watts when at stop. The dwarf signal requires two 12 watt lamps burned under voltage, with an actual watt consumption of 16 for the two lights.

Given then, even the same cost for installation as for semaphores, but less cost of operation and maintenance in all cases, it seems that the logical procedure is to install these signals everywhere instead of motors as an economic proposition.

**Advantages of the Position-Light Signal**

The advantages of any light signal, displaying the same aspects day and night and without moving parts and their incidental failures, are so obvious and have been so frequently set forth that comparison with the semaphore in this respect appears unnecessary. A color-blind man can read a position-light signal accurately. The lights penetrate fogs better than colored lights. Two lights must fail before the signal ceases to be displayed effectively. Four positions *without combination* are available and used, as against three positions of the semaphore and three colors which may be seen distinctively at a distance; and this additional position gives the greatest flexibility.

If two lights are extinguished on the bottom row, either diagonal or vertical, with the top row horizontal, the aspect "Stop and Proceed" is displayed; if all lights are extinguished on these rows, the indication is "Stop." In general, the more lights extinguished, the more restrictive the indication. False clear indications due to faults in these signals have been eliminated, and the day of experimentation is past.

A CHICAGO GREAT WESTERN passenger train was derailed near Marshalltown, Iowa, on September 9, and the two rear cars were overturned and later were destroyed by fire. Thirteen persons were injured, none seriously.

ANTI-RAILWAY PROPAGANDA IN ITALY. An Italian report is reported as estimating that if the 200,000 railway workers of that country were each employed in driving 10-ton trucks 8 hours a day for 300 days a year, five times as many ton miles would be carried as by the Italian railways now. The number of employees necessary for repairing trucks and for loading and unloading freight are not mentioned.

## Two Roads Secure Excellent Results from Water Treatment

REPORTS which have been prepared by the Missouri Pacific and Illinois Central on the operation of their respective systems of water softening for 1920 indicate that water treatment on both of these roads is being attended with highly profitable results. As will be noted in the tabulation for each road, the Missouri Pacific reports a saving for the year of \$481,129 through the use of treated water, a figure representing a return of 197 per cent on the total amount invested in treating facilities, while the Illinois Central reports a saving for the year of \$292,456, or about 120 per cent on the total investment.

### CONDENSED REPORT OF RESULTS OF WATER TREATING FOR 1920

Number of Treating Plants	Amount Invested	Quantity of Water Treated		Scaling Solids Removed in Annual Saving	Gross Annual Treating Process	Cost of Treating	Net Annual Saving
		Gallons	Pound				
67	\$244,201	1,617,360,000	4,517,883	\$624,708	\$143,579	\$481,129	
20	247,801	1,149,370,000	2,547,609	382,684	69,684	292,456	

Although the savings as reported constitute attractive figures in themselves it is worthy of note that in both cases they are intended to represent only the value of the reductions effected in the amount of fuel required by the locomotives, the flue renewals, the amount of flue calking and other running boiler repairs and the time lost by locomotives while undergoing boiler and firebox repairs, less the cost of treatment, no consideration having been given to such items as the improvement of train schedules, the reduction in the number of engine failures, increased power, etc., as are frequently mentioned in connection with water treatment.

In each case the gross saving from water treatment was arrived at by taking 15 cents as the aggregate saving in the above items effected for each pound of scaling matter removed by the treating process and prevented from entering the boiler, from which the net saving was obtained by subtracting the interest and depreciation of the treating plant, the cost of chemicals, and the cost of operation, maintenance and superintendence. The value of 15 cents was taken as the equivalent for the year 1920 of the value of 7 cents derived in 1911 and incorporated in the report of the Water Service Committee of the A. R. E. A. for 1914.

The Missouri Pacific water treating system includes 67 plants, 20 of which are new, 13 having been built in 1920 and the remaining 7 completed early in 1921. As a result of the operation of these plants 28.8 per cent of the 5,616,565,000 gal. of water used for steaming purposes was treated. The total consumption of water on the system during 1920 was 6,526,826,000 gal. and the average cost of treatment in 1920, including operation, 10 per cent on the investment in treating facilities and the cost of supervision was 8.87 cents per thousand gallons. This is compared to 8.72 cents in 1919, 6.57 cents in 1918, and 4.71 cents in 1917, the increase in cost being attributed to the increased cost of chemicals and labor. On the Illinois Central there are 20 treating plants which during the year treated 1,149,370,000 gal. of water at a cost of approximately 8 cents per thousand gallons.

As an additional item of interest in connection with the water softening on the Missouri Pacific the following is quoted from the report:

"It is estimated that a saving of at least 60,000 tons of coal was effected due to the removal of the scale-forming material which would otherwise have been deposited in the boilers. The 4,517,883 pounds of scale removed, averaged into the 750 engines using this water, and assuming only 25 per cent adhered to the tubes and sheets, would amount to 1,505 lb. per engine, which quantity would form an insulating coating about 3/16 in. thick. Experiments have shown

that fuel wasted to heat through this thickness of scale insulation varies from 20 per cent to 30 per cent. It is safe to assume that the 1,123,000 tons of coal necessary to evaporate the 1,617,360,000 gal. of water would have been increased at least five per cent by using untreated water. At a number of stations where the supply is secured from creeks or rivers, a very large quantity of mud and silt was also removed from the water, the saving from which is not included in the above figures. There is also the large saving in boiler repairs and loss of engine time which would have been caused by this large scale accumulation."

### "For Politics Only"

FOLLOWING is a portion of a letter written to Congressman Carl Hayden at Washington, D. C., by Epes Randolph, late president of the Arizona Eastern and the Southern Pacific of Mexico on August 18, 1921, four days before his death and printed in the Los Angeles Times of August 23. It is probably his last written expression on important public questions and is of such direct interest to railway men that it is reprinted herewith.

"There is an insect in certain parts of Mexico called the alacran. The female of this species gives birth once in her lifetime to a dozen or more infant alacrans who immediately climb upon the body of the mother and subsist upon her until she is no more. When Socialism first blossomed in this country the railroads belonged, for the most part, to a few men. The demagogue politician thought it a fine scheme to imitate the baby alacrans, jump on the Huntingtons and Hills and suck the life blood out of the railroads because these wicked fellows had dared amass fortunes. The work was quickly done, but the doers forgot to stop when railroads no longer represented individual fortunes.

"The late E. H. Harriman induced the investment of several hundred million dollars in the Southern Pacific and other western roads, and thus gave to the people of this country the best transportation system the world has ever seen, and at the lowest rates for service. Mr. Harriman's ownership in the Southern Pacific, as shown by the company books, was 1,100 shares of stock, par value \$100. His efforts caused the country to prosper as it had never prospered before, and incidentally earned modest dividends for the 34,000 owners of the company's securities, many of whom were widows and orphans. Mr. McAdoo, in one year only, put this great transportation system, which it required 35 years of brain and energy to create, 'on the bum,' and your very constituents are today crying out for relief. Why did McAdoo do this? The answer is, 'For politics only,' and he didn't get the job at that.

"The rancher today gets all the labor he wants for 15 cents an hour and others stand by begging to work at the same rate. The railway company is forced by law to pay the same type of labor, engaged just across the fence from the farmer, 34 cents an hour. Why is this? 'For politics only.'

"When will you lawmakers give your constituents proper relief? My guess is you will do so when the reason shall become 'for politics only' and not before. In other words, when the great mass of voters wake up and learn that railroad headquarters are located in the Capitol at Washington and not in San Francisco, Tucson or elsewhere as they now believe to be the case. A governmental agency today fixes freight rates; another governmental agency fixes railroad wage rates, but no governmental agency guarantees that the holder of a railroad security shall have one dollar's interest on his investment, yet a governmental agency does provide that he shall not have more than 5 per cent.

"Union labor today, to a very large extent, dominates the politics of this country. For eight years the White House doors swung open to one Samuel Gompers, a foreign-born individual of great skill in the art of creating industrial unrest.

This same creature has, on occasions, stood on the public rostrum, side by side with the President of the United States, and poured insidious poison into the ears of an unthinking audience. A foreign-born individual with a union-labor card in his pocket this day holds a Cabinet portfolio. Can there be any reason for these things except 'for politics only'?

"I once spent a night on the desert and was kept awake by coyote howls uttered from a mesquite thicket. It sounded like there were a million of them. At daylight next morning I took my shotgun, went out to the thicket and was disgusted to find there only an old female coyote with two pups. No doubt you have had like experience. Labor-union leaders are in the thicket and their howl is intimidating the American statesman. If he would inspect the thicket he would find there more howl than votes.

"The people, who, by the sweat of their brows, created this country, own it and it is to be hoped that the time is not far distant when they will control it. The people who count are beginning to wake up. Two years ago in your very town of Phoenix, a brick mason received \$10 a day and was allowed by grace of the 'walking delegate' to lay 700 brick only. Today he still receives his \$10, but he lays 2,500 brick with no more effort than he put forth to lay the 700. Then Phoenix was a 'closed shop' town; today Phoenix is an 'open-shop' town.

"Transportation is the most important industrial institution of this country. When will the government loosen its strangle hold and let the railroads become 'open shop'? The answer to that question is very much more important than the question of whether we shall have a Democratic administration or a Republican administration.

"For forty-five years I have labored. The laboring man, whoever he may be and however he may labor, with head or hands, has my sincerest sympathy and utmost good will. The labor leader who organizes his subjects and rules them with a despotism comparable only to that of the erstwhile Kaiser Bill, that he may wax fat on the proceeds of their labor (which he does) should find no lodgment in this republic. He should be sent along to join his brother, Bill Haywood, in Russia, and will be. Sam Gompers, backed by his full eight years of prestige and power, was not able to saddle upon this country as its President the man who bore the stamp of Woodrow Wilson's approval. The brush was beaten, all right, and to a finish, but the coyotes were not there and the howl didn't register in ballots."

## Labor Board Hears New York Central Dispute

**H**EARINGS BEFORE the Railroad Labor Board on a small but significant dispute between the New York Central and the Railway Employees' Department of the American Federation of Labor were opened on September 13. The dispute in this case arose from the action of the New York Central in transferring skilled and unskilled employees engaged in the construction and maintenance of telegraph lines along the New York Central right-of-way from its payroll to the payroll of the Western Union Telegraph Company. This change was made on April 15 and the employees, through the Railway Employees' Department, protested to the Board, asserting that the move was a "mere subterfuge" to avoid payment of wages fixed by the Railroad Labor Board. In the employees' submission to the Board they stated that the rates of pay and working conditions of the telegraph company (supposed to be less favorable to the employees) were applied to the men so transferred and cited as a precedent the Board's Decision No. 120, issued as a result of the controversy between the St. Louis-Southwestern and certain of its maintenance-of-way employees regarding the substitution of certain employees by employees of an outside contracting

organization. This decision was described in the *Railway Age* of April 22, page 990.

The railroad, in its submission to the Board, explained that a contract or agreement between the Western Union Telegraph Company and the New York Central and its subsidiaries was made in 1907. This contract provided that, in return for the acquisition by the telegraph company of the telegraph facilities owned by the carrier and for the use of the carrier's right-of-way for the telegraph company's lines, the Western Union would furnish the railroad telegraph service up to 40 per cent of its total wire mileage. The telegraph company was to provide for the skilled labor and the carrier for the unskilled labor used in the erection and repair of all telegraph wires. By the terms of a supplemental agreement made in 1910 the New York Central agreed to carry both the skilled and unskilled labor employed in this work on its own payrolls, billing the Western Union for 100 per cent of the amount paid to station linemen and 50 per cent of the amount paid for unskilled gang labor when on construction work.

During federal control, the railroad explained, the Western Union took exception to the increases in wages granted by the director general and refused to honor the bills presented to it by the carrier. By the end of federal control the director general held unpaid bills of the New York Central against the Western Union totaling \$1,171,074. This attitude of the telegraph company continued after federal control and as a result an additional claim totaling over \$200,000 was run up by the railroad company against the Western Union. After being called upon by the director general to settle these accounts the New York Central reached an agreement with the Western Union whereby the latter paid 60 per cent of the bill for labor under this agreement during federal control, and between 75 and 80 per cent of the amount which has accrued since the end of federal control.

### Henry T. Hunt Represents A. F. of L.

Henry T. Hunt, formerly a representative of the public on the Labor Board, appeared before that body for the first time as a legal representative of the Railway Employees' Department of the American Federation of Labor. Mr. Hunt's argument against the action of the company was based largely on legal citations showing that the employer is not necessarily the party which pays the employee, but that party which directs the employee's work and has the power to hire, discharge and make substitutions. Employees in this case, Mr. Hunt contended, are joint employees because they are directed by the joint superintendent, an employee of both the New York Central and the Western Union, even though they are paid by the telegraph company. He then developed the argument that joint employees of this character properly come under the labor provisions of the Transportation Act. Carrying out this thought, Mr. Hunt said that should the position of the carrier be upheld it would only be necessary for the railroads to get someone else to pay their employees to evade all of the labor provisions of the Transportation Act.

Jacob Aronson presented the carrier's case. After calling attention to the fact that the contract with the Western Union was made in 1907, fourteen years prior to the passage of the Transportation Act, he stated that if the Board ruled against the railroad in this case it would have to conclude that the railroad had enough foresight fourteen years ago to make the preparations necessary to avoid the provisions of the Transportation Act now. The defense of the New York Central, as outlined by Mr. Aronson, was based largely on the fact that the action taken by that carrier in transferring these employees from its payroll to the Western Union payroll was taken in accordance with the provisions of the supplemental agreement of 1910, and that by ruling against the railroad in any manner in this case the Board would be taking from the carrier the right of contract. Mr. Aronson called attention to the fact that this agreement is nothing more or less than

the lease of the small amount of wire mileage owned by the New York Central and of the right to use the carrier's right-of-way for the lines of the Western Union. In return for this the Western Union paid the carrier in service instead of in money, he added. The whole matter, Mr. Aronson said in closing, is therefore entirely outside the Board's jurisdiction.

The hearings were closed on the same day, the Labor Board taking the case under advisement.

During the past week the Labor Board has been busy in hearing a large number of smaller disputes through the agency of its three bureaus composed of three members each, the New York Central case being the first case which has been heard by the full Board for some time.

## A Heavy Duty Trailer

**T**HE MOVEMENT of heavy concentrated loads such as large castings, etc., constitutes an important handling problem in railway freight stations, warehouses and transfer stations. In such work, cranes, trucks, tractors and trailers and various other material handling devices are being increasingly used. For such work the Sharon Pressed Steel Company, Sharon, Pa., has developed a trailer specially designed for heavy duty service with tractors.

The trailer frame consists of four  $\frac{3}{8}$ -in. channel sections which are pressed from  $\frac{1}{8}$ -in. hot rolled open-hearth steel and riveted into one-piece channel section corner pieces pressed to a 6-in. radius. By varying the length of the side and the end rails, the trailer can be made in any length up to 72 in. and in any width up to 50 in. Two additional members, of 3-in. pressed steel channel, run lengthwise be-



Under Platform View Showing Construction Details

neath the floor and are riveted to the end rails and braced, laterally, to the frame with front and rear pressed steel "V" braces which take the pull of the  $\frac{5}{8}$ -in. steel forged coupler. Either one or two couplers can be used.

The rear wheel and front caster supports are 3-in. pressed steel channels riveted to the side rails and the longitudinal members of the frame. The rear wheel brackets are pressed from  $\frac{1}{4}$ -in. steel with two stiffening ribs on each side. The rear wheels are of malleable iron with six double-web spokes and  $3\frac{1}{2}$ -in. face and are equipped with 3-in. Hyatt roller bearings on a hardened and ground 1-in. shaft.

The front casters are of heavy-duty type, ball and roller bearing equipped, bolted to a  $\frac{1}{2}$ -in. steel plate which is riveted to the frame. The floor of the trailer is  $1\frac{1}{4}$ -in. oak recessed flush in the side and end rails. All frame members are flush on the bottom, thus affording an even support when the trailer is used in connection with a lift truck.

The trailer was recently given a severe test with a load of 8,000 lb., indicating its adaptability to exacting service.

## Flexible Metallic Packing

**A**N UNUSUAL and interesting rod packing, said to combine the adjustment features of non-metallic packing with the wear-resisting qualities of metallic ring packing, is "V" Pilot Packing, made by the Pilot Packing Company, Inc., Chicago. The packing takes its name from the patented contour of the metal which is shaped like a "V" to insure an entirely metallic surface on the rod at the

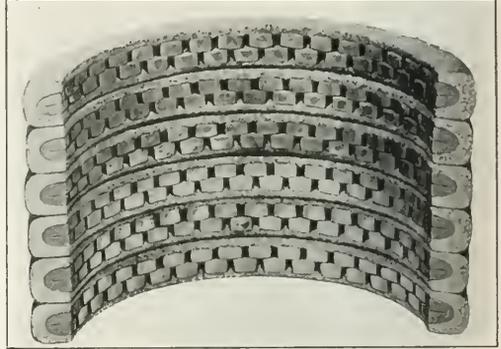


Fig. 1—Cross Section of a Set of "V" Pilot Packing

slightest pressure of the gland. The face of the metal, as shown in Fig. 1, is slotted, the slots being staggered to prevent the escape of steam down the rod. The slots serve another useful purpose by retaining oil for the lubrication of the rod.

A hasty glance at Fig. 1 may give the impression that there are two pieces of metal instead of one, but on closer examination the V-shape of the solid, white metal bar is apparent.

"V" Pilot Packing has a resilient, pliable back, fitting it for many uses for which purely metallic packing is not

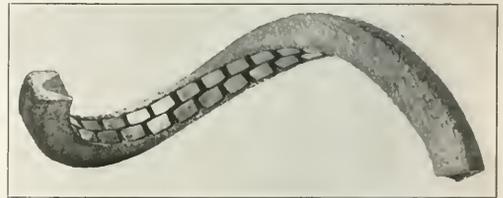


Fig. 2—View Showing Flexibility of New Packing

adapted. Its extreme flexibility, as shown in Fig. 2, permits its use on small rods and provides easy and quick adjustment. This packing has successfully passed the experimental stage and demonstrated its value by extended tests under actual working conditions, having shown unusually long life and resultant economy. It has a wide range of application and is used by railroads for air pumps, boiler feed pumps (steam and water ends), valve stems, throttle stems, power reverse gear rods, stationary air compressors, steam engines, hot and cold water pumps, ammonia pumps, roundhouse washout pumps, power plant feed water pumps, pumping station (steam or water glands), steam hammers and many other purposes.

"V" Pilot Packing is supplied boxed and ready for immediate service and is applied in the same manner as ordinary fibrous packing.

# General News Department

The Canadian Ticket Agents' Association will hold its thirty-fifth annual meeting at Ottawa, Ontario, on October 11, instead of September 20, as had been planned.

A fire in the roundhouse and local shops of the Erie Railroad at Jersey City, N. J., on September 11, destroyed one building, partly destroyed another one and damaged 18 locomotives; estimated total loss \$100,000.

The Executive Board of the Master Boiler Makers' Association, will meet at the Sherman Hotel, Chicago, Ill., on the morning of September 24, to decide on a place for the next annual convention to be held in May, 1922.

"A Shipper's View of the Evolution of Transportation, and Its Effect on Steam Railways" will be the subject of a paper by George C. Conn, director of traffic of the Buick Motor Company, at the next meeting of the Western Railway Club, on September 19, at the Great Northern Hotel, Chicago.

Four masked men held up passenger train No. 2 on the Kansas City Southern between Bloomburg, Tex., and Texarkana on the night of September 6 and robbed the mail car. The bandits (who had concealed themselves on the train), entered the cab of the engine and ordered the mail car uncoupled; they forced the engineer then to run to the outskirts of Texarkana where the actual robbery occurred.

The Joint Committee on Automatic Train Control of the I. C. C. and the A. R. A. will hold a meeting at the office of the American Railway Association, Manhattan building, Chicago, on September 27, to consider the reports of the I. C. C. and A. R. A. inspectors covering performance records of the train control systems which have been inspected on the Chicago & Eastern Illinois and the Chicago, Rock Island & Pacific. At present the inspectors are on the Chesapeake & Ohio installation.

The Los Angeles Limited, train No. 7, of the Oregon Short Line, was held up by two masked and armed robbers on August 31, near Clearfield, Utah, 9 miles south of Ogden. The train was stopped by an automatic block signal and the two robbers, entering the observation car, proceeded to hold up the men only. While one gathered loot in the observation car the other proceeded to the other cars. They then made the conductor start the train and in the outskirts of Salt Lake City, they dropped off.

## Railway Electrical Engineers Will Not Meet

The 1921 annual convention of the Association of Railway Electrical Engineers has been postponed indefinitely. This action was taken by its board of directors as a result of a suggestion made recently by the Association of Railway Executives that the various sections of the American Railway Association postpone indefinitely all conventions or curtail them as much as possible. The Association of Railway Electrical Engineers is not officially connected with the American Railway Association, but has applied for membership.

## Chief Engineers' Night

The Western Society of Engineers plans a chief engineers' night on September 26, at which prominent engineers on several of the larger railways at Chicago will speak briefly on some of their earlier experiences which they now look back on as turning points in their professional careers. This is the first of a series of inspirational programs designed particularly for the encouragement of the younger men of the society. The speakers will include C. A. Morse, chief engineer, C. R. I. & P.; A. S. Baldwin, vice-president and formerly chief engineer, Illinois Central; H. R. Safford, assistant to

president, C. B. & Q., and formerly chief engineer of the Grand Trunk; C. F. Loweth, chief engineer, C. M. & St. P., and E. H. Lee, vice-president and chief engineer of the Chicago & Western Indiana.

## No More Mail on Freight Trains

The former practice of shipping monthly, semi-monthly and weekly periodicals by mail, instead of by freight, will be re-established October 1. The change, it is expected, will save the government approximately \$268,000 annually in labor, rent and cartage. Nearly 1,000 publications will be affected.

At the time the freight-shipment plan was adopted in 1911, mails were transported by rail entirely on the weight basis, and the difference in the cost of transportation by freight and passenger trains was material. Since the adoption of payment by space, and the general increase in freight rates, conditions are the reverse of what they were; there is little difference in the cost of transportation between freight trains and mail trains.

## Some Unit Costs Show Reduction

The Interstate Commerce Commission's monthly bulletin of freight and passenger train service unit costs for the month of June shows a further reduction in some of the unit costs of railroad operation. The cost per freight train mile for selected accounts used by the commission was \$1.753 for the month as compared with \$1.89 last year and the average cost per passenger train mile, selected accounts, was 98.4 cents as compared with \$1.03 last year. For the first six months of 1921, however, the average cost per freight train mile was \$1.95 as compared with \$1.85 last year and per passenger train mile was \$1.07 as compared with \$1.01 last year.

## Annual Meeting of the Telegraph

### and Telephone Section

The annual meeting of the Telegraph and Telephone section of the operating division of the American Railway Association will be held at Cleveland, Ohio, on September 21, 22 and 23. A number of important reports relative to telegraph and telephone development and operation, including those relating to the handling of message traffic, the application of radio telegraphy and telephony to railway work and proper systems of education of employees, will be presented for discussion and action. The March meeting of this section was cancelled and the annual meeting is the first and only one to be held this year.

## Protests Against Valuations

Many protests against the tentative valuations which have recently been served by the Interstate Commerce Commission are being received by the commission, objecting on the ground that the commission has either left out or not given sufficient consideration to various elements of value. Most of the protests also object because the commission has not analyzed the methods by which it has made up its figure for final value. A brief filed this week by the Los Angeles & Salt Lake says that the method adopted by the Bureau of Valuation is wrong in principle and results in naming an inadequate figure for the value. It says the bureau has recognized that the figure it has reported does not represent the real value of the property "but a mere rate basis, a term which it uses interchangeably with valuation for rate-making purposes." It is also stated that the bureau method ignores factors of controlling importance. Whereas the commission places a final value of \$45,871,093 on this road, R. S. Lovett, chairman of the board, had testified that the property was worth \$82,000,000 after approximately \$10,000,000 had been added since the valuation date

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921

Table with columns: Name of road, Average mileage operated per period, Operating revenues (Freight, Passenger, Total), Operating expenses (Traffic, Transp. portion, Total), Net operating revenues, Net after interest, taxes, etc., and Net after interest, taxes, etc. (1920).

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Operating revenues (Freight, Passenger, etc.), Maintenance of Way and Equipment, Traffic, Trans- portation, General, Total, Operating ratio, Net from railway operations, Net after other returns, Net after 1920 returns.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage during month, Operating revenues (Total, Freight, Passenger, etc.), Maintenance of way and equip., Traffic, Transp., General, Total, Operating ratio, Net after railway operations, Operating income (or loss), Net after other matters, Net after taxes.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Operating revenues (Total, Freight, Passenger, Inc. msc.), Maintenance of way and structure, Equipment, Traffic, Trans-portion, General, Total, Operating ratio, Net from railway operations, Operating (income or loss), Net after rentals, Net after rentals 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage during period, Operating revenues (Freight, Passenger, etc.), Operating expenses (Traffic, Transportation, etc.), Total, Operating ratio, Net from operations, Operating income (or loss), Net after rentals, Net after 1921.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and structure.		Operating expenses.			Total.	Operating ratio.	Net from railway operations.	Net after rentals, 1920.	Net after rentals, 1921.
		Freight.	Passenger.	Other.	Total.	Way and structure.	Equip. ment.	Traffic.	Trans- portation.					
New Orleans & Northeastern.....	7 mos. 207	\$348,693	\$94,851	\$485,963	\$86,536	\$103,040	\$14,202	\$224,132	\$18,635	\$481,540	92.92	\$34,423	\$1,336	\$106,672
Norfolk & Western.....	7 mos. 110	27,920	6,948	34,868	6,048	7,816	881	1,863,923	3,482,643	2,582,582	140.80	258,282	52,015	1,000,000
Northern Alabama.....	7 mos. 110	330,424	93,868	503,140	136,029	133,260	13,500	1,600,771	24,036	1,624,807	103.80	1,448,318	1,000,000	628,808
Southern Pacific.....	7 mos. 7,110	67,543,925	4,440,391	72,984,316	2,435,197	2,624,724	221,257	5,830,151	343,021	6,173,172	71.90	4,650,203	3,699,904	3,359,540
"Arizona Eastern.....	7 mos. 382	127,165	28,501	155,666	36,942	34,594	2,917	2,012	31,365	169,467	86.00	6,957	184	49,325
Atlantic N. S. Lines.....	7 mos. 5,247	724,017	809,897	1,533,914	16,773	13,998	34,565	574,218	37,951	1,571,171	107.90	64,421	75,944	190,602
Gal. Harrisburg & Am. N.....	7 mos. 1,380	1,320,969	503,898	1,824,867	419,018	379,099	3,749,558	78,393	1,679,273	92.33	139,140	94,381	30,867	205,961
Houston & Tex. Central.....	7 mos. 932	763,661	260,317	1,023,978	299,240	1,486,627	23,470	398,739	36,404	905,975	82.26	195,360	166,788	137,230
Houston, East & West Texas.....	7 mos. 932	513,683	1,626,311	2,140,000	1,184,180	1,478,298	2,969,441	241,118	6,509,482	90.74	664,043	371,018	101,156	292,179
Louisiana Western.....	7 mos. 207	101,388	32,004	133,392	36,694	31,823	9,211	10,519	1,650	144,817	89.91	75,394	27,480	89,193
Morgan's La. & T. R. & S. Co. July.....	400	467,100	173,510	640,610	143,236	179,638	15,533	273,711	30,673	666,273	96.49	25,845	90,432	115,715
Texas & New Orleans.....	7 mos. 400	3,055,124	4,987,533	8,042,657	1,181,998	1,171,537	121,237	2,283,571	216,524	4,995,998	108.19	109,206	143,044	182,365
Spokane International.....	7 mos. 475	501,600	164,788	666,388	709,639	601,137	185,090	269,942	32,070	663,321	93.47	46,318	25,223	49,684
Spokane, Portland & Seattle.....	7 mos. 475	3,602,456	1,094,524	4,696,980	1,132,846	1,415,414	82,201	2,249,011	184,261	5,136,165	103.48	172,729	315,146	548,475
Tennessee Central.....	7 mos. 849	2,174,660	1,695,366	3,870,026	478,526	487,739	3,624	4,443	84,459	4,010,511	101.10	1,067,388	1,218	1,905
Term. R. R. Assn. of St. Louis.....	7 mos. 292	925,556	331,631	1,257,187	346,192	92,301	47,053	936	123,831	870,3	79.90	69,561	22,091	136,941
East St. Louis Connecting.....	7 mos. 37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis Mchts. Bridge Term. R. R. July.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis Transfer Ry.....	7 mos. 6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas & Pacific Ry.....	7 mos. 1,952	1,803,809	728,420	2,532,229	407,683	344,315	46,929	987,849	92,692	1,897,913	70.00	813,203	684,881	614,620
Toledo, Peoria & Western.....	7 mos. 1,949	13,916,714	2,580,810	16,497,524	4,077,039	3,692,921	4,077,039	369,740	8,484,688	70,647	17,487,468	85.10	3,064,139	2,166,436
Toledo, St. Louis & Western.....	7 mos. 247	581,280	338,369	919,649	131,383	128,690	2,316	3,382	2,067	7,391	143,176	130.13	15,469	25,469
Trinity & Brazos Valley.....	7 mos. 368	1,389,960	331,935	1,721,895	338,225	206,636	677,626	72,644	1,454,297	57,951	1,274,840	130.19	282,268	352,853
Utah & Delaware.....	7 mos. 128	79,529	137,097	216,626	18,829	17,065	22,945	5,856	58,500	91,250	97.50	23,864	57,336	190,729
Union R. R. of Pa.....	7 mos. 45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Pacific.....	7 mos. 3,614	6,886,057	1,854,124	8,740,181	1,243,113	1,902,340	155,051	2,631,314	310,363	6,981,384	67.64	2,815,004	2,156,774	2,158,005
Oregon Short Line.....	7 mos. 2,359	1,833,123	583,541	2,416,664	569,783	39,892	885,402	125,976	1,154,686	83.20	335,913	101,509	103,866	90,000
Oregon Wash. R. R. & Nav. Co. July.....	223	1,153,005	594,841	1,747,846	370,215	358,327	916,340	125,690	2,004,726	93.60	136,973	48,833	148,305	231,548
St Joseph & Grand Isl. July.....	258	255,113	3,045,8	3,300,913	1,167,970	1,167,970	4,971	6,188,218	943,183	14,341,303	97.80	856,666	3,141,301	1,814,943
Utah.....	7 mos. 258	1,846,284	212,036	2,058,320	376,870	341,384	18,994	856,764	102,775	1,606,799	93.51	117,370	27,402	576,728
Virginia.....	7 mos. 68	6,127,223	1,011,538	7,138,761	1,267,445	1,488,038	2,909	179,448	27,750	8,176,500	93.98	37,685	19,958	63,850
Wabash.....	7 mos. 247	3,670,319	916,581	4,586,900	1,005,303	791,502	3,310,884	218,166	7,202,347	61.60	3,913,637	3,352,651	3,359,463	
Western Maryland.....	7 mos. 247	2,591,167	840,613	3,431,780	501,794	420,341	1,355	29,926	88,800	3,760,525	140.90	306,000	129,778	408,288
Western Pacific.....	7 mos. 708	4,120,634	1,305,271	5,425,905	1,718,089	2,901,049	30,662	4,888,631	46,779	10,344,896	73.50	1,657,419	97,419	256,340
Wheeling & Lake Erie.....	7 mos. 101	660,947	280,818	941,765	166,680	186,131	29,084	371,645	32,938	858,262	84.37	139,108	64,343	78,588
.....	7 mos. 101	1,467,356	457,520	1,924,876	379,600	295,905	2,641,900	295,905	5,082,647	51.10	644,907	106,505	1,426,861	
.....	7 mos. 511	7,407,056	577,306	8,226,180	1,125,816	1,882,283	98,477	3,333,700	281,492	6,790,671	81.90	1,485,309	953,391	769,130

### Mail Car Robberies Reduced

Postmaster-General Hays is quoted as saying that the wave of post office and mail train robberies had been broken by the order issued last April that all post office clerks engaged in the transportation of mail arm themselves. There has been a slump in the losses since the clerks began carrying pistols and shotguns in mail cars, wagons and post offices. In 1920, the Post Office Department lost \$6,300,000 because of robberies, but in the five months from April 7, when arming was ordered, until September 7, only \$88,580 was stolen.

### The Equipment Quarterly

A list of traffic representatives of large shippers is a prominent feature of the August issue of the "Railway Equipment Quarterly," the 185-page supplement to the Railway Equipment Register. This list fills 34 pages, and information is given from 44 states, together with a few items from Canada. The list has been compiled primarily to show names of shippers and receivers of carload freight in large quantities. An idea of the detail included may be gained from the statement that New York fills nearly five pages. This includes, however, under New York City, the National Wholesale Lumber Dealers' Association, in which there are over 500 members, and the names and addresses of all these members are given. The Fisk Rubber Company, of Chicopee Falls, Mass., has branches in over 100 cities, all of which are named.

The classification of freight cars, which is a main feature of the Quarterly, has been greatly enlarged and now contains an enormous mass of details. A new section has been added, Part IV, Private Cars, filling seven pages. This gives the names of manufacturers, merchants and other shippers who own cars, with the figures distributed in 20 columns to show the kinds of cars. This list shows a total of 190,422 cars; which indicates that the total number of such cars in the country must be well above 200,000; for some prominent owners, like the American Refrigerator Transit Company, Morris & Company and Swift & Company, have given no information as to the number of cars owned by them.

The total number of tank cars recorded in this list is 124,479; refrigerators 36,306 and hopper (coal) cars 18,039.

### National Safety Council at Boston

The National Safety Council, headquarters 168 North Michigan avenue, Chicago, announces the tenth annual congress of the Council, to be held at Boston, Mass., in the State House, beginning Monday, September 26, and continuing five days. The general business meeting will be held on Monday morning, C. P. Colman, president of the National Safety Council, presiding. The section meetings will be held on the following days, the more important ones in the forenoon.

The steam railroad section, T. H. Carrow (Penn.), chairman, will hold its first session on Tuesday morning, in room 436. The speakers named in the program are John F. Moore (Y. M. C. A.), Rev. Walt Holcomb, C. W. Galloway (B. & O.), and E. L. Bair, Benefit Association of Railway Employees, Chicago.

The second session, Wednesday morning, will discuss bulletin No. 78 of the Interstate Commerce Commission, containing statistics of railroad accidents of the last quarter of 1920. Train accidents will be discussed by F. R. Mitchell (N. Y., N. H. & H.), S. G. Watkins (B. & M.), and T. R. McCampbell (C. C. & St. L.); train service accidents by C. L. La Fontaine (G. N.), W. J. Orr (T. H. & B.), D. E. Satterfield (C. & O.), and E. M. Harris (N. Y., N. H. & H.); non-train accidents by W. H. Ganzert (C. & O.), E. S. Chapin (Penn.), H. E. Astley (N. Y., N. H. & H.), and J. T. Pratt (P. & R.).

The third session will be a joint meeting with the Electric Railway Section, on Thursday morning, with John T. Broderick (B. & O.) in the chair. The discussion will be on highway grade crossing accidents, and the following are the speakers: J. E. Long (D. & H.), F. M. Metcalfe (N. P.), T. P. Brennan (L. I.), F. Whittemore (N. C. & St. L.), Arthur Ridgeway (D. & R. G. W.), D. L. Cease ("The Railroad Trainman"), and L. F. Shedd (C. R. I. & P.).

On Friday morning there will be an address by F. M. Metcalfe (N. P.) on the substitution of superintendents' staff meetings for the customary safety committee meetings. Other speakers on

Friday will be D. G. Phillips (Wabash), Harry A. Adams (U. P.), F. H. Babcock (P. & L. E.), and E. R. Cott (H. V.).

### Disastrous Floods in Texas

Heavy rains in southern Texas on September 9 and 10, featured by a cloudburst near San Antonio, caused serious loss of life and extensive damage to property in the city of San Antonio and vicinity. There also was considerable damage to railroad property. Bridge approaches have been washed out at many points. The Missouri, Kansas & Texas lost approximately 500 ft. of bridge approaches between Temple and Taylor, and the line between Austin and Ranger was closed many days. Between Ranger and Georgetown this road lost approaches to 14 or 15 bridges, while at three or four points as many as 10 to 20 panels were washed away. In the immediate vicinity of San Antonio the damage to the railroads was not so great. The Southern Pacific had a few washouts. Several small washouts occurred on that road between Austin and Elgin. Other damage is reported on the Llano & Austin branch, and some damage to trestle bridges and the San Gabriel river bridge on the Llano branch. Heavy rains have occurred on the watershed of the Little river which joins the Brazos north of Herne, and in that vicinity water was over the track in numerous places. Heavy rains fell farther south, and the Texas-Mexican, between Corpus Christi and Laredo, suffered heavy damage. The waters receded rapidly and it is expected that all train service will be restored by the end of this week. Until that time it will be necessary for the Missouri, Kansas & Texas to run trains to San Antonio by way of Houston.

### Railway Returns for July

The net railway operating income for July of the 202 class I railroads of the United States amounted to \$69,485,000, which is a larger sum than they have earned in any month since last October, according to the reports filed with the Interstate Commerce Commission. It also represents an increase of \$17,000,000 as compared with June.

The earnings for July, on the basis of the tentative valuation fixed by the Interstate Commerce Commission for rate-making purposes under the transportation act, would be at the annual rate of return of 4½ per cent. This is \$23,782,000 for the month less than the roads should have earned as the normal July proportion of a 6 per cent return, which would be \$93,267,000. Fifty-seven of the roads failed to earn their operating expenses and taxes for the month. In June, 72 of the roads failed to earn expenses and taxes.

The total operating revenues for July amounted to \$462,953,000, which was a decrease of \$66,000,000, or 12½ per cent, as compared with July, 1920, although the rates are now on a higher basis. Operating expenses were \$362,776,000, a reduction of \$151,000,000, or 29.4 per cent. The net operating income compares with a deficit of \$11,878,000 for July, 1920.

The large reduction in expenses is attributable to several factors. It reflects the effect of the reduction in wages ordered by the Railroad Labor Board, effective on July 1, but it also represents the effect of the drastic curtailment of maintenance expenditures, and it is to be borne in mind that the figures for last July, with which comparison is made, included some back wage payments.

For the 11 months since September 1, 1920, when the guaranty period expired, the net operating income of the class I roads has been \$438,000,000, which on the basis of the tentative valuation would be at the annual rate of return of 2.6 per cent, or \$570,000,000 less than a 6 per cent return.

For the roads of the Eastern district for July the operating revenues were \$208,043,000, a decrease of 13.8 per cent, while the expenses were \$167,007,000, a decrease of 32.5 per cent. The net operating income of the Eastern roads was \$27,336,000, as compared with a deficit last year.

The Southern roads had operating revenues amounting to \$71,202,000, a decrease of 10 per cent; their expenses were \$58,988,000, a decrease of 26.1 per cent, and their net operating income was \$8,368,000, as compared with a deficit last year.

For the Western district the operating revenues were \$183,708,000, a decrease of 11.8 per cent; the operating expenses were \$136,781,000, a decrease of 26.7 per cent, and the net operating income was \$33,781,000, as compared with \$9,104,000 in July, 1920.

## Traffic News

Nearly 7,000,000 more bushels of grain passed down the Lachine Canal in August than during the same month last year, according to figures issued by the Lachine Canal office. Wheat totalled 5,361,846 bushels gain; 6,662,592 bushels in August, 1921, against 1,300,747 bushels in August, 1920. Corn showed 2,918,266 bushels coming down last month, against 116,946 bushels last year. Oats, rye and flaxseed also record increases.

The Pennsylvania Railroad announces that beginning September 15, the extra fare of \$7.78 (including war tax) between Washington and Chicago on the Broadway Limited will be discontinued. Beginning September 25 a through sleeping car from Chicago to Washington will be run on train No. 136, leaving Chicago at 11:30 p. m., and one from Washington to Chicago on the train leaving Washington at 10:30 p. m. These changes are to meet the competition of the Baltimore & Ohio, which has put on a new train between Washington and Chicago, competing with the Broadway Limited in time, but charging no extra fare.

### Rates on Building Materials Reduced

The Interstate Commerce Commission on September 10 approved heavy reductions, on five days' notice, in interstate freight rates on sand, gravel and crushed stone between practically all points in trunk line territory, including Pennsylvania, New Jersey, Delaware, Maryland and portions of West Virginia and Virginia. The new rates will go into effect on October 1 and will be approximately 15 per cent higher than the rates in effect prior to the general increase of August, 1920, thus substituting a 15 per cent increase for a 40 per cent increase. Builders of roads, buildings, etc., will have the benefit of an annual reduction in transportation charges much in excess of a million dollars.

### Western Livestock Rates To Be Reduced

The Interstate Commerce Commission on September 13 granted the western carriers authority to waive the usual tariff rules requiring publication of specific rates in order to permit reduced rates on livestock in the west to become effective September 20. In its opinion the commission recommended that c. l. rates on cattle, hogs and sheep, west of the Mississippi river and Chicago, now higher than 50 cents per 100 lb., be reduced by 20 per cent, except that no rates need be reduced below 50 cents. Practically all rates from points west of the Missouri river to Chicago and from west of the Rocky Mountains to the Missouri river will be reduced in amounts ranging from 1 to 25 cents per 100 lb. In many cases the entire increase made in August, 1920, will be eliminated. The amount of reduction in the carriers' annual revenue which will result is not definitely known, but has been estimated to be upwards of \$10,000,000, the commission's announcement said.

### Anthracite Shipments, August, 1921

Shipments of anthracite for August, as reported to the Anthracite Bureau of Information, in Philadelphia, amounted to 5,575,115 gross tons, as compared with 5,462,760 tons in the preceding month, and with 6,207,653 tons in August, 1920. The decrease from August, 1920, was due chiefly to continued light demand for all sizes except stove, and to a continuance of scattered colliery suspensions caused by market conditions and petty strikes.

Shipments by originating carriers were:

	August, 1921	July, 1921
P. & R. R. W.	1,116,844	1,039,078
L. V. R. R.	924,649	946,387
C. R. R. of N. J.	544,007	507,942
D., L. & W. R. R.	953,014	926,850
D. & H. Co.	756,982	691,132
Penna. R. R.	360,817	384,780
Erie R. R.	628,280	619,365
N. Y., O. & W. R. W.	98,355	110,605
L. & N. E. R. R.	192,167	236,621
	5,575,115	5,462,760

## Commission and Court News

### Interstate Commerce Commission

The commission has announced the reopening of the Kansas intrastate rate case for further hearing with reference to specific intrastate rates in Kansas that may be higher than interstate rates to and from Kansas points.

The commission has suspended from September 15 until January 13, 1922, the operation of schedules which propose increased commodity rates on fresh fruits, melons and vegetables, in carloads, from points in Arkansas, Louisiana, Missouri, Oklahoma and Texas to destinations in Central Freight Association and Trunk Line Territories.

The commission has further suspended until October 29, the operation of certain schedules which propose to increase rates on lumber and other commodities between El Paso, Tex., and points in Oregon, Washington, Utah and Idaho, the operation of which was suspended until September 29 by an order previously entered.

The commission has suspended until January 11, 1922, the operation of certain schedules published by the Lehigh Valley, which propose the cancellation of the existing commodity rate of 12½ cents per 100 lb. on lumber from North Tonawanda, N. Y., to Canandaigua, leaving applicable instead the existing sixth-class rate of 14½ cents.

The commission has suspended until January 24, 1922, the operation of certain schedules published by the Southern Pacific which propose the cancellation of certain exceptions to the Western Classification applicable on fresh fruit and vegetables on interstate traffic between points in Arizona, New Mexico and Texas, resulting in the application of first, second and third class rates on apples, first class on bananas, melons, oranges, and third class on potatoes, 1. c. l., fifth class on apples, third class on bananas and oranges, and Class C rates on melons and potatoes, c. l., in lieu of the existing ratings of fourth class, 1. c. l., and Class C on carloads.

The commission has suspended from September 10 until January 8, 1922, the operation of certain schedules published in Agent R. H. Countiss' trans-continental east bound tariff which propose the cancellation of routing on lumber and other forest products from points on the South Bend (Washington) Branch of the Chicago, Milwaukee & St. Paul, via Marengo, Wash., to destinations on the Union Pacific System in Southern Idaho, Utah and Western Wyoming, resulting in the application of combination of locals. For example, the present through rate from Duly, Wash., to Nampa, Idaho, is 52½ cents, while the combination rate proposed to apply is 56½ cents.

The commission has suspended from September 15 until January 13, 1922, the operation of certain schedules published by R. H. Countiss, agent. The suspended schedules in Supplement No. 1 to the tariff propose to restrict the routing on lumber and articles taking same rates destined to eastern points so as not to apply via any junction in connection with the Atchison, Topeka & Santa Fe, Gulf, Colorado & Santa Fe or Pan-Handle & Santa Fe, from points in California, Nevada and Utah in the Hawley and Truckee groups, leaving applicable instead combination rates, and Supplement No. 2 to the tariff proposes to substitute for the combinations proposed to apply, the coast group rates from points in the Hawley and Truckee groups.

### State Commissions

The Baltimore & Ohio has filed an application with the Illinois State Commission for permission to close four stations in that state, the stations being Lakewood, Moccasin, Bluff Springs and Berry.

## Foreign Railway News

### Simplon Tunnel Widening Completed

The excavation work on the second Simplon tunnel in Switzerland, parallel to the first, was completed on September 13, according to cable dispatches from Geneva. The masonry work on the new tunnel is said to be well advanced and it is expected that it will be open for traffic by the first of the year.

### Disastrous Accident on French Railway

Twenty-five persons are reported to have been killed and 60 injured when an express train bound from Lyons to Strassbourg was derailed 9 miles from Lyons, on September 10. Four cars carrying third class passengers were overturned. Passengers in these cars were for the most part soldiers returning for duty to Alsace.

### Electrification of the Argentine Transandine

The directors of the Argentine Transandine Railway have asked authority to increase the capital of the company from 2,500,000 to 4,000,000 gold pesos, according to Commerce Reports. The additional funds to be used in covering the expense of electrifying the line. Plans are said to be under way providing for the joint operation of the Chilean Transandine with the Argentine Transandine.

### Belgians Underbid Americans in China

Bids by Belgian concerns on steel rails for the Peking-Mukden Railway are equivalent to \$41 a ton, according to Commerce Reports. These bids are from \$7 to \$32 lower than bids by American concerns. The Belgian bids were the lowest and two French concerns came second and third. The Yellow River Bridge Commission has recommended the awarding of the business to the Belgians.

### Purchasing Department Changes on

#### Japanese Government Railways

The financial and purchasing department of the Japanese Government Railways has organized a new section for the purpose of making extensive purchases of modern labor-saving machinery for the mechanical and engineering departments. This section, which will be under the direction of Shinji Sogo, will also arrange for the purchase and installation of modern equipment for the railway's offices.

### South African Railway Electrification

#### May Be Postponed

The latest reports regarding the proposals for the electrification of certain sections of the government railways of the Union of South Africa are to the effect that no bids have as yet been accepted, and that it is possible that the program may not be carried through at this time to the full extent planned for, according to Commerce Reports. It is reported that uncertain business conditions may influence the government to defer this work.

### Improved Railway Service for Rumania

Representatives from the ministry of railways of Rumania recently met in Prague to discuss the means of establishing rapid train service between Czechoslovakia, Rumania, and other southeastern European countries, says a report from Consul C. S. Winans, Prague, Czechoslovakia. A general conference on this question is to be held at Prague in October. The negotiations recently held at Budapest between Czechoslovakia and Hungary regarding the rates to be charged on merchandise sent to Rumania by way of Hungary are said to have reached a favorable conclusion.

## Equipment and Supplies

### Locomotives

THE CHILEAN STATE RAILWAYS, reported in the *Railway Age* of April 24, as inquiring for 30 Mikado type locomotives, has ordered 10 Mikado type locomotives from the Baldwin Locomotive Works, and 20 Mikado type locomotives from the American Locomotive Company.

### Freight Cars

THE BINGHAM & GARFIELD is asking for prices on 25 to 75 ore cars of 60 tons' capacity.

THE ATLANTIC FRUIT COMPANY, New York, has ordered 4 flat cars of 20-ton capacity from the Magor Car Corporation.

THE DENVER & RIO GRANDE WESTERN is inquiring for 1,000, 50-ton flat bottom gondola cars, also for 1,000, 70-ton flat bottom gondola cars.

THE WABASH has given an order to the Western Steel Car & Foundry Company, for making repairs to 200 to 250 all steel hopper cars, of 40-ton capacity.

THE VIRGINIAN contemplates having repairs made on from 1,000 to 4,000 freight cars. 100 freight cars are now being repaired at the shops of the Mt. Vernon Car Manufacturing Company.

THE BANGOR & ARGOOSTOOK, reported in the *Railway Age* of September 3, as inquiring for 200 single sheathed box cars of 40-ton capacity, has ordered these cars from the Standard Steel Car Company.

THE CHICAGO, ROCK ISLAND & PACIFIC, reported in the *Railway Age* of August 27, as inquiring for 200 gondola cars and also asking for bids for the repair of 500 all steel general service cars, has ordered 200 composite gondola cars of 50-tons capacity from the General American Car Company and is having repairs made to 125 general service gondola cars of 50-ton capacity at the shops of the Western Steel Car & Foundry Co.

### Iron and Steel

THE CANADIAN PACIFIC has ordered 25,000 tons of rail, from the Algoma Steel Corporation.

THE EVANSVILLE, INDIANAPOLIS & TERRE HAUTE has ordered from the Mt. Vernon Bridge Company, Mt. Vernon, Ill., 200 tons of steel for its Eel river bridge in Indiana.

THE MEIKI RAILWAY, Osaka, Japan, is inquiring through Mitsui & Company, New York, for 1,900 tons of 60-lb. rail; Mitsui & Co. are also inquiring for about 1,000 tons additional of 30-lb. and 60-lb. rail for export to Japan.

### Miscellaneous

THE MISSOURI KANSAS & TEXAS has awarded a contract to the National Boiler Washing Company, Chicago, for unloading and delivery facilities, pumps, oil columns, pipe lines, etc., for use with oil tanks the orders for which were noted in the *Railway Age* of September 10 (page 510).

THE NEW YORK CENTRAL will receive bids until 12 o'clock, noon, September 29, for its present requirements on rolled steel gears, fence wire, track bolts, volt cable and parts for installing same, bottom plates for crossing frogs, manganese frogs; its requirements of fuel oil for locomotive service during whatever period of time during the month of October, 1921, it is required to burn same and its requirements until October 31, 1921, on steel billets and steel wheels for locomotive, passenger car and tender repairs.

# Supply Trade News

R. I. Baird, who was from 1909 to 1917 connected with the sales department of the Electric Storage Battery Company, Philadelphia, Pa., has returned to the service of that

company and is now in charge in the western district of sales of Exide batteries for railway car lighting, industrial trucks, etc. Mr. Baird's headquarters will be at the Chicago office of the company, in the Marquette building. The railway signal work is in charge of H. B. Crantford, who formerly was in the service of the Chicago, Milwaukee & St. Paul. Mr. Baird was educated at the Armour Institute of Technology, Chicago, and has been connected with the Automatic Electric Com-



R. I. Baird

pany and the Bryant Zinc Company. He was also in railroad work, having served in the signal department of the Illinois Central. Since 1917, he has represented the Delco Light Company, in Montana.

Charles B. Seger, president of the United States Rubber Company, New York, has been elected also chairman of the board, succeeding as chairman Col. Samuel P. Colt, deceased.

Mr. Seger was born on August 29, 1867, at New Orleans, La., and was for many years in railway service, having begun work as an office boy with Morgan's Louisiana & Texas Railroad & Steamship Company, now a part of the Southern Pacific. He subsequently served as a clerk until 1887, when he was appointed steamship auditor. He was then auditor and later clerk to the chief auditor until 1893, when he was appointed auditor and secretary of the Galveston, Harrisburg & San Antonio, the Texas & New



C. B. Seger

Orleans and the Direct Navigation Company. In January, 1900, he was appointed also auditor and secretary of the Galveston, Houston & Northern. On November 1, 1904, he was appointed auditor of the Southern Pacific—Pacific system, with office at San Francisco, Cal., and six years later became general auditor of the Southern Pacific—Union Pacific systems, later serving as deputy controller until the separation by the courts of the Southern and Union Pacific systems in 1913, when Mr. Seger became vice-president and controller of the Union Pacific and from March to December, 1918, served as acting chairman of the executive committee and as president. Since January 1, 1919, he has been president of the United States Rubber Company and now becomes also chairman of the board as above noted.

The Pennsylvania Car Company has been incorporated under the laws of Delaware, with a capital of \$1,000,000 to engage in the building of railroad cars. The incorporators are: J. H. Van Moss, James H. Durbin, L. B. Coppinger, and the Corporation Trust Company of Delaware. Plants equipped with latest improved machinery will be constructed at Sharon, Pa., at Argentine station, Kansas City, Kan., and at Houston, Texas. This company is affiliated with the interests that control the Pennsylvania Tank Car Company and the Pennsylvania Tank Line, Sharon, Pa., and the present plans call for the development of one of the largest organizations of its kind in the country.

The Railroad Accessories Corporation, manufacturer of and dealer in general railway supplies, particularly those used by the signal departments, with offices at 50 Church street, New York, and factory at Boonton, N. J., has succeeded to the rights and property of the Eastern Signal & Supply Company, 50 Church street, New York, the Railroad Accessories Corporation, the Duplex Channel-Pin Company, and the Lenorr Concrete Products Company, all of 30 Church street, New York. The officers of the Railroad Accessories Corporation are F. C. Lavarack, president; E. M. Deems, vice-president and treasurer; J. M. Mercer, secretary, and W. W. Lavarack, manager. F. C. Lavarack has been connected with the railroad and supply field for the past 21 years, E. M. Deems with the supply field for the past 24 years, J. A. Mercer for the past 13 years, and W. W. Lavarack with the railroad and supply field for the past 40 years.

## Obituary

Fred A. Dexter, president of the Leavitt Machine Company, Orange, Mass., died on August 26.

Silas C. Linbarger, ceramic engineer for the Carborundum Company, Niagara Falls, N. Y., died at his home in that city on September 10.

## Trade Publications

COALING STATION.—The Howlett Construction Company, Moline, Ill., recently issued a pamphlet illustrating by diagram and photograph the small locomotive coaling station of the balance bucket type which this company has recently developed for railway service. The installations illustrated in the pamphlet include those for the Great Northern at Bellingham and Rockport, Wash., and for the Chicago, Memphis & Gulf. The pamphlet also devotes some space to illustrating its larger type coaling plants and to the listing of the work done by the company in 1920.



Photo from Keystone View Company

Canadian National Transcontinental Train Arriving at Edmonton, Alberta

# Railway Financial News

**ASHERTON & GULF.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$436,000 of first mortgage, 30-year gold bonds.

**CENTRAL NEW ENGLAND.—Authorized to Abandon Line.**—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a line of 1.87 miles in Hampden County, Mass.

**CENTRAL VERMONT.—Asks Loan from Revolving Fund.**—This company has applied to the Interstate Commerce Commission for a loan of \$128,000 for five years.

**CHESAPEAKE & OHIO.—Asks Authority to Lease Road.**—This company has applied to the Interstate Commerce Commission for authority to lease the property of the Chesapeake & Ohio of Indiana.

**CHICAGO JUNCTION.—Acquisition by New York Central.**—See New York Central.

**COLORADO & SOUTHERN.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Standard return (January and February, 1920; year 1919)	\$413,535	\$2,481,212
Total railway operating revenues	13,816,741	13,816,741
Total railway operating expenses	11,342,899	2,505,205
Net from railway operations	2,473,842	2,430,960
Railway tax accruals	784,225	—
Railway operating income and standard return	2,099,993	2,430,960
Estimated amount due for guaranty period (March 1 to August 31)	959,688	—
Total non-operating income	2,998,552	1,775,727
Gross income	5,098,544	4,206,687
Interest on funded debt	2,140,438	2,105,095
Total deductions from gross income	2,492,478	2,422,740
Net income	2,606,066	1,783,946
Dividends	680,000	680,000
Income balance transferred to profit and loss	1,926,066	1,103,946

The annual report of the Colorado & Southern will be reviewed editorially in an early issue.

**DENVER & RIO GRANDE.—Appeal Allowed.**—Judge Lewis of the Federal Court at Denver, Col., has allowed the stockholders an appeal from the order confirming the sale of the Denver & Rio Grande to the Western Pacific interests.

**FORT WORTH & DENVER CITY.—Annual Report.**—The corporate income for the year ended December 31 compares with the previous year, as follows:

	1920	1919
Standard return (January and February, 1920; year 1919)	\$315,231	\$1,891,386
Total railway operating revenues	11,196,885	11,196,885
Total railway operating expenses	10,383,618	18,121
Net from railway operations	1,128,498	1,873,266
Railway tax accruals	353,161	—
Railway operating income and standard return	792,275	1,873,266
Estimated amount due for guaranty period (March 1-August 31)	1,113,733	—
Total non-operating income	1,527,335	1,287,823
Gross income	2,319,610	2,000,218
Interest on funded debt	544,511	534,716
Total deductions from gross income	843,560	686,540
Net income	1,476,050	1,315,477
Dividends	639,152	639,152
Income balance transferred to profit and loss	836,898	676,325

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919, as follows:

	Operating Revenues	
	1920	1919
Freight	\$8,434,056	\$7,112,886
Passenger	4,086,611	3,615,727
Total railway operating revenues	13,251,946	11,162,302
	Operating Expenses	
	1920	1919
Maintenance of way and structures	\$2,033,334	\$1,100,537
Maintenance of equipment	2,985,747	2,188,479
Traffic	101,067	54,069
Transportation	5,972,814	4,068,432
General	440,692	316,953
Total railway operating expenses	11,660,759	7,767,354
Net revenue from railway operations	1,646,188	3,394,948
Railway tax accruals	376,961	257,541
Railway operating income	1,265,743	3,135,900
Net railway operating income	923,319	2,826,466

Passenger Traffic		
Number of revenue passengers carried	1,328,753	1,210,992
Number of passengers carried one mile	143,932,860	129,426,288
Average distance carried (miles)	108.32	106.88
Average revenue per passenger mile	2.839	2.794
Freight Traffic		
Number of revenue tons carried	3,441,773	3,150,448
Number of tons carried one mile	598,260,765	563,068,970
Average miles hauled—revenue freight	173.82	177.04
Average revenue per ton-mile of freight (cents)	1.409	1.263

**MIDDLE TENNESSEE.—Sold.**—John H. Carpenter, of Nashville, Tenn., purchased this road, September 10, on a bid of \$300,000. The Middle Tennessee extended from Franklin, Tenn., to Mt. Pleasant, 45 miles. It has not been operated for some time.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Asks Authority to Issue Notes.**—This company has applied to the Interstate Commerce Commission for authority to issue \$10,000,000 of ten-year, 6½ per cent collateral trust gold notes, the proceeds to be used to discharge indebtedness for current liabilities, and also to issue \$15,000,000 of first mortgage refunding 6 per cent bonds, of which it is proposed that \$12,500,000 shall be pledged as security for the note issue. The notes have been sold subject to the commission's approval to Dillon, Read & Co., at 97¼.

**MISSISSIPPI CENTRAL.—Authorized to Abandon Line.**—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line extending 11.74 miles from Hattiesburg, Miss. The commission has also authorized the company to acquire by lease the control of a branch line of the Gulf, Mobile & Northern from Beaumont to Hattiesburg, Miss., 26 miles.

**NEW YORK CENTRAL.—Commission's Examiner Recommends Authority to Take Over Chicago Junction.**—The Interstate Commerce Commission has made public a tentative report proposed by Attorney-Examiner Clarke recommending that the commission issue a certificate authorizing the New York Central to purchase the entire capital stock of the Chicago River & Indiana at not exceeding \$750,000 and that the Chicago River & Indiana lease from the Chicago Junction all of its properties at an annual rental of \$2,000,000, provided that the right to prescribe the terms, methods and character of securities which may be employed to effectuate the purpose be reserved to the commission, and that, as an express condition, the consummation of the transactions shall be taken as conclusive evidence of the acceptance by the carriers of an agreement to abide by 17 conditions enumerated in the report, which are intended to preserve the rights of shippers and of the competing lines which protested against the authority being granted. The recommendation of the examiner is made on the assumption that the commission has jurisdiction to grant the certificate under paragraphs 18 to 22, Section 1, of the interstate commerce act, although the commission has promulgated a conference ruling holding that these provisions apply only to applications for authority to construct or put in operation new lines of railroad. If the commission should be of the opinion that no modification of the conference ruling of April 8 can be made, it is recommended that the entire application be dismissed because it is stated that denial of all jurisdiction must result in eliminating any practical method of attaching such conditions as will prove effective in safeguarding the public interest.

**NEW YORK CENTRAL.—Asks Authority to Issue Bonds.**—Application has been filed with the Interstate Commerce Commission asking authority to issue \$19,500,000 of refunding and improvement mortgage bonds at 6 per cent, to be pledged with the director general of railroads as security for a demand promissory note dated August 21, given to the director general in payment of the company's indebtedness to him for additions and betterments for the period of federal control.

**NEW YORK, CHICAGO & ST. LOUIS.—To Pay 1918-19 Dividends.**—President J. J. Bernet, in a letter dated September 8 to the stockholders, says:

Your Board of Directors has approved a settlement with the United States Railroad Administration, whereby the company accepted a cash payment of \$3,000,000 in settlement of all claims and accounts theretofore existing between the company and the Railroad Administration. The making of this settlement has enabled your directors this day to declare the following dividends, payable on September 30, 1921, to stockholders of record September 19, 1921, out of the earnings of the years 1918 and 1919:

Year	Class of Stock	Per Cent	Amount
1918	First preferred	5	\$249,895
	Second preferred	5	\$49,900
1919	Second preferred	2½	274,995
	Common	5	699,480

The accounting for the proceeds of the settlement will be had during the year 1921, in accordance with the rulings of the Interstate Commerce Commission. The company's income allocated to the federal control period on the basis of the settlement made is as follows:

	1918	1919	Jan. and Feb., 1920	Total
Total operating income (after railway taxes), deficit.....	\$236,618	\$169,920	\$30,732	\$437,270
Total non-operating income (includes compensation).....	4,282,015	4,558,917	712,935	9,553,867
Gross income.....	\$4,045,397	\$4,388,997	\$682,203	\$9,116,597
Total deductions from gross income (includes interest and miscellaneous income charges).....	3,030,507	2,376,834	296,955	5,704,296
Net increase.....	\$1,014,890	\$2,012,163	\$385,248	\$3,412,301
Dividends previously paid.....				
First Preferred, 5 per cent.....				
Second Preferred, 2½ per cent.....		524,890		524,890
Remainder available for dividends.....	\$1,014,890	\$1,487,273	\$385,248	\$2,887,411
Dividends now declared.....				
First Preferred, 5 per cent.....				
Second Preferred, 1918, 5 per cent.....		799,885		799,885
Second Preferred, 1919, 2½ per cent.....		974,475		974,475
Common, 1919, 5%.....				1,774,360
Surplus.....	\$215,005	\$512,798	\$385,248	\$1,113,051

The payment of dividends during the federal control period was partially interrupted, and such payments were made at irregular intervals because an agreement had not been reached with the government regarding the amount of "just compensation" to which the company was entitled, and because of other matters in dispute growing out of the federal control. The dividends paid out of the earnings of given years and the dates paid since the present management assumed control of the company's affairs are as follows:

Out of earnings of year	Class of stock	Per Cent	Amount	Paid
1916	First Preferred	5	\$125,000	Jan. 2, 1917
	First Preferred	5	125,000	July 2, 1917
	Second Preferred	5	273,000	Jan. 2, 1917
	Second Preferred	5	274,995	July 2, 1917
1917	Total		\$799,995	
	First Preferred	5	\$124,947.50	Jan. 2, 1918
	First Preferred	5	124,947.50	July 1, 1918
	Second Preferred	5	274,995	Jan. 2, 1918
1918	Second Preferred	5	274,995	July 22, 1919
	Total		\$799,885	
	First Preferred	5	\$249,895	Declared payable Sept. 30, 1921
	Second Preferred	5	\$549,990	Declared payable Sept. 30, 1921
1919	Total		\$799,885	
	First Preferred	5	\$249,895	Jan. 23, 1920
	Second Preferred	5	274,995	May 1, 1920
	Second Preferred	5	274,995	Declared payable Sept. 30, 1921
1920	Common	5	699,480	Declared payable Sept. 30, 1921
	Total		\$1,499,365	
	First Preferred	5	\$249,895	July 12, 1920
	Second Preferred	5	\$549,990	Aug. 6, 1920
1921	Common	5	699,480	Jan. 15, 1921
	Total		\$1,499,365	
	First Preferred	5	\$249,895	July 2, 1921
	Second Preferred	5	\$549,990	Sept. 16, 1921

The management proposes to maintain the present first class physical condition of the company's property. The management also desires and intends, so long as the present favorable earnings continue and financial conditions justify, to declare and pay dividends on all of the classes of stock of the company at regular intervals.

**SOUTHERN.—Dividend Action Again Deferred.**—The directors at their meeting on September 8 failed to take action on the regular semi-annual dividend of 2½ per cent on the preferred stock, ordinarily paid June 30. Action on this dividend was also deferred at the May meeting.

President Fairfax Harrison issued the following statement in regard to the situation in the South:

As to the situation in the South, there is every indication that the corner has been turned. The advance in cotton was the breath of wind for which the Southern states have been waiting. It has been true in the past that good cotton prices led all industries and increase the buying power, which means improved business. Goods purchased by the South will mean better earnings for the roads. Improvement will of course be gradual, but much is gained when sentiment changes.

All our roads showed better revenue in August than in any month since December, 1920. Our power is all in excellent condition. Of course, we have not taken up as yet to any extent repair of freight cars. Our settlement with the government has been concluded and will be explained in detail in our next annual report.

**ST. LOUIS-SAN FRANCISCO.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$4,578,000 of prior lien mortgage 6 per cent gold bonds and to pledge any part of them as security for short term notes from time to time.

**Asks Authority to Purchase Belt Line.**—Application has been filed with the Interstate Commerce Commission for authority to purchase the property of the Miami Mineral Belt, 14 miles.

**WESTERN MARYLAND.—Loan Approved.**—The Interstate Commerce Commission has approved a loan of \$1,000,000 to this company to aid it in enlarging its elevator facilities at Port Covington, near Baltimore.

**WICHITA VALLEY.—Annual Report.**—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Standard return (January and February, 1920; year 1919).....	\$58,728	\$352,367
Total railway operating revenues.....	1,526,432	1,372,328
Total railway operating expenses.....	1,372,328	1,203,000
Net from railway operations.....	212,833	350,364
Railway tax accruals.....	57,120	
Estimated amount due for guaranty period (March 1—August 31).....	270,738	
Total non-operating income.....	249,824	117,762
Gross income.....	404,983	362,126
Interest on funded debt.....	38,450	38,450
Total deductions from gross income.....	261,596	243,718
Income balance transferred to profit and loss.....	143,886	118,407

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919, as follows:

	1920	1919
Operating Revenues		
Freight.....	\$1,232,615	\$781,980
Passenger.....	523,144	384,824
Total operating revenues.....	\$1,858,543	\$1,227,501
Operating Expenses		
Maintenance of way and structures.....	\$363,760	\$186,089
Maintenance of equipment.....	185,816	116,108
Traffic.....	1,537	3,950
Transportation.....	882,145	556,929
General.....	24,921	49,706
Total operating expenses.....	\$1,458,296	\$912,423
Net revenue from railway operations.....	\$400,247	\$315,078
Railway tax accruals.....	67,292	60,307
Railway operating income.....	\$332,399	\$254,348
Net railway operating income.....	\$142,849	\$185,552
Passenger Traffic		
Average number of revenue passengers carried.....	357,973	277,076
Number of passengers carried one mile.....	18,339,174	13,669,066
Average distance carried (miles).....	51.23	49.33
Average revenue per passenger per mile (cents).....	2.852	2.815
Freight Traffic		
Number of revenue tons carried.....	472,020	356,065
Number of tons carried one mile.....	41,618,705	31,031,897
Average miles hauled—revenue freight.....	92.41	87.17
Average revenue per ton mile of freight (cents).....	2.962	2.520

**WYOMING.—Asks Loan from Revolving Fund.**—This company has applied to the Interstate Commerce Commission for a loan of \$209,579 for 15 years from the revolving fund to enable it to improve its property and pay some outstanding debts.

**Guaranty Payments**

The Treasury Department has announced the following payments to railroads on account of the six months' guaranty for 1920: Bartlett Western, \$7,500; Louisiana Railway & Navigation Co., \$100,000; Mississippi Eastern, \$8,500.

**Railroad Administration Settlements**

The United States Railroad Administration has announced that it has made settlements covering the period of Federal control and has paid to the various carriers the following amounts: Chicago, Burlington & Quincy, \$8,000,000; Virginian, \$2,100,000; Alabama Great Southern, \$1,530,000; Mobile & Ohio, \$700,000; Chicago, New York & Boston Refrigerator Company, \$375,000; Marsh Refrigerator Service Company, \$21,000; Goldsboro Union Station Company, \$167.13; Durham Union Station Company, \$2,190.57. The Union Freight Railroad paid the Railroad Administration \$8,750.

**Dividends Declared**

Atchison, Topeka & Santa Fe. Common, 1½ per cent, quarterly, payable December 1 to holders of record October 28.  
 Great Northern. Preferred, 1½ per cent, quarterly, payable November 1 to holders of record September 23.  
 Kansas City, Ft. Scott & Memphis.—Preferred, 1 per cent, quarterly, payable October 1 to holders of record September 24.  
 New York, Chicago & St. Louis.—Common, 5 per cent, first and second preferred, 5 per cent (from 1918 income); second preferred, 2½ per cent (from 1919 income); all payable September 30 to holders of record September 19.  
 Pittsburgh, Bessemer & Lake Erie.—Common, 1½ per cent, semi-annual, payable October 1 to holders of record September 15.

## Railway Officers

### Operating

**E. W. Cameron** has been appointed assistant superintendent of the Canadian National, Western Lines, with headquarters at Népawa, Man., succeeding J. H. McDiarmid, who has been transferred, effective September 9.

**R. G. Murchison** has been appointed trainmaster of the Atlantic Coast Line with headquarters at Pinners Point, Va., and **C. L. Porter** has been appointed to a similar position at Tarboro, N. C. **C. G. Sibley** has been appointed superintendent of the Fayetteville district with headquarters at Rocky Mount, N. C., and **W. H. Newell, Jr.**, to a similar position on the Wilmington district with headquarters at Wilmington, N. C. **E. H. Powell** has been appointed terminal trainmaster with headquarters at Rocky Mount, N. C., and **J. A. Archer**, trainmaster with headquarters at Lakeland, Fla. **L. P. Broadfield**, trainmaster of the Jacksonville district, having resigned, **F. B. Langley**, also trainmaster of that district, has had his jurisdiction extended to cover the entire district. These appointments were effective September 1.

**H. T. Kinney**, whose appointment as superintendent of the Erie with headquarters at Dunmore, Pa., was announced in the *Railway Age* of September 10, (page 515), was born at Mansfield, Pa., on July 1, 1887. He was educated at the Mansfield State Normal School and Pennsylvania State College, at which institution he studied civil engineering. Mr. Kinney's first railroad work was from June, 1910, to March, 1911, when he was engaged in engineering work on the Key West extension of the Florida East Coast. He then returned to college where he remained until he had completed his course in July, 1913, when he went with the J. G. White Engineering Corporation, assisting in the appraisal of the Atlantic Coast Line. In June of the following year he became an assistant engineer for the Erie at Rochester, N. Y. On February 1, 1916, he was appointed supervisor of the Greenwood Lake and Newark branches and in October of the same year he was promoted to division engineer of the Allegheny and Bradford divisions with headquarters at Salamanca, N. Y. In May of the following year he became assistant division engineer of the Buffalo, Allegheny and Bradford divisions and in August, 1918, was appointed trainmaster of the Buffalo division. In April, 1920, he was transferred in a similar capacity to the Susquehanna division with headquarters at Elmira, N. Y., which position he was holding at the time of his recent appointment.

### Mechanical

**J. A. Carney**, superintendent of shops of the Chicago, Burlington & Quincy, at Aurora, Ill., has been appointed supervisor of fuel economy, with headquarters at Chicago, effective September 1. **H. Modaff**, master mechanic of the Ottumwa division, with headquarters at Ottumwa, Iowa, will succeed Mr. Carney as superintendent of shops at Aurora. **H. C. Turner** will succeed Mr. Modaff as master mechanic of the Ottumwa division.

### Traffic

**H. I. Norris** has been appointed export and import agent of the Erie with headquarters at New York, effective September 15.

**E. M. Snell** has been appointed general agent of the Erie with headquarters at Toronto, Ontario, effective September 15.

**S. H. Cummings** has been appointed assistant coal freight agent of the Chesapeake & Ohio with headquarters at Cincinnati, O. Through a typographical error the railroad with which Mr. Cummings is connected was omitted from an an-

nouncement of his appointment in the *Railway Age* of September 10 (page 515).

**H. R. White** has been appointed general agent, traffic department, of the Maine Central with headquarters at Eastport, Me., effective August 22.

**B. H. Taylor**, general agent of the Gulf Coast Lines, with headquarters at Houston, Tex., has been promoted to assistant general freight agent, with the same headquarters, effective September 5. **T. H. Mercer** will succeed Mr. Taylor as general agent, effective September 10.

**L. F. Daspit**, whose appointment as assistant general freight agent, of the Southern Pacific Lines in Texas, with headquarters at Houston, was announced in the *Railway Age* of August 13 (page 316), was born at New Orleans, La., on August 10, 1885, and was educated in the public schools of that city. He entered railroad service in 1901 as messenger boy in the freight claim department of the Morgan's Louisiana & Texas and served in various positions including that of chief overcharge claim clerk and statistician. Mr. Daspit resigned in 1907 to enter commercial work. He reentered the service of the M. L. & T. in July, 1909, and was promoted to compiler and chief

wage clerk, holding that position for about five years when he again resigned on January 1, 1917, to become assistant traffic manager of the Shreveport Chamber of Commerce. On July 15, 1918, he was appointed traffic manager of the Shreveport Chamber of Commerce, which position he held until his recent appointment as assistant general freight agent of the Southern Pacific Lines in Texas.

**E. W. Clapp**, general freight agent of the Southern Pacific, with headquarters at San Francisco, Cal., and **H. A. Hinshaw**, general freight agent, with headquarters at Portland, Ore., have been promoted to assistant freight traffic managers, with headquarters at San Francisco, succeeding **T. A. Graham** who has resigned to become general manager of the Pacific Mail Steamship Company. **J. Saunders**, assistant general freight agent, with headquarters at San Francisco, has been promoted to general freight agent with headquarters at Los Angeles, Cal. **J. H. Mulchay**, assistant general freight agent, with headquarters at San Francisco, has been promoted to general freight agent, with headquarters at Portland, Ore. **M. A. Cummings**, assistant general freight agent, with headquarters at San Francisco, will assume the duties formerly performed by Mr. Mulchay, with the same headquarters. **H. C. Hallmark**, general freight agent, with headquarters at Los Angeles, has been transferred to San Francisco. **G. J. Blech**, assistant general freight agent, with headquarters at Los Angeles, has been transferred to San Francisco. **L. C. Zimmerman**, division freight agent, with headquarters at San Francisco, has been promoted to assistant general freight agent, with headquarters at Los Angeles. **H. W. Klein**, foreign freight agent, with headquarters at San Francisco, has been promoted to assistant general freight agent, with the same headquarters. The changes were effective September 1.

### Purchasing and Stores

**J. D. McCarthy** has been appointed purchasing agent of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., succeeding **W. E. Manchester**, resigned, effective September 1.



L. F. Daspit

# Railway Age

Vol. 71 September 24, 1921 No. 13



*D., L. & W. Yards of Binghamton, N. Y.*

## Contents

### 100-Ton Coal Cars for the Chesapeake & Ohio ..... Page 567

High Capacity Cars Adopted for Transport of Export Coal—Drop Doors Provided for Emergency Unloading.

### Labor Board Defines Its Power and Legal Status ..... 579

Attitude of Various Carriers Causes Tribunal to Defend Its Rulings and Present Position.

### Standards for Railroad Electrification ..... 583

Great Britain Endeavoring to Standardize Electrification—Power Developed at 25 Cycles and Use of Both A. C. and D. C. on Trolley Continued.

#### EDITORIALS

Electric Traction Standards .....	557
The Conference on Unemployment .....	557
A Digest of Labor Decisions .....	557
Why Require Signatures to Train Orders? .....	557
The Roadmasters' Convention .....	557
Reduction in Bad Order Cars .....	558
Pressing Problems of Management .....	558
Why Are Railway Employees Thus Lied To? .....	559
Colorado & Southern .....	560

#### NEW BOOKS ..... 561

#### LETTERS TO THE EDITOR

Experience Justifies the Universal Use of Non-Signature Train Orders, by H. W. Forman .....	562
---	-----

Ford and the Mechanical Department .....	563
The Official Gasts .....	564
Reducing Road Freight Overtime, by V. Parvin .....	565
Permanent Remedy for Railway Labor Troubles .....	565
Some Fundamentals of Labor Unionism .....	566

#### GENERAL ARTICLES

100-Ton Coal Cars for the Chesapeake & Ohio .....	567
Roadmasters Hold Annual Meeting at Chicago .....	571
Train Order Deliverer Eliminates Unnecessary Stops .....	576
Freight Car Loading .....	578
Labor Board Defines Its Power and Legal Status .....	579
Some Remarkable Labor Turn-Over Statistics, by W. S. Wollner .....	582
Standards for Railroad Electrification .....	583
Annual Meeting of Telegraph and Telephone Section .....	585
Increasing the Efficiency of Employees, by P. H. Pearson .....	587

Published weekly and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*

SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building  
 PHILADELPHIA: 407 Bulletin Bldg.  
 CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34 Victoria St., Westminster, S. W. 1.  
 Cable address: Urasismec, London

WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
 B. H. ADAMS  
 H. P. LANE  
 R. E. THAYER  
 C. B. PECK  
 W. S. LACHER  
 J. G. LITTLE

A. F. STUEBING  
 C. W. FOSS  
 K. E. KILLENBERGER  
 ALFREDO G. OEBLER  
 F. W. KRAEGER  
 HOLCOMBE PARKES  
 C. N. WINTER

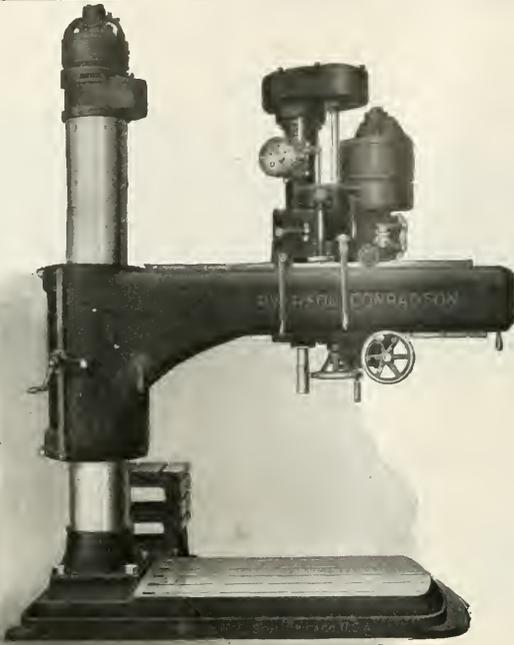
MILBURN MOORE  
 E. L. WOODWARD  
 J. E. COLE  
 J. G. LYNE  
 J. H. DUNN  
 D. A. STEEL  
 K. H. KOACI

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

*The Railway Age* is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free, United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue 9,000 copies were printed, that of these 9,000 copies, 8,032 were mailed to regular paid subscribers, 52 were provided for counter and news company sales, 316 were mailed to advertisers, 65 were mailed to employees and correspondents and 512 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 365,100, an average of 9,668 copies each



Ryerson-Conradson Railroad Machine Tools are abreast of the big powerful locomotive. Their use means more locomotive revenue hours.

## More Power at the Tool

The direct motor drive of the Ryerson-Conradson Railroad Radial delivers more power at the tool with a lower horsepower consumption.

One motor is used solely for elevating.

The second motor drives the spindle and feed mechanism. This provides straight line drive, avoids the use of bevel gears, eliminates half the gears of the usual radial and reduces power consumption 40%.

Ryerson-Conradson Railroad Radials are good for heavier work than similar sized machines usually take. You could use this capacity.

*Bulletin 4.001 gives the details*

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The question of standards for electric traction equipment is one that will demand attention in this country in the not far distant future. At present there are few things in a sufficiently advanced state of development to warrant standardization, but it may now be possible to define certain limits to which standardization may properly be carried. In an article in this issue George Gibbs, chief engineer of electric traction for the Long Island, points out many of the factors which govern and limit standardization and offers a number of suggestions. The letter is written to the Electrification of Railways Advisory Committee in England, and speaks specifically of British railways, but the statements as set forth apply equally well to railroads in the United States. An earnest and intelligent effort to outline standards for this equipment may not immediately produce tangible results, but it will aid materially in crystalizing the information at hand and will give the railroad operator a more definite idea of the possibilities and limitations of electric traction.

### Electric Traction Standards

The passage of the railroad funding bill, which is expected when the Senate convenes after its recess, has been regarded in many quarters as the stimulus which, added to the already hopeful business outlook, would bring eventually a return to normal economic conditions. If the "thawing" of the railways' and the equipment companies' "frozen credits" is likely to be of any such general benefit as this, then it would seem that the carriers and supply concerns should play an important part in the President's conference on unemployment to be held in Washington on Monday. From the preliminary list of delegates, the very opposite is apparently to be the case. One delegate has been announced to represent the railroads but none to represent the supply interests. The prominence and ability of the delegates chosen so far cannot be questioned. They are men and women who are leaders in many fields of activity all over the United States. Still, in view of the admitted importance of the railroads and the equipment concerns in the industrial fabric of the country, it would seem that special attention to means of promoting their activity would be one of the most potentially fruitful subjects to which the President's conference could devote its attention.

### The Conference on Unemployment

The activities of the Railway Accounting Officers' Association have in recent months been the subject of considerable favorable comment in the columns of the *Railway Age*. The reason has been that the R. A. O. A. is showing itself to be at present one of the liveliest organizations—some would say the liveliest organization—in the railway field. Because of the calibre of the association's membership and the ability of its official staff, the association has been able to realize in rather praiseworthy fashion on the increasing importance of the railway accounting officer. Another evidence of its enterprise is in the booklet, a review of which appears on another page of this issue, published this week by the association and entitled, "Index-Digest of Decisions of United States Labor Board." The booklet of 88 pages is a digest of the Labor Board decisions to September 1, 1921, namely Nos. 1 to 222. The digest has been compiled by the Bureau of Information of the Southeastern Railways. It is given circulation by the Railway Accounting Officers' Association, for the use of accounting officers, but there will be very few railway officers in all departments who will not be assisted measurably by the service which has been rendered by the publication of the digest.

### A Digest of Labor Decisions

Harry W. Forman, writing in response to our editorial of September 10, presents what political orators would call a ringing argument for the general use of train-order Form 19. To those who do not know Mr. Forman, it is proper to say that his 40 years' experience in train dispatching is somewhat different from ordinary experience in that he has constantly had to justify his utterances. Both his findings of fact and his opinions concerning probabilities can be fully accepted as having survived all possible criticism. If he has ever misinterpreted the facts of experience or has ever proposed anything for the future without keeping his feet firmly set on the ground, he has been through whatever fires were necessary to expose his error. In our editorial, we suggested that those operating officers who wish to promote the more general use of Form 19 would do well carefully to gather up the experience of roads all over the United States. The present letter suggests that this process might well begin at the far end of the country! That would give, as it were, a flying start. The heading on Mr. Forman's letter was put on by the editor, and the use of "universal" may perhaps be criticized by some. But are not the necessary exceptions to the use of Form 19 really very rare? A dispatcher who counts the orders that he has issued by the hundreds of thousands should be listened to with care.

### Why Require Signatures to Train Orders?

The Roadmasters' convention held in Chicago this week was in every way a success and serves as a fitting milestone for the steady progress which this organization has made during the last decade. The attendance has increased, the membership has grown and the character of the program and calibre of papers and reports presented bear emphatic evidence that the destiny of this association has been in skilled hands. It is a curious fact that the train of extraordinary times which have been visited upon the railroads of this country during the past five years have in no case interrupted or seriously interfered with the work of the three great associations of maintenance of way officers. The conventions of the Ameri-

### The Roadmasters' Convention

The Roadmasters' convention held in Chicago this week was in every way a success and serves as a fitting milestone for the steady progress which this organization has made during the last decade. The attendance has increased, the membership has grown and the character of the program and calibre of papers and reports presented bear emphatic evidence that the destiny of this association has been in skilled hands. It is a curious fact that the train of extraordinary times which have been visited upon the railroads of this country during the past five years have in no case interrupted or seriously interfered with the work of the three great associations of maintenance of way officers. The conventions of the Ameri-

can Railway Engineering Association, the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association have taken place without break during this period and with practically no modification from established customs. Perhaps this may be ascribed largely to the businesslike procedure which has characterized the conventions of these three associations—two and one-half to three solid days of technical discussion followed perhaps by a half day's inspection trip to work of specific interest to the men in question. Entertainment and recreation have played but little part in these meetings. It is also possible that the unbroken success of the conventions may be explained by the happy faculty of those in charge to suit the program each year to the particular need of the times, a fact that was appreciated in no small measure by the United States Railroad Administration, which availed itself, particularly in the case of the Roadmasters', of the opportunity to bring home a message of conservation and economy so imperative at that time. Of still greater importance is the attitude which has been generally taken by the railway managements who on the whole have encouraged attendance at the meetings on the part of their officers. Nor is it out of place to refer to the work done by the railway supply associations which have not only served as a guiding hand in directing the efforts of the supply manufacturers along legitimate channels, but have, moreover, exerted no small degree of influence in the administration of the association affairs.

For the first time in a year the railroads now report a reduction in the number of bad order freight cars. This is shown by the semi-monthly report compiled by the Car Service Division of the American Railway Association for the period ending September 1, when the number of cars needing repairs was 374,087, or 16.2 per cent of the total, as compared with 382,440, on August 15. Of the box cars the percentage needing repairs on September 1 was 17.8 per cent, as compared with 18.2 per cent on August 15. There was also a reduction in the number of bad order coal cars. The recent increases in the volume of traffic handled, particularly grain, has made it necessary to put more cars in service while giving the carriers some increase in revenue with which to do so, and the reduction in wages which went into effect on July 1 has also increased the ability of the roads to increase their repair forces. The bad order car situation is not one to brag about particularly, for the decrease in cars needing repairs in two weeks was less than the decrease in serviceable surplus cars in one week, but the fact that an improvement is being shown at last is a source of satisfaction. For the week ending September 8 there were 237,972 surplus cars in serviceable condition. For the first seven months of 1921 for which the Interstate Commerce Commission has reported the railroad earnings and expenses, the railroads expended \$737,000,000 for maintenance of equipment, which was \$111,000,000 less than they had expended on this account in the corresponding period of 1920. For the same period there was a reduction of \$113,000,000 in expenditures for maintenance of way. Part of the reduction in expenses represents, as would naturally be expected, real economy in maintenance and a part of it, too, represents the lessened volume of business, but the extent to which the railroads have been obliged to curtail and even defer maintenance work is indicated by the fact that the reductions made in these accounts amount to more than the \$213,000,000 net operating income which the railroads of the country had to show for their operations during the first seven months of the current year.

## Pressing Problems of Management

THE RAILWAYS are approaching normal in respect to net operating income. Their net operating income of \$69,-485,000 in July is the largest they have made under the present rates except in September, 1920, when they earned \$75,310,000, and in October, 1920, when they earned \$86,-500,000. It represents a return at the annual rate of 4.50 per cent, which has been exceeded under the present rates only in October, when the return was on an annual basis of 4.6 per cent.

While the results of operation in July are encouraging, the greatest mistake which could be made in interpreting them would be to infer they mean that the railroad problem is anywhere near solved. The net operating income obtained was chiefly the result of a reduction in operating expenses, as compared with July, 1920, of 29.50 per cent. This bespeaks a marked increase in operating efficiency, but it also bespeaks a very large amount of deferred maintenance. Before the railroad problem can be solved the existing physical properties must be rehabilitated by largely increased expenditures for maintenance. This will involve a large increase in operating expenses, and these increased expenditures for maintenance ought to be made as rapidly as the financial condition of the individual carriers makes practicable. To postpone increased expenditures for maintenance longer than is necessary would be artificially to increase the net operating income and give to those who are demanding general reductions of rates a strong but fallacious argument.

In addition to taking up deferred maintenance as rapidly as practicable, planning should be begun for expanding the capacity of the properties. The revival of general business may be slow, but conditions indicate that it is not only sure to come, but already has begun. General business began sharply to decline in the early spring of 1920 and continued rapidly downward until May, 1921. It was then practically stationary for about two months, and recently it has been increasing. With allowance for the ordinary seasonal changes, the increase in general business activity, if we may judge by past experience, will continue at an accelerating rate. One of the effects will be a corresponding increase in railway traffic. Other things being equal, the railroads make the largest profits when they are able to handle all the business offered without congestions and delays. The managements should spare no reasonable effort to get their organizations and properties in shape satisfactorily to handle a large traffic when it comes.

No less important than the problems of administration and operation which must be solved to get the railways ready to handle a larger business are those presented by their public relations. They are confronted with nation-wide demands for reductions of rates. The charge so often heard that the present rates are stifling business and preventing increase in railway traffic and earnings are refuted by the facts regarding the current movement of traffic. It is beyond question, however, that there are at present many bad adjustments of rates and many rates that are excessive. Readjustments to remedy these conditions should be made with the greatest practicable facility as a matter of railroad policy and of public policy. They are needed both to increase the gross and net earnings of the railroads, and to improve public opinion by meeting reasonable public demands.

There is a real and manifest danger, however, that public opinion and public authorities will insist upon reductions of rates being made faster than would be fair to the railways or beneficial to the public. The prime necessity of the situation is the restoration of railroad earning capacity and railroad credit. This can be done only by bringing about and maintaining a relationship between railway expenses and earnings which will enable the carriers to earn an adequate net return. It is the function and duty of the managements to make the

utmost efforts to get and keep the operating expenses on a reasonable basis. But this will not restore earning capacity and credit unless rates and total earnings can be made to provide a reasonable margin between expenses and earnings.

There is but one way to insure that the total earnings of the railways will not be unreasonably reduced, and that is to educate public opinion regarding the railroad situation. There is but one way to educate public opinion, and that is to present the facts about the railroad situation to the public throughout the country so energetically, skillfully and persistently that the public cannot evade or misunderstand them.

We greatly fear many high railway officers are today as far from understanding the public sentiment of the country in regard to the railroads as the public is from understanding the railroad situation. The cold truth is that a large part, if not a majority, of the more intelligent people of the country believe the following about the railroad situation:

(1) That present railway rates, both passenger and freight, are excessive and that extensive reductions ought to be made in the near future.

(2) That many of the managers of the railways have lost their "punch" and the roads are not being as efficiently and economically operated as they should be; that the managers have begun to run to Congress, the Interstate Commerce Commission and other government bodies for relief which they could get themselves if they would show the same initiative and energy as earlier generations of railway managers.

(3) That the railways have some kind of "guarantee" from the government and have not been participating in the losses suffered during the present depression by other classes of business concerns.

(4) That, while the railway managers admit that many maladjustments of rates now exist and that many rates are excessive, they are not making efforts rapidly to change the rate structure to make it meet present business needs.

These are but a few things a large part of the public believes in regard to the present railroad situation, which show a widespread spirit of mistrust. Eighteen months ago, when the railways were returned to private operation, public sentiment toward them was favorable. Today it is not favorable. This is a fact which it is not pleasant to contemplate, but which the railway managers should frankly recognize and act accordingly. Why does this public sentiment exist? First, because, whether reasonably or otherwise, the public believes the present railway rates are too high and in a spirit of resentment has become willing to believe almost anything unfavorable it is told about the managements. Secondly, because the railways never have done, and are not now doing, what they should have done and should be doing to educate public opinion. They have done a great deal of effective public relations' work through the Association of Railway Executives. The main thing which always has been needed, however, is skillful and effective work by the managements of the individual railways in dealing with public opinion in their own territories.

So long as the public regulates the railways the results of railway management will be largely determined by the way the railways are regulated. The public will determine how they will be regulated. Therefore it is just as essential a part of railway management to educate public opinion regarding the railroad situation as it is to run trains. Unfortunately, there are not more than a dozen of the large railways whose managements have recognized this fact and established and maintained departments especially to handle their public relations. It is as much a part of the duty of the railway managers to defend the railways as it is to operate them, and the railway problem will never be solved until this duty is more fully and adequately recognized.

The railways are entering a new period in their history. The successful management of the properties will require in

future as much administrative ability and energy as in the past, and more statesmanship and diplomacy in dealing with public opinion than ever have been shown. The future of the railways is in the hands of their present managers. If they cannot be successfully operated and developed under the present system of regulation, then it is the duty of their managers to so deal with public opinion and public authorities that the present system of regulation will be changed.

## Why Are Railway Employees Thus Lied To?

A STATEMENT appearing in "Labor" for September 17 with regard to the tentative valuation of the Chicago, Rock Island & Pacific contains such gross misstatements that they cannot go unchallenged. This is not a matter of error in the interpretation of complex analyses but an absolute disregard of facts which may be verified by anyone who has access to the valuation statement made by the Interstate Commerce Commission and the annual report of the Rock Island for 1920. The statement in "Labor" is as follows:

"Interstate Commerce Commission engineers have completed their evaluation of the Rock Island Railroad and find, even under the preposterous methods employed by the commission to determine value, that there is no property back of \$216,492,826 of the road's outstanding obligations.

"To replace the Rock Island new, at inflated after-the-war prices, would cost, according to a report just published, a cost of \$322,277,596.

"There is outstanding capital stock with a face value of \$397,637,422, in addition to which the road holds \$68,758,315 not yet in the hands of the public. The funded debt in the hands of the public amounts to \$231,633,000. The road owes the Federal government \$17,429,000 for various loans which are secured by a portion of its unauthorized stock.

"The valuation figure placed by the Interstate Commerce Commission is to be used for rate-making purposes. It covers all stock outstanding, which means that the public will be required to pay a return on the quarter of a billion dollars of water ploughed into the carrier."

The process of logic pursued in the first and last paragraphs is both novel and ingenious. The first paragraph states that the outstanding securities of the Rock Island are \$216,000,000 *in excess* of the valuation. In the last paragraph we find that "the valuation covers all stock outstanding." How can the valuation both exclude and include the alleged water? The second paragraph, however, must be given the palm for plain and fancy prevarication. It characterizes the commission's "final value" as the cost "to replace . . . new at inflated, after-the-war prices." In the first place the commission has not seen fit to throw any light on the process by which the "final value" was ascertained other than to say that it was obtained "after careful consideration of all the facts herein contained, including the excess cost of the carrier lands, appreciation, depreciation, going concern value, working capital, including material and supplies, and all other matters which appear to have a bearing upon the values here reported."

In view of this no one has a right to say that the "final value" as given is a "cost to replace." Furthermore, in view of the fact the data at the disposal of the commission included "cost less depreciation," it is a wide guess to presume that the final value was the value of a "new" property. But the prize lie is the "after-the-war prices," in the face of the commission's statement that the valuation is "as of valuation date of June 30, 1915." The prices used were 1914 prices.

The third paragraph attempts a statement of the outstanding securities, but leads the author into such deep water that

he had to beat a retreat without getting very far. What are the facts? How does the valuation compare with the outstanding securities of the road at the present time?

The final value of the Chicago, Rock Island & Pacific, plus that of the Chicago, Rock Island & Gulf, and a minor subsidiary, total \$335,639,013. Adding to this the expenditure for additions and betterments from the valuation date to December 31, 1920, or \$34,715,482, we get a grand total of \$370,354,595 as the total valuation to date. This is to be compared with the capital liabilities as of December 31, 1920, which total \$359,329,782. This statement will be made more clear by a study of the summary below.

#### FINAL TENTATIVE VALUATION

Final Value C. R. I. & P.	\$322,277,596
Final Value C. R. I. & G.	13,312,667
Morris Terminal	48,750
Total I. C. C. Valuation as of June 30, 1915.	\$335,639,013
Additions and Betterments June 30, 1915, to December 31, 1920	34,715,482
Valuation for Rate Making Purposes December 31, 1920.	\$370,354,595

#### CAPITAL LIABILITIES ON DECEMBER 31, 1920

Capital stock outstanding	\$129,040,511.50
Funded debt	229,975,796.51
Debt to affiliated companies	313,564.09
Total capital liabilities December 31, 1920.	\$359,329,872.10

Comparing the final valuation for rate making purposes with the total capital liabilities, we find a difference of \$11,024,723 in favor of the valuation. This sum is subject to more or less adjustment as a consequence of pending settlements with the United States government, but there is every reason to believe that the ultimate difference would be small. The important fact to remember is that the valuation which the commission has given to the Rock Island exceeds its present capital liabilities.

The big question which arises in the minds of the readers concerns the motive back of the gross misrepresentation of the Rock Island's valuation which "Labor" disseminates among railway employees. The answer is that it comprises but a single detail of a deep-seated plot to discredit the railroads in the eyes of their employees. More specifically in this case, the object is to enlist the employees in a campaign for lower rates. But lower rates means decreased earnings for the railroads which in turn mean smaller expenditures for operation and that spells lower wages or fewer employees or both. If there is anything that will militate against the interests of all the employees it is lower rates. But this is no concern of the wrecking crew responsible for the propaganda dispensed in the pages of "Labor," for they would not only sacrifice the railway employees, but the railway stockholders, the shippers, in fact the very business life of the country, on the altar which they have erected to the Plumb Plan.

## Colorado & Southern

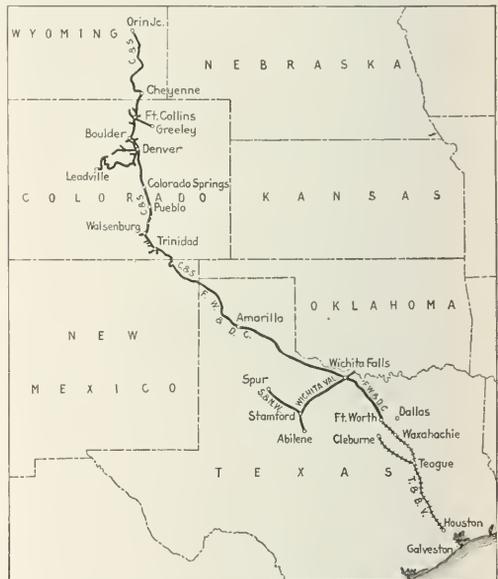
THE COLORADO & SOUTHERN, like various of its sister roads in the southwest, experienced in 1920 a rather satisfactory year. Further than that, it fared rather better than the other Hill roads. The company's corporate income account, in which consideration is given to the standard return for federal operation in January and February and to the amount accrued for the guaranty period, March 1 to August 31, showed for 1920 a net income available for dividends of \$2,606,066 as compared with \$1,783,946 in 1919 or \$1,376,371 in 1918. Dividends paid in each of these years totaled \$680,000, this including payments of 4 per cent on the first and second preferred stocks. No dividends are paid on the common stock. In 1920, the balance after the payment of the dividends on the preferred stock was \$1,926,066.

The net railway operating income of the Colorado & Southern in 1920 showed an increase over the previous year similar to that shown by the corporate net income. The figure

for the year was \$2,771,383. This compared with \$1,588,473 earned for the government in 1919. The standard return for the property while it was under federal control was \$2,481,212. In 1918, the first year of government operation, the net which the Colorado & Southern earned for the Railroad Administration was some \$300,000 in excess of the government rental.

The Colorado & Southern, thus far in 1921, to bring the figures up to date, has been carrying slightly less traffic than it was carrying in the early part of last year. In June this year, the falling off in business was especially noticeable. The net railway operating income for the first seven months of 1921, however, totaled, despite a poor showing for June and only a fair showing in July, \$832,741, which is an improvement when compared with \$838,191 in the first seven months of 1920.

The Colorado & Southern is tied into the Hill system



The Colorado & Southern Lines

through its control by the Burlington, which owns some \$1,130,000 of its \$8,500,000 first preferred, \$6,078,700 of its \$8,500,000 second preferred and \$23,667,500 of the \$31,000,000 common stock. The Colorado & Southern system totals 1,809 miles of line, of which 1,099 are operated by the Colorado & Southern itself; 454 by the Fort Worth & Denver City, and 256 by the Wichita Valley. The figures which have been given above are those for the Colorado & Southern itself. The lines operated by this group of carriers extend from a connection with the Burlington at Orin Junction, Wyo., southward across Colorado through Denver, Pueblo, Trinidad, etc., with branches to Leadville, Greeley, etc., thence across the Texas panhandle and to Fort Worth. Operation over the Trinity & Brazos Valley gives the system access to the increasingly important jobbing center and port of Houston, Tex.

The system's traffic is predominantly products of mines. In 1920 the total of 6,789,747 tons of revenue freight carried on the Colorado & Southern, 4,689,543 tons or 69.06 per cent were products of mines, of which 3,768,487 tons, or 55.50 per cent of the road's total tonnage, was bituminous

coal. Products of agriculture made up but 11.35 per cent; refined petroleum and its products but 2.51 per cent. The Fort Worth & Denver City carried in 1920 a total of 3,441,773 tons of revenue freight, of which 21.78 per cent was bituminous coal or 35.41 per cent products of mines. The Fort Worth & Denver City had also a large proportion of products of agriculture—25.17 per cent—and refined petroleum and its products made up 13.40 per cent. The Wichita Valley's freight traffic totaled 472,020 tons, of which tonnage 23.09 per cent were products of mines, 36.40 per cent products of agriculture and 14.39 per cent petroleum and its products.

The total tonnage of revenue freight carried by the Colorado & Southern in 1920, as above noted, 6,789,747 tons, compared with 5,697,261 tons in 1919. The revenue ton-mileage in 1920 was 882,016,336 as against 805,616,645 in 1919. The average haul in 1920 was 129.90 miles; in 1919, 141.40 miles. The freight revenues in 1920 totaled \$11,986,502; the total operating revenues to \$16,271,658. The latter figure represented an increase of \$3,295,014 over 1919. The Colorado & Southern was unusual in that its operating revenues increased in greater amount in 1920 as compared with 1919 than its operating expenses. The operating expenses in 1920 were \$12,773,845, an increase of \$2,062,328. The net operating revenue of \$3,497,813 was an increase of \$1,232,686 over 1919.

The operating ratio in 1920 was 78.50; in 1919, 82.54 per cent.

The Colorado & Southern has been making a special effort to encourage agriculture in its territory. In 1920 its agricultural department operated two demonstration cars and a better-farming exhibit car. It has also issued bulletins on various agricultural subjects, has arranged to have addresses at various farmers' meetings, has assisted farmers in ordering feed, seed and stock, and has helped to organize farmers' co-operative shipping and marketing associations. The effect of these various efforts are shown by a rapid increase, particularly in dairy production. In 1917, the system handled 1,932,526 tons of agricultural, live stock, forest and farm implement products; in 1919, 2,512,505 tons, an increase of 30 per cent. The number of carloads of live stock handled into the Denver Union Stock Yards by the Colorado & Southern in 1910 was 3,953 cars; in 1920, 10,046 cars, an increase of 154 per cent.

The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated .....	1,099	1,100
Freight revenue .....	\$11,986,502	\$9,701,857
Passenger revenue .....	3,028,085	2,510,935
Total operating revenue .....	16,271,658	12,976,644
Maintenance of way expenses .....	2,626,425	2,092,587
Maintenance of equipment .....	3,477,596	3,108,389
Traffic expenses .....	146,120	104,019
Transportation expenses .....	5,789,036	4,855,575
General expenses .....	609,555	462,155
Total operating expenses .....	12,773,845	10,711,517
Net operating revenue .....	3,497,813	2,265,127
Railway tax accruals .....	886,205	567,628
Railway operating income .....	2,607,492	1,692,906
Net railway operating income .....	2,771,382	1,588,473

The corporate income account is as follows:

Standard return (January and February, 1920; full year 1919) .....	413,535	2,481,212
Estimated amount due for guaranty period, March 1 to August 31 .....	959,688	.....
Railway operating income and standard return .....	2,099,993	2,430,960
Dividends and miscellaneous interest .....	1,352,530	1,430,821
Total non-operating income .....	2,998,552	1,775,727
Gross income .....	5,098,544	4,206,687
Interest on funded debt .....	2,140,438	2,105,095
Total deductions from gross income .....	2,492,478	2,422,740
Net income .....	2,606,066	1,783,946
Dividends .....	680,000	680,000
Income balance .....	1,926,066	1,103,946

## New Books

*Index-Digest of Decision of United States Railroad Labor Board. Compiled by Bureau of Information of the South-eastern Railways. Published by Railway Accounting Officers Association, 1116 Woodward Building, Washington. 88 pages; 6 in. by 9 in.; bound in paper.*

This book, as its title indicates, is a digest of the decisions of the United States Railroad Labor Board. It includes the decisions up to September 1, 1921—Nos. 1 to 222. The subject matter is arranged in alphabetical or indexed order, whence the name index-digest is derived. The publication gives all that anyone would need to know—for practical purposes—regarding any decision made by the Labor Board. In each case reference is made to the decision in which the finding was given, so that the additional details may be easily obtained where necessary. The use of the index-digest, however, eliminates the time and labor of reading through the full text of the decision. The book does not give rates of wages but the complete references will assist measurably in the finding of the rates relating to the several classes of employment in the decisions themselves. The value of the book is considerably enhanced by elaborate cross indexing.

The publication has been issued by the Railway Accounting Officers Association primarily because of the desirability of placing information of this sort in convenient form in the hands of the accounting officers who must be able to obtain expeditiously and accurately such information in connection with auditing payrolls, etc. It is self-evident that the publication should be of equally great value to executives, operating officers, shop accountants, time keepers, etc., and in general to officers in all departments of railway work. The value of the compilation will further be emphasized when it is realized how much ground has been covered in the many decisions of the Labor Board, and when attention is drawn to the fact that the Labor Board's own digest covers only the decisions up to January 1, 1921, namely, decisions 1 to 41.

The R. A. O. A. contemplates the issuance of future editions at such intervals as may be necessary to provide a reasonably up-to-date index-digest.

The Railway Accounting Officers Association has performed a real service to the entire railway field in taking it upon itself to issue a publication of this kind. The fact that the book issued this week includes the decisions up to as recent a date as September 1 is also noteworthy.

*Material Handling Cyclopedic. Edited by Roy V. Wright and John G. Little. Bound in cloth and leather; 850 pages, 1500 illustrations, 11 1/2 in. by 8 1/2 in. Published by the Simmons-Boardman Publishing Company, Woolworth Building, New York City. Price, cloth \$10.00, leather, \$15.00.*

This is the latest addition to the library of transportation literature published by the Simmons-Boardman Publishing Company. The volume is a companion book to the Car Builders' Dictionary and Cyclopedic, the Locomotive Dictionary and Cyclopedic, the Shipbuilding Cyclopedic and the Maintenance of Way Cyclopedic.

The purpose of this cyclopedic has been to bring together in a single volume complete, practical working information about the many types of material handling devices used in industry. The purpose has been to make the contents of interest and value alike to the executive interested in reducing handling costs and to the operating man who is seeking information as to the types of material handling machines best suited for his needs, how they operate and where they may be obtained.

The Definition Section in addition to its purpose as a dictionary of material handling terms, methods and devices serves as an index to other sections of the book. Following

the definition of each device receiving further treatment in the book is a reference to the page in the Text Section or Catalog Section on which the additional information appears. Thus, from the definition the reader is referred not only to the detail description, method of operation, and illustration of the device given in the Text Section, but as well to the page in the Catalog Section where the device which he has selected as best suited for his needs is described authoritatively by the manufacturers.

The Illustrated Text Section, which directly follows the Definition Section, has been sub-divided into divisions corresponding to the general classification of machines. Thus the text contains separate sections devoted to Hoisting Machinery; Conveyors; Elevators; Industrial and Motor Trucks, Tractors and Trailers; Industrial Rail Transportation Track, Cars and Locomotives, and Handling Systems. Each section of the editorial portion of the book has been prepared by a specialist particularly fitted for the work undertaken. In this way the experience of eleven specialists in material handling methods and appliances is made available under one cover. Each section is fully illustrated, the illustrations showing typical applications of the various machines as well as their general characteristics and appearances.

A Catalog Section of 150 pages supplements the information shown elsewhere in the book. In it the manufacturers of machines present detail descriptions and illustrations of particular devices referred to in the other sections of the book.

A General Subject Index covering the entire contents of the book is an additional help in making the information readily available.

*Saward's Annual Statistical Review of the Coal Trade.* 254 pages, including advertising, 6 in. by 8 in. Published by Frederick W. Saward, 15 Park Row, New York.

To men who are connected with the purchase or use of coal, a compilation of data regarding the operation of previous years is of value. This book provides information not otherwise readily available, giving in very complete form statistics of production and shipment with considerable information pertaining to the consumption of fuel. Sufficient comment on conditions in the industry are given to aid in interpreting the figures presented. The situation existing in 1920 is reviewed for the country as a whole and also for the principal producing districts and market centers. Production of both anthracite and bituminous is given for many of the principal companies, as well as for the various fields and for all the states. A large amount of data regarding prices is given, including quotations as early as 1834. The wage rates and the texts of the wage awards for both bituminous and anthracite are quoted. The tonnage shipped over various railroads is given, as well as the amount carried by water, the receipt at the lakes and the amount exported. In addition to the data regarding coal, figures are given for the production and consumption of petroleum.

PASSENGERS TRAVELING BY AIRPLANE are not so numerous as they were, according to a press despatch from Paris. Agents of the lines report a decrease of 50 per cent. The change is attributed to the ZR-2 disaster, several minor accidents in Europe and the smash-up of a Strasbourg-Paris passenger plane recently when all on board were killed. Several planes have been taken off the channel service and only two are now flying between Paris and London. This is said to be the first time that accidents have frightened the public. The airplane concerns are apprehensive and have announced that they will enforce the maximum degree of safety, and they think the lull will only be of brief duration.

## Letters to the Editor

### Experience Justifies the Universal Use of Non-Signature Train-Orders

SAN FRANCISCO, Calif.

TO THE EDITOR:

Your editorial of September 10, with the letter attached, serves to call to mind the fact that the railroad world is not yet educated up to that condition of mind which would adopt a general agreement on the total abolition of the 31 train-order form. Large bodies move slowly; and, what is more to the point, just here, large numbers of men scattered through 48 States often do not move in unison at all—without much skillful pushing and steering. Form 31 will not stir from its entrenched position. But it does seem as if a somewhat less radical change might be brought about at this time if persistent missionary work and hammering could be kept up by those most vitally interested—the dispatchers and division officers.

Experience during the past 40 years with the 19 form of order on a number of large roads has fully convinced me that while, under certain combinations of circumstances, signatures must be obtained, any operating officer who desires to do so may permit his trains to be handled as outlined below, without fear as to the results:

1. There must be clearance cards delivered with all train-orders, showing the individual number of each order, and these numbers must be checked by the men concerned. Before clearing a train in this manner, the operator must obtain permission from the dispatcher, indicating to the dispatcher by the several order numbers, previously endorsed on the clearance card, on what orders the train is being cleared. The dispatcher must not give O. K. to such clearance until he has checked his own record. If wires fail, the operator may clear trains without the O. K. from the dispatcher, provided all orders affecting the trains to be cleared have been completed by the dispatcher.

2. Three copies of all orders should be delivered to freight trains; one for the engineman, one for the fireman and one for the conductor. Four copies should be delivered to passenger trains; for engineman, for fireman, for conductor and for the flagman. It is unreasonable to assume that firemen and flagmen can always remember the contents of long train orders handed them to read, when the order must be immediately returned to the engineman or conductor. Anyone doubting this statement is invited to try to keep in mind the several "run-late" or 10 or 15 "wait" times to be found in many orders.

3. The 19 order may be used for any movement when the trains affected are moving in the same direction.

4. It may be used to meet trains, provided a copy of the order is sent to the operator at the place of meeting and copies are sent to all trains concerned before their arrival at the meeting point, with this exception: this cannot be regarded as safe practice if (a) the superior train is directed to take siding, or (b) if it must pass the switch where the inferior train takes siding before it reaches the telegraph office where the "middle order" is to be delivered.

I have made several hundred thousand such meets and have yet to hear of a collision or any accident thereunder which could be charged to the use of the 19 order in thus fixing meeting points.

5. In-time doubtless it will be universally conceded that the unsigned form of order may be safely depended on except in such cases as taking away from a crew an order which

the dispatcher must know is surrendered; or securing signatures at blind sidings; or when the order-signal will not hold a train at an open office.

Only one form of train order is needed; when necessary to secure signatures, they may be endorsed on this form. A code signal may be used to indicate when signatures must be obtained.

When only one order is awaiting a train at a station, and it is known that the order-signal is displayed at stop for such order, it is an up-hill argument to contend that a 31 would be safer than a 19, as in either case a collision might result if there should be a failure in delivery and the operator is as likely to overlook the 31 as the 19. The 31 in no way adds to the safety of such handling.

I have known more accidents under the use of 31 orders than would have occurred had the 19 form been used. The explanation is quite simple: The 19 is hung up where the operator can see it; the 31 is left lying on his table (possibly covered by other orders or a paper) until it is signed by the conductor.

When signatures must be obtained, why cannot the engineer first sign the order and obtain complete, and then move his train forward until the caboose is near the office so that the conductor may also sign? This would save the delay incident to the conductor having to walk 85 car lengths.

The most ridiculous feature of the present practice is the almost universal custom of delivering to a train one or more 31 orders affecting its rights at a point some 50 or 75 miles distant, without using the middle order at such point. Or, perhaps, it may be a non-telegraph station; or an office which is closed. Doing this while bugging to ourselves the delusion that this is safe train dispatching, because we have the signature of the conductor of the restricted train, is an example of narrow minded short sightedness well worthy of study. Some do this with a virtuous attitude of conservatism and yet forbid, or frown upon, the use of the 19 form addressed to the operator at the place of meeting and to all trains affected within a reasonable distance from such meeting point. So many things occur to distract conductors and engineers; and so frequent are serious delays which cause the lapse of from four to six hours from the time the order is delivered until it must be called to mind and executed, that it is surprising that more collisions do not occur when trains are dispatched in this manner.

H. W. FORMAN.

## Ford and the Mechanical Department

LOS ANGELES, Calif.

### TO THE EDITOR:

I hold no brief for Henry Ford, but in his efforts to re-plant the Detroit, Toledo & Ironton into a successful railroad, he has the sympathy of the public at large. However much we may criticise his six dollar minimum wage day, his wholesale reduction in freight rates, and his Sunday day of rest, those of us who are technical people are watching with keen interest every move he makes in mechanical matters.

It is said that Mr. Ford observed a freight train delayed with a hot car journal. Personal investigation disclosed the crew going through the usual performance of carrying water and robbing crank pin grease from the locomotive. And it is said Mr. Ford made some remark about axles being as "big around as your head." Truly the waste-packed journal box is an heirloom that has promoted more train delays than, I dare say, all other causes combined. There is no reason why a journal could not be designed to run several years without attention of any kind, or at least until wheel tread or flanges demand attention. European experiments have demonstrated that roller bearings are not impracticable. But for the high journal pressures employed in America, a long slender bearing with loose lubricating rings, such as is common on

dynamos, might be equally effective. With a substantial and tight housing, a journal might be depended upon to run years without repair.

No one is satisfied that car construction is perfect. With massive complex steel castings and electric welding developed as they are, there is no reason why the sills, bolsters, frames and purlines could not be fabricated into one piece. This piece could be standardized. Instead of the thousands of different designs scattered over the land, there might be three or four accepted designs, each interchangeable with its own kind. Further increase in car capacity is improbable. The average merchant finds 50 tons is an economical unit to purchase and transport. Larger capacity cars would involve more I.C.I. shipping and increased difficulty in stowage. It is reasonable, then, to suppose that the modern car is adequate in size and capacity for many years to come. The problem is to design the lightest and most efficient structure that will handle the standard load. If Mr. Ford's engineering department devotes as much energy to devising a feather-weight freight car, as to creating his little automobile, even the most cautious among us will venture that the new car will revolutionize railroading.

The steam locomotive has been in a constant stage of development, but the final limiting weight appears to be 200 or 250 tons. Mr. Ford proposes to build a 75-ton locomotive equally powerful. With the coefficient of adhesion between drivers and rails approximately  $4\frac{1}{2}$ , the only way the proposed locomotive could develop adequate tractive power is by employing the adhesive weight of engine truck and trailer wheels, and, perhaps, the temporary use of magnetic pull on rail to hold the wheels down when starting. With the train under way the problem is simply to develop the existing machine into one having sustaining power to handle a capacity-train long distances.

Mr. Ford's experience with pulverized fuel in his manufacturing plant may recommend a similar system for locomotives. The boiler would be redesigned to suit the fuel, and in place of the standard small firebox, there might be a larger one with unusually long combustion chamber, or corrugated or water tube arrangement. Steam pressures of 300 lb. or 400 lb. condenser and forced draft would not be scoffed at. The general use of heat-treated steel and "I" sections instead of rectangular shapes would reduce the dynamic augment, and permit doubling the static wheel load on the rail. Grease lubrication, with its tremendous internal friction, might give place to automatic oil lubrication for all driving journals. Instead of crown brasses, there might be main bearings completely surrounding the main axle so as to withstand the thrust of the rods.

Considering the present development of worm drives, which survive most exacting service in automobile trucks, a similar system might be incorporated in the new locomotive. The development and perfection of a 75-ton locomotive that will equal the 250-ton machine is a feat worthy of the best engineering talent the country affords. In our locomotive works and railroad offices much detail design is entrusted to poorly paid draftsmen, and the hatches they perpetrate survive for generations. Every part, no matter how trivial, should receive the best technical attention. Mr. Ford has drawn into his automobile organization engineering talent of the first order. With these men turned loose on a standard locomotive, no one doubts the result.

Dare we hope that Mr. Ford will undertake a saving of the entire mechanical situation? The present equipment is fundamentally the same as it was 50 or 75 years ago, and aside from increasing the thickness of sections, enlarging the parts, and hanging on appurtenances such as power reverse gears, feed water heaters, and boosters, there has been no great outstanding radical improvement. In other words, there has been a glaring lack of originality. Designers for the most part have resembled weather vanes and never dared

head across the wind. What is needed is a vigorous and prompt return to the fundamental problem, namely, to design the most powerful and efficient machine consistent with existing track and clearances.

Let the designer assume that no previous equipment is in existence whence to borrow ideas. Let him build from the ground up utilizing what we know today regarding kinematics and thermo-dynamics. Radicalism should be encouraged. Considering the present state of science, is steam the best available working medium? And is the reciprocating engine the best agency for utilizing it? One of the painful things about the proceedings of many of our engineering societies is the caution with which each new idea is advanced, and the criticism and storm of protest or skepticism manifested from all sides. Many nebulous ideas have been consigned to the waste basket for fear of scorn. There has been too much standing aside waiting for illumination from the few acknowledged leaders of the profession. Meanwhile the efficiency of conversion of heat content of fuel into useful work remains seven per cent. Perhaps Mr. Ford will raise it.

STOCKHOLDER.

## The Official Goats

SOMEWHERE ON THE ROAD.

TO THE EDITOR:

In all the eddying whirlpool of railroad labor trouble, there remains but one quiet spot—the secretaries. All other employees have been recognized as having a place under the sun; even the chief clerks are gaining some much deserved recognition. But not so the secretary. He still remains the official goat. He is kicked at so much that he is sick of kicking and does not kick.

Nine years ago, as a plain stenographer, I looked with envious eyes at the secretary, thinking only of the pleasures of riding around in the official car, seeing the sights and having a good time generally, but I failed to notice the worried, harassed look that seems characteristic of all secretaries. Yes, the job seemed attractive enough to me nine years ago, but looking back now in the light of those nine years' experience as a secretary, I find that the glamor has faded. Nine years of acting as a buffer between the boss and the world! Nine years of taking the blame for everything that happened on the railroad!

Sometimes I wonder how I have retained even those shreds of self-respect that are left to me, after acting as a safety valve for the temper and sullenness of the three officers I have worked for in that period. And yet these three officers were not martinetts. All of them were pretty good fellows, but there wasn't one of them who didn't jump on the secretary whenever anything went wrong. Of course, it is only human to vent one's rage on the object closest at hand, but I want to say, after nine years of taking it, that it is mighty unfair to the secretary.

It may seem far-fetched, but it has been my observation that there are very, very few railroad officials in this country who treat their secretaries as white men. I can hear the angry protests of every railroad official in the country, but ask the secretaries and you will find that they are unanimous in agreeing that they are needlessly bullied and blamed for all sorts of things over which they have not the slightest control nor any connection whatever. After all, the secretary is human, even if it is the fashion for his boss to consider him as a soulless target to hurl cuss words at.

Any secretary who reads this will readily recognize the following as a typical day's bawling out. The boss gets up and comes to the breakfast table. He is feeling rotten. He has eaten too much the day before or he has not eaten enough, or just naturally feels mean. His eyes roam about restlessly; the secretary recognizes the look and sighs, for

he knows what that means. The boss is looking for something to fuss about. Presently the boss almost smiles, for he has found something about which he can ride the secretary and feels better.

"Where's my morning reports?"

Now, everybody on the railroad knows the GM wants his morning reports the first thing in the morning and they all try to get them to him. The secretary rolls out first thing in the morning, rushes madly to the telegraph office to get them, but they are not there. Sometimes somebody does slip up, and the wires are down or the operators are asleep on the job. But does the GM blame the telegraph department or whoever else may be at fault? Not a bit of it. By the time he sees the superintendent of telegraph he will have forgotten about it; but he is mad now, the secretary is right at hand so the goat sits at the breakfast table and listens to a long harangue.

Having thus started the day right, the GM, or any of the other officials for that matter, continues throughout the day, about as follows:

"Don't see why you don't have the cook get better ham. This is like shoe leather. What's the matter with the coffee this morning? Why does it always rain in this town? Did you tell Smith to meet me with his auto at nine? What's the matter with the mail? Maybe if you would look for it instead of sitting there like a bump on a log, you would find it. Why didn't you have the car put in a quieter place? Why is that guy switching us around just when we are eating? Wish you wouldn't throw ashes all over the floor. Why don't you eat cabbage? Have you got those letters ready yet? Takes you all day to do anything. Why did this fool write me this letter? What's he talking about any how? Have you got the file on the car? I told you I wanted that file. No, you can't go uptown tonight. I want to write some mail. Wait up for me."

All this monologue was liberally interlarded with cuss words, of course. It is an exact verbatim transcription of what the GM said, for I took it down for that special purpose. To read it over one would think that I was the worst secretary in the business, yet I have been with the GM nearly four years. But it isn't that I am not giving satisfaction. At least, I get by all right, but it's always open season for swearing at secretaries. It's so nice to have somebody around to relieve one's rage upon, but I can say from bitter experience that it's not so nice for the "relievee."

The injustice of it is that those very secretaries who are treated in this fashion are usually bright, ambitious young chaps or they wouldn't be picked to go on the road. To them is intrusted every sort of responsibility, personal and private. For pitifully small wage, these boys work day and night (for the secretary knows no hours). They keep the bosses' correspondence secret and inviolate. They leave home on a moment's notice ready for a long trip. They deal with everybody on the railroad, act as grand vizier for the boss, alternating as his adviser, valet, physician and target for his abuse. They take the bosses' unjust criticisms philosophically.

And why do they put up with all this? Because they are loyal. They belong to no union; the eight-hour day is a myth so far as they are concerned, but they stick to their guns amid volleys of needless abuse and lack of appreciation because they love the rolling road; the roar of the Mountain type through the cañons and the softer purr of the Pacific type across the plains is music to their ears. The railroad is in their blood.

They make no demands; they ask for nothing. Shorter hours and more pay are agreeable words, but they are merely empty words for the secretary for he knows that his loyalty will be rewarded by a total lack of consideration on the part of the management. He knows that when increases are being passed out he will be the last one considered, if he is considered at all, and he knows that when cuts are in

order his name will head the list, but he takes it all without resentment, much as one overlooks the faults of an unjust parent whom one loves nevertheless; but he would like to be treated as a human being.

All he asks is that you officials who have secretaries realize that the average secretary has sensibilities and that his intelligence is sufficient to perceive lack of appreciation for work well done. In short, stop venting your own general cantankerousness on the secretary.

Above all, keep this thought in mind—your secretary is human, he is faithful and loyal and merits decent treatment. Did you ever try being human to your secretary? Try it some time and see how he brightens and expands under such treatment. If you do, you will be in the class with some of the brightest officials in the country (unfortunately few) who do not consider their secretaries as the "Official Goats."

ONE OF THEM.

## Reducing Road Freight Overtime

Owosso, MICH.

TO THE EDITOR:

I believe that it is now important to consider the question of road freight overtime for train and engine crews. With this thought in mind I will describe the method of dealing with this on the Ann Arbor railroad and the results obtained. I also feel that the time is proper to show what is being done towards economical operation in view of recent statements made before the Labor Board at Chicago pertaining to the waste and particularly that waste which can be found by examining the train sheets of the different railroads. When overtime is reduced to a minimum the greatest waste that can possibly be found from checking train sheets has been eliminated.

Overtime on the Ann Arbor railroad is watched probably more closely than any other individual item of expense. This intensified supervision in itself increases the miles per hour of all locomotives, increases the miles per day of all cars, decreases the per diem expense, adds more locomotives without increasing the units, avoids yard congestion, improves the handling of the freight over the railroad as a whole, and means a corresponding saving in coal, oil and other supplies, based on the percentage of reduction. In reducing the overtime there has been no sacrifice in the line of service or lowering of tonnage rating in order to accomplish the result. Whatever reduction has been made has been made through the education or the solicitation of the co-operation of each employee connected with the handling of trains, from the call boy to the train dispatcher. The result has been that there are any number of these men on the Ann Arbor railroad, who feel just as bad about making overtime on a trip as do the officers.

The plan of education has been along the lines of a daily check of the performance of each train operated. This check is made from both the delay report furnished by the conductor and the train sheet. Any delay, which on the face of it appears excessive or unnecessary, is taken up. If it appears that an engineer has made an unnecessary water stop, was too long taking coal and water, consumed too much time in dumping ashpan at different points where this is considered necessary, failed to make the average run between given points taking into consideration the tonnage on the train, weather conditions, etc., such delays are referred to the road foreman of engines to handle with the engineer, with a view of reducing all necessary delays to a minimum and entirely eliminating all unnecessary delays.

Where conductors put in too much time picking up or doing other work, fail to properly inspect train which later results in a delay, etc., these matters are taken up with them by the trainmasters. Delays which seem excessive, due to the

train dispatchers, are handled with them through the chief dispatcher. Delays caused by any mechanical defect are referred to the mechanical department. Delays caused by the roadway department employees, such as section men taking out rails without getting a line-up on trains, etc., are referred to the head of the roadway department. The manner in which the men as a whole have co-operated is surprising and the general chairmen of the four brotherhoods of train service employees have rendered every possible aid in bringing about the results for which we have been striving.

On the part of the management, sufficient supervisory force has been furnished so that the trainmasters, road foreman of engines and traveling fireman can spend the greater portion of their time on the road, riding freight trains and keeping in close personal touch with all the employees, for without keeping in close personal touch with your employees, you cannot hope to obtain results. Another feature which has brought about a great saving in overtime is the use of the 19 order for restricting the superiority of trains, which has been in successful operation for upwards of a year; and all of the train service employees, as well as the other employees on the road, endorse its use.

Due consideration is given to the starting of trains to avoid congestion, meeting points at short sidings, and trains are never run so close together that the trains in the same direction interfere with the movement of one another. In other words, trains are never run in fleets, which can be done on a small road as well as a larger road because there are always conditions which necessarily cause one to have several engines at one terminal.

As a result of the above mentioned efforts, the low record for the amount of total overtime on the Ann Arbor railroad was made on March 10. This road is 292 miles long. There were operated on this date 15 freight crews, handling a total of 403 loads and 155 empties. These 15 crews made a total overtime of 1 hr. and 46 min. Over 166 miles of the railroad, where the majority of the freight trains are operated, there are four first-class trains in each direction every 24 hours; on 62 miles there are three first-class trains in each direction, and on the remaining 64 miles there is one first-class train in each direction. The percentage of overtime loads and 192 empties per day, with an average of 13.2 crews to total time for these 15 crews March 10 was 1.4; this percentage having been cut down from 25 per cent. For the first 15 days in March we have handled an average of 441 per day and a percentage of overtime to total time of 8.3.

V. PARVIN,  
Division Superintendent

## Permanent Remedy for Railway Labor Troubles

NEW YORK

TO THE EDITOR:

The foregoing is one of the optimistic subheads in the very ingenious and suggestive article on the great country-wide railroad problem, from the pen of F. J. Lisman, which was published in your paper on July 9. And Mr. Lisman hits the bullseye with unerring aim: the labor leaders will object to his plan most strenuously, but a majority of their constituents would favor it, freely, if they could have a chance to vote on it. Nobody can tell how soon the world is going to see the genius who can convert these labor chiefs into broad-minded public-spirited leaders, or when the rank and file of railroad employees will rouse themselves to the extent of becoming free and courageous citizens; strong men with the courage to vote as their own mature judgment dictates; but it will be useful right now, regardless of how long our hopes may be deferred, to think over some of Mr. Lisman's proposals. I wish to suggest one point. It is in con-

nection with his proposed article Number 1, under which the government would lay down rules for the election of officers of the labor unions.

This is a vital feature. The selfishness and short-sightedness of the leaders is the real cause of most of the labor unions' mistakes and misfortunes. After 40 years, the railroad employees of the country are still without any satisfactory means of picking out their wisest men for leaders. Here, as in municipal politics, self-seeking busy-bodies get into office while conservative and honorable men carelessly remain asleep. It will be a great thing if the government can lay down election rules which shall tend to repress the selfish and encourage the right-minded.

And for the substance of a rule for selection of leaders we have instructive examples all around us. How is a suitable judge found for one of our high courts? By seeking a lawyer of good *character and experience*. Those two words mean that the man has been well known to his fellow citizens for a number of years. Usually they mean, also, that he is favorably known. Why should any conservative engineman, conductor or mechanic vote for any man for leader without first having such a guarantee of his honesty and efficiency? Never vote for a man for chairman of your local committee unless you know that, *for a period of years*, he has been trustworthy, broad-minded and human. Is there anything unreasonable or impracticable in such a requirement? By putting their best men, best-known men, long-tried men, in places of leadership, the employees' brotherhoods would only be following the example of all associations of wise and level-headed men everywhere. Today, as Mr. Lisman observes, the best men in these brotherhoods allow themselves to be led around by the nose on the order of a few young hot-heads.

And it would do no harm if there were a property requirement; if a candidate for leader should be required to have some financial interest. Such a requirement might not mean a great deal at first, but the principle would be educative. A citizen cannot go into court and take up the time of the judge and the court officers with a doubtful lawsuit without giving bonds to cover the costs; but railroad grievance committees can keep up costly conferences for weeks at a time with no limit on the expense except the railroads' easygoing generosity. Something ought to be done to make such committees realize their responsibility. Much has been said about capital's unfairness to labor; but one of the outstanding examples of unfairness in the railroad world is the liberality of the officers in allowing committees to grieve by the month at the company's expense. Such practice is unfair to the stockholders and to the great mass of employees who are not constantly grieving.

B. R. B.

## Some Fundamentals of Labor Unionism

NEW YORK.

TO THE EDITOR:

Many railroad officers in this country are Christian gentlemen; but there is one prominent Christian principle which they seem with fatal persistence to neglect. It is found in the Bible—the book of Christian principles—Epistle of St. Paul to the Christians at Rome, 12th Chapter, last verse; “Overcome evil with good.”

Why do we not apply this to our ever present labor-union problem? The way to kill off a pernicious union is to form a rival union which shall be so much of an improvement that men of reasonable motives and purposes will change their allegiance. This principle is recognized by wise men in other walks of life. To kill weeds and then neglect to plant good seed in the ground to take their place is the height of fatuity. What politician would be so foolish as to denounce

the opposite party and yet make no effort to put up, and to praise, a strong candidate on his own side!

The most heartening thing that has occurred in the railroad labor field for many years is the action of the Pennsylvania Railroad in encouraging large numbers of its employees to organize themselves for collective bargaining independently of the “national” and “international” brotherhoods. This can be said without any reflection on the principles of the large brotherhoods, and even without any reflection on their present leaders, for there are two fundamental principles which constantly tend to weaken these large brotherhoods: (1) National leaders cannot deal adequately with local problems. All they can do is to fight forever for uniformity, which means that all railroads must give the highest pay and the easiest conditions that cunning “grand chiefs” (always aiming at one objective) can extort from the easiest mark among the railroad presidents; and (2) these national leaders, even though they were angels from heaven, are under the constant temptation to magnify their own offices; to act from the narrow selfish and personal motives. They are human, like the rest of us. To really serve the best interests of their constituents they must often take their official lives in their hands; and who has the courage to do that?

Why should not every large road follow the Pennsylvania's example? It is a difficult proposition, I know; but what can be more difficult and discouraging than the present situation?

It will be said that the employer cannot with safety do what the Pennsylvania is doing; that he, like the labor leader, will consider, not the employee's interest, but his own. *But it is this, or nothing!* The great majority of the men classed as “labor” lack wisdom; they must be led by wiser men; men of big brains and consciences. It is the employer's duty—aye, his interest—to provide the needed brains and conscience.

An employer can advise and aid his employees unselfishly; the only question is, are there enough of us actually to do it, and do it with sufficient force and enthusiasm to “start something” all along the line? Small employers have done this; shall we say that the railroads are so big that they are powerless to do it? It would even pay to hire some outside individuals—priests, lawyers, or female welfare workers—to begin some plan for breaking the ice, if there are not enough big Christian men in the railroad world to assume the task.

I have said that “reasonable” employees would be amenable to right teaching or leading. How many of your employees are in that class? This, of course, is the crux of the question. How shall weak-minded or short-sighted men be made thoughtful and far-sighted? Educating men to be reasonable—that is, intelligent, well-informed, considerate of others and truly public spirited—is, however, a highly useful work, whether you ever show any tangible results or not! It is well worth while for “capital” to thus do good work for “labor” whether the reward comes in this life or the next.

Complete publicity is the one essential pre-requisite to any tangible accomplishment in the line that I have suggested. Mistakes will be made, and wrong motives will creep in; much tedious traversing of old ground will be necessary before any progress will be visible; but complete frankness and honesty would be the antidote for all sorts of troubles. Publicity compels honesty!

H. G. W.

WHILE IN COBLENZ I asked one of our American boys stationed there if he was not anxious to get back home. His answer was “No! I don't want to leave here as long as my \$30 a month produces over 2,000 marks on which I can live like a prince.” But this exchange question is a double-edged sword which cuts both ways. While we are busy building our tariff wall higher and higher this premium on our dollar tends to keep our goods out of foreign markets far more effectively than any protective tariff which the other nations might enforce against us.—Journal of the American Bankers' Association.



Chesapeake & Ohio Gondola Coal Car of 100 Tons Capacity

## 100-Ton Coal Cars for the Chesapeake & Ohio

High Capacity Cars Adopted for Handling Export Coal—Drop Doors Provided for Emergency Unloading

**T**HE CHESAPEAKE & OHIO handles a very large amount of export coal from the West Virginia and eastern Kentucky fields. The total tonnage which this road dumped at Newport News in 1920 was 7,264,000 tons, which was exceeded only by the Norfolk & Western. The pier is

preventing these cars from being loaded for interchange points.

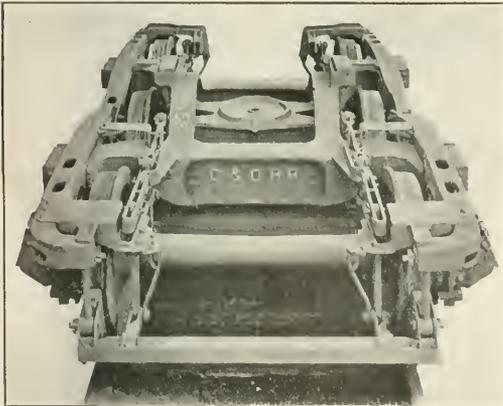
To facilitate the handling of tidewater traffic, the Chesapeake & Ohio last year ordered 1,000 cars of 100 tons capacity, of which 500 were built by the Pressed Steel Car Company and 500 by the Standard Steel Car Company. These cars are of the flat-bottom, high-side, gondola type and ordinarily will be unloaded by car dumpers. They are provided, however, with four drop doors which permit them to be unloaded in case of emergency at points where dumpers are not installed.

Of the three large roads which deliver coal to points on Hampton Roads, the Chesapeake & Ohio and the Norfolk & Western recently have adopted cars of 100 tons capacity, while the Virginian is using cars of 120 tons capacity. Both of these designs have been described in previous issues of the *Railway Age*.

### Construction of the New Cars

The inside dimensions of the new 100 ton capacity cars are 43 ft. 3 in. long, 10 ft. 1½ in. wide and 7 ft. 5½ in. deep. This gives a coal space of 3,212 cu. ft. when level full, or 3,703 cu. ft. when heaped at an angle of 30 deg. Using a factor of 54 lb. per cu. ft., the heaped load would weigh 200,000 lb. The cars, however, are stenciled as of 182,000 lb. capacity to provide for a 10 per cent overload. The length over striking castings is 44 ft. 7½ in.; the maximum outside width is 10 ft. 3⅝ in., and the height from top of rail to top of sides is 11 ft. The distance from center to center of the trucks is 30 ft. 7½ in. and the trucks, which are of the Lewis six-wheel type, have a wheelbase of 9 ft. The light weight of the car is 68,300 lb. and the weight on each axle with the car loaded is 44,717 lb.

The center sills are made up of two 12-in., 35-lb. channels with flanges facing out and reinforced at the bottom by 3½ in. by 3½ in. by ⅜-in. angles, extending between the draft gears, and at the top by the ¼-in. floor plates. There is



Lewis Truck with Clasp Brake

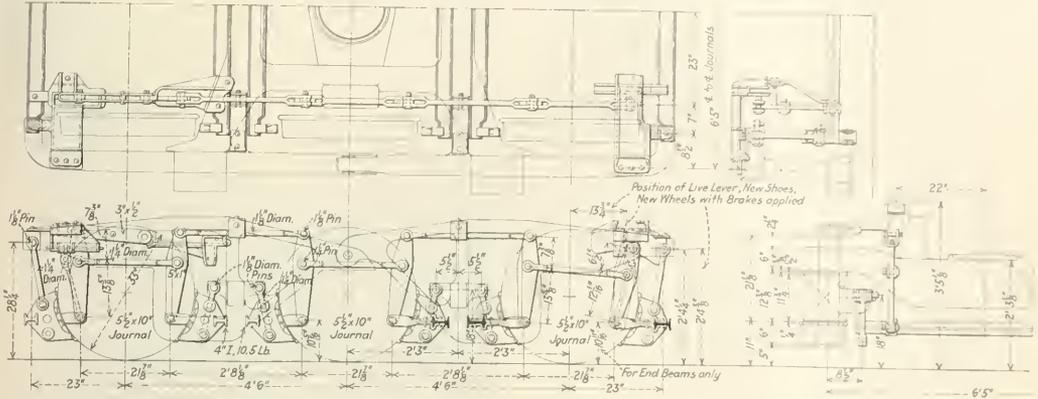
equipped with a pair of stationary turn-over car dumpers, each of which is capable of handling all sizes of cars up to those of 100 tons capacity at a rate of 30 cars an hour. The coal is dumped from the road cars into special transfer hopper cars which are lifted by an elevator, run along the pier and dumped into pockets. A large part of the export coal has been handled hitherto in hopper bottom cars of 70 tons capacity, but there has been considerable difficulty in



also a reinforcement in the center of the car on top of the floor plates consisting of a  $\frac{1}{4}$  in. plate 20 in. wide and extending slightly beyond the door openings.

The body bolsters are of cast steel. They are in one piece, 30 in. deep, located inside of the car body and reaching from side to side of the car on top of the floor. The body center plates are of cast steel, 16 in. in diameter, and have

seven pressed steel braces, as will be noted from the illustration showing the side view of the car. The side sheets are set in at the ends to bring the grab irons inside of the outer face of the side sheets and are flanged over the end sheets. Reinforcing plates are provided at the ends of the body bolsters. The two sides are tied together by two crossbraces, one at each intermediate gusset brace. They are constructed

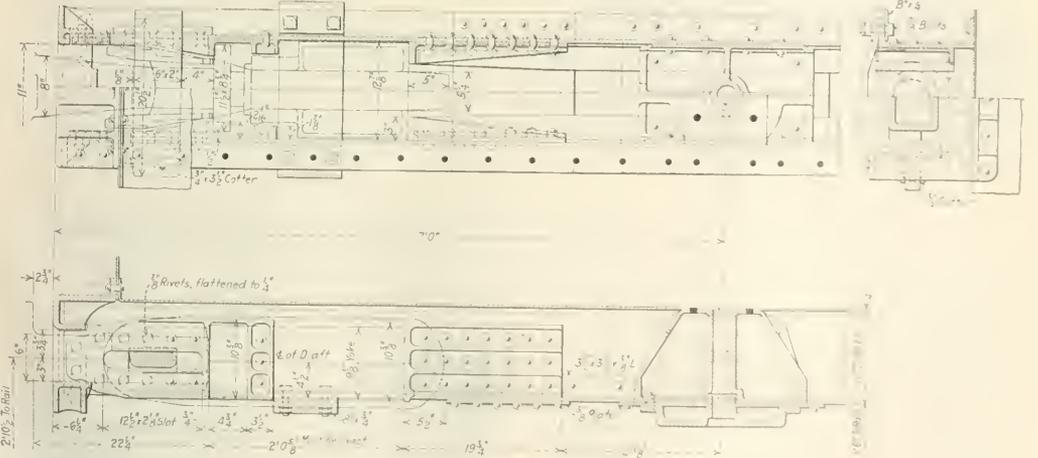


machined bearing surfaces. The body bolster center braces are of cast steel machined and the center brace brackets are also of cast steel. The body side bearings are open-beath steel bars, 4 in. by  $5\frac{1}{8}$  in. by 16 in., spaced 22 in. from the center of the car to the center of the side bearings, and with a clearance of  $\frac{1}{4}$  in. between body and truck side bearings.

The side sheets, placed outside the side stakes as in the

of  $\frac{1}{4}$  in. pressed plates, are of box shape and are shown clearly in the illustration of the inside of the car. Such braces were not used on the Norfolk & Western or on the Virginian cars, but should add materially to the stiffness of the sides.

The ends are of  $\frac{1}{4}$  in. steel sheets, reinforced at the top by a 4 in. by  $3\frac{1}{2}$  in. by  $3\frac{3}{8}$  in. bulb angle and by two



Draft Gear Arrangement

Virginian 120-ton cars to give the maximum width inside the body, are of  $\frac{1}{4}$  in. steel pressed in toward the top and reinforced by a 4 in. by 4 in. by  $7\frac{1}{16}$  in. angle and at the bottom by a 4 in. by  $3\frac{1}{2}$  in. by  $3\frac{3}{8}$  in. angle. Each side is also reinforced by nine  $\frac{1}{4}$  in. pressed steel gusset side stakes located inside of the car. The sides are further stiffened on the outside at the top by four cast steel braces and by

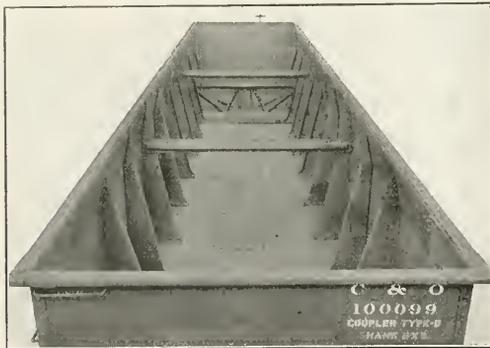
pressed steel U-shaped horizontal stiffeners of 5 16 in. steel, 5 in. deep at the center.

There are three cross-bearers, one at the center of the car and the others intermediate between the center and body bolsters, consisting of  $\frac{1}{4}$  in. pressed steel diaphragms with 8 in. by  $1\frac{1}{2}$  in. bottom tie plates, four cross-ties—two of pressed steel next to the center cross-bearers and two of 5 in.

9.3 lb. bulb angles on top of the floor next to the body bolsters—and a diagonal brace to each corner of  $\frac{1}{4}$  in. pressed steel riveted to the top of the floor. The floor is made of  $\frac{1}{4}$  in. open-hearth steel sheets.

The large capacity coal cars used on the Norfolk & Western and on the Virginian are not provided with bottom doors, it being assumed that they would always be emptied by car dumpers. The Chesapeake & Ohio cars have flush bottoms but are equipped with emergency drop doors which can be used when necessary to unload the car at a point where car dumpers are not available. The four drop doors, each with an opening of 2 ft. 6 in. by 3 ft., are located as shown on the drawings. They are operated in two sets. Part of the cars are equipped with door operating mechanism designed by the Pressed Steel Car Company and part from the design of the Standard Steel Car Company.

The trucks are of the Lewis, six-wheel type with cast steel side frames and bolsters designed and furnished by the American Steel Foundries. The wheelbase is 9 ft. and the journals are  $5\frac{1}{2}$  in. by 10 in., M.C.B. standard dimensions. The wheels are of wrought steel, part of them furnished by the Carnegie Steel Company and part by the Forged Steel Wheel Company. The side bearings consist of pockets cast integral with the truck bolster with cast steel filler blocks and three  $\frac{3}{16}$  in. shims in each pocket for adjusting the side bearing clearance to the nominal amount of  $\frac{1}{4}$  in. The journal boxes are of pressed steel, Kensington type, manu-



Interior of Car Body, Showing Bolster, Gusset Side Stakes and Crossbraces

factured by the Union Spring & Manufacturing Company.

The cars are equipped with Westinghouse empty and load brakes, schedule KDE-4-10-16, having a 4-in. take-up cylinder, a 10-in. cylinder for use when the car is empty and an additional 16-in. cylinder for use when the car is loaded. The brakes are of the same type as those used on the Virginian as described in the *Railway Age* of June 17, 1921. Retaining valves are of the 10-20 lb. spring type.

The brake rigging is designed to give a braking effort of 40 per cent on the empty car and also 40 per cent on the loaded car. The trucks are equipped with clasp brakes having vertical levers. The brake beams are of 4-in.,  $10\frac{1}{2}$ -lb. I-beams with two sets of open-hearth forged steel brake beam fulcrums spaced on 3 ft. 10 in. centers and substantial malleable iron brake heads. The hand brake is of the geared and multiplying type. The wheel load is 5,692 lb. on the empty car and 22,358 lb. on the loaded car. The nominal brake shoe pressures are 2,277 lb. on the empty car and 8,943 lb. on the loaded car.

The draft gear is of the Miner A-18-S friction type with  $2\frac{3}{4}$  in. clearance between the coupler horn and the striking castings. The cheek castings are of cast steel; each rear

cheek has 27  $\frac{7}{8}$ -in. rivets; the front ones have 15 rivets. The draft sill tie is 8 in. by  $\frac{3}{4}$  in. The couplers are A.R.A. type D with 6 in. by 8 in. shanks, connected by keys to cast steel yokes. The striking irons are of cast steel, the coupler carrier iron being cast integral with the striking casting.

In addition to the usual safety devices, the cars are provided with an inside ladder at each end.

The accompanying table gives the principal dimensions and other data of these cars and in addition similar information in regard to the large capacity coal cars used on the Norfolk & Western and on the Virginian.

Railroad	Chesapeake & Ohio	Norfolk & Western	Virginian
Capacity, stencilled..	182,000 lb.	200,000 lb.	218,000 lb.
Capacity, heaped 30 degrees .....	200,000 lb.	200,000 lb.	240,000 lb.
Cubic capacity level..	3,212 cu. ft.	3,122.5 cu. ft.	3,850 cu. ft.
Cubic capacity, heaped 30 degrees.	3,703 cu. ft.	3,636 cu. ft.	4,450 cu. ft.
Estimated density of load .....	54 lb. per cu. ft.	55 lb. per cu. ft.	54 lb. per cu. ft.
Length over striking plates .....	44 ft. 7 $\frac{1}{2}$ in.	43 ft. 9 in.	50 ft. 8 $\frac{3}{4}$ in.
Coupled length .....	47 ft. 1 in.	46 ft. 2 in.	53 ft. 3 $\frac{1}{2}$ in.
Truck centers .....	30 ft. 7 $\frac{1}{2}$ in.	31 ft. 8 in.	36 ft. 10 $\frac{1}{2}$ in.
Truck wheelbase....	9 ft. 0 in.	8 ft. 6 in.	8 ft. 8 in.
Height, rail to top of car side .....	11 ft. 0 in.	11 ft. 0 in.	11 ft. 0 in.
Length, inside .....	43 ft. 3 in.	42 ft. 7 in.	49 ft. 6 in.
Width, inside .....	10 ft. 1 $\frac{1}{2}$ in.	9 ft. 6 in.	10 ft. 2 $\frac{3}{4}$ in.
Depth, inside, center.	7 ft. 5 $\frac{1}{2}$ in.	8 ft. 6 $\frac{1}{2}$ in.	8 ft. 5 $\frac{1}{2}$ in.
Depth inside, ends..	7 ft. 5 $\frac{1}{2}$ in.	7 ft. 5 $\frac{1}{2}$ in.	7 ft. 4 $\frac{1}{2}$ in.
Width outside, extreme .....	10 ft. 3 $\frac{3}{4}$ in.	10 ft. 1 $\frac{1}{2}$ in.	10 ft. 3 $\frac{1}{2}$ in.
Weight of car body..	41,100 lb.	29,020 lb.	43,200 lb.
Weight of two trucks	27,200 lb.	24,480 lb.	35,700 lb.
Weight of empty car.	68,300 lb.	53,500 lb.	78,900 lb.
Weight loaded .....	268,300 lb.	253,500 lb.	318,900 lb.
Per cent revenue load of total weight...	74.6 per cent	78.9 per cent	75.3 per cent
Rail load per axle, loaded car .....	44,717 lb.	42,250 lb.	53,100 lb.
Weight loaded per foot coupled length	5,695 lb.	5,490 lb.	5,985 lb.

"ONE HUNDRED PERSONS KILLED" is the heading of a press despatch of September 15 reporting the derailment of a heavily convoyed grain train at Fastov, near Kiev, Ukraine. The wreck was caused by the removal of rails at a point where the train, made up of 61 cars, was running down grade. The grain was being carried to the Donetz basin to be distributed to miners.

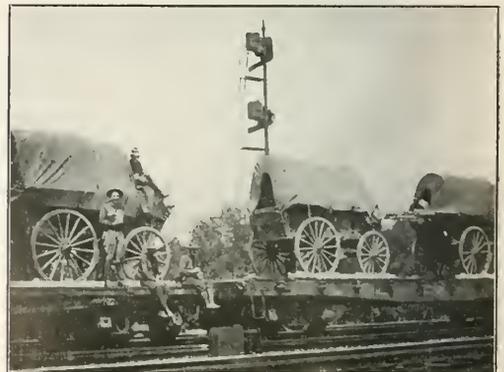


Photo by International.

Troops Leaving Camp Dix, N. J., for West Virginia Coal Fields

# Roadmasters Hold Annual Meeting at Chicago

Thirty-ninth Convention of the Association Characterized by  
Good Reports, Active Discussion and Interest in Exhibits

THE THIRTY-NINTH convention of the Roadmasters' and Maintenance of Way Association and the tenth annual exhibit of the Track Supply Association were held at the Auditorium Hotel, Chicago, on September 20-22, inclusive, with an attendance of 500. The program and character of the reports and papers presented, in line with those of recent years, mark a steady advancement in the work of the association. The proceedings this year included the presentation and discussion of the reports of five committees and three individual papers, abstracts of which follow:

P. F. McManus, general superintendent of the Elgin, Joliet & Eastern, Joliet, Ill., addressed the convention at its opening, outlining many of the advantages which could be had by close attention to the papers and also by active participation in the discussion. In the course of his remarks he offered as the ideal toward which all railroad men should strive, the furnishing of adequate transportation to the public at a reasonable cost. In the attainment of this ideal he emphasized the importance of the position which the Roadmasters' and Maintenance of Way Association now holds. He pointed out the many possibilities for economy which could be secured by a loyal endeavor on the part of the roadmasters and supervisors to develop their present methods in the handling of labor and materials. He also spoke of the exhibit of maintenance of way appliances and urged that every advantage be taken of such an opportunity to study the design and application of modern equipment.

## The President's Address

In his address, President Wiltsee made mention of the fact that the association is not only one of the oldest associations of railroad men, but it is the oldest organization from the point of view of never having had a break in its activities. During this period there have been many changes in the track structure and in the methods of carrying out the work. The railroads are now passing through a severe and trying time of readjustment and for that reason there is all the greater need for economical maintenance, especially in the handling of labor and the conserving of materials. In outlining the advantages of participating at the meetings of the association, he stated that it was a poor man who could not derive some good from a convention where topics in which he is vitally interested are discussed thoroughly. Active participation in committee work was urged strongly by President Wiltsee as one of the best means to advance the standing of the association through making its papers and work an authority on maintenance of way matters. He dwelt particularly upon the benefits which would accrue to the members themselves since, by taking an active interest in committee work, the general knowledge of the men themselves was broadened greatly and their circle of acquaintances was increased, all of which contributes much towards a successful life.

## Address by L. W. Baldwin

L. W. Baldwin, vice-president of the Illinois Central, Chicago, addressed the convention on the opportunities for effecting economies in maintenance of way work. In his opinion there was a need for two prime aids in the conduct of the work, the establishment of an effective measure of the results obtained and the general application of mechanical devices to increase production. The unit of measure is particularly important as an incentive for increased production by the

forces. It is his experience that few men do their best work unless it is noticed by those above them in rank. There is no satisfaction in working unless one knows what he is accomplishing. This subject now has a new significance because of the relatively higher wages being paid by the railroads, affording them an opportunity for selecting more intelligent, reliable and efficient men. This can be accomplished effectively only through some means of measuring their output. Records of work done also serve as a stimulus for rivalry among the forces.

Mr. Baldwin presented a long list of devices which have demonstrated their value in effecting economies in maintenance of way work. He also pointed to the need of improvement in many of these equipments and to the opportunities for further development. In closing he pointed to the gradual improvement in the general railway situation, calling attention to the fact that whereas the roads earned an actual deficit during January and February, the earnings for the other four months of the half year were enough to show an appreciable return. The present danger, he said, lay in the assumption of a viewpoint that was too optimistic as a result of which there is agitation for lower rates. In this connection he showed that the railway men can play an important part, saying "Railway men of all grades need to realize this and to exert their influence in such a way that the public will be led into a correct attitude."

## The Budget System as

## Applied to Track Work

By C. A. Morse

Chief Engineer, Chicago, Rock Island and Pacific Chicago

The question before the railroads today is how to reduce their cost of operation, and at the same time keep the property from deteriorating. About 20 per cent of the cost of operation of a railroad is for the maintenance of way and structures, and about two-thirds of that 20 per cent is spent on roadbed and track. If, therefore, you can, by better maintenance methods, reduce the cost of your work 10 per cent, you will be reducing the cost of transportation on your road 1 1/3 per cent.

## Where to Economize

Let us see how we should proceed to enable us to make a saving in maintenance of way as a whole, two-thirds of which would be in the track department. Maintenance of way work is composed of a great variety of classes of work, scattered over the entire railroad. Some of it must be done to keep the railroad safe for the operation of trains, other portions of the work are done in replacing parts that are worn out, or so nearly worn out that they will not continue to serve their purpose, while still other expenditures are made to retard deterioration or to avoid large expenses in the near future on the principle that "a stitch in time saves nine."

In addition to the class of expenditures named, there are those that are made to prevent damage claims, among which are the upkeep of right of way fences. Another class is that which makes for neatness in the general appearance of the property and tends to encourage the employees to do good work and to take a pride in the property. This is generally referred to as standardization, which simply means that the

work is performed in the same way on all portions of the railroad and not in a "bit or miss" manner.

In addition to these classes of work there is the work chargeable to maintenance of way in connection with additions and betterments to the property. On the average well maintained railroad the expenditures for additions and betterments on roadway and structures will amount to about one-fourth of the total maintenance of way expenses, and in carrying out this addition and betterment work, there will be maintenance charges about equal to the addition and betterment charges; so that about one-fourth of the maintenance of way charges are in connection with addition and betterment authorities. Of the remaining three-fourths of the maintenance of way expenses about one-half are required for ordinary upkeep, the other half, or three-eighths of the whole, are expended on the class of work that I have referred to as desirable and in many cases necessary, but which, if deferred, will not interfere with the safety of train service.

It is this three-eighths or 37.5 per cent of the total maintenance of way expenses that is deferred in times of business depression and done in greater quantity when earnings permit of the expenditures. It is this 37.5 per cent which covers the deferred maintenance, if there is any, on the railroad but it is also where there is the greatest opportunity for careful supervision and good judgment to see that it is expended on the parts of the railroad where it will earn a proper return, and not where it is of no real benefit to the property as a whole.

There is no real difference between this money and that required for "A. & B." work—it is only a matter of accounting. Revisions of the accounting methods have in recent years caused much that was formerly charged to maintenance of way to now be charged to additions and betterments.

### Need for a Budget

We are all loud in our praise of the decision of Congress to put a budget system into effect in connection with our national expenses, and feel that it will help to keep down expenses and reduce our taxes. The same thing applies, only on a smaller scale, to the expenditures on the railroads, not only on the comparatively small amount charged to additions and betterments, but to the much larger part charged to operating expenses. If the budget is made in the detail that it should be, it can be either authorized as a whole or "A. F. E.'s" made to cover the separate items.

There will be many cases where other items will be submitted with a request that they be substituted for some item in the budget, in which cases an "A. F. E." should be required in order that the necessity or desirability of the substitution can be investigated carefully and decided by the head of the department.

The total amount of money covered by the budget should be apportioned over the different months to insure a fairly uniform rate of expenditure during the year. This need have no reference to the items that go to make up the monthly expenditure—the local officers are best qualified to decide what work they will do at any particular time and should not be interfered with in carrying out their own plans for doing the work.

To facilitate the working out of a budget for maintenance of way work the different portions of the railroad should be classified, and certain classes of work should only be permitted on the more important portions of the road—others only on certain parts. In this way the matter of considering expenditures would be simplified, as it would be known that certain standards or certain classes of work would not be permitted on unimportant branch lines. Many economies could be worked out with a careful classification of the railroad as to maintenance of way work.

Now, with our budget system worked out and in force we come to the economies that may be secured in carrying out

the work. The authority for the expenditure of money on a piece of work should carry with it the authority to order the material direct from the store department, and the authority to put on the necessary men to carry out the work in accordance with the judgment of the local officer in charge of the work. It should not be necessary to have any signature but his own on a requisition, but the requisition should show the item on the budget, or the "A. F. E." number where "A. F. E.'s" are issued, for which material is being ordered. The same should apply to any additional help that is required to perform the work. A sheet accompanying the pay roll should show that any new names appearing on that roll are employed on work authorized by "A. F. E. (No. —)," or "item (No. —)" of the approved budget, it being understood that when their services are no longer needed on that work that they will be dropped or transferred to some other authorized work.

The cost of doing work is increased immensely by the "red tape" on many roads, connected with ordering of material and getting authority for the help, which in the judgment of the man in charge is necessary to handle the work in an economical way.

Many officers seem to fear to give their subordinates a free hand in the performance of authorized work, but with a proper system of checking up completion reports and with proper cost statistics compiled on the railroad, there will be a check on the performance of each man who has charge of work, and the man will take pride in making a good showing if he is furnished, as he should be, with statistics that show what others are performing similar work for. Such data are also necessary in order to estimate work properly that is being planned.

### Cost Data Sadly Lacking

It is a peculiar thing, but a fact, that practically all of the cost data that are kept in the maintenance of way department are the result of individual effort, and made up by the individual, because he finds that he must have some such data to enable him to estimate work. There are very elaborate and detailed statistics of cost of everything in the transportation department, but the only thing that is furnished in regard to maintenance of way is the cost of maintenance of way per mile of road, and the cost per 1,000 gross ton miles; and these are of no value in comparing one division with another, as the variation in class of railroad and in density of traffic changes the results to such an extent as to nullify any apparent comparison.

Maintenance of way and maintenance of equipment make up about 45 per cent of the total operating expenses of a railroad and transportation makes up about 50 per cent. As stated above, elaborate and detailed statistics are kept and published, showing various items that go to make up this 50 per cent of the total operating expenses, and absolutely nothing of any value is kept or published as to items that go to make up 45 per cent of the operating costs on the majority of the railroads of this country.

From the viewpoint of the transportation officer, good track, good power and rolling stock are essential to reduced transportation expenses and good service, and are cheap at any cost. This is true, but there is no reason why the same careful study should not be given to furnishing these essentials at a minimum cost, as there has been given to conducting transportation at a minimum cost.

If we are going to do this we must have cost data statistics covering maintenance of way and maintenance of equipment; we must have these kept in a uniform way on all railroads, and we must have them published so that each road and each division on a road may know what it is costing to perform these items on the other road, or on the other division. Also in the case of maintenance of way they should be kept on each roadmasters' territory so that the superinten-

dent may be able to see what each roadmaster is doing in the way of keeping down costs on his division.

A large or a small improvement program on a division makes a decided difference in the figures. A roadmaster and a section foreman are judged by the track they have, regardless of the amount of money they spend in getting it. Anyone can do maintenance of way work if he has money enough, but what is there to it—nothing to awaken any competition, nothing to make a man plan how he can do his work the cheapest.

In the majority of cases force is allowed on the basis of so much to the mile of main line, regardless of sidings and turnouts. Some roads have a method of track equation by which track is equalized as to different things that take extra labor. All roads should do this in order to distribute forces equally.

### Need Standard Basis

Possibly one of the reasons why nothing has been done in the way of keeping maintenance of way statistics is that there must be some concerted action in defining the units, so that the data will be comparable. One of the first things necessary is to agree on a classification of the different portions of a railroad. The cost of laying rail on a track having 20 trains over it in working hours will be much in excess of the cost on a piece of road having but 10 trains over it during working hours. The cost of inserting ties will vary with the class of ballast, and between ties put in without raising the track and those put in while lifting the track out of face for a new lift of ballast. Track work in large yards should be shown separately, also track work on passing and side tracks. Classes of ballast should be made so that work on unballasted track could be compared with similar work and work on lines ballasted with similar classes of ballast could be compared.

The Roadmasters' Association is well fitted to study this matter, and I would like to see the association appoint a committee to report next year, to classify the different types of track and recommend certain cost data forms for collecting and reporting the cost of doing certain units of work on each class of track.

### Classification and Distribution of Second Hand Rail

The term second hand rail includes all rail which has been used in actual service and which has been removed from track for any reason whatever. The only practical reason for having a classification of second-hand rail is to have a basis for utilizing such rail in track that will tend to increase the service without unduly increasing the expense of items of work which are necessary to maintain track properly, and in this manner contribute to more economical track maintenance.

The practical result of applying a classification of used rail to actual maintenance work should be: 1. To reduce to a minimum the amount of new rail purchased from year to year. 2. To secure a minimum annual expense for labor and material consumed in connection with rail renewals without unduly increasing other items of expense necessary to maintain track properly. 3. By securing minimum expense for the purchase of new rail and also minimum expense for labor and material used in connection with rail renewals, at the same time avoiding increased expense for other items of work necessary to maintain track properly, a second-hand rail classification is an effective means toward securing more economical track maintenance.

The supply of second-hand rail during any year depends on the amount of new rail which the management of a railroad may decide to buy for renewal purposes. The amount of rail purchased is not necessarily determined on the basis of the quantity needed in order to secure the most economical track maintenance, but primarily depends on the amount of

money available, and as long as railroad corporations must adjust their expenses to their revenues, variations in the amount of rail purchased from year to year must be expected.

On account of variations in the supply of used rail depending on elements which have but little influence on the demand, it is not possible to match the supply and demand of second-hand rail, and this inability to match supply and demand makes necessary a flexibility in any standard or measure that may be fixed for assigning used rail to a particular service. The result of these changes in relationship of supply and demand is to make it necessary to assign used rail of varying quality or standard to similar services during different periods.

In addition to this variation between the supply and demand of used rail, there are also other variables which must be considered. The relationship between branch line requirements and main line requirements varies from time to time. The relationship between the length of main line service and the length of branch line service which will result in greatest rail return varies from time to time. There is a variation in the cost of making rail renewals on main tracks and in branch tracks which influences the manner in which rail should be utilized, the high cost of main line renewals, together with the difficulty with which the work is accomplished under certain circumstances, being almost equal in importance to the cost of the rail itself.

In order to secure the maximum utilization of all rail in track and having in mind the principles and details involved, the following classification of second-hand rail has been prepared:

#### CLASS NO. 1.—MAIN LINE RELAYER RAIL

Class No. 1.—Main line relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in main line running tracks. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail which was previously used only on tangent track. If uniformly curved, rail which was previously used in curves may again be used in curves of not greater radius than the one where it was previously used.

Second—Rails shall be straight in line and surface, except that rails for use in curves may be uniformly curved to not less radius than that of the curve in which they are to be used.

Third—No driver-kinked, twisted or distorted rail shall be included in this class.

Fourth—No broken or defective rail removed from track shall be included in this class.

Fifth—Rail shall not be less than 24 ft. in length.

#### CLASS NO. 2.—SECONDARY MAIN TRACK AND HEAVY TRAFFIC BRANCH LINE TRACK RELAYER RAIL

Class No. 2.—Secondary main track and heavy traffic branch line track relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in secondary main and heavy traffic branch line running tracks. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail which was previously used only in tangent track. Curved rail may again be used in curves of a radius not greater than where previously used.

Second, third, fourth and fifth requirements same as for Class No. 1.

#### CLASS NO. 3.—LIGHT TRAFFIC BRANCH LINE RELAYER RAIL

Class No. 3.—Light traffic branch line relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in running tracks of light traffic branch lines. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail which was previously used only in tangent track. Curved rail may again be used in curves of a radius not greater than where previously used.

Second, third, fourth and fifth requirements same as for Class No. 1.

which has previously been used in curves may again be used in curves of not less degree than where originally used.

Second—Rails shall be straight in line and surface, except that rails for use in curves may be uniformly curved to not less radius than that of the curve in which they are to be used. They shall be free from driver limbs which cannot be removed without cracking or otherwise damaging the rail. They shall also be free from twist or distortions which prevent an even bedding of the rail throughout its length.

Third—Same as fourth requirement Class No. 1.

Fourth—Same as fifth requirement Class No. 1.

#### CLASS NO. 4—SIDE TRACK RAIL

Class No. 4—Side track rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in side tracks over which traffic passes at slow speed.

Rail for this purpose shall be any rail removed from track which cannot be made to comply with the requirements of Class 1, 2 or 3, except as to length, but which is suitable for use in slow speed tracks, and shall meet the following conditions:

First—No rail removed from track on account of a defect shall be included in this class.

Second—Parts of broken rails removed from track, which are otherwise satisfactory, shall be included in this class, provided the break did not result from a defect.

Third—Rail shall not be less than 15 ft. in length.

#### CLASS NO. 5—FROG AND SWITCH REPAIR RAIL

Class No. 5—Frog and switch repair rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in frog and switch work. Rail for this purpose shall meet the following conditions:

First—It shall be suitable, in all respects except as to length, for use as Class 1, 2 or 3 second hand rail.

Second—It may be of any length less than 24 ft.

Rail classed as frog and switch repair rail shall be subdivided into Class 1, Class 2 or Class 3, according to what its classification would be if it were 24 ft. or more in length.

#### CLASS NO. 6—SCRAP

Class No. 6—Scrap shall include all rail removed from track, which, because of defects, lack of strength, length, crooks, or for any other reason, cannot be classified in any of the above classes.

### The Maintenance and Construction

#### of Railroad Crossings

The committee recommended the use of manganese construction for crossings in main lines carrying heavy traffic and high speed trains. On double tracks it was recommended that one rail only be used between joints, doing away with center joints between crossings. The placing of timbers under the rails of the track carrying the heaviest traffic was favored at a square crossing instead of placing the ties diagonally, as it was believed that a better opportunity is afforded to tamp the timbers and to give them a more equal bearing than with ties. The use of ties was under diagonal crossings.

The committee recommend the use of a plate extending the full length of the crossing under those sides carrying the heaviest traffic, in place of corner plates. Experience has shown that in tamping under the timbers or ties under the corners of crossings where corner plates are used it is difficult to secure a solid foundation, as the plates are ordinarily too wide.

On all high speed main line crossings, where there is no likelihood of track changes, the committee recommended that a reinforced concrete slab be placed under the crossing at a sufficient depth below the rail to enable 8 to 10 in. of ballast to be inserted above the slab with cross ties to carry the rails. The use of rail anchors in all tracks about crossings as far back as the derail in each line was favored because a crossing should be placed in position and then anchored to hold it there. By anchoring each track as far back as the derail this result will be accomplished.

D. O'Hern, chairman, roadmaster, E. J. & E., Joliet, Ill.

### Methods of Stimulating Friendly

#### Rivalry Among Track Forces

Rivalry is created among track forces by the application of one or more of the following methods, practices or systems:

One method that is in common use on several railroads requires an inspection in the spring and in the fall. In the spring the roadmaster or other maintenance officers go over the division with the purpose of making a program of the season's work and at the same time taking notes of the conditions on each section. In the fall an inspection is made and each section foreman is provided with a copy of each section record, in order to give him an idea of the progress that the other foremen have made in the season's work. Cash prizes, medals, sign posts, and also division prizes, are awarded to the best sections, and also to the division showing the most efficient work done during the year. In connection with the premium system the committee recommended that a foreman who receives this prize for two consecutive years be offered an inducement to keep his section in advance of the others by allowing him a higher rate of pay.

The following practice is in effect on several railroads and is conducive to higher efficiency and to the stimulation of friendly rivalry among the track forces: After information for the entire division has been obtained and a program decided upon and each foreman is given a chart showing the program as it applies to all sections on the division or subdivision. This is followed each month with a percentage chart, by sections, showing the percentage of work done, in ties, line, surface, etc., and an analysis of the figures showing who is making the best record with the allotted number of men, so that each foreman is familiar with what the other foremen are doing.

One of the best ways to develop rivalry among the foremen and also among the men is to assemble them at meetings for the discussion of their common problems. These meetings not only broaden the views and interest of the men, but tend to create enthusiasm and a desire to excel. If possible, the higher officers should attend, and address the meetings.

A supervisor should establish a continuous personal contact with his foremen and make an effort to instill a live interest among them in their work at all times throughout the year. There is no better way to accomplish this than for the supervisor to visit the men and talk over their work and conditions with them on the ground, for this gives a foreman confidence and an exact idea of what is wanted. A verbal comparison of his work with that of the foreman on each side of him will start a "friendly rivalry" that will spread over the entire division.

Committee: George Koontz, chairman, roadmaster, D. & H., Carbondale, Pa.

#### The Track Supply Association

The exhibit of the Track Supply Association included individual displays by 58 manufacturers of materials and supplies relating to track maintenance, this being one of the largest exhibits ever held by the association. The location of the exhibit in a room adjacent to the meeting hall added greatly to its value to those attending the convention. A list of the firms exhibiting, the materials and devices exhibited and the names of the representatives in attendance, is given below.

Addressograph Company, Chicago; addressographs and graphotype machines: W. G. Ryan, J. E. Miles and E. F. Steffen.

Air Reduction Sales Company, New York; welding and cutting torches, acetylene, oxygen, samples of welded switch points and welded rail ends; H. H. Melville, A. W. Brown, Edward L. Fiddymant and A. B. Brown.

American Chain Company (Reading Specialties Division), New York; rail clamps, derailleurs, rail benders: A. H. Weston and J. J. O'Connell.

American Hoist & Derrick Company, St. Paul, Minn.; photographs of ditchers; W. B. Maurer and Miss H. Haller.

American Steel & Wire Company, Chicago; fence posts and woven wire fencing; L. P. Shanahan, M. E. Evans, D. B. Waterman and John Collins.

American Valve & Meter Company, The, Cincinnati, Ohio; switch stands and track appliances; J. T. McGarry, F. C. Anderson and Dan J. Higgins.

Balkwill Manganese Crossing Company, Cleveland, Ohio; model manganese crossing; S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.; switch stands; Neil E. Salsich, R. W. Gillispie, E. H. Gambart, R. E. Belknap and J. F. Hennessy.

Brazys Company, South Milwaukee, Wis.; moving pictures of spreader plow and other excavating machinery; E. G. Lewis, H. M. Swigart, H. L. Palmer, G. A. Morrison, M. J. Woodhull and Morgan Rogart.

Carbic Manufacturing Company, Duluth, Minn.; acetylene lights, welding generator, welding and cutting equipment and motor car light; A. D. Guthrie, D. C. Duncan and C. H. Bolinder.

Chicago Malleable Castings Company, Chicago; rail anchor tie plate, tie plate with key and rail clips; Warren Osborn, J. S. Llewellyn, A. R. Anderson and W. L. Beadway.

Chicago Manufacturing & Distributing Company, Chicago; ratchet track bolt wrench, ratchet screw wrench and other ratchet wrenches; J. A. Slater, B. W. Conlin, J. D. Hiatt, H. I. Hiatt and R. J. McKee.

Creechbeck Company, The, Hoboken, N. J.; rail anchors; P. E. Browne and John T. Reagan.

Crerar, Adams, & Company, Chicago; bonding drill, track drill, rail saw, die starters, jacks, snow brooms, shovels, etc.; Russell Wallace, G. D. Bassett, E. C. Pochler, W. I. Clock, J. A. Martin and C. W. Gregory, E. Mahlke.

Duff Manufacturing Company, The, Pittsburgh, Pa.; jacks; C. N. Thain and E. E. Thain.

Elliot, Frog & Switch Company, East St. Louis, Ill.; guard rail clamps, switch stands and switch rods; H. J. Elliot and W. J. Fairback.

Emulsified Asphalt Company, Indianapolis, Ind.; C. E. Jefferson.

Fairbanks, Morse & Co., Chicago; spike puller, track wrench; A. A. Taylor, B. S. Spaulding, L. H. Matthews, E. C. Golladay, F. J. Lee, F. M. Condit, G. W. Lewis, H. L. Hilleary and P. H. Gilleland.

Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.; gas engine for motor cars; H. E. Wade, W. F. Kasper, W. D. Brock.

Frictionless Rail Company, Boston, Mass.; models and photographs of frictionless rail; S. W. Simons, John W. McManama.

Hauk Manufacturing Company, Brooklyn, N. Y.; thawing outfits, kerosene torches, circular flame burners, blue flame oil burners and syphon type furnace burners; Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind.; model derail; H. J. Mayer, S. W. Hayes, O. M. Kendall, H. H. Jenkins and R. H. Gnaesophl.

Heavy Good Roads Company, Philadelphia, Pa.; bituminous railroad crossing; F. X. Kern.

Ingersoll-Rand Company, New York; tie tamper and air tools for track work; W. H. Armstrong, J. N. Thorp and J. P. Gillies.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.; light inspection motor car; J. McKinnon, F. E. McAllister, W. E. Winters and H. R. Miller.

Kilbourne & Jacobs Manufacturing Company, Columbus, Ohio; photographs of automatic air dump cars with apron attachment; Jay N. Markel.

Leitch Engine Corporation, The, New York; tie plates; W. S. Boyce and W. Brooke Moore.

Maintenance Equipment Company, Chicago; friction car stop, fence posts, derail; rail layer, power ballast screen and switch; H. C. Holloway, J. A. Roche and Ray Downey.

McVicker Safety Tie Plate Company, Milwaukee, Wis.; E. M. McVicker and A. W. Tabert.

Mudge & Company, Chicago; railway motor car; Karl J. Eklund, Clyde P. Benning, John H. Mulliloand, Burton Mudge.

National Lock Washer Company, The, Newark, N. J.; nut lock; J. Howard Horn, R. L. Cairncross and A. T. Thompson.

National Malleable Castings Company, Cleveland, O.; wrecking hook, iron washers, rail braces and tie plates; J. A. Slater, G. R. Rasmusson, C. H. Krakau and L. S. Wright.

North Western Motor Company, Eau Claire, Wis.; railway motor car and model engine; F. W. Anderson, R. R. Rosholt and A. H. Nelson.

Oxweld Railroad Service Company, The, Chicago; welding and cutting appliances; W. H. Kolmehl, L. C. Ryan and C. M. Marshall.

P. & M. Company, The, Chicago; rail anchors and anti-creepers; S. M. Clancey, G. E. Johnson, P. V. Samuelson, D. T. Hallberg, J. J. Gallagher and J. E. Mahoney.

Pocket List of Railroad Officials, The, New York; Charles L. Dinsmore.

Positive Rail Anchor Company, Marion, Ind.; guard rail, rail anchors, rail braces, guard rail plates and braces and tie plates; A. H. Told and L. C. Ferguson.

Q & C Company, The, New York; rolled steel compromise joint, rail joint, electric snow smelter for switches, guard rail clamp, rail bender, derail and steel fence posts; R. J. McComb, J. L. Terry, L. Thomas and F. G. Peterson.

Rail Joint Company, The, New York; insulated joints, compromise and standard joints; Alex. Chapman, G. H. Larson, G. T. Willard, C. B. Griffin, Charles Jenkinson, R. W. Payne and Thomas Ryan.

Railroad Supply Company, The, Chicago; tie plates and derails; A. H. Smith, E. P. Gowing, G. W. Nibbe and M. J. Fox.

Railway Review, Chicago; copies of paper; Harold A. Smith, W. M. Camp, Arthur E. Hooven and C. L. Bates.

Ramapo Iron Works, Hillborn, N. Y.; switch stand, double shoulder switch plates, manganese switch point; W. C. Kidd, R. J. Davidson, Jr., J. B. Snow, J. B. Strong and T. E. Akers.

Reade Manufacturing Company, Jersey City, N. J.; photographs of chemical weed killing machines; R. H. Bozle and W. L. Gegus.

Reliance Manufacturing Company, The, Massillon, Ohio, nut locks; H. C. Mull and H. J. McGinn.

Safety Guard Rail Lock Company, Orlando, Fla.; model safety guard rail lock; W. L. Daugherty.

Sellers Manufacturing Company, Chicago; tie plates; G. M. Hogan, T. D. Crowley and R. A. Van Houten.

Simmons-Boardman Publishing Company, New York; copies of papers and cyclopedias; L. B. Sherman, E. T. Howson, F. H. Thompson, B. J. Wilson, F. C. Koch, W. S. Lacher, D. A. Steel and J. M. Rutherford, Milburn Moore, R. H. Smith, James Currie.

Superior Supply Company, Chicago; John B. Seymour, C. A. Gieles, J. H. Erby and W. R. Sostheim.

Templeton, Kenly & Co., Ltd., Chicago; track jacks, car jacks, pole jacks and emergency jacks; W. D. Templeton, L. E. Allen, S. A. Nelson and A. C. Lewis.

Track Specialties Company, New York; spikes, insulated bolts, guard rail clamps, rail brace, compromise joint, rail joint, anchor plate, insulated joint, tie plate, derail, car stop, car replacer, etc.; John A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa.; insulated rail joint, J. J. Cozens and George Marloff.

Verona Tool Works, Pittsburgh, Pa.; track tools, nut locks, and rail joint springs; E. Woodings, W. W. Glosser, P. L. Laughlin, A. T. Richardson, F. B. Nimmo and J. S. Wincranitz.

Warren Tool & Forge Company, The, Warren, Ohio; track tools; H. C. Mull and George Konold.

Werner Machine Company, Inc., West Allis, Wis.; spike shaper; E. J. Wind and F. A. Gardner.

William Pharten, Jr., & Co., Inc., Easton, Pa.; manganese steel one-piece guard rail, photographs of manganese steel frogs; H. F. McDermott, S. G. Llewellyn, Victor Angerer, George R. Lyman, J. H. Hock and F. H. Leheka.

Woolery Machine Company, Minneapolis, Minn.; gas engine for motor cars; H. E. Woolery.

Wyoming Shovel Works, The, Wyoming, Pa.; track shovels, spades, scuffle hoes and picks; H. T. Potter, Stanley H. Smith, G. E. Geer and E. L. Ruby.

Wood Shovel & Tool Company, Piqua, Ohio; shovels, spades and scoops; C. L. Butts and M. H. Lytle.

### Other Features of the Program

J. H. Waterman, superintendent of timber preservation, Chicago, Burlington & Quincy, gave an illustrated lecture on the results obtained from the use of treated ties. This consisted largely of an object lesson based on the test tie sections which have been maintained by the Chicago, Burlington & Quincy for the last 12 years or more. By means of photographs and tables he demonstrated how much greater the life of treated ties is as compared with even the best species of wood used untreated. He was particularly emphatic in pointing out that white oak untreated ties do not give as good service as treated ties of what are termed some of the "inferior woods" when properly protected against mechanical wear.

Other features of the program included a paper by H. L. Pierce, supervisor, Pennsylvania System, Cresson, Pa., on "The String Lining of Curves," comprising a detailed exposition of several methods by which curves may be lined without the use of surveying instruments. The committee report presented by E. P. Hawkins, division engineer, Missouri Pacific, Wichita, Kan., covering "The Most Economical Method of Renewing Cross and Switch Ties," contained explicit instructions on the methods of determining the allotment of ties, methods of handling and the program for carrying on tie renewals in the most expeditious manner. A committee on Records and Accounts presented a number of forms for use by the foreman and supervisor and a digest of the practice on several roads.

### L. F. Loree Speaks at Annual Dinner

The annual dinner was held in the Auditorium Hotel on Wednesday evening. L. F. Loree, president of the Delaware & Hudson, was the speaker of the evening. He said in part:

"I think it may be taken as a general proposition that the foundation of good railroading is good track and that the foundation of good track is good drainage. It is in this latter respect that our practice falls far short of European standards. In other respects, our maintenance practice is fully as good and in many respects much better.

"What the transportation officer has a right to look for is track in proper surface, alignment, gage and curve compensation, resting upon a minimum of 10 in. of ballast that will readily dispose of storm water and melting snow, upon a roadbed properly drained, free from soft spots, of sufficient width to support the track, and with suitable runways ahead of the switch points to enable their safe and convenient

handling. No effort should be spared to see that these requisites receive adequate attention.

"But however interesting it might be to take up these matters and, in detail, the means of handling them, they are not the most important things that press for attention at the moment. What we have to do is to rescue these properties, from which close to ten millions of people get their living, from the deplorable state of demoralization in both the personnel and the upkeep to which they were reduced by the administration of the director general.

"There are three ways to improve the character of the personnel: (1) employ a better class of men; (2) educate those kept; and (3) discharge the inefficient and incompetent.

"The greatest difficulty in securing competent help, and in honest, capable workers securing positions of trust, exists in the very limited number who may be known intimately by anyone employing others in positions of responsibility. Many are in need of faithful and efficient help. Many deserving workers need employment. The ordinary employment agency but illy stops a portion of the gap. We ought all to address ourselves to the building up of better means of handling this important question. If the employee is selected carefully and, on physical examination, is found to be free from the common defects and is reasonably intelligent, no effort should be spared to explain to him both the reasons and the methods governing the work in which he is engaged and to bring him as rapidly as possible into a position not only to perform the work but to do it with a full appreciation of the results to be attained and the underlying reasons therefor.

"Control of the men can only be maintained by supervision and by discipline. Such is the constitution of man that there is always a small but turbulent minority against whom we hold our properties, our lives and our religion itself at the price of the jail, the penitentiary and the gallows. Like bad order cars, bad order men should be kept down to about 4 per cent of the total. If they were allowed to run up to 12 per cent they would ruin us. Railroad employment is to a marked degree regarded as a protected service. Once a man's name gets on the payroll, he is hedged about by constant and numerous artificial restraints as a permanent fixture. In gardening it is not sufficient that the soil be good and well sustained by fertilizers and the seed the best. The resulting crop depends largely upon cultivation and weeding out, and, similarly, in the railroad business carefully selected men, education and training will not suffice. To them must be added systematic and unwearied weeding. You must know your men and those that, from whatever cause, are palpable misfits you should eliminate at once.

"When you have brought the track to its proper condition and the men to the old relation of loyalty to the company and fidelity to the work with which they are entrusted, you will doubtless remain disturbed by the problems confronting us involving the economic conditions of the immediate future. I am sorry to say that I do not come to you with any message of optimism. On the contrary, I believe we are faced with conditions of such a trying character that they can only be surmounted, let alone shortened, by strenuous effort and self-denying frugality.

"Employment of the men annually added to the ranks of labor is conditioned upon additional capital investment, and the failure not only to maintain but to increase our savings for investment, while embarrassing to all, will work its greatest hardship upon labor. These capital investments are very large. For every man on the railroad payrolls, there is a capital investment of \$10,000. Where are you under present conditions to look for the savings that alone make possible additions to the ranks of labor?

"While we as a people exalt knowledge, its value is apt to be exaggerated. It is, after all, a kind of raw material, collected from various sources and retained largely through feats of memory. The significant thing is intelligence, the poten-

tiality of the human machine, the ability to learn, to think quickly and accurately, to analyze a situation, to maintain a state of mental alertness and to comprehend and follow instructions. It is not because you men have education but because you have intelligence that you occupy administrative positions of authority, and it is to the extent that you exercise this intelligence in the conduct of the affairs entrusted to you that we count with hope on overcoming the difficulties with which we are beset. What we look to find in you is a great fund of common sense, a power of knowing or hitting the mark as to things and ideas, the impression of the real, cautious, critical, shrewd and well-balanced, a sort of curb and correction of the errors that education and history so often produce."

Following the adjournment of the convention on Thursday the members and others visiting the convention made a detailed inspection of the Santa Fe's reclamation plant located in the Chicago terminal district, for which a special train was provided. This excursion included a stop at the Clearing yard of the Belt Railway of Chicago.

## Train Order Deliverer Eliminates Unnecessary Stops

**A**S A FURTHER STEP in eliminating unnecessary stops and expediting traffic, the Northern Pacific has installed for test a train order deliverer device over the entire second subdivision of its Idaho division between Spokane, Wash., and Kootenai, Idaho, a distance of 78 miles. The device was designed to eliminate unnecessary stops, slowdowns and accidents, which arise out of the use of hoops in delivering "19" orders. Ten machines were erected and first placed in service on April 26, 1921, and all passenger and freight engines and train crews on the Second subdivision are equipped with the catcher. This subdivision consists of a single track line equipped with automatic signals over which an average of 12 scheduled trains and 4 extras each way operate daily and on which an average of 37 orders are issued every 24 hours.

### How the Machine Operates

The deliverer at present in use consists of a square post 13 ft. 6 in. high and having 6 in. sides and is set 6 ft. 6 in. from gage. Four angle irons are used on which a sheet metal covering is placed. A movable carrier 6 ft. long and to which the arms are attached between which the train orders are fastened, moving in a grooved guide, is raised and lowered by means of a ratchet and chain contained inside the post. The carrier is equipped with three sets of arms spaced 24 in. center to center, thus providing means for delivering three copies of an order to a train when this is necessary in connection with double-heading. The carrier when in position for delivering orders places the center line of the top rope 12 ft. 2 in. above top of rail; the middle rope 10 ft. 2 in. and the lower rope 8 ft. 2 in. above top of rail. This height can be made to meet conditions on any road. The arms consist of  $\frac{1}{2}$  in. square steel, the top pair being 27 in. long; the intermediate set 28 in. and the bottom ones 29 in. This variation in length is to prevent interference after the rope containing the train order has been caught and the arms have returned to their normal position, the top arm of each pair being raised to a vertical position by means of a spring attached inside the post, while the bottom arm of a pair drops down by gravity. The movable carrier, when not in use, is lowered to the bottom of the post which brings the arms low enough for the operator to reach for loading, after which it is raised to the proper height for delivery of orders to trains. The operator can then remove the handle to prevent tampering and pro-

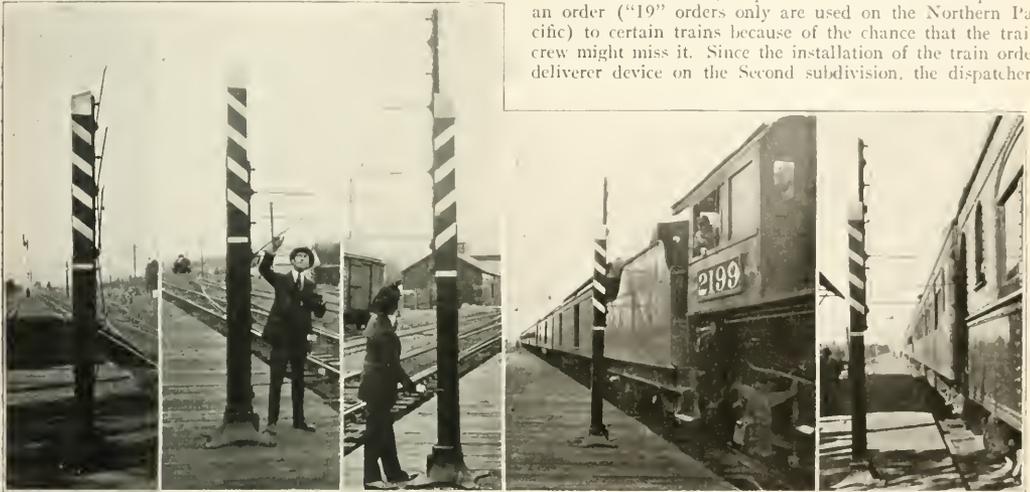
ceed about his other work. The illustration will show the principles of its operation.

The cord to which the train order is attached consists of a 2-ft. piece of sash cord to the ends of which are attached spring clips for fastening over the hooks of the carrier arms. At one end of the rope carrier is attached a waterproof canvas bag 2 in. by 3 in. in size, somewhat similar to a tobacco pouch, in which the order is placed.

The catcher which is carried on the engines and as part of the way car or flagman's equipment consists of a  $\frac{3}{8}$  in. by  $\frac{3}{8}$  in. cold rolled steel bar 38 in. long, having a handle and guide stop on one end. At the other end for a distance of 14 in. is attached by means of rivets, the rope catching apparatus, which consists of a flat piece of medium hard steel  $\frac{3}{32}$  in. by  $\frac{3}{8}$  in. formed in the shape of a number of inverted Vs, the points projecting outward. Over these points is fastened a V-shaped spring which acts as a guard to prevent the rope from dropping out after once having

Results so far obtained would indicate that from an economic standpoint the use of this machine to replace the hoop system of train order delivery will result in considerable savings. For example, from a check made of the train sheets over a 90 day period, it was found that on the Idaho division 33 unnecessary stops were made because orders were missed under the hoop system. With this as a basis it was estimated that approximately 1,800 unnecessary stops under the hoop system were being made on the Northern Pacific system. These stops work a hardship on motive power and efficiency of train operation. If the enginemen fail to get the order the train is stopped and backed up, or, as it often happens, the conductor uses the emergency air valve, which causes severe shocks to the equipment and not infrequently a break in two, with consequent serious delays.

Better running time is made because it is unnecessary for a train to slow down in picking up the orders and because of the schedule, dispatchers often would not put out an order ("19" orders only are used on the Northern Pacific) to certain trains because of the chance that the train crew might miss it. Since the installation of the train order deliverer device on the Second subdivision, the dispatchers



The Deliverer Empty, Being Loaded, in Position, Order Caught by Engine and Train Crew

passed into the space provided for it between the adjacent teeth.

#### Operating Results

The catcher device is light enough not to be cumbersome or unwieldy and at the same time strong enough to operate properly. The guide casting used on the engines is attached to a square piece of steel of about  $\frac{1}{2}$  in. by  $\frac{1}{2}$  in. section, mounted vertically but a few inches from the front end of the side window of the cab. This can be moved up to a point for catching the order on the top carrier arm (in case of double-heading), or it can be left in the lower position just above the window sill, which corresponds to the position of the middle set of carrier arms. This guide casting can be fastened in position by a set screw and is arranged with a slot on top into which the catcher device is placed which, when being pushed out to the proper operative position, has a stop which fits in a slot on the back side of the guide casting. The design of this casting is such that it takes but an instant to drop the catcher device in place or to remove it. In double-heading, should a small engine be used, it would pick up the order at the 10 ft. 2 in. level, while a large engine would use the 12 ft. 2 in. level and the train crew would catch the order at the 8 ft. 2 in. level.

are putting out orders at points where they had previously refused to do so with the assurance that the order will be picked up, thus saving from 50 min. to an hour and a half on the running time.

Another item of economy is in connection with the saving on hoops and the assurance that an order or important message may not go under the train instead of being caught. The Northern Pacific uses 20,000 hoops a year, and from the test to date it would appear that one rope carrier will outlast about 200 hoops, or the equivalent of 10 cents against \$44.

It is expected that this device will eliminate many of the minor and fatal injuries due to the use of the hoop system. In cold climates the footing on station platforms and on engine and car steps is often insecure because of ice and snow. It removes the danger of an operator being struck by falling coal or by projecting stakes or timbers or swinging car doors. Minor accidents are caused by train and enginemen striking their hands against the hoops in catching them. The train order deliverer device was developed and patented by James A. Blair, dispatcher in the Spokane, Wash., division, office of the Northern Pacific, and is being made by the Blair Train Order Deliverer Company, Spokane, Washington.

## Freight Car Loading

WASHINGTON, D. C.

**O**BSERVANCE of the Labor Day holiday resulted in a reduction in the number of cars loaded with revenue freight during the week ended on September 10, as compared with the previous week, according to the reports of the Car Service Division of the American Railway Association. The total for the week was 748,118 cars or 82,483 less than the preceding week and 135,297 cars under the corresponding week last year. It also was 198,852 cars less than were loaded during the corresponding week in 1919. Had it not been for the observance of Labor Day, loadings during the week would have shown an increase over the week before, the average number of cars loaded daily during the week of September 10 having been approximately 143,870 as compared with 138,433 during the preceding week.

Decreases compared with the week before were reported in the loading of all commodities. Loading of grain and grain products amounted to 54,457 cars as compared with 60,632 during the previous week. A total of 25,108 cars were loaded with livestock, which was 2,431 less than during the previous week, while coal loadings totaled 142,049 or 13,767 less than during the week of September 3. Coke loadings fell off 59 cars to a total of 4,599 and forest products dropped 3,274 cars which brought the total for the week to 42,145.

Except for grain and grain products, loadings of all com-

modities were less during the week than during the corresponding week in 1920. Reductions compared with the previous week were reported in all districts except the Poca-hontas, where there was an increase of approximately 3,000 in the number of freight cars loaded.

The summary is given in the table below:

A further decrease of 8,768 in the number of surplus serviceable freight cars is shown by the report of the Car Service Division for the period September 1 to 8. The total surplus was 237,972, including 65,858 box cars.

The number of bad order freight cars showed a reduction for the first time in a year in the report for September 1. On that date the number of bad order cars was 374,087, or 16.2 per cent, as compared with 382,440, or 16.6 per cent on August 15. Of the box cars 17.8 per cent were in bad order as compared with 18.2 per cent on August 15.

The summary for the week of September 3 is given in the table at the bottom of the page.

THE ASSOCIATION OF RAILWAY EXECUTIVES will adopt the methods of the American Railway Association as to the voting power of the member roads. This allows to each road one vote for each 1,000 miles of line. Hitherto each road has been entitled to one vote regardless of its size. Henceforth assessments will be based on the gross revenues of each road from September 1, 1920, when the Federal guaranty ended, to August 31, 1921. The basis of assessments has hitherto been on the "standard return."

### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, SEPTEMBER 3, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded			Received from connections		
										This year	Corre-sponding year	Corre-sponding year	This year	Corre-sponding year	Corre-sponding year
										1921	1920	1919	1921	1920	1919
Eastern	1921	7,784	2,809	43,291	1,181	4,399	2,792	58,989	60,679	201,924	238,461	203,815	207,621	276,866	244,067
	1920	7,143	3,075	51,932	3,510	7,829	10,892	49,310	104,770	238,461	203,815	207,621	276,866	244,067	207,621
	1919	3,295	3,038	43,768	2,194	2,510	5,971	45,594	58,430	164,800	201,622	198,474	111,732	151,365	139,451
Allegheny	1921	2,897	3,660	57,638	6,775	3,444	14,894	39,535	72,779	212,212	201,622	198,474	12,858	21,142	20,120
	1920	149	269	14,676	35	1,122	2,720	2,202	5,140	24,112	201,622	198,474	12,858	21,142	20,120
	1919	196	240	23,792	71	1,163	1,999	3,026	6,134	35,921	201,622	198,474	12,858	21,142	20,120
Pocahontas	1921	3,627	1,747	21,540	417	14,457	220	36,965	32,828	111,801	128,428	120,238	60,575	74,473	71,481
	1920	3,713	2,075	24,485	1,607	18,949	3,019	35,256	39,323	128,428	120,238	120,238	60,575	74,473	71,481
	1919	19,909	6,586	8,854	459	10,567	20,614	29,016	33,359	130,054	128,428	120,238	60,575	74,473	71,481
Southern	1921	12,950	7,019	12,503	4,493	14,943	43,453	29,666	39,140	160,406	160,406	160,406	50,073	63,782	65,834
	1920	19,909	6,586	8,854	459	10,567	20,614	29,016	33,359	130,054	128,428	120,238	60,575	74,473	71,481
	1919	16,240	2,400	23,792	71	1,163	1,999	3,026	6,134	132,879	132,879	132,879	53,537	63,782	65,834
Central Western	1921	11,537	10,641	23,155	473	7,262	4,496	31,956	44,130	133,650	133,650	127,622	72,731	68,265	68,265
	1920	4,167	2,776	4,706	220	6,531	767	16,260	27,647	65,021	62,384	59,372	46,593	51,455	50,561
	1919	60,632	27,539	155,816	4,658	45,419	31,112	220,894	284,531	830,601	62,384	59,372	542,989	711,814	659,779
Southwestern	1921	42,573	29,048	199,000	14,674	62,229	77,804	205,839	336,466	661,633	661,633	661,633	116,790	147,511	150,114
	1920	47,132	33,300	178,551	9,856	60,878	69,404	134,111	371,111	661,633	661,633	661,633	116,790	147,511	150,114
	1919	38,659	1,509	43,184	10,016	16,810	46,692	15,355	86,783	131,032	131,032	131,032	168,825	168,825	168,825
Increase compared	1920	13,450	5,761	22,735	5,198	15,459	38,292	219,165	86,580	73,792	73,792	73,792	116,790	147,511	150,114
Decrease compared	1919	59,505	28,070	161,612	4,606	46,460	30,635	219,165	280,256	839,799	1,001,308	951,653	540,715	706,797	671,135
August 27	1921	59,875	29,110	154,140	4,436	44,582	32,370	216,752	275,170	816,436	968,103	913,207	540,408	692,847	630,725
August 20	1921	61,560	26,835	158,260	4,286	45,333	32,942	213,046	256,703	808,965	971,269	832,439	530,550	687,614	588,131
August 13	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,264	784,781	935,730	872,073	522,247	686,317	596,917

\*Detail figures for Michigan Central for 1919 not given.

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, SEPTEMBER 10, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded			Received from connections		
										This year	Corre-sponding year	Corre-sponding year	This year	Corre-sponding year	Corre-sponding year
										1921	1920	1919	1921	1920	1919
Eastern	1921	7,245	2,455	37,691	1,263	3,943	2,289	52,811	72,827	180,524	203,248	231,363	187,792	250,231	250,374
	1920	5,911	2,602	40,109	3,699	6,870	10,921	42,469	90,667	203,248	231,363	231,363	187,792	250,231	250,374
	1919	3,131	2,925	39,096	3,108	3,844	3,966	40,794	50,122	145,340	185,812	207,603	97,744	147,551	150,114
Allegheny	1921	2,619	256	16,581	146	979	78	4,867	3,916	27,110	203,248	231,363	12,251	12,251	12,251
	1920	149	269	14,676	35	1,122	2,720	2,202	5,140	24,112	203,248	231,363	12,251	12,251	12,251
	1919	196	240	23,792	71	1,163	1,999	3,026	6,134	35,921	203,248	231,363	12,251	12,251	12,251
Pocahontas	1921	3,627	1,747	21,540	417	14,457	220	36,965	32,828	111,801	128,428	120,238	60,575	74,473	71,481
	1920	3,713	2,075	24,485	1,607	18,949	3,019	35,256	39,323	128,428	120,238	120,238	60,575	74,473	71,481
	1919	19,909	6,586	8,854	459	10,567	20,614	29,016	33,359	130,054	128,428	120,238	60,575	74,473	71,481
Southern	1921	12,950	7,019	12,503	4,493	14,943	43,453	29,666	39,140	160,406	160,406	160,406	50,073	63,782	65,834
	1920	19,909	6,586	8,854	459	10,567	20,614	29,016	33,359	130,054	128,428	120,238	60,575	74,473	71,481
	1919	16,240	2,400	23,792	71	1,163	1,999	3,026	6,134	132,879	132,879	132,879	53,537	63,782	65,834
Central Western	1921	11,537	10,641	23,155	473	7,262	4,496	31,956	44,130	133,650	133,650	127,622	72,731	68,265	68,265
	1920	4,167	2,776	4,706	220	6,531	767	16,260	27,647	65,021	62,384	59,372	46,593	51,455	50,561
	1919	60,632	27,539	155,816	4,658	45,419	31,112	220,894	284,531	830,601	62,384	59,372	542,989	711,814	659,779
Southwestern	1921	42,573	29,048	199,000	14,674	62,229	77,804	205,839	336,466	661,633	661,633	661,633	116,790	147,511	150,114
	1920	47,132	33,300	178,551	9,856	60,878	69,404	134,111	371,111	661,633	661,633	661,633	116,790	147,511	150,114
	1919	38,659	1,509	43,184	10,016	16,810	46,692	15,355	86,783	131,032	131,032	131,032	168,825	168,825	168,825
Increase compared	1920	13,450	5,761	22,735	5,198	15,459	38,292	219,165	86,580	73,792	73,792	73,792	116,790	147,511	150,114
Decrease compared	1919	59,505	28,070	161,612	4,606	46,460	30,635	219,165	280,256	839,799	1,001,308	951,653	540,715	706,797	671,135
August 27	1921	59,875	29,110	154,140	4,436	44,582	32,370	216,752	275,170	816,436	968,103	913,207	540,408	692,847	630,725
August 20	1921	61,560	26,835	158,260	4,286	45,333	32,942	213,046	256,703	808,965	971,269	832,439	530,550	687,614	588,131
August 13	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,264	784,781	935,730	872,073	522,247	686,317	596,917

# Labor Board Defines Its Power and Legal Status

## Attitude of Various Carriers Causes Tribunal to Defend Its Rulings and Present Position

THE RAILROAD LABOR BOARD, faced with the necessity of justifying its recent orders regarding rules and working conditions and outlining its interpretation of the labor provisions of the Transportation Act, has handed down two decisions which describe at length the views of the Board on the intent of the Act, the authority and jurisdiction delegated to the Board, and the reasons for rendering those decisions which have met with opposition on the part of some carriers, and particularly the Pennsylvania.

The most important of these two decisions grants the petition of the Pennsylvania for further oral hearings in its recent controversy with the Railway Employees' Department of the American Federation of Labor and the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees. The progress of this controversy has been described in the *Railway Age* of July 16 (page 115), August 6 (page 257), August 13 (page 297), August 20 (page 352), August 27 (page 399) and September 10 (page 493). Subsequently the Pennsylvania filed a petition with the Labor Board which, according to the analysis in this decision, attacks the action of the Board in extending indefinitely the national agreements and asks the Board to set aside its decision of July 26, described in the *Railway Age* of August 6 (page 257), and to hold further oral hearings in this controversy. In granting the Pennsylvania's request for further hearings the Board specifically confines the carrier's additional testimony to

1—The question as to what employees, if any, not in the actual and active service of the carrier, such as men laid off, furloughed, or absent upon leave, shall be permitted to vote in the election of representatives to negotiate agreements on rules and working conditions.

2—The question of how the representative capacity of the spokesmen of unorganized employees shall be ascertained.

3—The carrier will be permitted to offer such evidence as it may see fit of the adoption or ratification of its shop craft rules by the representatives of said crafts fairly selected by a majority of the employees of that class.

Testimony on other points raised by the Pennsylvania will not be heard by the Board, according to this decision. The hearings are set for 10 a. m. September 26.

### Board Interprets Transportation Act

The Board in this decision recognizes that a clear and detailed statement of its position and interpretation of the labor provisions of the Transportation Act have become necessary and accordingly the decision says in part:

The obvious and declared purpose of Congress in adopting the labor section and title of the Transportation Act was to preserve, protect and promote uninterrupted traffic and transportation, and to avoid any interruption to the operation of any carrier growing out of disputes between the carrier and its employees and subordinate officials. It faced and knew the history of the country; knew such interruptions had repeatedly occurred growing out of such disputes; and it knew that even more general and disastrous interruptions then threatened. It undertook to establish a tribunal or tribunals to settle such disputes, to indicate means and methods of settlement, and, if possible, to prohibit and prevent such interruptions. It created the Labor Board and directed the methods by which such disputes should be settled, and how and when they might be brought before the Board.

After quoting Sections 301 and 307 of the Act, the decision continues:

It is plain that Congress intended to demand and require that if possible there should be no interruption of traffic by reason of these disputes between carriers and their employees; that it should be the positive duty of the parties interested to confer through

their representatives and settle such disputes if possible, but it did not stop there. It directed that if they could not be or were not thus settled, then the parties should refer them to the proper board for decision. If not thus settled, either because a conference was held and they did not agree or because one of the parties refused to enter such a conference, then either party could bring it before the Labor Board, and it was made the positive duty of this Board to receive for hearings and to decide any such dispute which had not been so decided or settled.

### How National Agreements Came Before the Board

The question of national agreements properly comes before the Board, according to this decision, because the requests of the organizations for conferences on rules and working conditions were refused by the carriers on the grounds "that the matter had already been referred to the Labor Board for decision." The organizations subsequently brought this controversy before the Board in accordance with the Board's interpretation of Sections 301 and 307 outlined above. The continuance of national agreements by the terms of Decision No. 2 was purely a "modus vivendi" and, the decision continues:

This decision was accepted, acquiesced in, and acted under, so far as we are informed, by practically all the parties before the Board. The dispute as to the adoption and continuance of the national agreements was before the Board on the applications filed by the representatives of the employees for an adoption or continuation of the national agreements. The Board could not render its final decision for the reasons stated at the time Decision No. 2 was rendered, and, as they were the rules and working conditions then in force, obviously they could not be well terminated without a decision or bringing on an industrial war which Congress had sought to prohibit.

The plea of General W. W. Atterbury, vice-president of the Pennsylvania, for immediate abrogation of national agreements and return to the rules and working conditions of December 31, 1917, made during subsequent hearings on national agreements, was interpreted by the Board as follows:

Here was a clear recognition—if any were needed—that the Board had jurisdiction and was dealing with the subject of rules and working conditions, and the Board was requested by the representatives of the carriers, including the Pennsylvania System, to put in force rules existing prior to December 31, 1917, as a basis for negotiation, from which it appears that the carriers also realized there must be some authorized set of rules in existence and in force to govern the parties until new rules could be adopted, either by agreement or a decision of the Board.

After outlining the provisions of Decision No. 119 which ordered national agreements terminated on July 1, 1921, the decision continues:

The Board was then assuming that all the parties would in good faith endeavor to meet and confer as the Board had directed, and as the Transportation Act enacted by Congress required. It assumed that this would be done promptly, and the matters of difference submitted to the Board. The Board retained jurisdiction of the whole matter and proceeded with the hearings, and further evidence and arguments were submitted by all the parties to the dispute.

### Board Defends Rulings on Rules

#### and Working Conditions

Defending the later order continuing national agreements until negotiations between the individual railroads and their own employees were completed and approved by the Board, the decision says:

It was the judgment of the Board that this was proper and necessary, especially in view of the fact that in many instances, on account of disagreement of the parties as to how and with whom such conferences should be held, no such conferences had

been held as the statute required and as the Board had directed. It was thought necessary in the interest of industrial peace that the Board should make this extension and give the parties additional time in which to comply with the orders of the Board and provisions of the statute.

Similarly "Principle 15" regarding the right of the majority of any craft or class of employees to determine what organization shall represent the members of such craft or class (one of the "16 principles" contained in Decision No. 119 and which were to be incorporated into the new agreements regarding rules and working conditions) is defended in the decision as necessary and reasonable.

### Pennsylvania Charged With Misrepresentation

The decision then recites the history of the Pennsylvania controversy and in commenting on the request of that carrier for a 15 day extension of time in which to carry out the Board's orders, said:

It appears, however, that the time so granted had not been used for the purpose intended, that the conference directed had not been held, and that no steps had been taken to enable the employees to select their representatives as required by the law and ordered by the Board. On the contrary, the entire 30 days has been consumed by the carrier in the active promulgation of propaganda, at an enormous expense to its stockholders, in which the issues involved in this controversy have been misstated and the action and position of the Labor Board grossly misrepresented.

In the application to the Board to vacate and set aside Decision No. 218, the carrier says, in effect, and in its outside propaganda in express words, that it will not abide by the decision of the Board in this matter, unless said decision sets the seal of its approval on the carrier's conduct.

The open attacks of the carrier on the Labor Board and on the law which created it, shall, in no wise, affect the Board in its effort to give calm and just consideration to the carrier's petition, because matters of great moment to the public and to the carriers are involved.

It may be as well to state in this connection, once for all, that the Labor Board cannot be swerved from what it considers a just and legal course by the hostile printed propaganda of dissatisfied carriers or by the continued threats of labor strikes that are made before it.

In closing this portion of the decision the Board said in part:

The Transportation Act is regarded by thoughtful men as the greatest forward step that has ever been taken in any country to preserve industrial peace. The plain, primary purpose of Congress was to protect the public from the financial disaster, physical suffering and general demoralization that would result from the interruption of railroad traffic and transportation. Secondly, the Act was intended to save both labor and capital from such calamities.

That the time has come when the complex industrial and social system of this great and populous country must be guaranteed all the immunity possible from traffic and transportation disturbances, is beyond all question. If the Transportation Act does not provide such a guaranty, the public will find means, legal and constitutional, that will.

The Labor Board has been gratified by the cooperation it has received, as a rule, from both carriers and employees in its difficult task of aiding the transition of the country's great transportation systems from a war basis to one of peace, with the least possible conflict.

The Board, however, recognizes the right of any party to a controversy before it to take such legal measures as it may deem desirable to protect itself from any injustice that might be imposed by the action of the Board.

### Board Discusses Questions Raised by the Pennsylvania

In discussing the points raised by the Pennsylvania in the last hearings in this case several important principles are dealt with by the Board. The following quotations give in substance the Board's views on the questions indicated.

*The right of the Board to adopt the principles set out in Decision No. 119 and in other decisions, for the guidance of carriers and employees, is questioned.*

It is a settled principle of law that under a remedial act, as this is, even where not expressly given, sufficient powers are implied to enable the purposes of the act to be accomplished. But in this instance the power is expressly given in the language of the statute—namely, "The Labor Board may make regulations

necessary for the efficient execution of the functions vested in it by this title."

In the adoption of the rules promulgated in these several decisions, the Board was making "regulations necessary for the efficient execution of the functions vested in it"—regulations to accomplish the purposes of the Act, to promote and make practicable, if possible, the proper conferences provided for in the Act, and to establish regulations and conditions that would lead to a settlement of disputes and prevent the interruption of traffic.

*An attack of criticism is made on the statement in the decision that "there is no question of the closed or open shop involved in this dispute and no other real matter of principle. The question involved is merely one of procedure."*

The petitioner loses sight of the fact that the Transportation Act provides that any and all disputes between the carrier and its employees shall be brought before his Board for settlement, unless otherwise adjusted. Questions of procedure are not excluded.

It certainly was a very acute dispute, and the position of the carrier practically was that it had the sole right to proceed in its own way in the selection of the delegates who were to represent the employees; that it, and it alone, had the right to prescribe the plans and conduct the proceedings and be the sole judge of the results; and that any judgment, opinion, direction or regulation by the Board was an uncalled for and unauthorized interference with the prerogatives of the carrier. The mere statement of its position would seem to carry its own answer. It must be evident to every one that if this practice should prevail, there would be no real conferences, no liberty of action left to the employees, and that there could be no real negotiation and settlement of matters in dispute.

*The carrier asserts the right to limit the representatives to be selected by the employees to persons who are in the actual employment of the carrier.*

The Transportation Act does not prescribe any such limitation. We know of no law in this country which prevents or limits a man in selecting his own representative, and this Board has certainly no power to prescribe a limitation which the law does not, and has no disposition to do so.

The organizations are repeatedly and expressly recognized in the act and shown to have the right to represent the employees in these matters.

Of the hundreds of disputes brought before this Board probably less than five have been brought by and for unorganized employees. It seems useless and even stupid to argue and discuss this phase. But we want to make it plain that Congress contemplated that the organizations would largely represent the employees, and made it the imperative duty of the Board to hear them.

This presents the real crux of the controversy in this case. Here was an organization to which many, if not a majority, of the employees in the shop craft class of this company belonged. It is strongly insisted that a majority of this class on this road desired and had authorized this organization to represent them in the conferences and negotiations to be held. For reasons and motives that are immaterial to this Board, it is evident that the management was not willing, if it could be avoided, that this organization, its officials, agents and committees should represent these men, and it evidently formed its plans to prevent this if it could. Anyway, it was unwilling to agree, or did not agree, with this organization on a plan to fairly ascertain the wishes of this class of employees on the road. Both of the contending parties adopted and carried out their own separate plans, both of which were held by this Board to be faulty and unfair. The Board endeavored to prescribe a plan and method that would fairly obtain and accurately express the wishes of the majority of the employees of this class. This decision the carrier rejects and refuses to abide by, and arrogates to itself the sole function and power to decide these matters. If a majority of this class of employees on this road has an absolute right under the law to select their own representatives—and this is the clearly expressed will of Congress—this Board in its proceedings and decisions must obey the mandate of Congress. If the carrier refuses, it is an attack not so much on this Board as on Congress. It is nothing more or less than a denial and repudiation of the sovereign will of the United States as expressed by Congress.

If the members of any class wish to join a union they have that right. If they desire to remain out or leave such a union at any time, they have that right. If they or a majority of any class want a union or its officers to represent them, they have that right. If they, whether union men or not, want other individuals to represent them, they have that right. Neither this board nor the management of the Pennsylvania System has the right by any kind of plan or movement to dictate as to who shall be their representatives. Any attempt to do so—is an unauthorized assumption of power.

*The carrier suggests that the employees who are not parties to the alleged contracts and who do not want to be bound by them may invoke the aid of the board.*

The carrier in this suggestion ignores the statutory right of the employees in the first instance to a voice in the making of said agreements.

On the question as to the legal right of the carrier to establish rules and working conditions, the board refers to its discussion of this subject as contained in Decision No. 224 (an abstract of which follows). We think that opinion demonstrates that it is the duty of the board to prescribe what are fair, just and reasonable rules and working conditions for the parties without regard to their strict legal rights, and that if each party is allowed to insist upon its strict legal rights, as defined by the decisions of the Supreme Court of the United States prior to the enactment of the Transportation Act, it would be impossible for them to reach agreements, except the agreement to disagree and separate and thus, in effect, demoralize the transportation system of the country.

The purpose of the Transportation Act was to enable the parties to meet in conference, and when unable to compose their differences, for the Labor Board to prescribe conditions under which they should act. It is pointed out in the decision above referred to that there are two possible views as to the present state of the law on this subject: One is that the decisions of this board are merely persuasive with only a moral obligation resting upon the parties. The other is that Congress in the exercise of paramount police power necessary for the preservation, safety, and progress of the country, has, as to these common carriers and their employees, for the benefit of the public, limited the exercise of their hitherto unquestioned legal rights in such matters. But, as stated in that decision, whatever view may be taken, the duty of the Labor Board remains the same; that is, to decide what is just, fair and reasonable as between the parties and the public.

### Constitutional Rights of Railroads Analyzed by Board

A second decision rendered in an unimportant case becomes significant because of the discussion of the principles which accompany it. This decision orders the reinstatement of two section foremen discharged by the Butler County Railroad mainly because they belonged to the same union as the men who worked under their direction. The decision also gives the men full pay for all time lost less the amount earned since the date of their dismissal. The company contended that it was within its legal right to discharge these men.

The Board, in this decision said in part:

The principle invoked of the legal rights of the managements in their dealing with employees has cast some confusion and shadow over every action and decision of the board. The board understands that it is its duty to follow the law, and its membership has been sworn to support and maintain the principles of the Constitution of the United States, which obligation the members will faithfully observe.

Congress, when the Transportation Act was passed, was fully informed of the constitutional and legal rights of all the parties and interests to be affected. It must be assumed to have had these rights in mind and legislated accordingly. Among the conditions confronting Congress were these: (1) The great transportation systems of the country being conducted and maintained by many carriers all under private ownership and control; (2) the employment by these carriers of vast numbers of employees more or less especially experienced and trained and fitted for this business, who had generally made this service a life occupation and who were largely dependent on it for their continued existence and welfare. These transportation systems more vitally affected all classes of people and every line of business and endeavor than any other agency of our civilization and life. In fact, the general progress and, indeed, the well-being and almost the existence of most of our people are vitally dependent on the continued and proper functioning of these transportation systems. Anything seriously interrupting or interfering with these systems of transportation and traffic could only and would necessarily result in tremendous financial loss and untold human suffering. Capital, labor, civilization, are dependent on them. The employees in the service of these corporations who, as we say, were largely dependent on them for continuous employment and welfare had, to a great extent, in the protection and upbuilding of their interests, as they had a right to do, joined various unions or organizations, just as the holders and managers of large combinations of capital had done.

These organizations and managerial groups were called upon to deal with each other. From the very nature of things there were conflicts of interests and differing views in regard to the matters of their several interests and rights. Frequent conflicts had in the past arisen, and at the time of the passage of the Transportation Act more serious and general conflicts were threatening, growing to some extent out of post-war conditions. It was

apparent that if these were not prevented the most serious and lamentable results would follow.

It was and is intolerable from a public point of view that strikes or lockouts of any serious character, especially those of a general nature with far-reaching and disastrous effect, should occur. Without regard as to which party is primarily to blame, the effect is the same and the helpless and innocent public is the principal sufferer. These transportation interests from their very nature and from governmental grants acquire great and special privileges and are affected with a public use and owe a public duty. This duty is imposed both on the management and the employees. The public pays the bill and on the public both sides are dependent for their existence. Moved by these conditions and considerations, Congress passed the Transportation Act, created the United States Railroad Labor Board, and prescribed in a general way its functions; the clear purpose being to provide an impartial tribunal, which, looking to justice, equity and fair dealing between the carriers and their employees and the greater and dominating interests of the public, would be able to settle all conflicts and disputes and prevent any interruption of traffic.

The duty is imposed on the Board of deciding disputes as to wages or working conditions on the basis of establishing such as are in the opinion of the Board just and reasonable—not according to the strict legal rights in all instances of either party, for one party might have a legal right to prescribe a wage for which the other party would have a legal right to refuse to work; or, the carrier might have a legal right to impose a rule or working condition under which the employees would have a legal right to decline to serve.

Here the decision outlines in detail the varying views as to the intent of Congress in framing this part of the Transportation Act which are briefly mentioned in the closing paragraphs of the Pennsylvania ruling. Regardless of these views, the duty of the Board remains the same, the decision holds, namely to decide disputes to the best interests of the parties directly interested and of the public. Continuing, the decision says in part:

It must be evident to all and beyond doubt or controversy, from the very nature of things and the character of the disputes that cause the friction between carriers and their employees which lead to interruption of traffic, that Congress did not intend or expect to limit the Labor Board to deciding these disputes according to the strict legal rights of the parties, because if it did, and both parties relied strictly and fully on their legal rights, the disputes never could be solved. If the carrier has, as contended, unlimited freedom in establishing rules and working conditions and is going to do so regardless of this Board's opinion and decision as to what is just and reasonable, there can be no practicable use or sensible reason for the Board hearing the dispute and expressing an opinion or rendering a decision. Likewise, if the employees are going to ignore the Board's opinion and decision and rely on their legal rights to determine for themselves the rules under which they will work, as some of them have been indicating they will do, it is equally useless for the Board to hear and decide the matter. It was doubtless because of a recognition of this conflict in strictly legal rights that Congress, in the interests of the public and to prevent interruption of traffic and the operation of the carriers, created this Board and directed it to decide what, in view of all the facts, was and is just and reasonable in each case.

The Board in its previous decisions has endeavored to be governed by these principles. It has constantly in view the public interest and the rights of the public to demand prompt, efficient, and economical transportation. It recognizes the necessity for discipline and control by management, and it hesitates to interfere by its decision with the management's freedom and discretion in these matters. It has required a clear showing of obvious wrong or a plain violation of contract of employment before granting relief, as its numerous decisions in discipline cases demonstrate. But it must and does recognize that employees have interests that must be given consideration if disturbance is to be avoided and a loyal, cheerful, and efficient service obtained.

The individual importance of this particular case is small, but the principle involved is momentous, and the Board has felt that in the public interest its position should be made clear and its views and reasons set out so they could be understood. It has found reasons for this in the very emphatic position taken by the carrier in this case, indicating a purpose to carry out its policy with unlimited freedom, possibly without regard to the decisions of the Board, and recent happenings in other cases where disregard of the decisions of the Board has been intentional. Announcements from both carriers and employees.

It is to be hoped that the effect of this decision will not be misrepresented or misunderstood. Much propaganda has been published and circulated which purports to represent misrepresentations and circulated which purports to represent the purpose and effect of the decisions of the Board.

to the effect that the tendency, if not the purpose of its decisions, is to establish a unionized closed shop. Such statements have no foundation in fact. No such proposition has been submitted and no action taken by this Board tending to establish such conditions.

If Congress should enact a law prohibiting recognition of labor organizations of railway employees, or authorizing carriers to establish rules in the interest of the public prohibiting railroad employees from belonging to such unions, this Board would obey the law. But on the contrary, Congress has recognized as lawful and directed this Board to recognize them in the railway service, and this Board in this decision is only obeying the obvious direction of Congress. Its decisions on this subject do not tend to a closed shop and have no bearing whatever on the very bitterly debated question of the open and closed shops in other industries. Any representations or statements to the contrary are not only misleading, but can only work public harm.

This Board can only to the best of its ability decide the disputes brought before it according to the provisions, purposes and spirit of the Transportation Act, seeking to do all it reasonably can to secure industrial peace along these lines and to prevent an interruption of traffic so disastrous to public interests. If either party to such disputes sees proper to disregard its decisions and thus contribute to or cause the public misfortune which Congress sought to prevent, the responsibility is with those guilty of such action.

While the Board regrets such action, not so much because it is an attack more or less direct on the power and effectiveness of the Board, but because it, in the opinion of the Board, is in effect a deliberate attempt to ignore the power and defeat the will and purpose of Congress plainly expressed, and Congress in these matters represents the dignity, power and sovereignty of the United States. The remedy lies with the public, or possibly with Congress or the courts.

## Some Remarkable Labor Turn-Over Statistics

By William S. Wollner

ON APRIL 1, 1920, a western railroad inaugurated a plan for collecting statistics reflecting the maintenance of way labor turn-over, and the information thus obtained during the nine months ending December 31, 1920, is of remarkable interest as indicating the extremely short duration of average employment during a period of labor shortage. These statistics cover only men employed through the employment bureau of this road, no data having been collected concerning the men picked up by foremen in the localities in which they were working. As the period which these figures cover was one of extreme labor shortage in the territory this road serves, the number of men employed in this way was very small, it being doubtful if as much as one per cent of the total number of men hired during this period was secured through other means than the employment bureau.

Maintenance forces have been divided, for the purpose of this report, into extra gang laborers, section gang laborers, carpenters and carpenter helpers, and a summary of these statistics as applied to extra gang laborers and section gang laborers is given below.

### LABOR TURN-OVER STATISTICS, APRIL 1, 1920, TO DECEMBER 31, 1920 EXTRA GANG LABORERS

Total number employed during period.....	890
Did not report for work or did not work after reporting.....	579
Total number employed during period who gave service.....	311
Total number of man-days service given.....	7,187
Average number of man-days service based on number of men employed.....	8,075
Average number of man-days service based on number of men who actually gave service.....	23.10
DURATION OF STAY BY PERIODS	
Did not work.....	579
1 to 10 days.....	108
11 to 20 days.....	78
21 to 31 days.....	48
1 to 2 months.....	60
2 to 3 months.....	9
Over 3 months.....	8
Total.....	311

Of the men in the above statement, the following were still in the service December 31, 1920:

Less than 1 month service.....	3
1 to 2 months' service.....	7
2 to 3 months' service.....	2
3 to 4 months' service.....	2
4 to 5 months' service.....	4
Total.....	18

### SECTION GANG LABORERS

Total number employed during period.....	401
Did not report for work or did not work after reporting.....	247
Total number employed during period who gave service.....	154
Total number of man-days service given.....	4,172
Average number of man-days service based on number of men employed.....	10.40
Average number of man-days service based on number of men who actually gave service.....	27.09

### DURATION OF STAY BY PERIODS

1 to 10 days.....	62
11 to 20 days.....	32
21 to 30 days.....	32
1 to 2 months.....	21
2 to 3 months.....	8
3 to 4 months.....	8
Over 4 months.....	4
Total.....	154

Of the men in the above statement, the following were still in service December 31, 1920:

Less than 1 month.....	3
1 to 2 months.....	3
2 to 3 months.....	5
3 to 4 months.....	4
Over 4 months.....	3
Total.....	18

One of the primary purposes of this labor turn-over survey was to determine the principal causes for men leaving the railroad's service so that, if practicable, the conditions responsible for the heavy turn-over could be corrected or modified. Of the 1,513 men hired by the employment bureau during the nine months' period which figures cover, 937 gave no service. Of these 937, 744 did not report on the job and foreman failed to give reasons why 306 of the others quit. It is possible, therefore, to show reasons for only 463 men leaving the service. These reasons as given by the foreman for the classes of employees covered by these statistics (extra gang laborers, section gang laborers, carpenters, carpenter helpers) are tabulated as follows:

### REASONS FOR LEAVING

Did not report on job.....	744
Gave no reason.....	306
Wanted to move on.....	182
Discharged.....	73
Weather conditions.....	30
Reduction of forces.....	31
Had another job.....	26
Quarters.....	23
Rate of pay.....	20
Could not mix in gang.....	19
Dissatisfied with food.....	11
Work was too hard.....	8
Sickness.....	7
Had no blankets.....	7
Reduction to working hours.....	7
Had no rainclothes.....	5
Insufficient earnings.....	3
Hours.....	2
Charge for board.....	2
Claimed there was not enough to eat.....	1
Insane.....	1
Poison cake.....	1
Not feeling well.....	1
No mattress.....	1
Sickness in family.....	1
Did not like railroad work.....	1
Had no funds for board at hotel.....	1
Epileptic fits.....	1
Dissatisfied with job.....	1
Total.....	1513

The period which these figures cover was one of acute railroad labor shortage, whereas, the period immediately following has been one in which labor conditions have made available many more men than could be used in railroad maintenance service. Additional statistics will, therefore, be compiled at a later date so that comparison of data for the two periods may be used to reflect turn-over conditions during time of shortage and oversupply, and a consolidation of the data used to reflect average conditions.

OF THE TOTAL RAILWAY MILEAGE in the United States rather over 1 per cent is operated electrically as against about 4 per cent in Britain.—*South African Railways & Harbors Magazine.*

# Standards for Railroad Electrification

## Power Should Be Developed at 25 Cycles and Use of Both Alternating and Direct Current on Trolley Continued

**I**N AN EFFORT to establish standards for electric traction equipment, the Electrification of Railways Advisory Committee in England appealed to George Gibbs, chief engineer of electric traction, Long Island, for an expression of opinion. The recommendations by the committee that power should be developed as three-phase alternating-current at the frequency which is in general use in the district and that 1,500 volts direct-current be used as a standard trolley voltage have given rise to much comment. Mr. Gibbs' letter was subsequently published in the *Engineer*, London, substantially as follows:

### The Question of System

I am not of opinion that at the present time one system of traction at a suitable pressure should be applied as a standard to meet all requirements of railway traffic. Admitting the advantages of standardization in general, yet I believe the establishment of any one system of electrification as standard for British railways would be a mistake at the present time, because:

(1) It is too early in the state of the art to determine and fix the features of any system to the extent required for the purposes of complete standardization, and yet not restrict the future and desirable development of the system selected.

(2) There does not exist sufficient and comparable operating data from which to conclude as to the relative advantages and disadvantages for the future of the two radically different systems most prominently before the railways today, *i. e.*, the "direct-current" and the "alternating-current." Both systems are workable and in use; each has its advocate in important manufacturing interests, and able professional men differ as to which system should prevail. This competition of diverse minds in the development of these different systems is an important factor in ensuring the future determination of the best system; it should not be discouraged by the premature exclusion of either system from trial in the present development period.

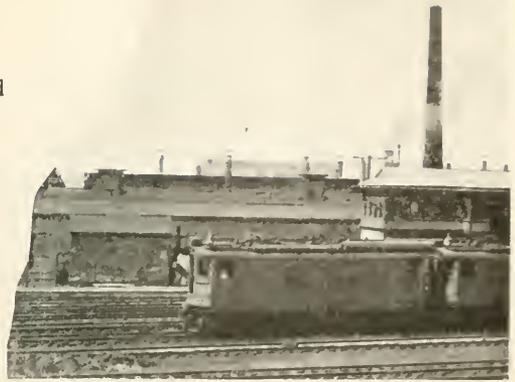
(3) Neither system, as now developed and applied to a typical general case, differs greatly in first operating and upkeep costs; therefore, railways will not be greatly penalized, except by hampering interchange, by being allowed to work out for the time being the full possibilities of the different systems.

*Per contra*, I am in favor of certain exclusions and the fixing of certain general requirements of any permitted traction system; thus—

(1) I recommend standardizing the location and clearances of third rail and overhead working conductors. Standards for these have been established for American railways by the American Railway Association. The figures will, of course, differ for British railways. Standardization of this kind will permit the continued development of both the alternating-current and direct-current systems of traction and will ensure interchangeability of running requirements between roads using the same character of traction system.

(2) Standardization suitable and safe limits for voltages in each of the two types of working conductors. These should be as follows:

For third rail 600 volts (nominal) direct-current is recommended. A higher voltage than the above is, in my opinion,



inadvisable for general railway usage, because employees or others who have access to the right-of-way cannot be effectively safeguarded from accidental contact with it. Contact with voltages of 1,200 to 1,500 is generally fatal.

The recommended voltage for overhead conductors is 11,000 for the alternating-current system and 3,000 for the direct-current.

In the case of the alternating-current system the maximum is determined by the practical limit in maintaining insulation; 11,000 volts (nominal) is below this point, but experience indicates it is high enough for the heaviest kind of traction and is suitable for any class. A collector system carrying it can be installed and maintained properly and economically within close permanent way and rolling equipment clearances. It should be noted, however, that in an overhead wire system such as the three-phase, which requires two contact wires, insulated from each other and from earth, and two current collectors of different polarity, the practical voltage limit is considerably lower than 11,000.

In case of a direct-current system maximum voltage is limited by other considerations than that of insulation of the working conductor. The demands of economy in distribution and the problem of successful collection of current for heavy trains suggest the highest possible voltage; on the other hand, the limitations in respect of its utilization in the train control and motors point to the desirability of low working voltage. For the general case I am of the opinion that 3,000 volts is the minimum requirement from the standpoint of economy and successful current collection, and is the present maximum allowable for the other considerations.

### Frequency

Current frequency should be standardized for traction systems in accordance with the requirements of such purpose and not by a compromise with the conflicting requirements of another service. A frequency of 25 cycles per second is the best for both systems of traction recommended for trial, and should, therefore, be made the standard for traction generating plants.

### Power Generation

High-pressure three-phase generation is suitable for both alternating-current and direct-current traction systems, and may be made standard.

The voltage at the generating plant may depend upon the local situation; it is quite immaterial for standardization purposes what this actually is, as the voltage is transformed for secondary distribution, and various primary voltages may be utilized in the traction installation of one railway.

A consideration of "frequency" is highly important and no

standard should be proposed which will exclude, materially complicate, or hamper the development of either of the two systems suggested.

One of the features making for simplification in the single-phase alternating-current system is that current from the generating plant is used in the working conductors without change, except, if desirable, by altering the voltage in a transformer. It is essential, however, that the "frequency" employed in the working conductors shall not exceed 25 cycles per second. If a higher generating frequency than the above is standardized it would complicate the alternating-current system; thus to utilize 50 cycles it would be necessary either to employ "frequency changers" or to install in the central station separate 25-cycle generators for railway purposes. The latter plan is employed to some extent in America, and it is found practicable for electric supply companies to install in the same station high-frequency generators for commercial purposes and 25-cycle generators for railway work and provide one or two large motor units for interchange of power between the two parts of the station.

With the direct-current system which employs alternating-current generation and transformation and conversion in substations any desired frequency from 25 to 50 (or more) cycles may be used. Twenty-five cycles is, however, not only a suitable standard for the direct current, but is from some considerations better than a higher frequency. Therefore:

(1) Three-phase, 25-cycle generation at any desired voltage or voltages should be specified as a requirement to allow the flexible development of electric traction systems.

(2) Commercial power plants, which employ other frequencies, may be utilized for railway power purposes either directly in case of direct-current traction or by the installation of separate generators and motor generator tie-in sets, or frequency changers for alternating-current traction.

#### Costs

The investigation of the Chicago Association of Commerce is probably the best source of information which has appeared to date regarding the details of first and operating costs of electric systems. This report was completed in 1915. It covers a minute investigation of a great railway problem within a compact area of 428 square miles in and around a very large city. Within this area thirty-nine different railway companies operate dense passenger, freight and switching services over a network of tracks comprising an aggregate mileage of 4,500. The net first cost of the equipment required to operate this entire system electrically was estimated and analyzed with great care for three different systems and gave the following results: Direct current, 600 volts, third rail, \$188,132,314; direct current, 2,400 volts, overhead, \$181,891,122; single-phase alternating current, 11,000 volts, overhead, \$178,127,230. In other words, the first cost was substantially the same for all three systems. This conclusion is, of course, for short-haul conditions; for long-distance haulage the showing for the high-tension system, as compared with the third rail, would be better. For average conditions estimates I have made on important projects indicate a first cost difference of 15 to 20 per cent in favor of the high-tension overhead alternating-current or direct-current trolley systems as compared with the direct-current third rail, and of the two high-tension systems the alternating current appears in every case to cost less than direct current.

As to operating costs, the Chicago report showed for items affected, a substantial saving per train mile as compared with steam. The saving was least in case of the 600-volt third-rail system and greatest for the 11,000-volt alternating-current system, but there was not a very great difference between the latter and the 2,400-volt "overhead" system. The conditions, however, in the Chicago district are somewhat peculiar; for the average railway condition, estimates indicate differences of 10 to 16 per cent in favor of the high-tension trolley systems as compared with the 600-volt direct-current third

rail and the high-tension alternating current appears to be more economical than the high-tension direct current.

#### Factors Affecting the Selection of a System

The important considerations governing the selection of a system are:

(1) Adaptability to all physical conditions of the railways.

(2) Economy in first and operating costs.

(3) Flexibility as regards conducting varying kinds and volumes of traffic.

(4) Suitability for extension.

(5) Possibilities as regards future advance in the art and improvements in details.

I would work, as far as consistent with the above, towards the elimination of systems which are applicable to special cases only. This, as before indicated, would narrow the selection to the adoption of one of the high-tension overhead conductor systems. The 600-volt third-rail direct-current system would only be considered for extensions to existing installations or for very special cases.

The 1,500-volt direct-current system could only be adopted with an overhead conductor and for light traffic requirements; 1,500-volt third rail cannot be used generally because of its danger to life. The 1,500-volt system is an interim development only. Higher voltage direct-current systems, such as the 3,000-volt system, have promise for the future and their development should be allowed to continue unhampered. The 11,000-volt alternating-current system likewise has a broad field of usefulness and promises well for future development.

The selection, therefore, of a proper system for general use appears to lie between the 3,000-volt direct current and the 11,000-volt alternating current. I have referred to the existing difference of opinion as to these two systems, and since I am not recommending the elimination of either from adoption at present, it is unnecessary for me to indicate my preference. I should approach any concrete problem upon its merits along the lines laid down, having regard to the latest experience and facts as to the state of the art when decision is to be made.

#### Report of French Commission Not Well Founded

I have looked through the voluminous report of the French Commission on Electric Traction, and, frankly, its conclusions do not seem to be well founded on the data presented. Perhaps the commission has arrived at a correct conclusion, having regard to the particular conditions in France, but the reasons given for condemning the single-phase system seem inadequate and largely the results of a "scare" as regards the inductive interference question. The commission seems to have been dominated by telephone and telegraph experts. It also seems to have been greatly influenced by reports of the high cost of maintenance of the alternating current, which, they state, is at least double that of direct current, a conclusion which is absurd. No effort seems to have been made to equate operating conditions in comparing systems, and I doubt if the commission really had any accurate figures of cost of maintenance of the alternating current. It does not seem to have attached much importance to the future trend of development and possibilities in connection with both alternating-current and direct-current traction.

I was interested, and disappointed, in reading the Interim Report of the Advisory Committee on Electrification of Railways. It would be valuable to know what reasons led the committee to the adoption of the 1,500-volt direct current as standard. I think a mistake has been made, even if it should prove to be the eventual system, because the adoption of any standard now is going to put the development of electric traction in a straight jacket. The development of both the alternating-current and the direct-current systems should continue in order to get the best results.

# Telegraph and Telephone Section Hold Annual Meeting

## Radio and Wired Wireless in Railroad Work, Message Traffic and Technical Training Discussed

THE ADAPTABILITY and the application of radio and wired wireless to railroad work, the reasons why employees of the telegraph and telephone department should be technically trained and the use of automatic telephone systems for intercommunication between the various offices of a railroad were among the important subjects considered at the annual meeting of the Telegraph and Telephone Section, Division I—Operating, American Railway Association, which was held at the Hotel Cleveland, Cleveland, Ohio, on September 21, 22 and 23. Chairman H. Hulatt (Grand Trunk), presided. There was a total attendance of about 275. This meeting is the first held since the annual meeting at Winnipeg, Man., last September, as the March meeting which was scheduled for Atlanta, Ga., was cancelled, in line with the wishes of the A. R. A., because of business conditions existing at that time.

Of the 13 regular committees, 11 submitted reports. In addition a paper was read on "Some Phases of Railroad Telegraph and Telephone Engineering" by Stanley Rhoads, telegraph and telephone engineer, New York Central Lines, which was discussed by A. W. Douglas (C. R. I. & P.), I. C. Forshee (P. R. R.) and J. L. Niesse (C. C. C. & St. L.). At the opening session on Wednesday, September 21, Dr. Dayton C. Miller, professor of physics, Case School of Applied Science, delivered an address on "Electric Wave Motions and Applied Scientific Phenomena" in which he discussed many scientific principles affecting the development of the telegraph and telephone.

After the opening of the first session on Wednesday morning the members were welcomed on behalf of the city by Mr. Metcalf, director of finances. A letter was then read from R. N. Aishton, president of the American Railway Association, in which he called attention to the many advances made in the methods of communication during the last few years, while Mr. Hulatt, in his opening address, emphasized the important educational advantages to be derived from taking part in the activities of the association. At the opening of the afternoon session on Wednesday, J. Marshall, special representative of the Freight Claim Division of the A. R. A., talked on freight claim prevention.

Thomas A. Edison personally sent a message of greeting over a special wire from his laboratory in Orange, N. J., to the members of the section during the informal banquet held on Thursday evening in which he said, "It is with great pleasure and some pride that I am still able to send readable Morse, that I extend my kindest felicitations and congratulate you upon the able manner in which you are carrying on the work begun by the railway telegraph superintendents in 1882. This occasion brings back to me pleasant recollections of the old days when I was a regular and probably a better operator. I hope some of my comrades are there to-night. To all I extend my '73.'" The message was answered by Charles A. Seldon, general inspector of transportation Baltimore & Ohio.

### Radio and Wired Wireless

J. D. Jones (P. R. R.), chairman of Committee No. 12—Radio and Wired Wireless, in presenting the report, explained that the committee had been asked to keep in touch with various manufacturers of wireless apparatus with a view to considering the adaptability to railroad use of any new developments in the field of wireless telegraphy, wireless telephony and wired wireless and to negotiate with one

or more manufacturers of wireless equipment to arrange for the development and practical demonstration of radio (telegraph and telephone) and wired wireless equipment to meet various railroad conditions. In connection with this work, data were obtained from the various railroads as to what has been done regarding the application of radio and the possibilities of its use in railroad work. In this connection C. A. Worst, superintendent telegraph, C. B. & Q., suggested that the following points be considered in the application of radio in any form for practical use in railroad service.

- (a) Necessity and advantages as a reserve means of communication.
- (b) Necessity and advantages as a regular means of communication.
- (c) Cost of original installation per station.
- (d) Number of stations to be installed.
- (e) Cost per station for operation.

E. C. Keenan, general superintendent telegraph, New York Central Lines, in speaking of wired wireless stated that "apparently there is no question that this method of obtaining multiple communication will be available within a short time, and will give additional trunk line connections between switchboards and adjacent cities, so that almost unlimited communication can be given to the railroad officers and subordinates, which will do away with some of the restrictions now imposed. If these carrier circuits can be obtained at reasonable expense, it would seem to be our aim to establish sufficient long distance communication by applying them to our present lines so that prompt connection can be given upon any legitimate request for service." Mr. Keenan also thought that there was a need for wireless on the Great Lakes for railroads which maintain their own boat lines and that wireless telephony could be used to advantage if satisfactory communication could be maintained continuously between some central stations and various tug boats operated by the railroads.

It was the feeling of H. A. Shepard, superintendent of telegraph, N. Y., N. H. & H., that the radio telephone could undoubtedly be used to advantage between the engine and caboose in freight service provided that a suitable signaling system is devised to enable one station to signal the other when desiring to talk.

J. A. Jones, superintendent of telegraph, Southern Railway, Lines East, is of the opinion that there is a good field for radio in railroad service and he is looking forward to the day when every train will be an open office. This would be of particular advantage when the high officers of a railway, when en route on the line, could get in communication directly with their subordinates.

Regarding the application of small portable wireless sets for the use of maintenance of way forces or wrecking crews in communicating with the division headquarters, the committee stated that this had been carefully considered and, after a conference with engineers of radio companies, it was learned that portable sets were available but that the complete equipment so far constructed, because of its weight, would require several men to handle. It was the feeling that small outfits capable of being handled by one man would not be available for some time, but that portable outfits now constructed could be placed on hand cars or wreck trains and would enable the working parties to keep in communication with headquarters.

In connection with this entire subject the committee also presented (1) Information as to the meaning of the terms "Radio and Wired Wireless," as applied to railroad operation; (2) Suggestions as to what particular conditions in

railroad operation would justify consideration of the application of radio and wired wireless; (3) Information on the application of wireless telephone for short haul transmission, as for example—between important division points; and (4) Information on the application of wireless telephone for operation in conjunction with physical lines, to take care of transmission by wireless through certain sections, to be continued over physical lines to regular telephone stations.

#### Report on Message Traffic

This committee of which G. D. Hood, superintendent of telegraph, C. R. I. & P., is chairman, recommended the use of an automatic telephone system for intercommunication between various departments of a railroad, leaving the ordinary switchboard free to handle public requirements, whenever and wherever the business on the ordinary switchboard reached the point where release is necessary. Such an automatic system should have the greatest possible flexibility and should be practically unlimited as to growth and length of circuits. For intercommunication between offices located in the main building where such stations will not be subject to any material changes of location, if it can be foreseen that the ultimate requirements will not exceed 20 stations, an intercommunicating telephone system of the push button or camkey type should be considered.

In considering the desirability of tie lines between the switchboards of the different railroads in cities where there are headquarters of several railroads, it was felt that their use would eliminate the necessity of communication going through the different telephone exchanges and would expedite service. In cities having a number of railroad private telephone exchanges it was recommended that circuits connecting such private exchanges are desirable whenever and wherever a traffic study justifies their installation, as the use of such circuits will facilitate communication between railroads by expediting telephone service and improving transmission.

In addition to the subjects above mentioned this committee presented information on the use of rotary repeaters; standardization of operators' employment records; necessity for transmitting initials of railroads after signatures; use of printer telegraph apparatus; use of carrier system for distribution of messages; uniform rules governing employees; recommendations in connection with the organization of a proper method of educating wire chiefs, repeater attendants and operators and the desirability of a standard code covering the routine matters exchanged on a railroad and more particularly in connection with such matters exchanged between different railroads transmitted over commercial wires, such as reservation messages.

#### Report of Committee on Technical Training

This committee, of which I. C. Forshee, electrical engineer, telegraph department, Pennsylvania System, is chairman, stated in its report that it was the consensus of opinion of this committee that the courses of instruction to be recommended or developed by the committee should be available for all employees under the superintendent of telegraph from the messengers, groundmen, linemen or laborers who first enter the employ of the company to the highest employe in the department. The methods of instruction which are applicable to the work of this department are: In a class room, under a competent instructor; by an instructor or foreman who can assemble the employees on the job; by lectures; and by correspondence.

For each road to attempt properly to equip school or class rooms for the instruction of employe would result in a needless duplication of facilities and expense in a large number of important railroad centers. In such cities better and more complete facilities and more competent instructors could be obtained by pooling the interests. With this ar-

rangement the employees of each road and each class of employees could be given regular class room assignments; instructors who are specialists in each particular class of work could be employed; more complete and adequate equipment and material could be furnished, and all at a smaller expense to each road than to attempt to equip and man even the most elementary layout by each company. The expense of equipping and running such a school could be pro-rated upon some equitable basis.

In order to ascertain to what extent the different railroads have developed educational work for the telegraph and telephone department, a questionnaire was prepared by this committee and sent out to the superintendents of telegraph of all railroads holding full membership in the A. R. A. Sixteen companies with a mileage of 41,802 at present have courses of instruction, while 78 roads are in favor of a course in technical training and four are not in favor of such a course. Sixty-three favored an apprenticeship course, while 11 roads were opposed to this practice.

#### Construction and Maintenance—Outside Plant

Committee No. 1—G. A. Cellar, general superintendent of telegraph, Pennsylvania system, chairman, has perfected its rules for the construction of pole lines, the tables indicating classes and spaces of poles, and specified its methods of calculations, assumed stresses to which the line shall be opposed and the strength recommended to approve these stresses. The appendices submitted with its report covered: (1) method of calculating the class and number of wood poles required for railroad telegraph and telephone pole lines; (2) tables of minimum dimensions and classes of poles; (3) modulus of rupture of various species of wood used for telegraph and telephone poles; (4) method of calculating strength of side guys and (5) method of calculating the replacement tables.

It also presented specifications for telegraph, telephone and other signal wires, and cables, crossing the tracks of steam and electrified railroads. It has given attention to crossing legislation and commission orders passed or issued in various states where progress is being made in the establishment of proposed standards covering this class of work. The committee resubmitted practically the same specifications for transpositions as were given at the last meeting at Winnipeg to which very slight additions have since been made.

#### Construction and Maintenance—Inside Plants

R. F. Finley, superintendent of telegraph, New York Central, Lines West, chairman of this committee, stated that the specifications for the installation of telegraph and telephone equipment in railroad offices, as recommended by the committee at the Winnipeg meeting in 1920 for submission to letter ballot for inclusion in the manual, covered quite generally fundamental principles only and that the work of the committee from now on will be devoted largely to the preparation of separate specifications for the manufacture, installation and operation, etc., of telegraph and telephone inside plants.

A specification for lead sheath insulated and enameled, non-quodded office cable for No. 18 A. W. G. conductors and a specification for braid sheath rubber insulated non-quodded office cable for No. 16 A. W. G. conductors were presented. A report was also made on the preparation of typical floor and wall plans showing the space necessary for and the most desirable arrangement of telegraph and telephone equipment in railroad station towers, booths and office buildings. These plans include sizes and locations of operating tables at smaller offices where only single Morse and train order telephone instruments are used, together with layouts of instruments and signal apparatus in such offices. Drawings for all circuits required in railroad telegraph and telephone inside plant and specifications for the installation and maintenance of gravity batteries; of caustic

soda batteries and for cross connection records were also presented.

### Other Committee Reports

Committee No. 3—Protection Against Electrolysis, B. J. Schwendt, superintendent of telegraph and signals, Toledo & Ohio Central, chairman, reported on the extent to which it has been found that ordinary maintenance forces are able to detect and record electrolytic action intelligently. The committee also submitted a brief outline of the work done by other bodies on the subject of protection against electrolysis.

Committee No. 4—Protection against Lightning for Electric Light and Power Circuits, J. F. Caskey, superintendent of telegraph, Lehigh Valley, chairman, presented reports on the comments and suggestions received from representatives of members; carried to a conclusion manufacturing specifications previously submitted; submitted specifications for telegraph and telephone protector mounting, and for telegraph and telephone protectors assembled and also instructions for the installation and maintenance of telegraph and telephone protectors.

The officers of the section chosen for the ensuing year are as follows: Chairman, W. H. Hall (M. K. & T.); first vice-chairman, R. F. Finley (N. Y. C.); second vice-chairman, I. C. Forshee (P. R. R.).

## Increasing the Efficiency of Employees

By Paul H. Pearson

SINCE THE RETURN of the railroads to private management, every possible effort has been directed toward increasing their capacity through rehabilitation of equipment, increasing loads per car and miles per car per day, and last but not least, increasing the efficiency of the employees. Of these several methods, the increased efficiency of labor has been developed to the smallest degree, notwithstanding the fact that it possesses the greatest of possibilities with the smallest expenditure of capital of any of the factors mentioned; and this at a time when capital is hard to get, expensive because of the high rate of interest, and in some instances actually impossible to obtain at all.

It must be admitted that in the now quite distant past, capital had the upper hand, and used it without a great deal of regard for the rights of labor; in the last few years the tables have been turned and labor now has the balance of power; it, too, has used it in many cases without regard to either the rights of the carriers or the public. It is not my intention to enter into a discussion of the merits or demerits of either capital or labor's use of their respective advantages, but it is unthinkable that this condition should ever again be allowed to exist. On the other hand, both labor and capital should get down to a business-like basis and work together for the best interests of each other.

My position is not sufficiently official to remove me from the confidences of those employees with whom I have summered and wintered—been cold and wet, as well as dry and warm—and with whom I have often shared food and "smokes" while we were all growing up together in the business of transportation. At the same time my relation to my superiors has come to be sufficiently close to give me an insight into the problems and perplexities surrounding those responsible for the efficient operation of the transportation machine of which I am a part.

Owing to the very nature of their work, the various classes of train service employees must of necessity constitute the chief problem, because no method of supervision has yet been devised which gives more than a superficial check on the work performed by these men. They are out at all hours of the day and night many miles from the nearest superior officer, with problems arising at a moment's notice suc-

cessful solving of which is dependent upon their own individual experience, judgment and faithfulness, as well as the degree of co-operation existing between the individuals.

From the constant daily contact with the various train service classes, I am firmly convinced that fully 80 per cent of the normal number of such employees possess both the will and the ability, intelligently directed, to give the very best work they have in them; that the efforts of executive officers responsible for the efficient operation of the transportation machine should be directed toward a better understanding of the problems confronting both the officers and the men. Instead of a very unwise attempt to break down labor organizations, which have come to stay, every effort should be made to have the better class of men, numbering, as before stated, about 80 per cent, become the predominant influence in such organizations.

As a first step towards this end, I believe that much information now in the possession of supervisory officers, and heretofore considered as confidential, could be disseminated among the men with good results. It would give them an insight into the reasons underlying certain policies of the management, and contribute toward the more intelligent performance of their duties.

As a second step, some method should be followed of keeping an accurate record of the many good performances recorded weekly or monthly, and suitable publicity given them by the publishing and distribution of a bulletin or news letter at stated periods. This bulletin should cover only such territory as may come under the jurisdiction of one superintendent in order to keep up the local interest of the men who are working side by side daily. It would, of course, be advisable also to record the poorer performances, being careful to omit the names of the offenders.

A great deal of unrest and dissatisfaction is often caused by employees being acquainted with facts pertaining to the operation of their own division, without knowing the underlying reasons therefor. Much of this could be corrected by the inclusion in the bulletin of such of these facts as can be disseminated without injury to the management.

What is true of the train service men is also true of all the other branches of the service, as all have a great interest in the operation of the road, and only need to have this interest stimulated to begin to show good results. I know that a great many executive officers will doubtless discount this statement by about 50 per cent; if so it will be because the facts are hidden under the mass of troubles caused by the other 20 per cent of the employees, thus leaving little time for attention to those faithful employees who by the very nature of their good work go unnoticed.

There can be no question, in the mind of any thinking person, but that the national agreements lead to great inefficiency and unnecessary expense. Each road should deal directly with its own employees, whose problems they are familiar with, and the conditions surrounding which are so dissimilar even on adjacent roads. On the other hand, there is still present in the minds of even the more conservative of the labor men a very considerable doubt as to the real intentions of the officers of the different carriers, and it is the big job of such officers to so establish their own sense of justice and integrity, that they will have the absolute confidence of such employees. This cannot be done without some means of bringing both sides together into a knowledge of the problems of each and how it is proposed to meet them; or, in other words, bringing each other's troubles out into the sunlight; this can also be partly accomplished by some such publication as I have suggested.

Finally, it is my opinion that the desired results can only be obtained by much careful thought and hard work on the part of the best brains our railroad executives can produce. There will be many discouragements, but I have an abiding faith that the problem is possible of a solution.

# General News Department

The Railroad Administration will settle immediately the claims for damages sustained by 278 residents of Cloquet, Minn., in the forest fire of October 12, 1918, at 50 cents on the dollar.

A new organization known as the Rock Island Ampere Club has been organized recently, the membership including managers, wire chiefs, operators and linemen at all of the clay telegraph offices.

A lone masked bandit, who held up a Chicago, Burlington & Quincy train at Parkville, Mo., about 15 miles from Kansas City, Mo., on the night of September 10, was overpowered and captured by passengers and members of the train crew while in the smoking car.

A party of officers of the St. Louis-San Francisco, including T. A. Hamilton, vice-president, and F. G. Jonah, chief engineer, last week went over the line of the Missouri & North Arkansas, which has discontinued operation. The Frisco crosses the abandoned line at Seligman, Mo.

The official opening of the Cairo, Ill., floating dock connection of the Mississippi River barge service with the Illinois Central took place on September 16, when a special train carrying members of the Chicago Association of Commerce arrived. The canal fleet now consists of 40 steel barges and four towboats, each with a carrying capacity of 2,000 tons.

Torpedoes which appeal to three senses, hearing, seeing and smelling, are now in use on all of the lines of the Canadian Pacific. The new torpedo, according to an announcement by the company, has spring steel or brass clips by which it is fastened to the head of the rail. Each detonation is accompanied by a brilliant flash and a pungent smell. This torpedo is called the "Meteor Track Signal," Wanklyn patent. It is made by the Dominion Cartridge Company.

A Statistical Analyst, at a salary of \$3,600 to \$5,000, is wanted by the Interstate Commerce Commission, according to the last announcement of the United States Civil Service Commission. Applications may be filed up to November 1. Appointees will be required to assist in the analysis of railroad reports and must be capable of conducting independent research and analysis of statistical data pertaining to the economics of transportation and of making reliable and readable reports thereof. Other requisites can be learned by applying for Form 2118, giving the title of the examination desired.

Veteran Employees' Associations are being organized on all divisions of the Pennsylvania Railroad, which have not already organized, and campaigns are going on to increase the membership of those associations already in existence. As soon as the divisional organizations are perfected it is planned to hold a Pennsylvania System convention. Approximately 38,778 employees are eligible for membership in these associations by virtue of 20 years of service; that is, one employee in five. Many of the 6,185 former employees now on the pension roll are members of the division veterans' associations. These associations were first started in 1897, and they have been among the active factors in perpetuating those traditions and ideals of public service and mutual co-operation between officers and men which have been handed down through 75 years of Pennsylvania Railroad history.

## Traveling Passenger Agents

The American Association of Traveling Passenger Agents held its annual convention at Salt Lake City, Utah, on September 15. F. R. Perry, general agent of the passenger department of the Canadian Pacific, New York City, was elected president.

## Signal Section

F. B. Wiegand, chairman, and H. S. Balliet, secretary, announce that the meeting of the Signal Section of the American Railway Association, which was to have been held in New York City on November 3 and 4, has been cancelled. The majority of the committees have not progressed to the point where they can report conclusively on the subjects assigned to them.

## Inconvenience of Eight Hour Day

Claiming that inconvenience and hardships are caused to patrons of the railroads in Louisiana, under a strict application of the Public Service Commission's rule prescribing an eight-hour day at stations, the railroads in that state have asked the commission to amend the rule in order to permit a split of the time a ticket agent works. Under the rule at present the agent works eight hours straight regardless of the time of the arrival of trains. Under the ruling asked for, the railroad may arrange for a ticket agent to divide his time so as to be on duty at the time of all passenger trains.

## Transmission of Electric Power at 1,000,000 Volts

Experiments in the transmission of electrical energy at a potential of 1,000,000 volts were made recently in a laboratory of the General Electric Company at Pittsfield, Mass. The result of the tests indicated that a line in which the conductors are 4 in. in diameter, or larger, would be necessary for the transmission of 1,000,000 volts, but also confirmed the belief of the engineers that it will be commercially feasible to employ higher voltages than any now in use. A power line is now under construction on the Pacific Coast, over which energy will be transmitted at 220,000 volts.

## Reduction in Employees and Their Compensation

A further reduction in the number of employees and the total payroll of the railroads for the second quarter of 1921, as compared with the first quarter, is shown in the Interstate Commerce Commission's quarterly summary of statistics on employees' service and compensation for Class I roads for the three months ending June 30. The average number of employees for the quarter was 1,568,143 as compared with 1,691,471 in the first quarter of 1921. In the third quarter of 1920, when the number of employees was at the maximum, the total was 2,157,989. The number in service at the middle of the month was 1,542,716 for April, but increased to 1,575,599 for May and 1,568,143 for June. The number in service in April was 655,108 less than it was last August.

The total compensation for the second quarter of 1921 was \$699,684,795 as compared with \$757,325,356 in the first quarter of 1921 and \$1,052,109,451 in the third quarter of 1920. The total payroll for the 12 months ending June 30, 1921, was \$3,491,000,000.

## Steel Treaters Convene at Indianapolis

The third annual convention of the American Society for Steel Treating was held in the Manufacturers' and Women's Buildings, State Fair Grounds, Indianapolis, Ind., September 19 to 24 inclusive. Prominent metallurgists and steel experts, both of this country and Europe were present. Eighty-seven papers relating to steel treating in its various phases were read and presented by title, simultaneous sessions being held on several afternoons to allow time for reading and discussing the large number of papers. The exhibition was of exceptional size, interest and value, approximately 80 manufacturers exhibiting products ranging from immense electric and gas furnaces to small scleroscopes and high-speed drills. The entertainment program was featured by a 100-mile match

race Wednesday morning on the Motor Speedway between Duesenberg and Frontenac motor cars. Other interesting features were a smoker and vaudeville entertainment Tuesday night and the annual banquet Thursday night at the Claypool hotel.

### C. M. & St. P. Officers to Test Election Laws

Test of the law which requires that employees be allowed two hours with pay in which to cast their votes at primaries and elections in Chicago will be made by the officers of the Chicago, Milwaukee & St. Paul, for whom warrants charging violation of election laws were issued on September 19. These warrants were issued on complaint of an assistant states attorney and named H. E. Byram, president of the St. Paul, Burton Hanson, general counsel, L. K. Silcox, general superintendent of motive power, and George T. Martin, assistant to Mr. Silcox. It is charged that at the time of the judicial election last June a machinist employed by the St. Paul asked for two hours off in which to vote. His request was not answered. Nevertheless he was absent for two hours and found the following day that two hours' pay had been deducted from his wages. The warrants were issued as a result and attorneys for the railroad announced that they intended to test the constitutionality of the law, carrying the case to the highest court if necessary.

Mr. Byram, in statements made to the press, takes the stand that under the eight-hour day, the men have opportunity to vote outside of working hours and the carrier should not be forced to pay for two hours lay-off every election day.

### Large Loss from Claims on Household Goods

The Freight Claim division of the American Railway Association has found that the railroads pay \$1,500,000 yearly on household goods, of which amount 83 per cent is for damages and 17 per cent for shortages. Recent statistics show that the railroads pay about 85 cents in claims for every ton of household goods shipped, while claims do not exceed 5 cents a ton on all other classes of freight.

The Freight Claim division has issued a circular to division superintendents requesting them to bring the matter before their district freight claim prevention meetings for discussion. Among the suggestions proposed are those that freight agents be required to see that all household goods are properly marked, securely packed and stowed to ride safely; that the shipper declares the valuation in a signed statement; that the shipper number each piece consecutively and place a slip of identification in each box. Agents should weigh damaged pieces in order to help the claim department determine the value under the tariff. One railroad has issued a pamphlet for the benefit of storage companies, individual shippers and others, stating its requirements when accepting responsibility for shipments.

### Federated Shop Crafts Announce Strike Vote

Railroad shop employees, members of the Federated Shop Crafts, have decided, by a "constitutional majority," to strike in protest against the recent wage reduction authorized by the Railroad Labor Board, according to the announcement made by B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, at a mass meeting of shop employees at Chicago on September 18. Mr. Jewell stated that no strike had been called because the organization leaders believed that their cause will be considerably strengthened if the contemplated strike is called in protest against changes both in the wage scale and in the rules and working conditions.

General charges that the railroads were opposing the demands of the organizations as part of the movement which Mr. Jewell said was backed by "nine billion dollars or more" were made. The object, he said, was "to crush organized labor." In support of this charge he cited the "unfair action of the railroads in offering to negotiate working rules on each road and then failing to agree."

N. P. Good, chairman of the Pennsylvania System Federation No. 90, expressed his opinion that the Pennsylvania had been selected by the railroads to conduct a fight for the "open shop" as the first step in a campaign which would eventually involve all the railroads. Practically all of the speakers at the meeting condemned the Railroad Labor Board and its decisions, Mr. Jewell charging that the railroads were attempting to use the board to take unfair advantage of the present industrial situation.

### Iowa Increases Railroad Taxes

Railroad companies operating in the state of Iowa have been taxed, they believe, too high and not according to the basis set down for other properties. The roads have, therefore, brought injunction suits against the State Executive Council and 99 county auditors to restrain the spreading of the tax assessment on the valuation as laid down. The suits began in the federal court of the state on September 12 with H. L. Adams, counsel for the Chicago & North Western, J. L. Parish, for the Chicago, Burlington & Quincy, and J. E. Gamble, for the Chicago, Rock Island & Pacific, presenting the railroad side of the case. During the opening day of the hearing the railroads charged that they are being assessed for taxation in Iowa at 79 to 84 per cent of their actual value, while Iowa farms are only taxed upon the basis of 38 per cent.

The assessed tax valuation of the railroads operating in the state for 1921 has been materially increased over that for 1920. Thus the Chicago, Burlington & Quincy, which was taxed on an assessed valuation of \$11,607,617, or \$8,500 per mile of road, in 1920, has been given an assessed valuation of \$10,500 per mile, or \$14,333,160, for 1921. The Burlington claims that its assessed valuation should be \$3,220 per mile and at that figure the road's taxes for this year would be \$777,000 less. The Chicago & North Western has 1,615.71 miles of tracks in the state and was assessed in 1920 at \$9,700 per mile, which figure has been increased in 1921 to \$10,500 per mile, or a total of \$16,964,955.

The Chicago, Rock Island & Pacific, with 2,202.35 miles of track in the state, was assessed at \$7,750 per mile in 1920 and \$8,000 per mile in 1921, or a total of \$17,618,680 for the latter year.

### Unemployment Conference at Washington

Secretary Hoover, of the Department of Commerce, has announced the names of those invited by the President to attend a conference at Washington, beginning on September 26, called by the President to inquire into the volume and distribution of unemployment, and to consider measures that would tend to recovery of business. Men of experience in those industries where there is the largest degree of unemployment have been called upon in larger proportion than from trades where there is less difficulty. It was impossible to include representation of the whole of some 50 trade groups in the conference and hold its size within workable limits.

An Economic Advisory Committee has been appointed in advance of the conference by enlarging the economic advisory committee of the Department of Commerce. This committee will prepare an agenda for the conference. Mr. Hoover has been appointed chairman of the conference and it is expected that it will at once dissolve into special committees which will, no doubt, seek co-operation from further representatives of labor, employers, and civic bodies. Secretary of Labor Davis has made a renewed survey of unemployment in preparation for the conference.

The members invited include

C. H. Markham, president of the Illinois Central; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Engineers; Edgar F. Clark, ex-president of the Order of Railway Conductors; member Roosevelt Anthracite Organization in 1902; formerly chairman Interstate Commerce Commission; and Charles P. Neill, former U. S. Commissioner of Labor Statistics; Empire Anthracite Organization; former president of Southeastern Railway Association.

Operating Statistics of Large Steam Roads—Selected Items for the Month of July, 1921,

Region, road and year	FREIGHT SERVICE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Average miles of road operated		Locomotive-miles			Car-miles		Ton-miles (thousands)		Locomotives on line daily																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	Trains-miles	Trains	Heavy and helper	Light	Loaded (thousands)	Per cent loaded	Gross. Excluding locomotive and tender	Net. Revenue and non-revenue	Serve-able	Un-serve-able	Per cent unserve-able	Stored																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
New England Region:													Boston & Albany.....1921	394	238,548	257,204	28,825	4,268	63.4	227,907	88,303	120	29	19.2	...	1920	394	340,373	365,183	38,561	6,046	66.7	353,440	168,984	134	31	18.7	...	Boston & Maine.....1921	501	550,038	570,043	57,043	10,413	67.1	543,650	241,113	171	41	23.9	...	1920	2,469	783,167	874,650	94,110	15,589	71.4	847,521	383,559	367	101	21.6	1	N. Y., N. H. & H.....1921	1,959	455,987	495,446	32,299	10,340	65.3	546,425	225,718	301	80	21.0	38	1920	1,938	543,143	567,832	36,546	11,737	71.1	614,180	282,889	308	108	26.0	...	Great Lakes Region:													Delaware & Hudson.....1921	880	338,651	441,012	31,292	8,198	60.9	546,714	267,406	269	44	14.1	114	1920	858	456,517	650,645	44,735	11,757	66.0	797,332	422,526	266	34	11.3	11	Del., Lack. & Western.....1921	997	485,022	587,595	110,734	14,683	67.5	872,777	383,357	307	53	14.7	47	1920	997	576,126	703,718	132,478	17,366	69.6	1,019,268	520,898	307	73	19.3	1	Erie (inc. Chic. & Erie).....1921	2,259	873,116	981,660	46,710	28,302	66.9	1,087,295	771,155	522	177	25.3	96	1920	2,259	1,140,806	1,279,814	38,691	37,536	68.1	2,315,723	1,145,517	562	124	18.1	3	Lehigh Valley.....1921	1,431	527,360	583,615	58,303	14,918	62.5	915,825	421,736	416	127	23.4	131	1920	1,429	669,055	745,433	68,049	20,086	70.3	1,252,860	670,220	426	169	28.8	90	Michigan Central.....1921	1,829	424,629	435,111	17,762	12,712	62.4	762,121	263,680	331	81	19.7	115	1920	1,826	505,608	608,536	18,637	26,959	62.1	1,007,829	481,672	339	75	21.9	1	New York Central.....1921	5,655	1,542,563	1,706,487	118,905	52,688	62.5	3,061,297	1,290,314	1,001	641	39.0	279	1920	5,646	2,079,143	2,379,522	184,197	79,703	65.5	4,887,140	2,407,894	(1)	(1)	(1)	(1)	N. Y., Chic. & St. L.....1921	972	304,905	305,683	597	9,240	64.1	487,552	181,890	115	48	29.5	46	1920	970	373,677	406,705	705	16,627	76.7	638,446	289,144	106	61	16.4	14	Perce Marquette.....1921	2,196	308,281	315,658	6,615	7,297	65.6	414,440	180,964	171	38	18.2	20	1920	2,200	363,575	372,490	5,793	9,369	78.6	495,536	239,544	152	47	23.7	...	Pitts. & Lake Erie.....1921	225	63,824	73,384	601	2,105	62.6	150,967	83,215	61	24	28.2	21	1920	225	115,465	121,307	1,486	4,455	62.8	279,885	157,933	21	26	6.6	6	Wabash.....1921	2,418	533,146	560,938	6,954	15,153	70.0	802,000	343,814	270	78	28.4	49	1920	2,418	610,228	621,794	6,618	18,093	76.2	950,786	455,408	264	76	22.4	6	Ohio-Indiana-Allegheny Region:													Baltimore & Ohio.....1921	5,185	1,636,926	1,881,304	138,232	39,357	60.7	2,572,741	1,267,476	991	411	29.3	154	1920	5,157	2,064,835	2,440,156	151,107	56,242	62.4	3,727,353	1,998,335	1,075	246	22.6	24	Central of N. J.....1921	679	258,539	286,873	36,510	5,604	60.1	382,066	174,647	203	59	22.4	9	1920	679	347,632	380,570	39,617	7,480	63.9	412,253	259,093	218	52	19.4	...	Chicago & Eastern Ill.....1921	1,131	229,412	230,394	3,664	5,118	58.5	314,734	146,182	139	49	27.2	55	1920	1,131	315,756	325,307	4,917	7,736	67.2	476,937	246,105	123	56	30.5	2	C., C. & St. L.....1921	3,382	659,995	667,327	4,884	15,322	59.8	1,007,829	400,001	290	183	23.8	38	1920	2,393	742,299	775,540	4,338	20,680	65.0	1,254,363	594,843	293	98	25.1	...	Elgin, Joliet & Eastern.....1921	837	77,587	83,817	3,900	2,318	67.6	167,340	89,639	97	11	9.9	41	1920	834	163,944	187,513	11,951	5,324	72.6	365,307	205,908	95	13	12.3	1	Leng Island.....1921	392	47,361	47,361	7,501	446	63.8	26,710	10,075	54	8	8.6	20	1920	395	43,672	60,848	13,403	512	63.8	25,742	10,200	38	11	22.0	...	Pennsylvania System.....1921	10,749	3,929,249	4,252,074	308,810	100,808	62.3	6,860,990	3,398,981	2,649	834	24.0	860	1920	10,838	5,256,249	5,803,822	439,198	139,570	67.6	8,918,044	4,796,266	2,145	876	29.0	8	Phila. & Reading.....1921	1,119	480,507	540,338	65,932	11,469	61.3	763,717	405,987	367	84	18.7	169	1920	1,119	589,497	680,303	96,947	15,133	70.4	1,017,898	590,084	369	80	21.2	11	Pocahontas Region:													Chesapeake & Ohio.....1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,636	917,372	431	129	23.0	57	1920	2,520	882,895	980,090	25,054	36,174	60.0	1,967,579	1,095,622	418	116	21.7	1	Norfolk & Western.....1921	6,995	1,818,626	1,924,449	132,534	48,469	62.8	2,740,537	1,345,899	672	89	13.2	252	1920	2,190	861,355	1,096,774	50,105	25,899	62.8	1,958,990	1,686,858	479	203	29.8	40	Southern Region:													Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74	1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59	Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21	1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...	I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19	1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20	Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24	1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...	Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...	1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...	Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52	1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5	Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814
Boston & Albany.....1921	394	238,548	257,204	28,825	4,268	63.4	227,907	88,303	120	29	19.2	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	394	340,373	365,183	38,561	6,046	66.7	353,440	168,984	134	31	18.7	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Boston & Maine.....1921	501	550,038	570,043	57,043	10,413	67.1	543,650	241,113	171	41	23.9	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,469	783,167	874,650	94,110	15,589	71.4	847,521	383,559	367	101	21.6	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
N. Y., N. H. & H.....1921	1,959	455,987	495,446	32,299	10,340	65.3	546,425	225,718	301	80	21.0	38																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,938	543,143	567,832	36,546	11,737	71.1	614,180	282,889	308	108	26.0	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Great Lakes Region:													Delaware & Hudson.....1921	880	338,651	441,012	31,292	8,198	60.9	546,714	267,406	269	44	14.1	114	1920	858	456,517	650,645	44,735	11,757	66.0	797,332	422,526	266	34	11.3	11	Del., Lack. & Western.....1921	997	485,022	587,595	110,734	14,683	67.5	872,777	383,357	307	53	14.7	47	1920	997	576,126	703,718	132,478	17,366	69.6	1,019,268	520,898	307	73	19.3	1	Erie (inc. Chic. & Erie).....1921	2,259	873,116	981,660	46,710	28,302	66.9	1,087,295	771,155	522	177	25.3	96	1920	2,259	1,140,806	1,279,814	38,691	37,536	68.1	2,315,723	1,145,517	562	124	18.1	3	Lehigh Valley.....1921	1,431	527,360	583,615	58,303	14,918	62.5	915,825	421,736	416	127	23.4	131	1920	1,429	669,055	745,433	68,049	20,086	70.3	1,252,860	670,220	426	169	28.8	90	Michigan Central.....1921	1,829	424,629	435,111	17,762	12,712	62.4	762,121	263,680	331	81	19.7	115	1920	1,826	505,608	608,536	18,637	26,959	62.1	1,007,829	481,672	339	75	21.9	1	New York Central.....1921	5,655	1,542,563	1,706,487	118,905	52,688	62.5	3,061,297	1,290,314	1,001	641	39.0	279	1920	5,646	2,079,143	2,379,522	184,197	79,703	65.5	4,887,140	2,407,894	(1)	(1)	(1)	(1)	N. Y., Chic. & St. L.....1921	972	304,905	305,683	597	9,240	64.1	487,552	181,890	115	48	29.5	46	1920	970	373,677	406,705	705	16,627	76.7	638,446	289,144	106	61	16.4	14	Perce Marquette.....1921	2,196	308,281	315,658	6,615	7,297	65.6	414,440	180,964	171	38	18.2	20	1920	2,200	363,575	372,490	5,793	9,369	78.6	495,536	239,544	152	47	23.7	...	Pitts. & Lake Erie.....1921	225	63,824	73,384	601	2,105	62.6	150,967	83,215	61	24	28.2	21	1920	225	115,465	121,307	1,486	4,455	62.8	279,885	157,933	21	26	6.6	6	Wabash.....1921	2,418	533,146	560,938	6,954	15,153	70.0	802,000	343,814	270	78	28.4	49	1920	2,418	610,228	621,794	6,618	18,093	76.2	950,786	455,408	264	76	22.4	6	Ohio-Indiana-Allegheny Region:													Baltimore & Ohio.....1921	5,185	1,636,926	1,881,304	138,232	39,357	60.7	2,572,741	1,267,476	991	411	29.3	154	1920	5,157	2,064,835	2,440,156	151,107	56,242	62.4	3,727,353	1,998,335	1,075	246	22.6	24	Central of N. J.....1921	679	258,539	286,873	36,510	5,604	60.1	382,066	174,647	203	59	22.4	9	1920	679	347,632	380,570	39,617	7,480	63.9	412,253	259,093	218	52	19.4	...	Chicago & Eastern Ill.....1921	1,131	229,412	230,394	3,664	5,118	58.5	314,734	146,182	139	49	27.2	55	1920	1,131	315,756	325,307	4,917	7,736	67.2	476,937	246,105	123	56	30.5	2	C., C. & St. L.....1921	3,382	659,995	667,327	4,884	15,322	59.8	1,007,829	400,001	290	183	23.8	38	1920	2,393	742,299	775,540	4,338	20,680	65.0	1,254,363	594,843	293	98	25.1	...	Elgin, Joliet & Eastern.....1921	837	77,587	83,817	3,900	2,318	67.6	167,340	89,639	97	11	9.9	41	1920	834	163,944	187,513	11,951	5,324	72.6	365,307	205,908	95	13	12.3	1	Leng Island.....1921	392	47,361	47,361	7,501	446	63.8	26,710	10,075	54	8	8.6	20	1920	395	43,672	60,848	13,403	512	63.8	25,742	10,200	38	11	22.0	...	Pennsylvania System.....1921	10,749	3,929,249	4,252,074	308,810	100,808	62.3	6,860,990	3,398,981	2,649	834	24.0	860	1920	10,838	5,256,249	5,803,822	439,198	139,570	67.6	8,918,044	4,796,266	2,145	876	29.0	8	Phila. & Reading.....1921	1,119	480,507	540,338	65,932	11,469	61.3	763,717	405,987	367	84	18.7	169	1920	1,119	589,497	680,303	96,947	15,133	70.4	1,017,898	590,084	369	80	21.2	11	Pocahontas Region:													Chesapeake & Ohio.....1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,636	917,372	431	129	23.0	57	1920	2,520	882,895	980,090	25,054	36,174	60.0	1,967,579	1,095,622	418	116	21.7	1	Norfolk & Western.....1921	6,995	1,818,626	1,924,449	132,534	48,469	62.8	2,740,537	1,345,899	672	89	13.2	252	1920	2,190	861,355	1,096,774	50,105	25,899	62.8	1,958,990	1,686,858	479	203	29.8	40	Southern Region:													Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74	1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59	Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21	1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...	I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19	1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20	Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24	1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...	Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...	1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...	Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52	1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5	Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																											
Delaware & Hudson.....1921	880	338,651	441,012	31,292	8,198	60.9	546,714	267,406	269	44	14.1	114																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	858	456,517	650,645	44,735	11,757	66.0	797,332	422,526	266	34	11.3	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Del., Lack. & Western.....1921	997	485,022	587,595	110,734	14,683	67.5	872,777	383,357	307	53	14.7	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	997	576,126	703,718	132,478	17,366	69.6	1,019,268	520,898	307	73	19.3	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Erie (inc. Chic. & Erie).....1921	2,259	873,116	981,660	46,710	28,302	66.9	1,087,295	771,155	522	177	25.3	96																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,259	1,140,806	1,279,814	38,691	37,536	68.1	2,315,723	1,145,517	562	124	18.1	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Lehigh Valley.....1921	1,431	527,360	583,615	58,303	14,918	62.5	915,825	421,736	416	127	23.4	131																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,429	669,055	745,433	68,049	20,086	70.3	1,252,860	670,220	426	169	28.8	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Michigan Central.....1921	1,829	424,629	435,111	17,762	12,712	62.4	762,121	263,680	331	81	19.7	115																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,826	505,608	608,536	18,637	26,959	62.1	1,007,829	481,672	339	75	21.9	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
New York Central.....1921	5,655	1,542,563	1,706,487	118,905	52,688	62.5	3,061,297	1,290,314	1,001	641	39.0	279																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	5,646	2,079,143	2,379,522	184,197	79,703	65.5	4,887,140	2,407,894	(1)	(1)	(1)	(1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
N. Y., Chic. & St. L.....1921	972	304,905	305,683	597	9,240	64.1	487,552	181,890	115	48	29.5	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	970	373,677	406,705	705	16,627	76.7	638,446	289,144	106	61	16.4	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Perce Marquette.....1921	2,196	308,281	315,658	6,615	7,297	65.6	414,440	180,964	171	38	18.2	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,200	363,575	372,490	5,793	9,369	78.6	495,536	239,544	152	47	23.7	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Pitts. & Lake Erie.....1921	225	63,824	73,384	601	2,105	62.6	150,967	83,215	61	24	28.2	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	225	115,465	121,307	1,486	4,455	62.8	279,885	157,933	21	26	6.6	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Wabash.....1921	2,418	533,146	560,938	6,954	15,153	70.0	802,000	343,814	270	78	28.4	49																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,418	610,228	621,794	6,618	18,093	76.2	950,786	455,408	264	76	22.4	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Ohio-Indiana-Allegheny Region:													Baltimore & Ohio.....1921	5,185	1,636,926	1,881,304	138,232	39,357	60.7	2,572,741	1,267,476	991	411	29.3	154	1920	5,157	2,064,835	2,440,156	151,107	56,242	62.4	3,727,353	1,998,335	1,075	246	22.6	24	Central of N. J.....1921	679	258,539	286,873	36,510	5,604	60.1	382,066	174,647	203	59	22.4	9	1920	679	347,632	380,570	39,617	7,480	63.9	412,253	259,093	218	52	19.4	...	Chicago & Eastern Ill.....1921	1,131	229,412	230,394	3,664	5,118	58.5	314,734	146,182	139	49	27.2	55	1920	1,131	315,756	325,307	4,917	7,736	67.2	476,937	246,105	123	56	30.5	2	C., C. & St. L.....1921	3,382	659,995	667,327	4,884	15,322	59.8	1,007,829	400,001	290	183	23.8	38	1920	2,393	742,299	775,540	4,338	20,680	65.0	1,254,363	594,843	293	98	25.1	...	Elgin, Joliet & Eastern.....1921	837	77,587	83,817	3,900	2,318	67.6	167,340	89,639	97	11	9.9	41	1920	834	163,944	187,513	11,951	5,324	72.6	365,307	205,908	95	13	12.3	1	Leng Island.....1921	392	47,361	47,361	7,501	446	63.8	26,710	10,075	54	8	8.6	20	1920	395	43,672	60,848	13,403	512	63.8	25,742	10,200	38	11	22.0	...	Pennsylvania System.....1921	10,749	3,929,249	4,252,074	308,810	100,808	62.3	6,860,990	3,398,981	2,649	834	24.0	860	1920	10,838	5,256,249	5,803,822	439,198	139,570	67.6	8,918,044	4,796,266	2,145	876	29.0	8	Phila. & Reading.....1921	1,119	480,507	540,338	65,932	11,469	61.3	763,717	405,987	367	84	18.7	169	1920	1,119	589,497	680,303	96,947	15,133	70.4	1,017,898	590,084	369	80	21.2	11	Pocahontas Region:													Chesapeake & Ohio.....1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,636	917,372	431	129	23.0	57	1920	2,520	882,895	980,090	25,054	36,174	60.0	1,967,579	1,095,622	418	116	21.7	1	Norfolk & Western.....1921	6,995	1,818,626	1,924,449	132,534	48,469	62.8	2,740,537	1,345,899	672	89	13.2	252	1920	2,190	861,355	1,096,774	50,105	25,899	62.8	1,958,990	1,686,858	479	203	29.8	40	Southern Region:													Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74	1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59	Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21	1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...	I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19	1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20	Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24	1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...	Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...	1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...	Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52	1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5	Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																												
Baltimore & Ohio.....1921	5,185	1,636,926	1,881,304	138,232	39,357	60.7	2,572,741	1,267,476	991	411	29.3	154																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	5,157	2,064,835	2,440,156	151,107	56,242	62.4	3,727,353	1,998,335	1,075	246	22.6	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Central of N. J.....1921	679	258,539	286,873	36,510	5,604	60.1	382,066	174,647	203	59	22.4	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	679	347,632	380,570	39,617	7,480	63.9	412,253	259,093	218	52	19.4	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Chicago & Eastern Ill.....1921	1,131	229,412	230,394	3,664	5,118	58.5	314,734	146,182	139	49	27.2	55																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,131	315,756	325,307	4,917	7,736	67.2	476,937	246,105	123	56	30.5	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
C., C. & St. L.....1921	3,382	659,995	667,327	4,884	15,322	59.8	1,007,829	400,001	290	183	23.8	38																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,393	742,299	775,540	4,338	20,680	65.0	1,254,363	594,843	293	98	25.1	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Elgin, Joliet & Eastern.....1921	837	77,587	83,817	3,900	2,318	67.6	167,340	89,639	97	11	9.9	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	834	163,944	187,513	11,951	5,324	72.6	365,307	205,908	95	13	12.3	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Leng Island.....1921	392	47,361	47,361	7,501	446	63.8	26,710	10,075	54	8	8.6	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	395	43,672	60,848	13,403	512	63.8	25,742	10,200	38	11	22.0	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Pennsylvania System.....1921	10,749	3,929,249	4,252,074	308,810	100,808	62.3	6,860,990	3,398,981	2,649	834	24.0	860																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	10,838	5,256,249	5,803,822	439,198	139,570	67.6	8,918,044	4,796,266	2,145	876	29.0	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Phila. & Reading.....1921	1,119	480,507	540,338	65,932	11,469	61.3	763,717	405,987	367	84	18.7	169																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,119	589,497	680,303	96,947	15,133	70.4	1,017,898	590,084	369	80	21.2	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Pocahontas Region:													Chesapeake & Ohio.....1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,636	917,372	431	129	23.0	57	1920	2,520	882,895	980,090	25,054	36,174	60.0	1,967,579	1,095,622	418	116	21.7	1	Norfolk & Western.....1921	6,995	1,818,626	1,924,449	132,534	48,469	62.8	2,740,537	1,345,899	672	89	13.2	252	1920	2,190	861,355	1,096,774	50,105	25,899	62.8	1,958,990	1,686,858	479	203	29.8	40	Southern Region:													Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74	1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59	Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21	1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...	I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19	1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20	Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24	1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...	Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...	1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...	Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52	1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5	Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Chesapeake & Ohio.....1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,636	917,372	431	129	23.0	57																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,520	882,895	980,090	25,054	36,174	60.0	1,967,579	1,095,622	418	116	21.7	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Norfolk & Western.....1921	6,995	1,818,626	1,924,449	132,534	48,469	62.8	2,740,537	1,345,899	672	89	13.2	252																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,190	861,355	1,096,774	50,105	25,899	62.8	1,958,990	1,686,858	479	203	29.8	40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Southern Region:													Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74	1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59	Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21	1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...	I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19	1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20	Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24	1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...	Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...	1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...	Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52	1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5	Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Atlantic Coast Line.....1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	74																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	4,823	836,566	858,922	10,922	14,078	64.7	1,047,617	524,662	298	139	31.3	59																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Central of Georgia.....1921	1,908	267,556	273,381	3,413	3,413	66.2	389,506	120,342	112	23	17.0	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,913	288,386	292,993	6,459	5,860	71.1	296,868	124,618	110	20	15.4	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
I. C. (inc. Y. & M. V.).....1921	6,151	1,482,989	1,489,400	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	6,151	1,992,664	2,001,949	41,408	51,057	64.2	3,210,881	1,469,093	705	160	17.4	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Louisville & Nashville.....1921	3,038	495,866	508,538	5,835	26,513	65.1	1,667,351	778,533	353	102	26.6	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,005	536	116	12.8	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Seaboard Air Line.....1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	3,537	451,655	488,248	7,759	10,141	71.7	529,345	238,849	176	95	35.0	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Southern Ry.....1921	6,995	1,292,842	1,362,643	27,214	26,352	64.6	1,994,243	554,411	898	221	16.7	52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	6,942	1,598,901	1,632,549	39,768	35,520	72.0	1,819,894	807,930	887	218	19.7	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Northwestern Region:													C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106	1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...	C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...	1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9	C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52	1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26	Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268	1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51	M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41	1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34	Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116	1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39	Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8	1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...	Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
C. & N. W.....1921	8,334	1,409,554	1,455,190	18,178	27,959	59.2	1,674,822	627,808	838	248	22.6	106																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	8,323	1,760,053	1,971,857	28,408	39,494	66.3	2,266,587	1,078,884	676	235	26.1	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
C. M. & St. P.....1921	10,992	1,370,666	1,408,757	38,087	53,287	63.8	1,837,978	798,917	672	213	21.6	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	10,626	1,730,851	1,789,180	71,298	53,307	69.0	2,363,816	1,090,854	664	259	28.0	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
C., St. P. M. & O.....1921	1,726	284,665	301,346	11,330	5,292	69.8	277,225	120,122	156	57	26.7	52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	1,726	355,442	374,186	14,637	6,643	71.3	351,866	155,557	166	42	20.2	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Great Northern.....1921	2,978	637,617	647,617	13,000	14,317	64.7	1,047,617	433,617	248	175	24.4	268																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,985	934,959	963,993	34,077	27,171	65.9	1,654,095	835,598	478	200	29.5	51																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
M., St. P. & St. Ste. M.....1921	4,225	414,724	444,343	5,641	8,579	62.0	430,928	181,936	344	56	13.9	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	4,227	530,266	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Northern Pacific.....1921	6,408	650,793	681,792	43,847	18,733	68.8	1,033,521	462,866	626	150	22.2	116																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	6,495	870,866	908,774	44,169	24,212	69.8	1,387,778	654,539	602	142	24.4	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Ore.-Wash. R. R. & Nav.....1921	2,198	164,190	178,681	21,417	3,352	74.2	214,633	102,177	115	39	25.3	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	2,146	258,677	294,440	41,252	6,192	74.1	345,563	176,650	113	42	27.3	...																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Central Western Region:													Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158	1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16	Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Atch., Twp. & Santa Fe.....1921	9,771	1,478,477	1,566,423	70,602	39,005	65.8	2,213,962	846,339	785	181	18.7	158																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1920	9,708	1,830,148	1,935,554	91,955	49,044	68.2	2,695,343	1,120,212	675	230	25.4	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Chicago & Alton.....1921	1,010	338,835	344,418	4,584	7,116	61.0	447,480	196,814																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Compared with July, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Cars on daily line			Per cent un-service-able	Stored	Gross tons		Net tons per train	Net tons per car	Net ton miles per car-day	Car miles per car-day	Net ton miles per mile of road per day	Pounds of coal per 1,000 gr. ss	Passenger service		
	Home	Foreign	Total			per train, excluding locomotive and tender	per ton							Train-miles	Passenger train car miles	
<b>New England Region:</b>																
Boston & Albany.....1921	3,866	3,936	7,802	7.3	1,131	955	370	20.7	36.5	27.8	7,231	191	313.57	2,063,683		
1920	623	8,477	9,100	4.3	.....	1,038	497	27.9	59.9	32.1	13,338	151	332,704	1,238,012		
Boston & Maine.....1921	18,523	12,281	30,804	2.1	2,921	1,088	442	21.2	32.2	16.1	2,896	146	945,638	5,319,161		
1920	2,543	28,484	31,027	8.9	.....	1,083	490	26.6	61.3	9.5	3,914	151	901,261	5,820,762		
N. Y., N. H. & H.....1921	27,037	14,027	41,064	21.9	833	1,198	495	21.8	17.7	12.4	3,716	156	1,117,459	7,353,973		
1920	8,349	34,805	43,154	7.5	.....	1,131	521	24.4	21.2	12.2	4,708	180	1,261,495	8,133,721		
<b>Great Lakes Region:</b>																
Delaware & Hudson.....1921	11,194	5,036	16,230	13.6	1,339	1,614	790	32.6	33.1	26.8	9,798	176	2,554.1	1,287,739		
1920	4,098	15,416	19,514	5.6	.....	1,736	926	35.9	69.8	25.5	15,878	182	238,914	1,327,899		
Del., Laek. & Western.....1921	17,898	7,074	24,972	13.7	495	1,696	790	26.1	49.5	28.1	12,606	161	511,678	3,811,436		
1920	4,413	20,764	25,177	5.6	.....	1,769	904	30.0	66.7	32.0	16,858	.....	520,233	3,926,142		
Erie (inc. Chic & Erie).....1921	14,822	14,868	29,690	21.7	11,028	1,933	883	27.3	44.6	24.7	11,013	129	644,884	5,361,532		
1920	8,530	53,783	62,313	7.4	.....	1,903	1,004	30.2	59.9	29.9	16,363	139	731,756	5,830,762		
Lehigh Valley.....1921	32,578	8,581	41,159	15.1	3,886	1,739	800	28.3	33.1	18.8	9,510	155	370.8	2,495,049		
1920	9,625	27,075	36,700	7.3	.....	1,873	1,002	33.4	58.9	25.1	15,130	159	391,745	3,134,883		
Michigan Central.....1921	19,964	12,014	31,978	19.7	1,197	1,652	620	20.7	26.6	20.6	4,650	111	624,236	5,480,919		
1920	1,084	9,749	10,833	7.9	.....	1,843	774	24.4	84.0	47.0	16,790	.....	301,952	5,844,466		
New York Central.....1921	91,726	43,619	135,345	16.3	27,255	1,984	836	24.5	30.8	20.1	11,111	626	2,424,333	20,682,822		
1920	27,694	129,365	157,059	7.8	.....	2,351	1,158	30.2	49.5	25.0	13,757	.....	2,707,987	21,873,144		
N. Y., Chic. & St. L.....1921	5,810	3,777	9,587	18.7	1,464	1,599	597	19.7	61.2	48.5	10,255	96	89,410	506,255		
1920	1,084	9,749	10,833	6.6	.....	1,843	774	24.4	84.0	47.0	16,790	.....	301,952	5,844,466		
Pere Marquette.....1921	11,527	8,249	19,776	9.9	1,000	1,343	587	28.8	29.8	27.7	6,653	121	391,481	2,767,846		
1920	3,739	19,270	23,509	6.6	.....	1,361	714	27.7	35.6	16.4	8,905	148	344,664	1,967,243		
Pitts. & Lake Erie.....1921	19,080	7,743	26,823	33.9	2,145	2,365	1,304	39.5	10.0	4.0	11,950	88	111,914	623,110		
1920	1,638	20,656	22,694	14.2	.....	2,837	1,714	44.1	29.9	8.5	28,426	117	171,288	635,273		
Wabash.....1921	13,295	10,124	23,419	10.6	1,055	1,502	644	27.4	37.4	34.9	4,587	141	524,312	2,456,668		
1920	4,919	21,869	28,788	8.2	.....	1,558	762	25.1	22.1	26.6	6,205	151	565,001	3,018,794		
<b>Ohio-Indiana-Allegheny Region:</b>																
Baltimore & Ohio.....1921	72,904	27,674	100,578	7.0	6,030	1,572	774	32.2	40.7	20.8	7,886	174	1,398,660	9,035,055		
1920	22,630	84,848	107,455	7.1	.....	1,802	968	35.5	60.0	29.2	12,508	.....	1,391,239	6,699,481		
Central of N. J.....1921	20,739	7,004	27,743	9.8	1,560	1,478	637	31.9	19.9	10.7	8,303	168	391,481	2,767,846		
1920	4,907	19,946	24,853	9.8	.....	1,419	755	34.6	37.6	15.2	12,314	.....	403,376	1,904,998		
Chicago & Eastern Ill.....1921	16,466	3,089	19,555	10.6	4,100	1,372	637	38.6	24.1	14.4	4,169	151	227,173	1,478,981		
1920	8,427	15,418	23,845	8.3	.....	1,508	779	31.8	33.3	16.1	7,020	.....	235,039	1,493,435		
C., C. & St. L.....1921	19,422	10,426	29,848	2.6	2,642	1,698	702	26.1	37.8	23.2	5,817	131	708,568	4,423,814		
1920	4,708	31,425	36,133	8.0	.....	1,690	801	28.8	53.1	28.4	8,018	.....	524,312	4,838,571		
Elgin, J. liet & Eastern.....1921	9,735	3,539	13,274	9.9	2,363	2,157	1,155	28.7	21.8	8.4	3,456	117	(?)	(?)		
1920	8,105	8,564	16,669	7.3	.....	2,238	1,256	38.7	39.8	14.2	7,994	.....	229,546	1,402,524		
Long Island.....1921	2,450	3,268	5,718	2.6	1,120	646	244	26.6	4.5	8.24	346	.....	229,546	1,402,524		
1920	4,911	5,395	10,306	3.7	.....	839	239	19.9	35.3	13.3	.....	.....	.....	.....		
Pennsylvania System.....1921	120,718	63,610	284,328	13.4	58,842	3,622	33.6	39.4	18.8	10,180	1,188	5,646,186	37,864,673			
1920	94,768	245,104	339,872	5.5	.....	1,697	912	34.4	45.5	19.6	14,276	.....	5,646,186	37,864,673		
Phila. & Reading.....1921	28,817	9,269	38,086	8.6	7,309	1,631	845	35.5	34.4	15.8	11,705	173	536,967	2,456,785		
1920	6,393	32,857	39,250	3.4	.....	1,727	1,001	39.0	48.5	17.7	17,007	.....	541,853	2,508,130		
<b>Peacham's Ohio:</b>																
Chesapeake & Ohio.....1921	41,885	10,850	52,735	9.2	4,298	2,313	1,251	43.5	36.1	23.2	11,613	117	447,842	2,571,572		
1920	12,246	25,191	37,437	9.9	.....	2,263	1,241	41.9	94.4	37.2	14,025	.....	440,412	2,569,889		
Norfolk & Western.....1921	37,444	5,414	42,858	9.0	4,152	2,111	1,148	42.8	59.3	34.2	11,476	155	416,265	2,715,469		
1920	13,552	22,967	36,519	5.9	.....	2,274	1,262	42.0	96.0	36.4	16,010	.....	414,434	2,945,556		
<b>Southern Region:</b>																
Atlantic Coast Line.....1921	20,840	6,153	26,993	22.9	.....	1,081	436	19.8	26.4	21.1	1,459	136	710,321	3,278,560		
1920	5,362	21,487	26,849	13.0	.....	1,094	480	20.9	35.4	25.1	1,944	.....	765,642	4,535,491		
Central of Georgia.....1921	1,961	4,929	6,890	19.4	.....	1,478	637	31.9	19.9	10.7	8,303	168	391,481	2,767,846		
1920	1,470	6,678	8,148	4.4	.....	1,029	422	21.3	40.9	26.2	2,102	.....	322,135	1,593,911		
I. C. (inc. Y. & M. V.).....1921	48,512	16,648	65,160	12.6	6,946	1,637	737	28.1	53.4	30.1	5,655	127	1,435,989	8,195,244		
1920	12,590	45,466	58,056	5.1	.....	1,611	737	28.8	81.6	44.2	7,703	.....	1,404,151	8,475,275		
Louisville & Nashville.....1921	10,729	15,835	26,564	26.1	.....	1,115	519	23.3	41.0	25.0	4,344	160	961,397	5,636,106		
1920	10,730	27,983	43,703	9.2	83	1,086	509	28.5	64.6	33.4	5,439	.....	912,431	5,636,106		
Seaboard Air Line.....1921	11,525	6,739	18,264	29.5	.....	1,058	421	20.4	29.2	21.4	1,507	173	561,757	3,103,085		
1920	3,364	15,926	19,290	8.7	.....	1,172	529	23.6	39.9	23.3	2,178	171	575,469	3,009,050		
Southern Ry.....1921	39,379	15,485	54,864	19.9	1,957	1,118	444	21.0	32.6	24.0	2,576	191	1,326,467	7,858,123		
1920	14,649	49,082	63,731	3.7	.....	1,138	505	22.9	40.9	24.8	3,754	.....	1,457,926	8,908,146		
<b>Northwestern Region:</b>																
C. & N. W.....1921	51,174	22,692	73,866	10.1	8,900	1,188	445	22.4	27.4	20.6	2,430	163	1,697,026	11,020,761		
1920	26,927	57,193	84,120	7.0	.....	1,288	613	27.3	41.4	23.8	4,182	.....	1,728,705	11,210,457		
C., M. & St. P.....1921	50,042	10,457	60,499	20.9	1,845	1,315	583	24.1	36.6	23.0	3,344	148	1,533,010	9,834,996		
1920	19,789	50,904	70,693	8.9	.....	1,366	599	26.7	43.6	29.9	4,343	.....	1,533,010	9,834,996		
C. St. P., M. & O.....1921	4,451															

### A Regional Adjustment Board

Two roads, the Baltimore & Ohio and the New York Central, have agreed with their train-service employees on what is called a regional board, for arbitrating disputes growing out of personal grievances or from the interpretation of the application of existing working schedules. It is named the "Train Service Board of Adjustment." This board will consist of eight members, four to represent the two railroads and four chosen by the chief executive officers of the four train service organizations, engineers, firemen, conductors and brakemen. A tentative course of action has been outlined. The agreement provides that when disputes arise the settlement of which by the usual method of direct conference has failed, they shall be passed upon by the new regional board whose decisions will be final and binding on both the railroads' management and the train service employees. It will not come within the province of this board, however, to hear any disputes arising from proposed changes in rules, working conditions or rates of pay; such matters will go before the Railroad Labor Board.

### University of Illinois

Edward Charles Schmidt has been appointed professor of railway engineering at the University of Illinois, and head of that department. Professor Schmidt was associate professor and professor of railway engineering at the University for 11 years up to November, 1917, when he resigned to enter military service as Major of Ordnance. He was graduated from Stevens Institute of Technology in 1895 with the degree of mechanical engineer. He was connected with the Kahlfleisch Chemical Company, New York and Buffalo; with the Edison Electric Illuminating Company of Brooklyn, N. Y., and with the American Stoker Company. He first went to Urbana in 1898 as instructor of machine design. After five years there he went into the employ of the American Hoist & Derrick Company of St. Paul, and in 1904-06 he was engineer of tests with the Kerr Turbine Company.

After a comparatively short time in the Ordnance Corps, Professor Schmidt was requisitioned by the Fuel Administration, and later was transferred to the Railway Administration in charge of the campaign for fuel economy in locomotive service. From August, 1919, until the present time, he has been mechanical engineer for the North American Company.

### Vandalism on the A. B. & A.

B. L. Bugg, receiver in charge of the Atlanta, Birmingham & Atlantic, has called upon the state authorities to protect the road, its trains, employees and passengers, from train wreckers, who use dynamite; and has offered a reward of \$5,000 for the conviction of the guilty person or persons of murder, a locomotive engineer having been killed when a freight train was derailed by dynamite on the night of September 7. This wreck was near Cascade, eight miles from Atlanta; and a similar outrage had been committed several days before this at a place near Cordele. Colonel Bugg gave to the governor of the state a statement of 33 wrecks or attempts at wrecks which had been committed on the lines of the road since the beginning of the strike, on March 5, which led to the employment of non-union men to run the company's trains. The governor, following a conference with the receiver, offered a reward of \$500 for the detection of the miscreants.

At Fitzgerald, Ga., on September 5th, 19 men, including the mayor of Fitzgerald, were indicted by a special grand jury on a charge of interfering with the employees of the road. Of the 19 men, two were classed as engineers, two trainmen, ten shopmen, two conductors and one clerk, all, evidently, men who had been among the strikers.

The Governor of Georgia has appointed a special commission to investigate the wrecks on this road, consisting of C. M. Candler, chairman of the State Railroad Commission; William P. Turner, master mechanic of the Georgia Railroad and Woods Hudson, general superintendent of the Georgia Car & Locomotive Company. The Bureau of Safety of the

Interstate Commerce Commission is also making an investigation. The governor was requested to appoint the commission in a letter from three machinists—a "committee," who complained that organized labor had been unjustly accused in connection with the wrecks.

### Welding Equipment Investment Nets 300 Per Cent

Practical application of the electric arc welding process was the subject of a paper read by E. Wanamaker, electrical engineer of the Rock Island, at a meeting of the Metropolitan Section of the American Welding Society, on September 20, at the Engineering Societies' Building, New York, N. Y. The paper dealt principally with the equipment, materials and skill required for successful welding. Mr. Wanamaker spoke particularly of the manner in which results are obtained on the Rock Island. A book of loose-leaf specifications is sent to welders and welding foremen, which explains what can be welded, how the work can best be done, how to test the quality of a weld, etc., giving the welder sufficient information to work intelligently, provided he understands the fundamental principles, and keeping him up to date on all new practices. New sheets, superseding those in the book, are sent out as new methods are developed. Cleanliness and impressing the welder with his responsibility, said Mr. Wanamaker, are big factors in getting and maintaining good results.

It has been shown that an investment of \$150,000 in welding equipment on the Rock Island has in a few years saved three times its cost.

After the practice of welding locomotive tires was established, no new tires were purchased for a period of three years, and the number now bought is only about one-third of the former average.

### Railway Returns for July

The Interstate Commerce Commission's summary of revenues and expenses for July for 201 Class I roads is as follows:

Item No.	Item	July		Seven Months	
		1921	1920	1921	1920
1	Average number of miles operated.	235,169.28	235,095.12	235,219.54	234,519.74
	Revenues:				
2	Freight	\$314,611,353	\$356,091,063	\$2,184,159,000	\$2,213,997,964
3	Passenger	108,865,325	123,218,449	668,846,505	689,267,311
4	Mail	7,307,354	7,741,624	56,401,740	109,885,860
5	Express	8,140,074	14,389,175	49,784,819	88,961,717
6	All other transportation	13,718,860	13,466,067	91,715,454	81,500,611
7	Incidental	9,766,642	13,829,879	69,586,356	83,060,474
8	Joint facility—Cr.	610,047	623,076	4,512,007	4,184,880
9	Joint facility—Dr.	170,209	209,579	1,225,276	1,363,337
10	Railway operating revenues.	462,849,446	529,149,754	3,138,780,605	3,269,515,080
	Expenses:				
11	Maintenance of way and structures	65,161,318	100,857,228	435,897,125	549,206,480
12	Maintenance of equipment	95,097,865	138,580,346	737,351,678	848,885,296
13	Traffic	6,877,955	6,601,766	49,903,994	38,124,146
14	Transportation	178,618,999	247,690,003	1,377,721,187	1,525,804,827
15	Miscellaneous operations	4,285,056	5,781,346	29,409,396	34,283,708
16	General	13,225,299	15,200,764	100,837,074	93,627,594
17	Transportation for investment—Cr.	425,309	457,364	3,408,785	2,115,065
18	Railway operating expenses.	362,841,183	514,254,089	2,727,711,669	3,087,816,986
19	Net revenue from railway operations	100,008,263	14,895,665	411,068,936	181,698,094
20	Railway tax on accruals	23,585,957	23,708,993	157,580,940	155,946,582
21	Uncollectible railway revenues.	104,899	59,092	671,295	613,580
22	Railway operating income	76,317,407	8,872,420	252,816,701	25,137,932
23	Equipment rents	5,249,298	1,735,437	29,388,691	16,491,618
24	Joint facility rent	1,769,588	1,445,433	9,875,761	10,654,312
25	Net of items 22, 23 and 24.	69,298,521	12,053,290	213,552,249	2,007,998
26	Ratio of expenses to revenues (per cent)	78.39	97.18	86.90	94.44

<sup>2</sup> Includes \$2,823,714, sleeping and parlor car surcharge.

<sup>3</sup> Includes \$18,734,330, sleeping and parlor car surcharge.

## Traffic News

The Public Service Commission of Oregon has ordered extensive reductions in freight rates on sand, gravel and crushed stone.

The passenger trains of the Atlantic Coast Line, in the month of August, made a record of 97.8 per cent maintenance of schedules. In July, 96.9 per cent of the trains maintained their schedules.

Sunday excursion trains on the Pennsylvania Railroad System, in three months, May, June and July, carried 291,669 passengers. In July, including Monday, July 4, the number of such trains run was 209. Of the total number of passengers above noted, about 85 per cent (248,566 passengers occupying 4139 cars) were reported by the Eastern Region.

Proposals to reduce transportation taxes, as agreed upon by the House committee, have been modified by the Senate committee. This committee has decided to restore all transportation taxes (which the House committee would repeal as of January 1) so that those on freight and passenger and Pullman accommodations would continue throughout 1922, but at only half the present rates.

The Railway Commissioners of Canada, by a vote of three to five, have agreed to make no reduction in freight rates at the present time. Commissioners Corvell and Nantel were in favor of a general reduction of ten per cent, with certain exceptions. The majority held that no action could reasonably be taken until the special investigation of railroad wages, now going on, has been concluded.

### Portrait Tickets on the New York Central

The use of photographs on commutation tickets has proved so successful on the New York Central since September 1, when the requirement was extended to a large number of stations, that announcement is made that, beginning October 1, the portraits will be required on these tickets at all stations in the New York City suburban territory. Sales of monthly tickets have fallen off about 25 per cent, indicating that the railroad has been losing \$500,000 yearly by the use of these tickets by passengers who ought to have paid the full single-trip fare. For tickets to be used, beginning with October 1, passengers may have photographs taken and the purchase may be made at any time after September 21. They may have their photographs taken at the Grand Central Terminal, New York, for 35 cents each.

### Rates on Western Vegetables to Be Reduced

After a conference between representatives of the transcontinental carriers, western vegetable shippers and the Interstate Commerce Commission, a decision has been reached to make reductions desired by shippers in the rates on vegetables from California and other Pacific Coast territory to the territory east of the Rocky Mountains as far as Chicago and the Mississippi river.

The basis to be employed is to substitute for the increase of 33 1/3 per cent made on August 26, 1920, an increase of 15 per cent over the rates in effect August 25, 1920, thus removing more than half of the increase made at that time.

A large volume of movement takes place annually under the rates to be reduced and it is hoped that the reductions will materially assist growers and shippers of western vegetables.

### Freight Rate Revisions in Canada

The Canadian Railway Association, since January 1, last, has reduced 1,450 rates, voluntarily, to meet varying traffic and commercial conditions. This work has been supplementary to the blanket reduction of five per cent, ordered by the Government, which went into effect in January. These reductions cover about

400 commodities. Among these are those on lumber from British Columbia to eastern Canada; livestock between all Canadian points—a reduction of about 25 per cent; on grain and grain products for export from Bay ports and Fort William via Montreal and other Atlantic ports, from nine to 26 per cent.

Transcontinental rates on 48 different staple commodities show reductions of from six to 32 per cent; and 78 commodities to United States consuming points show reductions varying from four per cent to 64 per cent.

### Freight Traffic Officers Meet at Chicago

The American Association of Freight Traffic Officers held its annual meeting at the Drake hotel, Chicago, on September 19, and its annual dinner at the same place that evening. The principal speakers were J. F. T. O'Connor of North Dakota, who was the candidate for governor of that state on an independent ticket a year ago, and Henry A. Palmer, editor of the Traffic World. Mr. O'Connor spoke upon the business man in government affairs and urged he should take a more lively interest in the conduct of the government. He also told of the work of the non-partisan league in his home state. Mr. Palmer opened his remarks with a statement of the fundamental railroad problem and then called attention to the needed co-operation and understanding between carrier and shipper if the problem is to be solved. He said, "I know that talk of co-operation between carrier and shipper sounds stale. We all believe in it—or say we do. But we do not all practice it." Mr. Palmer then referred to what might be called the proper business attitude on the part of the railroads. He said a lack of it exhibited itself in several ways. "There are for instance," he continued, "the railroad rate committees. Their purpose is good and the carriers are entitled to and have received great credit for their actions but the plan has been permitted to degenerate into a time-killing scheme that is becoming the bane of shippers. There is perhaps no one thing in which the traffic department of the railroads could better help themselves to a higher place in the esteem of their customers than by revising this rate committee plan so that it will work with something like business method. If it cannot be revised then it had better be cast aside altogether. It not only annoys the shipper but it is suppressive of initiative in the carrier." Speaking of the fundamental railroad problem and the matter of railroad initiative and enterprise in the broader aspect, Mr. Palmer said, "we have a perplexing phase of the railroad problem before us. But do we see railroad initiative, railroad leadership in an attempt to solve it? The attitude of the railroads seems to be that the law is what it is and times are what they are and neither is their fault. They are victims and their hands are tied. It is true that they are shackled by over-regulation, but it is also true that they have the benefit of a degree of protection not afforded to other business. But even if the hardships outweigh the benefits there is still opportunity for the exercising of talent in an attempt to make the scale turn the other way." In referring to the present rate situation, he said that it had been successfully shown that high rates have not throttled or even hampered business generally in the sense that they have prevented tonnage from moving. After referring to the 4 1/2 per cent earned last July on the valuation of all the roads as fixed by the Interstate Commerce Commission, Mr. Palmer said that while 4 1/2 per cent was not enough it was considerably more than most businesses were now earning. Is there not here then, he queried, an opportunity for constructive action on the part of the railroads that will not only aid some business that is in even worse condition than the railroads, and thus contribute to the return to normal conditions, but that will also be a master stroke in winning for the carriers a place in public esteem which rightly or wrongly they are losing?

In conclusion, Mr. Palmer said that there should be at this time a meeting of transportation minds in the forming of a wise and definite policy. That policy should aim immediately at a reduction of operating costs through the abolition of the Labor Board and by all other possible means; a readjustment of rates so as to give the shipping public the benefit of any possible saving that may be achieved by this means; the establishment of some degree of certainty as to the rate level for some time to come; and the elimination of business interests in the dealings of railroads with shippers and with governments, to the operation especially of individual transportation enterprises.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until January 18, 1922, the operation of an item in a Kansas City Southern tariff which proposes the cancellation of the commodity rates on live poultry and eggs from stations on the Kansas City Southern in Missouri, Arkansas and Oklahoma to New Orleans, La.

### State Commissions

The State Railroad Commission of California has protested to the Interstate Commerce Commission against the application of the Santa Fe to acquire control of the California Southern, an intrastate line serving the cotton growers between Rice Junction and Ripley. The State Commission bases its protest on a claim of complete jurisdiction over an intrastate carrier.

The Railroad Commission of Texas has denied permission to James A. Baker, receiver of the International & Great Northern, to incur a debt of \$193,400, which he had recently applied for to the Interstate Commerce Commission. The Texas state law prohibits receivers of railroads from issuing securities exceeding \$100,000 in value, without permission from the state railroad commission.

The State of Alabama has asked the United States District Court for an order enjoining the Interstate Commerce Commission from placing a surcharge of 50 per cent on Pullman and parlor car transportation within the boundaries of Alabama. The point is stressed that the federal rate-making body has no right to interfere with the Alabama Public Service Commission in prescribing rates for intra-state traffic. Twice the railroads doing business in Alabama requested the Alabama Public Service Commission to authorize the imposition of the 50 per cent Pullman and parlor car surcharge and twice this request was denied by the state commission. An appeal was then taken by the railroads to the Interstate Commerce Commission, which authorized the collection of the surcharge on intrastate passenger transportation, and later declined to modify this order.

The Public Utilities Commission of Rhode Island has refused to suspend a tariff filed by the New York, New Haven & Hartford, making advances in passenger fares on the line between Providence and Bristol. This line is operated partly by electric trains and commutation rates are very low. Remonstrances against the advances have been filed also with the Interstate Commerce Commission and with the Massachusetts Commission. The Rhode Island Commission in its decision says that this section of the New Haven railroad was operated during the first six months of this year at a loss of \$106,525; that the monthly tickets are left at the old rate and that if there is any discrimination as between passengers on different sections of the New Haven road it is in favor of this section. To suspend the rates would continue a burden of loss upon the company, whose existence appears to be very seriously endangered by the condition of its finances.

### Personnel of Commissions

Charles R. Vanneman, heretofore at the head of the Steam Railroad division and connected with the New York State Public Service Commission in various capacities for the past 11 years, has been appointed chief engineer of the new commission at a salary of \$8,000 a year. Under the reorganized commission, which, unlike the former commission for the second district, has authority throughout the whole state, the chief engineer will be in charge of engineering and inspection work in connection with all steam railroads, street railroads, including grade crossing elimination; and also all electric light, gas, telephone and telegraph companies.

## Foreign Railway News

### Belgium Gets Contract for Big Chinese Bridge

The Peking-Hankow Railway has, according to press dispatches, awarded a contract to a Belgian firm for the construction of a bridge over the Yellow river. This firm's bid was stated at \$10,500,000. It was reported that four American concerns entered bids for the structure, which will be in excess of 1½ miles in length.

### Ohio Man Appointed American

#### Purchasing Agent for Chinese Government

Charles H. Kettinger, president of the Defiance Machine Works, Defiance, Ohio, has been appointed purchasing agent in America for the republic of China. Mr. Kettinger will have charge of purchases in this country of practically all classes of equipment and supplies of a mechanical or engineering nature.

### Australian Railway Officers to Visit America

The railway commissioners of Victoria and New South Wales, Australia, recently announced their decisions to send delegations of railway officers to the United States to study railway operations, according to a report from Trade Commissioner A. W. Ferrin, announced in Commerce Reports. The delegations from each state consist of four members, who, remaining in America for three or four months, will concentrate their attention on an intensive study of the most modern and efficient railway facilities of the country.

### Passport Visas Cost More Than Railway Fares

While a welcome beginning has been made in the removal of passport difficulties, the prices charged for visas by several countries remain exorbitant, says the Railway Gazette (London). The price of a first class railway ticket from Paris to Constantinople by the shortest route is \$215 (at par exchange) and of a second class ticket about \$100. The passenger passes through six countries, and the total price of the six different passport visas required amounts to \$106 or about \$6 more than the cost of a second-class ticket. The French visa costs 28 cents, the Swiss 30 cents, the Italian \$27, the Czecho-Slovakian \$27.20, the Greek \$26, and the Serbian \$25.

### Electrification of Japanese Railways

The official plan for the electrification of the railways of Japan has recently been revised and a new electric bureau established, according to information published in Commerce Reports. According to the plan now being worked out by the Department of Railways, the first steps will be to electrify the entire Tokaido line, the traffic of which has been increasing enormously each year, from Tokyo to Kobe, and a part of the Central line between Iidamachi station in Tokyo and Kofu, in the rear of Mount Fuji, where many tunnels make transportation slow. Electric trains will be used exclusively for passengers, freight trains being operated by steam as at present.

### Relative Value of Railway Supply Exports

According to a pamphlet recently issued by the Chamber of Commerce of the United States, railway cars and locomotives ranked respectively twenty-fifth and twenty-sixth in value of all of our exports for the first six months of the current year. Steel rails ranked thirty-fifth. If, however, the value of these exports had been added together, viz. cars and parts, \$21,205,000; locomotives \$20,745,000; and steel rails, \$14,806,000—the result \$56,756,000, representing exports of railway supplies, would have been the eighth in the list. The order would have been as follows: wheat, raw cotton, tobacco, coal and coke, flour, lard, illuminating oil and railway supplies.

**July Exports of Locomotives**

Exports of locomotives in July fell to 30, valued at \$876,840, compared with 136, valued at \$4,254,474, during the previous month. The July total is the lowest of any month during the current year. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Number	Dollars
Canada	2	20,900
Mexico	10	245,000
Other British West Indies	1	2,250
Colombia	8	274,100
Peru	1	12,000
Japan	1	23,100
Australia	1	12,550
Philippine Islands	6	286,940
<b>Total</b>	<b>30</b>	<b>876,840</b>

**Germans Seek to Develop Italian Lignite Fields**

LONDON.

German capitalists have offered to the Italian government their co-operation for the exploitation of the mines of lignite in Italy to be used as fuel for the railways, in exchange for the facilities the Italian government would grant to Germany in connection with their confiscated properties in Italy. According to reports published by the Italian papers, Germany estimates that there are in Italy about 300,000,000 tons of lignite, of which only 3,000,000 tons are produced yearly. They propose to form a German-Italian company which should undertake the exploitation of the whole lignite wealth of Italy and to build special plants in which the lignite should be distilled, and, through a process discovered by them during the war, obtain oil to be used as fuel. It is estimated that the lignite produced and the oil obtained would cover the whole demand for fuel of Italy including the railways.

**July Exports of Car Wheels and Axles**

Exports of car wheels and axles totaled only \$78,237 in July, as compared with \$236,719 during the previous month. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Dollars
Canada	5,050
Costa Rica	384
Guatemala	839
Honduras	120
Nicaragua	356
Panama	43
Salvador	745
Mexico	40,135
Other British West Indies	90
Cuba	262
Dominican Republic	332
Argentina	2,975
Brazil	665
Chile	1,329
Colombia	436
British India	1,995
Japan	20,656
Belgian Congo	35
Portuguese Africa	1,800
<b>Total</b>	<b>78,237</b>

**Tampico-Mexico City Short Line to Be Completed**

Information has been received from the City of Mexico to the effect that the National Railways of Mexico have awarded the contract for the completion of the short line of that system to extend from Tamos, on the Tampico-San Luis Potosi division, to a connection with the Hidalgo and Northwestern division, near Honey. It is stated that the work of building the new line will be resumed by October 1. The construction of this Tampico-City of Mexico short line, as it is called, was started about 12 years ago and about 50 miles of grade and track were finished before the revolutionary period caused a cessation of the work. From a traffic standpoint it is regarded as one of the most important railroad projects ever undertaken in Mexico. It will mean the reducing of the distance between the port of Tampico and the capital by about two hundred miles and the line will traverse a region that is very rich in agricultural and mineral resources. It also will penetrate a coastal territory that is believed to contain vast oil potentialities. With the resumption of construction of this line the rumor has been revived that the contract will be let soon for building the long proposed road that is to run between Tampico and Matamoros, near the mouth of the Rio Grande. B. F. Yoakum, of New York, while at the

head of the Frisco system, obtained a concession from the Diaz government for the construction of a railroad down the Gulf coast of Mexico from Matamoros, but difficulties arose that prevented him from undertaking the actual building of the line at that time.

**Portuguese Railway Results**

The Portuguese Railway Company, which owns and works the principal lines running out of Lisbon and Oporto and the Spanish frontier, has just held its annual general meeting, according to the Railway Gazette (London). The receipts for 1920 were \$29,889,561, or \$15,053,098 more than in 1919, this considerable increase being due to the general increase in rates. Notwithstanding this, the company is no better off, operating expenses having continued to rise in even greater ratio, with the result that the year's operation shows a deficit of \$7,512,156. Failing an early and radical reduction in the cost of fuel it is difficult to foresee the company's future; rates have already been raised 200 per cent, and further relief can therefore hardly be looked for on the receipts side.

**July Exports of Cars**

Freight cars totaling 464, valued at \$705,281, were exported in July, compared with 536, valued at \$1,006,256, during the previous month. Exports of parts of cars were valued at \$653,683, compared with \$887,241 in June. Three passenger cars, valued at \$20,036, were exported, as against 21, valued at \$96,100 during the previous month. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger		Freight and Other		Parts of cars Dollars
	Number	Dollars	Number	Dollars	
France					1,647
England					1,050
Canada	2	12,536	8	9,700	16,351
Guatemala					215
Honduras			14	2,300	2,680
Nicaragua					215
Panama					515
Salvador					100
Mexico			10	44,200	13,430
Jamaica					123
Cuba			75	441,584	14,295
Dutch West Indies					756
Dominican Republic			50	66,000	51
Argentina					10,740
Brazil			40	86,803	38,466
Chile					244
Colombia					43
China					467,698
British India					19,471
Dutch East Indies					43,635
Japan					43,635
French Oceania	1	7,500			601
Philippine Islands			155	18,250	20,311
British West Africa					400
British South Africa					1,306
Portuguese Africa			12	36,444	
<b>Total</b>	<b>3</b>	<b>20,036</b>	<b>464</b>	<b>705,281</b>	<b>856,883</b>

**Extent and Importance of Australian Railways**

The mileage of all the railways open for traffic throughout Australia aggregates some 25,652 miles of various gages, according to Weekly Bulletin of the Canadian Department of Trade and Commerce. Their recapitulation is as follows:

	Miles
New South Wales Government Railways	4,824
Victoria Government Railways	4,189
Queensland Government Railways	5,469
South Australia Government Railways	2,289
Western Australia Government Railways	3,533
Tasmania Government Railways	601
Commonwealth Government Railways	1,333
Private companies' railways	3,009
<b>Total Australian railways</b>	<b>25,652</b>

The New South Wales State Railways are practically all of the standard gage, 4 ft. 8 1/2 in. The Victorian State Railways are nearly all of the 5 ft. 3 in. gage. The Queensland State Railways are of the 3 ft. 6 in. gage. The South Australia State Railways comprise 1,080 miles of 5 ft 3 in and 1,029 miles of 3 ft. 6 in. gage. The Western Australia State Railways' entire track of 3,533 miles is of 3 ft. 6 in. gage. The Tasmania State Railways are of 3 ft. 6 in. gage. The Commonwealth Government Railways (chiefly in the states of South Australia and Western Australia) comprise 1,051 miles of 4 ft. 6 in., 478 miles of 3 ft. 6 in., and in the Northern Territory 200 miles of 3 ft. 6 in. gage. The private company lines comprise 1,600 miles

of 3 ft. 6 in. gage and 1,070 miles of 2 ft. 6 in. gage. The unaccounted gages are of comparatively unimportant feeder lines varying from 1 ft. 8 in. to 3 ft.

"It is obvious that these government railways require considerable quantities of imported materials of a most comprehensive variety," the Weekly Bulletin comments in conclusion.

### French Railways Before the War and Now

Operating expenses of the French railways mounted some 440 per cent during the period 1913-1920, according to information compiled by the Bankers Trust Company, New York. In 1920 the operating expenses of the railways were approximately \$1,380,600,000 (par exchange) as compared with \$225,000,000 in 1913. The enormous increase was due to higher cost of fuel and supplies, increased forces due to shorter hours and to higher wages.

The following table shows the number of railroad employees on the different roads in 1913 and 1920, and the amounts paid in wages:

	Number Employees		Wages (millions of dollars)	
	1913	1920	1913	1920
Northern	53,053	76,632	24.2	105.0
Eastern	54,259	75,326	22.8	94.0
P. L. M.	81,000	118,577	41.8	160.0
Midl	27,489	40,586	8.6	47.8
Orleans	50,338	72,179	19.0	98.0
State	78,805	106,586	32.6	120.2
Totals	344,944	489,886	159.0	625.0

Under the term "wages" are included indemnities growing out of the war which were in 1920 incorporated in the sums paid as wages. There was an increase in wages in 1919 and again in 1920.

The cost of fuel on all roads increased from \$35,000,000 in 1913 to \$38,200,000 in 1920. Total cost of operation of individual roads compares as follows (millions of dollars):

	1913	1920
State	55.4	275.2
Northern	41.2	232.0
Eastern	37.8	174.0
P. L. M.	67.8	366.0
Orleans	36.2	238.0
Midl	16.6	95.4
Totals	255.0	1,380.6

### Car Exports in June

June exports of freight cars totaled 536, valued at \$1,096,256, as compared with 465, valued at \$639,454, during the previous month. A total of 21 passenger cars, valued at \$96,100, were also exported, and also parts of cars valued at \$887,241. The detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger		Freight and Other		Parts of cars Dollars
	Number	Dollars	Number	Dollars	
Belgium	..	..	..	..	1,631
France	..	..	..	..	8,184
Netherlands	..	..	..	..	940
Spain	..	..	..	..	120
England	..	..	..	..	6,268
Canada	6	17,500	6	3,388	28,252
Costa Rica	..	..	..	..	16,095
Guatemala	..	..	..	..	402
Honduras	3	22,600	106	159,902	1,854
Panama	..	..	..	..	254
Salvador	..	..	..	..	854
Mexico	12	56,000	101	222,055	20,397
Newfoundland and Labrador	..	..	..	..	281
Jamaica	..	..	..	..	171
Trinidad and Tobago	..	..	..	..	50
Other Brit. W. Indies	..	..	..	..	3
Cuba	..	..	103	239,369	10,687
Virgin Islands of U.S.	..	..	..	..	250
Dutch West Indies	..	..	5	3,875	971
Dominican Republic	..	..	..	..	2,246
Bolivia	..	..	..	..	7,508
Brazil	..	..	160	444,167	219,099
Chile	..	..	..	..	20,287
Peru	..	..	..	..	7,022
Venezuela	..	..	..	..	244
China	..	..	55	23,500	393,347
Kwantung, leased territory	..	..	..	..	691
British India	..	..	..	..	6,069
Hongkong	..	..	..	..	308
Taiwan	..	..	..	..	66,766
Siam	..	..	..	..	56
Australia	..	..	..	..	777
New Zealand	..	..	..	..	32,511
Philippine Islands	..	..	..	..	20,378
British South Africa	..	..	..	..	1,665
Portuguese Africa	..	..	..	..	..
Total	21	96,100	536	1,096,256	887,241

## Equipment and Supplies

### Freight Cars

THE PAULISTA RAILWAY (Brazil) is inquiring through the car builders for 180 freight cars.

### Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD has bought from the International Motor Company three gasoline motor cars, supported by special trucks, with seating capacity of 35, also compartment for baggage. Delivery of these cars is expected early in December and they will be used in short haul passenger service on branch lines.

## Railway Construction

AMERICAN RAILWAY EXPRESS.—This company contemplates the erection of a building at Sweetwater, Tex., to cost about \$10,000.

ATLANTIC COAST LINE.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 250-ton, automatic electric coaling plant to be erected at Dothan, Ala.

CADDO RIVER LUMBER COMPANY.—This company, located at Rosboro, Arkansas, will begin the construction on October 1 of a short line railroad connecting with the Missouri Pacific at Womble, Arkansas, and extending northward towards Oden, a distance of 16 miles. The work will cost approximately \$10,000 per mile.

CHICAGO & ALTON.—This company has awarded a contract for the construction of a second track, between Wann, Ill., and Brighton, about 12 miles, to Mulvill Bros., Alton, Ill.

CHICAGO & NORTH WESTERN.—This company is accepting bids for the rebuilding of a 1,900 ft. viaduct across its yards at Proviso, Ill.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the Railway Water & Coal Handling Company, Chicago, for the installation of a pipe line in connection with a reservoir being built by company forces at Valier, Ill.

CHICAGO, BURLINGTON & QUINCY.—This company will construct a 30-ft. by 50-ft. brick machine shop at Herrin Junction, Ill., with company forces.

CHICAGO GREAT WESTERN.—This company contemplates the construction of a passenger station at Afton Junction, Iowa.

FLORIDA EAST COAST.—This company will open bids about November 1 for the construction of a general office building at St. Augustine, Fla., to cost approximately \$175,000. The proposed structure will be 50 ft. by 105 ft. and 4 stories in height and will be of terra cotta, marble and brick construction on a concrete frame.

GREAT NORTHERN.—This company has awarded a contract to the F. W. Miller Heating Company, Chicago, for the installation of a boiler washout and refill system at Superior, Wis. The same company has awarded a contract to the National Boiler Washing Company, Chicago, for the installation of a boiler washout and refill system at Great Falls, Mont., and one at Hillyard, Wash.

ILLINOIS CENTRAL.—This company has awarded a contract to the A. Lund Construction Company, Chicago, for the enlarging of the waiting room at the Randolph street suburban station, Chicago, to cost about \$20,000.

INTERSTATE.—This company has awarded a contract to the Brooks-Callaway Company, Atlanta, Ga., for the construction of three tunnels on its Guest river extension. These tunnels will be, respectively, 600 ft., 550 ft. and 350 ft. in length through hard sandstone, slate and shale. It is anticipated that two of the tunnels will require lining, to be done with concrete.

## Supply Trade News

**Henry S. Lebage**, formerly Chicago representative of the Handlan Buck Manufacturing Company, has been appointed manager of the railroad department of the **H. Channon Company** for Chicago territory, effective October 1.

**Theodore Rogatchoff** has been elected president of the **Rogatchoff Company**, Baltimore, Md., succeeding A. E. Davis. The company has moved its offices in Baltimore from 205 Water street to 1512 Latrobe terrace.

**R. H. Blackall** has been appointed railway sales representative for the New York territory of The Lowe Brothers Company, Dayton, Ohio, with offices at 7 East Forty-second street, New York City and Farmers Bank building, Pittsburgh, Pa.

**T. N. Gilmore**, who for the past sixteen years has been associated with Westinghouse, Church, Kerr and Company, engineers and contractors, has opened offices as a consulting

engineer at 136 Liberty street, New York. Mr. Gilmore was in charge of railroad shop and engine terminal work for Westinghouse, Church, Kerr and Company and was for several years a director and vice-president and chief engineer of the company in charge of all engineering and construction. Mr. Gilmore received his early training in steam railroad work. Prior to the World's Fair at St. Louis in 1904, he went with the St. Louis Terminal where he was in charge of the mechanical and car departments

and in addition planned the power houses, locomotive shops and engine terminal facilities constructed to handle the traffic for the fair. Mr. Gilmore is a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers and the Structural Engineers Association of Illinois.

**J. H. McMullen** has been appointed railroad representative in the Boston, Mass., territory, for the **Western Electric Company**, succeeding E. R. Morgan and E. B. Denison, formerly in charge of the Minneapolis, Minn., territory, has been appointed Detroit, Mich., railroad representative, succeeding R. S. Cowan.

The **English Electric Company of Canada, Ltd.**, a newly-formed company associated with the English Electric Company of Great Britain, has acquired control of the **Canadian Crocker-Wheeler Company, Ltd.** R. A. Stinson, vice-president and general manager of the latter company, has been elected president and general manager of the new company.

The **Conewango Car Company**, incorporated in Delaware, has leased the site at Warren, Pa., formerly occupied by the Allegheny Tank Car Company, which plant was partly destroyed by fire on April 6 last. The new company will specialize in repairs to tank cars. In addition to three buildings on the site which were not destroyed by fire, the new company has built a car shop, a machine shop and a sand-blast shop. Shop and yard space is provided for repairing 20 cars at a time, as is storage space for 50 additional cars. The plant is now being equipped with modern machinery and is

expected to be ready for operation by October 1. N. C. Stiteler is president and treasurer of the new company and J. C. Sullivan is vice-president and general manager.

## Obituary

**Kenneth Rushton**, vice-president in charge of engineering of the Baldwin Locomotive Works, who died on September 2, as was noted in the *Railway Age* of September 10, was born

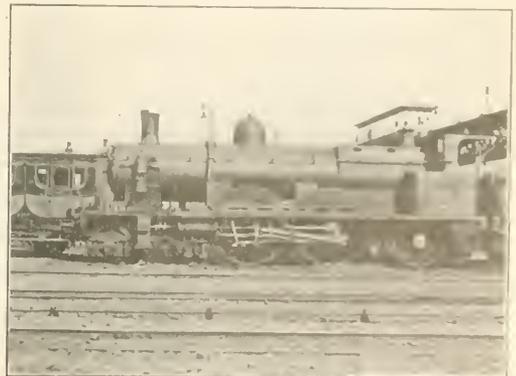


K. Rushton

60 years ago in Philadelphia, Pa., and was educated in the city schools and Episcopal Academy. He served an apprenticeship, as machinist, under Hugo Bilgram, Philadelphia, and afterward entered the employ of the Baldwin Locomotive Works in April, 1881. Mr. Rushton's association with the Baldwin Locomotive Works continued uninterrupted until the time of his death. He served first as a draftsman, and then as designer, chief of the mechanical engineer and later as vice-president. He was

the inventor of many appliances used in the construction of locomotives, and was closely associated with S. M. Vauclain in the development of the four-cylinder compound that bears the name of the latter. While Mr. Rushton did not travel extensively in the prosecution of his business, he represented Baldwin's abroad in some important missions. In 1913, he was sent to Chile, visiting various points of railroad interest on the west coast of South America, and in 1918 went to France, in connection with the design of railway transport for artillery.

"WE ARE JUST AS RESPONSIBLE as the South Americans for the lull in trade between the two continents," said W. E. Leigh, export manager of the International Western Electric Company upon his return from a five months' trip to Brazil, Uruguay and Argentina. "As long as we refuse to accept the animal and agricultural products which form their main stock in trade, not so long will they find it impossible to buy from us the output of our factories."



Atlantic Type Compound on the Northern Railway (France)

## Railway Financial News

**BALTIMORE & OHIO.**—*Asks Authority to Acquire Stock.*—Application has been filed with the Interstate Commerce Commission for authority to acquire the entire capital stock of the Indian Creek & Northern from the New England Fuel & Transportation Company at an estimated cost of \$850,000.

**COLORADO & SOUTHERN.**—*Annual Report.*—A review of this come account for the year ended December 31, 1920, compares this issue.

**GEORGIA RAILROAD & BANKING COMPANY.**—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue and sell at not less than 95 per cent of par and accrued interest \$1,500,000 of debenture bonds, the proceeds to be used in connection with other funds to pay off and retire a like amount of plain debentures now outstanding.

**GRAND TRUNK RAILWAY OF CANADA.**—*Bonds Sold.*—Dillon, Read & Co. and other bankers have sold \$25,000,000, 15-year, 6 per cent sinking fund gold debenture bonds at 95¼ and interest to yield about 6.50 per cent. The issue is dated September 1, 1921, and the Dominion of Canada guarantees principal and interest by endorsement. A sinking fund of \$500,000 annually, accruing from September 1, 1921, is to be available in equal semi-annual amounts for the purchase of the bonds in the market at not exceeding par and interest. If the bonds are not so obtainable any unexpended balance reverts to the railway company. These bonds are the direct obligation of the Grand Trunk Railway Company of Canada, which is controlled by the Government of the Dominion of Canada and forms part of the Canadian National Railways System.

**INTERNATIONAL & GREAT NORTHERN.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Net revenue from operations (September 1 to December 31).....	\$2,129,697	
Federal rental and Transportation Act guaranty.....	1,416,854	\$1,394,946
Hire of equipment-credit (September 1 to December 31).....	349,916	
Other corporate income.....	200,801	Def. 51,380
Gross corporate income.....	\$4,097,268	\$1,343,566
Corporate operating expenses (January and February).....	110,166	\$60,058
Tax Accruals (September 1 to December 31).....	119,831	
Hire of equipment-debit (September 1 to December 31).....	779,155	
Other corporate deductions.....	80,737	108,234
Total deductions.....	\$989,890	\$168,292
Net corporate income.....	\$3,107,379	\$1,175,274
Interest on funded debt.....	\$902,043	\$818,793
Interest on unfunded debt.....	874,149	695,905
Total.....	\$1,776,192	\$1,514,698
Surplus, carried to profit and loss.....	\$1,331,187	Def. \$339,424

**INDIAN CREEK & NORTHERN.**—*B. & O. Asks Authority to Acquire Stock.*—See Baltimore & Ohio.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the sale at not less than 97¼ and accrued interest of \$10,000,000, 10-year, 6½ per cent collateral trust gold bonds. The company has also been authorized to issue and pledge as collateral security for these bonds \$12,500,000 of first refunding mortgage bonds and to procure the authentication and delivery to its treasury of \$2,500,000 of first refunding mortgage bonds to be held in the treasury until the further order of the commission.

**NORTHERN PACIFIC.**—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of the Washburn Branch extending from Iron River to Washburn, Wis., 33.78 miles.

**TEXAS & NEW ORLEANS.**—A hearing was held before an examiner of the Interstate Commerce Commission at Washington

on September 21 on this company's application for approval of a lease of the Texas State Railroad.

**WHEELING & LAKE ERIE.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Railway operating revenues (Mar. 1 to Dec. 31).....	\$15,747,525	
Railway operating expenses (Mar. 1 to Dec. 31).....	13,906,828	
Interest from railway operations.....	1,846,697	
Taxes and uncollectible railway revenue.....	797,125	
Operating income.....	1,049,572	
Non-operating income.....	7,457	
Gross income.....	1,057,029	\$1,687,327
*Compensation (Jan. and Feb., 1920; year 1919).....	264,340	1,592,037
*Guaranty (Mar. 1 to Aug. 31).....	1,438,622	
Interest on funded debt.....	1,217,161	979,224
Total deductions from gross income.....	2,703,265	1,380,691
Net income.....	56,725	306,636
Total appropriations.....	117,187	146,276
Surplus transferred to profit and loss.....	Def. 60,462	160,360

\*Tentative, pending decision as to "just compensation" and other matters in dispute arising out of federal control and guaranty period operations.

The report of the Wheeling & Lake Erie will be reviewed editorially in an early issue.

### More Car Trust Certificates Sold

Additional funds have been put at the disposal of the Railroad Administration for use in making settlements with the railroads by the sale of \$20,204,000 of equipment trust certificates, in addition to the \$7,500,000, the sale of which was announced last week. The sale was made by the War Finance Corporation acting as the agent of the Railroad Administration. The certificates were those issued by the Atlantic Coast Line; Atchison, Topeka & Santa Fe; Central of New Jersey; Chicago, Burlington & Quincy; Great Northern; Louisville & Nashville; Norfolk & Western; Pittsburg & Lake Erie, and Southern Pacific. Of these, \$13,778,000 were sold to White Weld & Co.; Brown Brothers & Co., and Lee, Higginson & Co., and \$6,426,000 to the Prudential Insurance Company. The price was par and accrued interest. The legislation which would authorize the War Finance Corporation to purchase these securities itself is expected to be taken up in the Senate very shortly.

On September 20 announcement was made of an additional sale of \$5,479,500 of these certificates, making a total of \$33,283,500.

### Railroad Administration Settlements

The Railroad Administration has made final settlements for the period of federal control and has paid to the following carriers the amounts named: Chicago & North Western, \$6,500,000; Chicago, St. Paul, Minneapolis & Omaha, \$1,200,000; Old Dominion Steamship Company, \$900,000; Wrightsville & Tennille, \$22,500; Louisville & Wadley, \$3,175.

### Guaranty Payments

The Treasury Department has announced the following payments to railroads on account of the six months guaranty for 1920: St. Louis-San Francisco, \$200,000; Chicago Junction, \$50,000; Gulf, Texas & Western, \$20,000; Cooperstown & Charlotte Valley, \$15,000; White Sulphur & Huntersville, \$14,000; Sandy River & Rangeley Lakes, \$10,000; Mohassuck Valley, \$10,000; Delaware & Hudson, \$7,500; Greenwich & Johnsonville, \$6,000; Frankfort & Cincinnati, \$5,600.

### Dividends Declared

Minneapolis, St. Paul & Sault Ste. Marie.—Common, ¾ per cent, semi-annually; preferred ¾ per cent, semi-annually; both payable October 15 to holders of record September 30.  
Northern Pacific.—1¼ per cent, quarterly, payable November 1 to holders of record October 3.  
Reading Company.—Common, 2 per cent, quarterly, payable November 10 to holders of record October 18; second preferred, 1 per cent, quarterly, payable October 13 to holders of record September 27.

**COUNTRY SAVED—CONSTITUTION VINDICATED.**—"Oklahoma City, Sept. 15.—An order forbidding alleged discrimination by the Fred Harvey Corporation and the Atchison, Topeka & Santa Fe Railway was issued today by the State Corporation Commission. It was on a complaint made by Campbell Russell, chairman of this commission, who had been denied the privilege of eating in a Harvey dining room at Purcell, Okla., without wearing his coat."

# Annual Report

## Colorado & Southern Railway Company—Twenty-Second Annual Report

CHICAGO, January 1, 1921.

To the Stockholders of The Colorado & Southern Railway Company:  
Herewith is submitted the Twenty-second Annual Report of your Board of Directors for the year ended December 31, 1920, setting forth comparative statements for the fiscal period of The Colorado & Southern Railway Company, Fort Worth & Denver City Railway Company and The Wichita Valley Railway Company.

### THE COLORADO & SOUTHERN RAILWAY COMPANY.

COMPARATIVE STATEMENT OF CORPORATE INCOME. YEARS ENDED DECEMBER 31.

1920	1919
\$413,535.30†	\$2,481,211.88
<b>RAILWAY OPERATING REVENUES</b>	
\$10,212,960.99	11,708.49
2,656,946.46	106,990.42
136,820.29	535,000.03
235,162.17	1,118,733.12
319,228.16	
228,111.58	
27,511.22	
\$13,816,740.87	\$1,527,334.65
Total railway operating revenues.....	
	\$2,319,669.94
<b>RAILWAY OPERATING EXPENSES</b>	
\$2,376,876.44	\$18,643.50
3,168,450.11	544,511.29
123,689.84	19,003.92
5,020,565.67	2,755.58
113,642.20	58,445.53*
541,574.34	
3,899.65	
\$11,342,898.95	\$843,559.82
Total railway operating expenses.....	
	\$50,251.79
\$2,887,377.22	\$2,430,960.09
Net income.....	
\$784,234.89	\$639,152.32
3,159.00	\$639,152.32
\$2,099,923.73	\$836,897.80
Railway operating income and standard return.....	
	\$2,430,960.09
<b>NON-OPERATING INCOME</b>	
\$150,978.36	
33,268.51	
59,462.00	
1,352,530.15	\$59,476.22
509,161.76*	1,430,820.99
959,687.98	*285,429.38
(Estimated amount due under guaranty Transportation Act, 1920).....	
\$2,998,551.74	\$1,775,726.60
Total non-operating income.....	
\$5,098,544.47	\$4,206,686.69
<b>GROSS INCOME</b>	
\$112,398.06	
2,140,438.47	\$111,959.97
1,988.88	2,105,095.45
13,573.93	1,250.24
224,078.83*	13,539.28
Miscellaneous income charges.....	
\$2,492,478.17	*190,395.38
Total deductions from gross income.....	
\$2,606,066.30	\$2,422,740.32
Net income.....	
\$680,000.00	\$1,783,946.37
<b>DISPOSITION OF NET INCOME</b>	
\$680,000.00	\$680,000.00
Dividends.....	
\$1,926,066.30	\$680,000.00
Total appropriations of income.....	
	\$680,000.00
Income balance transferred to profit and loss.....	
	\$1,103,946.37

†January and February, 1920. †Corporate.  
\*Includes "Lap-over" items credited and charged by Federal Administration.

### FORT WORTH & DENVER CITY RAILWAY COMPANY

COMPARATIVE STATEMENT OF CORPORATE INCOME  
YEARS ENDED DECEMBER 31

1920	1919
\$315,231.08†	\$1,891,386.40
<b>RAILWAY OPERATING REVENUES</b>	
7,175,940.38	
3,457,155.07	
134,023.17	
151,697.28	
103,563.70	
174,157.19	
348.12	
\$11,196,884.91	
Total railway operating revenues.....	
	\$18,120.69
<b>RAILWAY OPERATING EXPENSES</b>	
\$1,863,733.33	
2,667,980.15	
90,521.65	
5,310,743.20	
82,048.82	
385,483.06	
16,902.70	
\$10,383,617.51	
Total railway operating expenses.....	
	\$18,120.69

1920	Net	1919
\$1,126,498.48		\$1,874,267.71
\$333,160.75		
3,062.44		
\$792,275.29		
Railway operating income and standard return.....		
		\$1,873,267.71
<b>NON-OPERATING INCOME</b>		
\$240,176.18		
2,921.24		
11,708.49		
106,990.42		
535,000.03		
1,118,733.12		
\$1,527,334.65		
Total non-operating income.....		
\$2,319,669.94		\$1,873,267.71
<b>DEDUCTIONS FROM GROSS INCOME</b>		
\$18,643.50		
544,511.29		
19,003.92		
2,755.58		
58,445.53*		
\$843,559.82		
\$1,476,050.12		
Total deductions from gross income.....		
\$639,152.32		
\$639,152.32		
\$836,897.80		
Net income.....		
		\$1,315,477.46
<b>DISPOSITION OF NET INCOME</b>		
\$639,152.32		
Dividends.....		
\$639,152.32		
Total appropriations of income.....		
		\$639,152.32
Income balance transferred to profit and loss.....		
		\$676,325.14

†January and February, 1920. †Corporate.  
\*Includes "Lap-over" items credited and charged by Federal Administration.

### THE WICHITA VALLEY RAILWAY COMPANY COMPARATIVE STATEMENT OF CORPORATE INCOME YEARS ENDED DECEMBER 31

1920	Standard Return	1919
\$58,727.84		\$352,367.05
<b>RAILWAY OPERATING REVENUES</b>		
\$1,015,016.63		
436,800.54		
23,458.49		
34,859.40		
4,445.97		
11,851.43		
\$1,526,432.46		
Total railway operating revenues.....		
<b>RAILWAY OPERATING EXPENSES</b>		
\$397,228.24		
189,565.04		
1,362.95		
764,148.71		
19,577.20		
450.50		
\$1,372,327.64		
Total railway operating expenses.....		
\$155,158.55		
\$57,120.48		
553.63		
\$155,158.55		
Net income.....		
		\$350,364.21
<b>NON-OPERATING INCOME</b>		
\$169,755.42		
8,433.00		
3,343.89		
4,389.48		
132,673.03		
270,738.12		
\$249,824.10		
Total non-operating income.....		
\$203,392.80		
38,450.00		
\$267,596.33		
\$143,386.32		
Total deductions from gross income.....		
\$113,210.01		
38,450.00		
19,753.53		
\$267,596.33		
\$143,386.32		
Total deductions from gross income.....		
\$113,210.01		
Income balance transferred to profit and loss.....		
		\$110,477.44

†January and February, 1920. †Corporate.  
\*Includes "Lap-over" items credited and charged by Federal Administration.

## Railway Officers

### Executive

**H. B. Titcomb**, vice-president of the Pacific Electric, with headquarters at Los Angeles, Cal., has been elected president of the Southern Pacific of Mexico and the Arizona Eastern, to succeed Epes Randolph, deceased. Mr. Titcomb was born at Indianapolis, Ind., in December, 1871. He graduated from the Cogswell Polytechnical College in 1891, and in July of the same year entered the service of the Southern Pacific as a draftsman. He was promoted to assistant engineer in the construction division in 1898; was appointed roadmaster on the Western division in 1899, and was successively roadmaster on the Shasta and Sacramento divisions from 1900 to 1904. He was



H. B. Titcomb

assistant resident engineer from 1904 to 1905, resident engineer at San Joaquin, Cal., from 1905 to 1906, and at Los Angeles from 1906 to 1909. He was district engineer, with headquarters at Los Angeles, from 1909 to 1914, and maintenance of way assistant to the assistant chief engineer, with headquarters at San Francisco from 1914 to 1917. In October, 1917, he was promoted to superintendent of the Stockton division, with headquarters at Stockton, Cal., which position he held until September, 1918, when he resigned to become vice-president of the Pacific Electric.

### Financial, Legal and Accounting

**W. E. Fitzgerald** has been appointed auditor of the San Antonio & Aransas Pass, with headquarters at San Antonio, Texas, succeeding J. W. Terry, deceased.

**G. E. Bramon**, auditor of freight accounts of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed auditor of expenditures, succeeding **S. L. Porter**, who will assume the duties formerly performed by Mr. Bramon, effective September 1.

### Traffic

**W. M. Long** has been appointed commercial agent of the Illinois Terminal, with headquarters at Wood River, Ill.

**F. F. Seymour, Jr.**, has been appointed general agent of the Kansas City Southern, with headquarters at Kansas City, Mo., succeeding T. A. Dudley, deceased.

**A. S. Edmonds**, traffic manager of the Los Angeles & Salt Lake, has been appointed traffic manager of the Oregon-Washington Railroad & Navigation, effective September 1.

### Operating

**Eugene H. Daniel**, assistant to the general superintendent of the Central of Georgia, has been appointed superintendent of transportation with headquarters at Savannah, Ga., effective September 1, and the position of assistant to the general superintendent has been abolished.

**Eugene H. Daniel**, assistant to the general superintendent of the Central of Georgia, has been appointed superintendent

of transportation with headquarters at Savannah, Ga., effective September 1, and the position of assistant to the general superintendent has been abolished.

**E. J. Devans**, general superintendent of the Buffalo, Rochester & Pittsburgh with headquarters at Du Bois, Pa., has been appointed superintendent with jurisdiction over the entire system. The positions of general superintendent, division superintendent and superintendent of stations and transfers have been abolished. **M. G. McInerney**, superintendent with headquarters at Rochester, N. Y., has been appointed assistant superintendent with the same headquarters, succeeding **T. C. McCarthy**, who has been appointed chief dispatcher of the Buffalo division. **A. B. White**, superintendent with headquarters at Du Bois, Pa., has been appointed assistant superintendent with headquarters at Punxsutawney, Pa., succeeding **A. H. Stokes**, who has been appointed acting assistant superintendent during the illness of R. L. Moore, assistant superintendent. **H. E. Patterson**, assistant superintendent with headquarters at Rochester, N. Y., has been transferred to a similar position with headquarters at East Salamanca, N. Y. These changes were effective on September 1.

**W. H. Newell, Jr.**, whose appointment as superintendent of the Atlantic Coast Line with headquarters at Wilmington, N. C., was announced in the *Railway Age* of September 17 (page 556), was born at Wilmington on February 27, 1884, and was educated in the grammar schools of that city and Portsmouth, Va., and the Portsmouth Academy. He entered railroad service on September 1, 1898, as a messenger and operator in the superintendent's office of the Atlantic Coast Line. From September, 1899, to January, 1903, he served in the office of the general agent at Norfolk and Pinner Point, Va., consecutively as receiving clerk, billing clerk, loading clerk, baggage agent, ticket agent and assistant cashier. In January, 1903, he became a flagman on the Norfolk & Carolina (a branch of the Atlantic Coast Line). In April of the same year he was transferred to the Wilmington district and served consecutively as flagman, baggageman, freight and passenger conductor and station master of Wilmington Union Station, until May 1, 1918, when he was appointed trainmaster of the Norfolk district with headquarters at Tarboro, N. C. In September of the same year he was transferred in the same capacity to Pinner Point, Va., in charge of the Southern and Atlantic Coast Line terminals which were under unification. In April, 1919, he was transferred as trainmaster of the Atlantic Coast Line and Seaboard Air Line terminals (also under unification) at Wilmington (N. C.), which position he was holding at the time of his recent promotion.



W. H. Newell, Jr.

**Engineering, Maintenance of Way and Signaling**

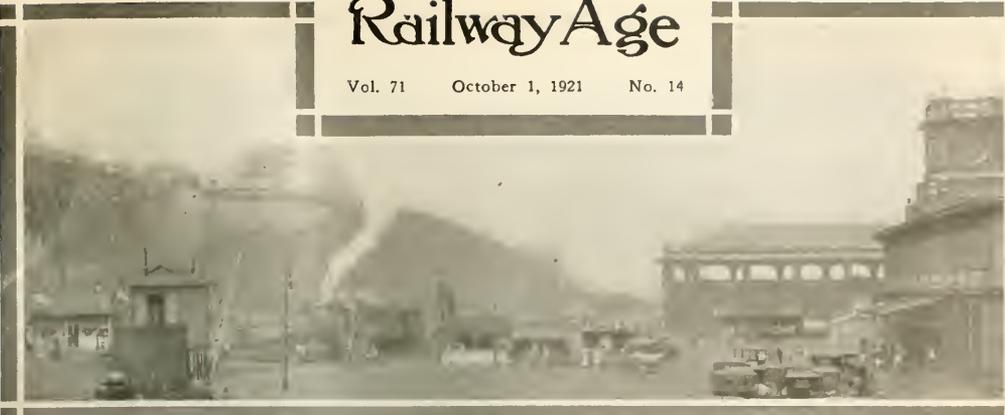
**J. H. Moore**, signal supervisor of the Rochester division of the Buffalo, Rochester & Pittsburgh, has had his jurisdiction extended to include the Buffalo division with headquarters at East Salamanca, N. Y., succeeding A. J. Darrow, who has been assigned to other duties, effective September 1.

### Obituary

**S. B. Howard**, general agent of the homeseekers bureau of the Chicago, Burlington & Quincy, died at Omaha, Neb., on September 17. He was 64 years of age and had been with the Burlington since 1907.

# Railway Age

Vol. 71      October 1, 1921      No. 14



Ferry House and New York Central Freight Line Below Grant's Tomb, New York City—Photo by Keystone

## Contents

Commission Presents Tentative Consolidation Plan ..... Page 609

Preliminary Report Proposes Nineteen Competing Systems—Based on Report of Professor William Z. Ripley With Alternatives.

Missouri Pacific Rebuilds Station in Record Time ..... 617

Passenger Terminal at Little Rock, Arkansas, Completed Within Short Period After Being Burned, by E. A. Hadley.

The Railroad Shop vs. The Contract Shop ..... 631

Obscure Elements of Cost of Freight Car Repairs Developed by Analysis of Railway Accounts, by J. W. Roberts.

### EDITORIALS

Placing the Burden on the Bridge Engineer .....	601
Good Sense from a Labor Leader .....	601
A Contrast in Maintenance Problems .....	601
Railways' Contribution to Unemployment .....	601
Plans for India's Railways .....	622
The Coal Situation .....	622
The "Government Guarantee" to the Railways .....	602
Cleveland, Cincinnati, Chicago & St. Louis .....	603
Great Northern .....	604

### LETTERS TO THE EDITOR

The Stop-and-Proceed Rule .....	606
One Swallow Does Not Make a Summer, by A. C. Irwin .....	606
The War Finance Corporation Bill, by E. H. Morton .....	607
Non-Spectacular Safety First .....	608
Freight Rate Allowances to Plant Facilities, by W. S. Hobbs .....	608

### GENERAL ARTICLES

Commission Presents Tentative Consolidation Plan .....	609
Missouri Pacific Rebuilds Station in Record Time, by E. A. Hadley .....	617

### GENERAL ARTICLES—Continued

Pennsylvania Declines to Appear Before Labor Board .....	619
Committee of Security Owners' Association Discusses Consolidations .....	620
Additional Sales of Equipment Trust Certificates .....	621
Unemployment Conference .....	622
Expressing Railway Grading Costs by Trend Curves, by A. Leslie von Rosenberg .....	623
European Railroad Problems Similar to Ours .....	625
Freight Car Loading .....	626
The Field for Gasoline Railway Motor Cars, by L. C. Josephs, Jr. .....	627
Railroad Inquiry to Be Resumed .....	628
Safety Section of A. R. A. Holds First Meeting, by W. S. Wallner .....	629
National Safety Council at Boston, by W. S. Wallner .....	630
The Railroad Shop vs. the Contract Shop, by J. W. Roberts .....	631
A Shipper's Views of Railway Needs, by G. C. Connors .....	635
Freight Traffic Statistics .....	638
Dual Control of Railroads Criticized .....	638

GENERAL NEWS DEPARTMENT ..... 639

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building      CLEVELAND: 4300 Euclid Ave.

LONDON: England: 34 Victoria St., Westminster S. W. 1

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: Urasimec London

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. F. LANSF  
R. E. TRAYNER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STUEBING  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEHLEK  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LYME  
J. H. DUNN  
D. A. STEEL  
K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 9,000 copies were printed, that of these 9,000 copies, 8,032 were mailed in regular mail subscribers, 52 were provided for counter and news company sales, 148 were mailed to advertisers, 65 were mailed to employees and correspondents and 512 were provided for new subscriptions, 500 copies lost in the mail and office use, that the total copies printed this year to date were 374,100, an average of 4,9582 copies per week.



With Ryerson Standardized Flue Shop Machinery, erecting shop work never waits for flues.

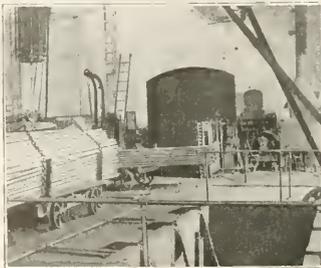
## Do the Flue Job Right

Flue work is sometimes considered as a necessary evil. It really is conservation and offers means for saving that is continuous.

In one flue shop four men replaced seven men when Ryerson Standardized Flue Shop Equipment put the flue job on a production basis.

The saving in wages alone will pay for the equipment in less than two years.

We would like to make a layout for your shop without obligation. Write us to-day.



Bundle of Tubes at Submerged Cleaner

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

In a letter appearing elsewhere in this issue, A. C. Irwin discusses the two motives which are responsible for the use of low unit stresses in designing concrete railway structures. One of these relates to the variation in the strength obtained in concretes and the writer very properly points to the need of refinement in practices so that a much more effective control of results will be secured. The other condition concerns the provision of sufficient allowance for further increases in train loading so that a structure designed and built to be permanent may be expected to function adequately many years hence. In the absence of authority to use higher design loadings, lower unit stresses are often resorted to with the idea that when the greater loadings are applied the stresses will remain within conservative limits. A more consistent practice would be to use maximum conceivable loads with maximum allowable working stresses. This has been done in the cases of a few large steel bridges and would seem to have equal applicability to concrete structures.

### Placing the Burden on the Bridge Engineer

With labor leaders and labor lobbyists by the score working night and day to defeat the passage of Senate Bill 2337, which, in the words of the director general of railroads, provides that "the government refrain from collecting certain amounts that the roads owe and do the same for the transportation system of the United States that the government is doing for France, England, Italy and Germany in extending obligations growing out of the war," it is refreshing to see that at least one man who has been prominent in railway labor organization work has recognized the fallacy of this opposition. The letter to the editor published elsewhere in this issue and headed "The War Finance Corporation Bill," sets forth very clearly certain facts which might well be seriously studied by railway labor organization leaders. It is unquestionably true that the prosperity of the railway employee is solely dependent upon the prosperity of the railroads. It is probable that labor leaders will not recognize this fundamental fact so long as the moves which they advocate or oppose are steps toward eventual government ownership and operation. Nevertheless, it is indeed unfortunate that the rank and file, who are after all, most vitally affected, cannot have the full benefit of the saner logic which is expressed in this letter to the editor.

### Good Sense From a Labor Leader

A part of England's contribution to the International Railway Association, the next meeting of which is scheduled to be held at Rome, Italy, in 1922, will be a paper on the maintenance and supervision of railway track. A short review of this, appearing in the Railway Gazette of London, England, is particularly interesting because of the conclusions arrived at in the summary, through a study of data furnished by 44 roads located in Great Britain and Ireland, India, Australia and South Africa. While the report is intended to

cover only the conditions existing on the roads of the countries named, the statements made are to some extent applicable to railway maintenance work the world over. In effect, the summary states that present organizations and methods on the roads in question have changed but little since 1900; that they are adapted only to conditions where labor is plentiful and cheap; that the present system does not lend itself readily to the adoption of labor-saving appliances; that a reduction of wages alone does not appear likely to reduce the cost to a reasonable figure; and that a profitable means for effecting economies lies in the re-organization of the present system to utilize labor-saving devices to advantage. These statements are worthy of consideration by railway officers on this continent. In all fairness, it must be said that the organizations of a large number of American railways lend themselves readily to the adoption of labor-saving devices, as some of our more progressive roads have already demonstrated. In contrast to the situation in Great Britain, there is nothing inherent in American railway organizations, which in itself retards the adoption of labor-saving equipment; but it is safe to say that the officers of practically every American road could spend some time profitably in studying the progress actually made in development of modern maintenance equipment and the extent to which other roads have put it to practical use.

The unemployment conference convened at Washington this week at the call of the President should find some interesting material for consideration in the quarterly report just issued by the Interstate Commerce Commission on statistics of railway employees' service and compensation for the three months ending June 30, 1921. This report shows that the average number of railway employees in service during the quarter was 1,568,143, or 436,617 less than during the corresponding quarter of 1920, and 123,328 less than during the first quarter of 1921. An even more striking reduction in railroad employment is shown by the comparison between August, 1920, when the railroads were carrying a record-breaking traffic, and April, 1921. The reduction for this period was 655,108, or nearly 30 per cent. In August, 1920, the number of employes in service on the railroads of the United States was 2,197,824. In April this had been reduced to 1,542,716. For the first quarter of 1921 the average was 1,691,471 and for March it had fallen to 1,593,068. In April the situation was still worse, but there was a slight increase in May to 1,575,599 and in June to 1,586,143. Later reports will undoubtedly show further increases for the ensuing months, for which the reports are not yet available, as traffic has increased and the railroads have been able gradually to increase their maintenance forces, particularly since the slight reduction in wages allowed by the Railroad Labor Board on July 1. but every one knows that the improvement since last spring has been relatively very slight. An analysis of the report indicates that while the decrease in the amount of freight offered to the carriers has naturally led to a reduction in the number of train crews, even heavier reductions were made

### Railways' Contribution to Unemployment

### A Contrast in Maintenance Problems

in the track and car repair forces and heavy reductions were also made in the clerical forces. The total compensation paid to the employees of Class I roads for the second quarter of 1921 was \$699,684,795 as compared with \$757,325,356 for the first quarter of 1921 and \$1,052,109,451 in the third quarter of 1920. Since in all these three quarters the employees were on the same basis of wages, the reduction in the payroll was entirely due to reduction in the number of employees. While the commission's statistics indicate the extent of the unemployment in the railway industry which has resulted from the general business depression of the past year and the necessity for the railroads to curtail their expenditures in every way possible, it does not show the very large amount of unemployment in industries which are dependent upon the prosperity of the railways. Directly and indirectly the drastic retrenchments the railways have had to make undoubtedly have caused the unemployment of more than a million men.

The railway facilities of India are notoriously inadequate. In October of last year a committee, of which Sir W. M.

#### Plans for India's Railway

Acworth is chairman, was appointed by the government to examine the situation and recommend changes which would ameliorate conditions. The Indian railways are now for the most

part owned by the government, but are leased for operation to private English companies. The committee was unanimous in recommending that this system of management be done away with at the termination of existing contracts. On the solution of the problem, however, the committee divided. Five members, including the chairman, recommend out-and-out government operation. The other five members favor operation by private companies, as at present, but they insist that these companies should be domiciled in India and not in Britain. Some action must be taken at once to bring about the additions to railway plant and equipment which India sorely needs. Capital must be secured and it would seem that the recommendation of the committee members advocating operation by Indian companies would give the necessary incentive to efficient operation and would be of assistance in interesting Indian capitalists in investing in the railways of the country. With the rather conspicuous failure of government operation in Great Britain and many of its dominions it seems strange that so large a number of the committee members are favoring such a plan for India.

### The Coal Situation

**R**AILWAY OFFICERS and coal mine operators will watch developments in the production and transportation of coal with much interest during the weeks immediately ahead of us. The production and transportation of bituminous coal thus far in the year 1921 are believed to have set a new low record for the last quarter century in proportion to the population and consuming capacity of the country. Up to September 17 the total production in 1921 had been only 279,881,000 tons. This was 111,185,000 tons less than in the corresponding part of 1917, 140,663,000 tons less than in 1918, 47,000,000 tons less than in 1919 and 97,000,000 tons less than in 1920. The Geological Survey estimates that at the rate of production since January 1 the total for the year would be only 393,000,000 tons. Never since 1909 has the total production fallen below 400,000,000 tons, and in the record year 1918 it was 530,000,000 tons.

There will soon be a seasonal increase in the demand for coal for domestic consumption. If general business activity revives in any substantial measure there will also be an in-

crease in the demand on this account. How large will this increase in demand be? Will it be so large that it will be difficult for the railways to meet it? For many months now the railways have been setting many thousands more cars at the mines than the operators have been loading and there has been continuously a very large surplus of coal cars. On August 31 the number of surplus coal cars which were in serviceable condition was 130,596. There was in addition a large number of coal cars which were in bad order but could soon be put in serviceable condition if they were needed.

It is hard to believe that one year ago the country was filled with outcries about the danger of a great coal shortage, that the railways were making the utmost efforts to move enough coal to supply the demands, and that they were being widely criticised for alleged inefficiency in not moving more coal. For many months they have had hundreds of thousands of coal cars standing on side tracks and rusting their wheels off because there was no demand. After all these months of huge car surpluses, will the public arise and smite the railways hip and thigh as soon as they are again unable to transport all the coal the mines can produce and the public consume when they are producing and consuming to capacity?

Coal shipments are beginning to show an upward trend. They amounted to 7,606,000 tons in the week ended September 3; 7,069,000 tons in the week ended September 10, and 8,139,000 tons in the week ended September 17. This was the first week since early in June when they passed the 8,000,000 mark. While, however, total shipments in these three weeks were 22,814,000 tons, they were in the same weeks of the year 1920, 33,506,000 tons, or about 50 per cent more. We now rejoice when the shipments exceed 8,000,000 tons a week. Perhaps in a few months we shall hear the railroads again being denounced because they do not transport more than 13,000,000 tons a week. Nobody thinks of denouncing the coal operators, the coal dealers and the consuming public when they don't furnish the railways coal with which to load their coal cars, but the coal operators, the coal dealers and the dear public all join in one wild howl when the railways cannot furnish cars in which to load all the coal. It's a great little world and many of the people in it are so fair and consistent—not!

### The "Government Guarantee" to the Railways

**T**HERE IS NO FEATURE of the railway situation regarding which there is more misunderstanding on the part of the public than regarding the so-called "government guarantee of 6 per cent." Selfish and industrious misrepresentation by persons who desire to destroy the rate-making provisions of the Transportation Act, or even private ownership of railways, has caused literally millions of people to believe that the Transportation Act actually guarantees to the railways a net return of 6 per cent. Many people, and even many newspapers, believe and say that the railways are guaranteed 6 per cent, while other industries of the country are making little or no net return, or actually are losing money. Whether the railways under present conditions should be guaranteed or enabled to earn an average return of 6 per cent may be a debatable question, but one fact which is beyond all reasonable question is that they never have been guaranteed 6 per cent, that they are not guaranteed 6 per cent now, and that they have not been and are not earning or getting 6 per cent.

Since there is such general misrepresentation and misunderstanding regarding the facts bearing upon this matter, it is desirable that they should be stated clearly and in detail.

Nowhere does the Transportation Act in any form, directly or indirectly, temporarily or permanently, guarantee to the railways an annual net return of 6 per cent or any other

amount. The law first requires the Interstate Commerce Commission to fix rates which will "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation."

It will be noted that this provision, which is here quoted in the exact language of the law, requires the rates to be so fixed as to yield a "fair return" *only if the railways are efficiently and economically managed.* The law then continues: "The Commission shall from time to time determine and make public what percentage of such aggregate property value constitutes a fair return thereon, and such percentage shall be uniform for all rate groups or territories which may be designated by the Commission." Are these provisions a guarantee of 6 per cent? They require the Commission to let the railways earn a "fair return," but they do not say that this return must be 6 per cent.

But this is not all. The law adds: "Provided, that during the two years beginning March 1, 1920, the Commission shall take as such fair return a sum equal to 5½ per cent of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of one per cent of such aggregate value to make provision in whole or in part for improvements, betterments or equipment, which, according to the accounting system prescribed by the Commission, are chargeable to capital account."

Now, what does all the foregoing mean? It means, first, that Congress has directed the Interstate Commerce Commission to so fix rates that for a period of two years beginning March 1, 1920, the railways shall be allowed to earn not less than 5½ or more than 6 per cent, and, second, that after March 1, 1922, the Commission itself shall determine what is a "fair return" for the railways to be allowed to earn, and, having so determined, shall allow them to earn this return. *The provision that not less than 5½ nor more than 6 per cent shall be taken by the Commission as the measure of a fair return covers only the period from March 1, 1920, to March 1, 1922, and then expires by limitation.* After that the Transportation Act will place no limitation whatever on the exercise by the Interstate Commerce Commission of its best judgment in determining what is a "fair return" for the railways to be allowed to earn.

How has this particular provision covering the two years from March 1, 1920, to March 1, 1922, been carried out thus far? The Commission, in the rate advance case of last year, decided that the "fair value" of the railways as a whole was \$18,900,000,000, and that under the conditions then existing 6 per cent would be a "fair return" for them to earn upon this valuation. On a 6 per cent basis the net operating income of the Class I railways—that is, of the railways earning more than \$1,000,000 gross each annually—should have been, in the eleven months ending with July, 1921, \$978,340,000. Did they earn this much? The net operating income actually earned by them was only \$437,600,000. Instead of the net earned by them being a "fair return" of 6 per cent, it was only 2.7 per cent. The difference between what they should have earned to get 6 per cent, and what they did earn, was \$541,000,000. If the government had "guaranteed" them 6 per cent it would have to pay them this \$541,000,000. But the government is not obligated under the law to pay this, and it won't pay it, or any part of it. The railways simply earned a net return of 2.7 per cent, and this being all they earned this is all they will ever get for that particular period. A "guarantee of 6 per cent" that produces only 2.7 per cent is about as valuable as the present paper currencies of some European countries.

A lot of people are advocating repeal of these so-called "guarantee" provisions upon the ground that they tend to make railway rates higher. *But never in any year since rail-*

*way statistics were kept have the railways of the United States earned as small a percentage of return on the book cost of their road and equipment as they earned in the first twelve months that the rates fixed under these so-called "guarantee" provisions were in effect.* In the twelve months ended September 1, 1921, they earned less than 3 per cent on the book cost of their road and equipment. The smallest percentage of return ever earned by them in any previous year of which there is a record was 3.2 per cent in 1894. Furthermore, since the provision specifying a minimum return of not less than 5½ or more than 6 per cent will automatically go out of existence in five months, why repeal it? It would take that long to get a bill to repeal it through Congress.

Those who have been active in carrying on propaganda regarding the so-called "guarantee" to the railways know all the facts regarding this so-called "guarantee" which have been stated in this editorial. They have carried on their propaganda solely to misrepresent the Transportation Act and the railroads to the public as a part of their unscrupulous campaign to discredit and destroy private ownership and management, and erect the Plumb Plan or some other socialistic or Bolshevistic system of railroad ownership and management in its place. It is astounding how the press will lend itself to the dissemination of the grossest misrepresentations regarding railway matters, and how easily the public is misled by them. It is no wonder that we have a very serious railroad problem when the railways are subjected to drastic and comprehensive regulation the wisdom or unwisdom of the administration of which depends on public opinion, and when a large part of the press and the public will accept almost any misrepresentation or canard regarding railway matters that any interested prevaricator may put into circulation.

## Cleveland, Cincinnati, Chicago & St. Louis

THE NET railway operating income of the Big Four in 1920 was not as great as in 1919 but, because of the manner in which the earnings held up during the latter part of the year when the property was being operated on its own account, the net accruing to the corporation showed a considerable increase over 1919. The corporate income account for 1920 showed total earnings from railroad operations of \$11,829,376, including the government compensation for January and February, the amount accrued under the guaranty provisions of Section 209 for March to August and the net railway operating income for the remaining four months of the year. This compared with the government compensation for 1919 totaling \$10,427,351, the increase over 1919 being \$1,402,025.

The net corporate income for 1920 was \$5,888,779 as compared with \$577,786 in 1919, but the 1919 figure was after the deduction of \$3,580,184, representing revenues and expenses applying to the period prior to January 1, 1918, settled for the account of the corporation by the Railroad Administration. The dividends declared by the Big Four totaled \$499,925—5 per cent on the preferred stock. The surplus after profit and loss in 1920 was \$5,323,339, in 1919 but \$35,005.

The Big Four's standard return for operation by the Railroad Administration was \$9,938,597, although in 1919, for instance, the accrued compensation was \$10,427,351. The Big Four earned considerably over its governmental rental during the period of federal control. In 1918 its net railway operating income was \$14,688,939; in 1919 it was \$12,746,171 and in January and February, 1920, as compared with a rental for the two months of about \$1,700,000 there was a net railway operating income of over \$1,000,000.

This level of earnings, however, was not maintained during the guaranty period.

At the present time the road is carrying about 80 per cent of the business it was carrying at this time last year. Its net railway operating income for the first seven months of 1921 was \$3,453,217 as compared with \$4,014,445 in the same period of last year.

The total revenue tonnage moved by the Big Four in 1920 was 38,513,685 tons, of which slightly over one-half was bituminous coal. This tonnage was an increase of 5,249,352 over 1919, the increase being made up principally by increases in the tonnage of coal. The revenue ton mileage in 1920 was 6,874,262,476, as compared with 6,042,170,957 in 1919. The average haul in 1920 was 179; in 1919, 182 miles. The total freight revenue in 1920 was \$60,825,455, as compared with \$50,700,076 in 1919. The total operating revenues of \$88,862,078 compared with \$73,856,456 in 1919, an increase of \$15,005,622. The operating expenses were \$76,326,466, as compared with \$57,427,452 in 1919, an increase of \$18,899,014 over 1919. Because of the greater increase in expenses than in revenues the net operating revenue of \$12,535,612 in 1920 represented a decrease of \$3,893,393 from the 1919 figure. The Big Four secured in 1920 an average revenue train load of 799 tons, an increase of 31 tons over 1919. The average load per loaded car was 30.9 tons, as compared with 27.3 tons in 1919. Miles per car per day was 28.3 and the net ton-miles per car per day were 540, as compared with 530 in 1919. It is only fair to say that at present, with the falling off of traffic, none of these figures are being maintained at their 1920 average.

One of the distinguishing features of the operations of the New York Central Lines in the past few years has been the broad policy the lines of the system have followed in the matter of acquiring new equipment and of making expenditures for additions and betterments to the property. The Big Four has been no exception. That road received from the Railroad Administration 2,000 of the standard freight cars and 35 of the standard locomotives. The total cost of this equipment was \$6,842,500, 75 per cent of which is covered by equipment trust certificates given to the director general of railroads and amounting to \$5,130,000. The company has also acquired or will acquire 75 locomotives, 55 passenger train cars and 3,100 freight cars under sublease from the New York Central. The estimated cost of this equipment is \$15,227,995.

Under the arrangement with the parent company the Big Four will assume its pro-rata share of the equipment trust certificates covering 75 per cent of the total cost, or \$11,416,671. The remaining 25 per cent was secured in the form of a loan from the New York Central covered by fifteen 6 per cent notes maturing December 23, 1921 to 1935. This loan totaled \$3,944,000, including \$3,415,000 for the new equipment and also \$529,000 for additions and betterments to existing equipment. In the same manner \$4,560,000 was borrowed from the New York Central for additions and betterments to way and structures, this loan being covered by a 10-year promissory note dated December 23, 1920. The Big Four also borrowed from the New York Central \$113,000, giving therefor its 10-year, 6 per cent note secured by the pledge of a like note given by the Cincinnati Northern to provide the latter company with money for additions and betterments.

The manner in which the New York Central was assisted in making loans such as these to its subsidiary companies through the medium of the revolving fund administered by the Interstate Commerce Commission has already been detailed in these columns. The equipment trusts and promissory notes issued by the Big Four in 1920, as above detailed, totaled \$25,163,671. During the year the company retired \$722,000 in bonds and equipment trusts totaling \$1,447,940. This means that the 1921 income account will

show a considerably increased charge for interest on funded debt. This is the kind of charge which in the last analysis must be paid by a railroad desiring to keep up with the march of progress in its territory.

The total expenditures made for additions and betterments by the Big Four in 1920 totaled \$10,777,210, including \$7,778,293 for equipment (less equipment retired or transferred). Projects which the company had or now has under way include second track and grade revision work on the Indianapolis division, grade separation work at Indianapolis now under way for several years, relocation of line in the Miami Conservancy District, etc. An important step taken during the year was the assumption of operation of the Evansville, Indianapolis & Terre Haute for the benefit of the owning company for a period of three years with the option of purchase. In 1921 this last step was taken through the purchase of the entire capital stock. The line, 134 miles in length, will prove of value to the Big Four primarily because of its access to important coal deposits.

The operating results in 1920 as compared with 1919 were as follows:

	1920	1919
Mileage operated	2,421	2,409
Freight revenue	\$60,825,455	\$50,700,076
Passenger revenue	19,639,114	17,267,397
Total operating revenue	88,862,078	73,856,456
Maintenance of way expenses	12,003,633	9,235,773
Maintenance of equipment	20,666,894	14,685,269
Traffic expenses	1,279,461	921,481
Transportation expenses	39,861,700	30,735,156
General expenses	1,859,961	1,474,546
Total operating expenses	76,326,466	57,617,418
Net railway operating revenue	12,535,612	16,239,038

The corporate income account is as follows:

Compensation (January and February)	\$1,705,535	
Guaranty, March 1 to August 31	5,059,713	
Net railway operating income, September 1 to December 31	5,064,107	
Total (compared with compensation accrued in 1919)	11,829,376	\$10,427,351
Total other income	1,621,425	757,762
Gross income	13,454,039	11,190,574
Interest on funded debt	5,957,003	4,919,600
Total deductions from gross income	7,464,654	7,032,604
Less revenues and expenses applicable prior to January 1, 1918, settled by U. S. R. A.	100,606	3,580,184
Net corporate income	5,888,779	577,786
Dividends; preferred, 5 per cent	499,925	499,925
Surplus for the year	5,323,339	35,005

## Great Northern

THE RECENT DECLARATION by the directors of the Great Northern of the regular  $1\frac{3}{4}$  per cent quarterly dividend will serve to call attention to the fact that owing to adverse business conditions in the extended territory which it serves, the property has been able thus far to make but small progress towards recovery from the unfortunate circumstances which have characterized railway operation since the advent of federal control. The continuance of the regular dividend has been made possible by performances in former years; it is in spite of a very adverse earning record to date this year. The Great Northern in the first seven months of the present year carried but 3,167,524,000 net ton-miles of freight. The contrast with the figures for the first seven months of 1920—namely, 5,255,637,000—shows only too well why it is that the road has been unable, even with drastic economies in all directions, to show sufficiently improved results.

In the first seven months of 1921 the gross earnings of the property were \$50,046,749 as compared with \$65,747,635 in the same period last year. The drastic economies and the reductions naturally contingent upon reduced traffic have produced total operating expenses of \$45,654,483 as against \$60,025,245 last year. The net from railway operations this year to July 31 was \$4,392,266; in the same period of last year the figure was \$5,722,390. The operations for the seven months showed, after the deduction of taxes, equipment rentals, etc., a net railway operating deficit of \$538,012. In the first seven months of 1920 there was a net railway operating income of \$1,791,728.

To refer to the figures by months, it will be noted that for the first four months of 1921 the Great Northern suffered deficits. In May it broke a little bit better than even. The net railway operating income of over a million dollars for June and July respectively has not been sufficient to overcome the deficits made earlier in the year. The operating ratio for the road—which in the old days used to range between 55 and 60 per cent—was in the first seven months of 1921, 91.20, and in July, 79.20. The Great Northern is

suffered the typical experience that practically all the roads of the country have gone through in the last three years except perhaps that in the Great Northern's case the factors stand out in somewhat greater relief. There is no indication that when business picks up in the road's territory improvement will not be of marked degree.

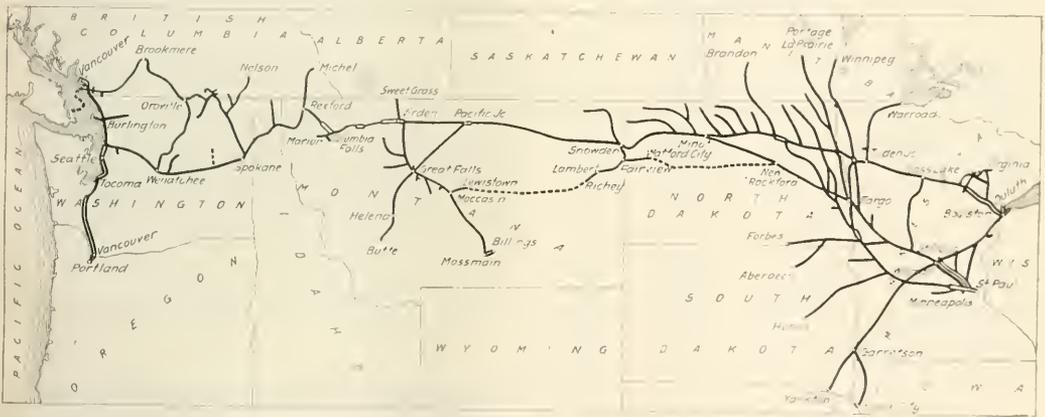
In 1920 the Great Northern carried 32,948,292 revenue tons of freight, a figure exceeded in but one previous year, 1914, in which year, however, the revenue ton-mileage was

Year ended	Freight revenue	Total operating revenue	Operating expenses	Net operating revenue	Operating ratio	Revenue tons	Revenue ton-miles	Average haul	Revenue train load	Revenue per load
June 30										
1912.....	\$44,877,369	\$66,197,819	\$37,662,548	\$28,535,271	56.89	27,543,172	6,277,718,227	226	661	17.33
1913.....	58,426,236	78,692,767	45,859,255	32,833,512	58.27	33,626,638	7,634,056,449	227	635	26.00
1914.....	55,025,016	75,473,869	46,547,956	28,925,913	61.68	30,857,598	6,930,295,709	225	663	24.44
1915.....	47,147,314	67,162,858	36,828,275	30,334,583	54.83	23,433,055	5,773,779,488	246	650	15.88
1916.....	60,177,249	81,262,478	43,914,076	37,348,402	53.79	28,927,130	7,809,816,834	270	663	22.87
Year ended December 31										
1916.....	61,053,293	83,181,729	48,569,202	34,612,527	58.39	30,389,386	8,018,210,184	264	660	22.65
1917.....	64,303,666	88,598,735	59,282,156	29,316,579	66.91	30,650,814	8,399,349,197	274	671	23.71
1918.....	76,937,445	100,698,520	84,429,245	16,269,275	83.84	30,948,659	8,844,747,071	286	683	27.88
1919.....	77,351,472	106,562,145	87,148,403	19,413,742	81.78	27,390,432	7,973,568,958	291	663	24.66
1920.....	89,760,845	122,616,776	113,999,659	8,617,117	92.97	32,948,292	8,518,840,991	259	684	23.33

gradually improving as the months go by, but the point to be made is that this improvement has not been sufficient to be satisfactory.

The Great Northern suffered adversely from federal control. It was far from proving a good money-maker for the Railroad Administration. The standard return for operation by the government was \$28,686,973. In 1918, the first year of federal control, despite the fact that the revenue ton-miles carried were the greatest in the company's history, the net railway operating income was \$11,978,791; in 1919, it was

less than in 1920. The revenue ton-miles in 1920 totaled 8,518,840,991, which figure was exceeded in 1918. The average haul in 1920 was 259 miles; in 1919, 291, and in 1918, 286. Of the Great Northern's total tonnage about 42 per cent consists of iron ore. The ore carried in 1920 increased approximately 3,570,000 tons over that carried in 1919, but the 1919 tonnage was reduced because of labor trouble. The grain carried in 1920 was not up to ordinary amounts. Some 97,000,000 bushels were carried in 1920 as against 112,400,000 bushels in 1919. This reduction was



The Great Northern

\$12,459,618. In 1920, including operation for two months by the government and for six months under the guaranty, the net railway operating income was but \$6,283,494.

The Great Northern did a large business during federal control and continued this business into 1920. It was unable, nevertheless, even with this heavy traffic to overcome the influences of higher wage scales, increased fuel costs, decreased efficiency of labor, etc., to which the transportation lines have been subjected. As far as 1921 is concerned the road is gradually overcoming these several handicaps to satisfactory earnings, but the sharp falling off in business and in gross earnings has prevented the results from showing in net earnings. The Great Northern has always been recognized as one of the country's most efficiently operated roads. The figures that have been given merely show that it has

the result of the farmers holding their grain in the hope of better prices.

The total freight revenues in 1920 were \$89,760,845, an increase of 16.04 per cent over 1919. The gross operating revenues of \$122,616,776 represented an increase of \$16,054,631 or 15.07 per cent over the previous year. The total operating expenses were \$113,999,659, an increase of \$26,851,255 or 30.81 per cent. The result of this greater increase in expenses than in revenues was a decrease of \$10,796,624, or 55.61 per cent, in net operating revenues. The operating ratio in 1920 was 92.97; in 1919, 81.78. Attention has already been drawn to the fact that prior to federal control the operating ratio of the Great Northern varied between 55 and 60 per cent; in fact, in 1915 it was but 54.04 per cent. With reference to the increase in operating ex-

penses in 1919, it is worth noting that the Great Northern estimates that the wage order in the Labor Board's Decision No. 2, issued July 20 and retroactive to May 1, 1920, increased operating expenses during the last eight months of the year to the amount of \$7,600,000. There was also an increase in taxes of \$2,070,386 or 25 per cent.

The Great Northern during 1920 placed orders for and received 50 Mikado locomotives, 1,000 75-ton ore cars and 163 other cars. It spent for new equipment and for additions and betterments to equipment, \$17,440,968, of which, however, \$7,080,922 was paid to the Great Northern Equipment Company for expenditures in prior years. Because of increased cost of oil, 70 locomotives were converted for coal. Expenditures for additions and betterments for other than equipment totaled \$5,204,841. The road made use of the revolving fund administered by the Interstate Commerce Commission to the extent of \$17,910,000; including \$2,010,000 to assist in the purchase of cars and locomotives, \$100,000 for strengthening existing equipment, \$800,000 to assist in paying for additions and betterments to way and structures and \$15,000,000 to aid in meeting maturing obligations.

The corporate income account of the Great Northern in 1920 showed a net corporate income of \$19,304,097 of which \$17,462,916 was applied to the payment of the 7 per cent dividends. The balance for the year after the payment of these dividends and \$25,685 applied to sinking and other reserve funds was \$1,815,497. In 1919, the net corporate income was \$22,139,586. Of this \$17,462,890 was applied to dividends, and \$76,230 to sinking and other reserve funds and \$2,500,000 was appropriated for investment in physical property, leaving a balance for the year 1919 of \$2,100,466.

The operating results in 1920 as compared with 1919 were as follows:

	1920	1919
Mileage operated	8,175	8,270
Freight revenue	\$89,760,845	\$77,351,472
Passenger revenue	20,551,025	19,623,859
Total operating revenue	122,616,776	105,562,145
Maintenance of way expenses	25,739,672	18,176,655
Maintenance of equipment	26,742,469	20,200,065
Traffic expenses	1,232,215	678,088
Transportation expenses	55,712,338	44,482,867
General	2,938,478	2,208,981
Total operating expenses	113,999,659	87,148,403
Net operating revenue	8,617,117	18,413,742

The corporate income account is as follows:

	1920	1919
Standard return (January and February, 1920; Net 1919)	\$4,781,162	\$28,686,973
Miscellaneous income	14,498,381	513,943
Gross corporate income	27,801,719	32,082,267
Interest on funded debt	7,375,984	7,431,387
Total deductions from gross corporate income	8,497,622	9,942,687
Net corporate income	19,304,097	22,139,586
Dividends (7 per cent)	17,462,916	17,462,890
Income appropriated for investment in physical property		2,500,000
Balance transferred to profit and loss	1,815,497	2,100,466

IN AMERICA for many years the passenger cars have been made of steel; ours are for the most part still of wood—no doubt that they may burn faster. In America they have automatic couplers, which prevent accidents and save time; in France there are still unhappy human beings who have to lock the cars together one after the other by hand. In America there is not a coach which does not have its two wash rooms, one for women, the other for men; in France a third of the cars have no wash rooms and in those that have them they are kept by ineradicable tradition filthy. In America, in the Pullman cars, which correspond to our first class, each passenger has at his shoulder a small electric light which enables him to read, and a tiny table on which he can work; in France, even in the de luxe cars, it is impossible most of the time to see clearly after dark. In America each coach is furnished with a reservoir of cold water and with paper cups from which to drink; in France, in point of water, there is only that which drops on your head when you go to the wash room.—Stephane Laucaume in *Le Matin* (Paris).

## Letters to the Editor

### The Stop-and-Proceed Rule

CHICAGO, ILL.

TO THE EDITOR:

Mr. Rudd has some interesting views on the question of automatic signals on grades (*Railway Age*, August 6, 1921, Page 247), and the importance of avoiding unnecessary stops; and I am in full sympathy with his suggestion for doing everything possible in the way of accomplishing this desired economy; but if this rule to proceed without stopping should be made general I think that we should not find the extensive improvements which he hopes for.

Take the case of two freight trains, both moving eastward, one of which we will call Train A and the other Train B. The leading train is B. When Train A is stopped by an automatic block signal it is because it is closing in on Train B. If it makes a full stop and then proceeds it has lost enough time to give Train B a chance to get ahead of it far enough to permit the next signal to clear for Train A. If it does not stop the chances are multiplied that it will overtake Train B in the block; and if Train B is stopped Train A will have to stop also; and if Train B is barely moving then Train A will have to slacken speed to the same slow rate.

Block signals should always be located in the best starting ground that can be found. Neglect of this requirement has been the cause of much waste of power. On steep grades it is assumed that all of the starting ground is poor; but when we come to make this non-stop rule universal then we shall find that in a good many cases the omission to stop at the signal would result simply in forcing upon the train the necessity of stopping, between signals, at some point less favorable for starting.

Those who advocate the usual stop and proceed practice and who would relax this rule only in extreme cases do not always state their reasons as clearly as they might. A Chicago railroad officer put the idea aptly the other day; he said that the stopping was necessary "in order that the engineer's mind may emphatically be impressed with the thought that in moving through the section governed by the signal he is doing so without the protection afforded by the automatic block signal system."

Where is Mr. Anthony these days? What would he say to these 1921 novelties? B. Q. R.

### One Swallow Does Not Make a Summer

CHICAGO.

TO THE EDITOR:

In an editorial appearing in the issue of September 17, 1921, under the title "Securing Good Results with Concrete" the following statement occurs: "A recent investigation of a concrete building failure disclosed the remarkable fact that it is apparently impossible to produce a concrete of a greater strength than 1,000 lb. per sq. in. at 28 days, with the materials used because of wide variation in the results secured with the concrete materials available in railroad work."

After reading this several times, I am led to believe that you did not mean what you say. You have properly referred to the low strength of the concrete in this particular building as a remarkable and hence unusual fact. The conclusion, therefore, that this remarkable and unusual fact may be taken to represent a general truth is obviously poor logic. I assume, therefore, that something slipped between the writer and the printer. The failure referred to in this editorial

refers to *one* building which failed out of *thousands* which have not failed. The only conclusion, therefore, that can be drawn from this failure is that in this particular case all specifications and rules formulated to secure a satisfactory building had been violated or else the specifications and rules themselves were grievously at fault. In no other way would such low strength concrete be produced.

The obvious intent of the editorial is to show the necessity of securing proper materials, controlling the amount of water used, proper proportioning, thoroughness of mixing and protection of the concrete after it has been placed in the forms. All these are important and when they are secured the concrete will have a strength at least double that to which you refer as being the practical limit of 28 days.

Railway bridge engineers know about these things. Their apparent conservatism in the unit stresses used in the design of railway structures is due both to difficulty in securing the observance of best construction methods and in the sort of live loads which the structure must carry, rather than in any inability to accept economical design.

Only when designers realize fully the paramount importance of the quantity of mixing water, the design of concrete mixtures, and the effect of proper curing conditions, and when the methods of construction are reduced to positive assurance that all these factors will be controlled, can we hope to obtain the maximum strength and economy in the use of reinforced concrete. It is equally possible to obtain concrete of a predetermined strength within limits of 10 or 15 per cent, as to obtain structural steel of specified quality. It is time that designers and builders should understand that there is a limit to which concrete may be abused, and it is a poor argument for such abuse that field operations cannot be so controlled as to prevent it.

A. C. IRWIN,  
Engineer, Structural Bureau, Portland Cement Association.

(Mr. Irwin's conclusion is correct. The editorial in question was improperly punctuated as published. The first two sentences should have read as follows: "Recent investigation of a concrete building failure disclosed the remarkable fact that it is apparently impossible to produce a concrete having a greater strength than 1,000 lb. per sq. in. at 28 days with the materials used. Because of wide variation in the results secured with the concrete material available in railroad work the railroad bridge engineers are inclined to be conservative \* \* \*."—Editor.)

## The War Finance Corporation Bill

SMITHSBURG, Md.

TO THE EDITOR:

On August 22 the House of Representatives passed H. R. 8331, a bill to amend the Transportation Act by authorizing the President, through the War Finance Corporation, to purchase from the Railroad Administration securities now held by it, or to be acquired by it, to an aggregate purchase price not exceeding \$500,000,000, of which amount about 159,000,000 were in the hands of the director general of railroads on August 1 of this year. They were acquired under authority granted by Section 207 of the Transportation Act.

On July 22 President Harding made the following statement: "With this end in view you are asked to extend the authority of the War Finance Corporation so that it may purchase these railway funding securities accepted by the director general of railroads. No added expense, no added investment is required on the part of the government; there is no added liability, no added tax burden. It is merely the grant of authority necessary to enable a most useful and efficient government agency to use its available funds to purchase securities for which Congress already has author-

ized the issue and turn them into the channels of finance ready to float them."

This is clear and understandable. It is advice given for the benefit of the nation in a period of stress and uncertainty, when the whole nation is struggling in its efforts to return to that prosperous normal condition which obtained before the war.

This week in Washington there will be a labor conference called by the President and made up of representatives of capital and labor to consider ways and means to combat unemployment throughout the country. The 600,000 railroad employees who were laid off between August 20, 1920, and March 21, 1921, are among the number who will be affected by the findings. The conference could take no more important action than the adoption of a resolution urging the early passage of Senate Bill 2337, which is similar to the bill already passed by the House of Representatives. If the railroad brotherhoods would take similar action and devote their energy to assist in passing this important bill, they would be doing their members the greatest possible service.

This measure is not giving the railroads one dollar. It means only that the government guarantees a loan for a period of 10 years, supplemented by securities furnished to the director general of railroads and the War Finance Corporation by the railroads. In other words, it gives a moral guarantee, not a banking endorsement. The director general has said: "It seems to me that this is an expediency that is the result of the war, and what the government is asked to do in this case is to refrain from collecting certain amounts that the roads owe, and do the same for the transportation system of the United States that the government is doing for France, England, Italy and Germany in extending of liabilities growing out of the war."

Congressman Layton ably said: "If the roads need help, and instant help, which is admitted on every hand, they should have it, no matter what the credit and debit account between them and the government may show as the result of government control during the war."

The railroads must function; not to function is inconceivable. Unless they function there is immediate and universal disaster; they must function even if the government assumes entire financial liability. The farmers are asking financial aid in order that their crops may be moved. What good is it to finance them for such a purpose if the railroads cannot function?

The condition of railroad credit is being impaired more and more until loans are almost impossible to obtain from private sources except when a railroad can place a bond issue which will take precedence over its regular stock. To do this they must first obtain the consent of the Interstate Commerce Commission. The commission might be reluctant to consent for the reason that if this were continued it means that the common stock of the railroads would soon become absolutely worthless.

The general public believes that under the Transportation Act the railroads have been turned back to their owners in the same condition they were in prior to January 1, 1918. This is a great mistake. Under the provisions of the Transportation Act the railroads are unavoidably running into debt every month. This is due primarily to the fact that all their powers have been taken away from them. They have no authority; no power to borrow money; no independent power to spend it when borrowed. The price of all they have to sell—freight and passenger service—are fixed by a government body. The wages of their employees are determined by the Railroad Labor Board. The employees have already received a big cut in wages estimated at about \$400,000,000 annually. Unless this bill is passed by the United States Senate and the railroads are given this financial assistance, another cut will be necessary, not only in the number of men employed but in the wages paid those still

in service. This condition would be deplorable in the face of approaching winter with several million men already out of work.

This bill is the greatest piece of legislation that could be enacted at this time to restore a full degree of employment to labor. Increased railroad purchases of supplies and equipment would mean increased employment in maintenance and repair work. It would also increase production, and incidentally employment, in iron and steel industries and in the moving of lumber, coal and other raw materials.

The welfare of the whole nation is at stake. If the arteries of transportation are disrupted, there will be a malnutrition that will eventually cause economic starvation. The entire business world demands a practical adjustment of the railroad situation; a reduction of freight and passenger rates with adequate service and equipment and avoidance of car shortage.

Some are trying to make the exigencies of war force the railroads into bankruptcy and thereby bring on government ownership. This is not only unjust but absolutely dishonest.

Summing up—the compelling question at this time is the importance of financing the transportation system, whose continued function is vitally necessary to the welfare of the nation. The passage of this bill will restore confidence, increase stability of railroad management and be one more move toward that national condition of certainty and prosperity which existed before the war. EARL H. MORTON.

## Non-Spectacular Safety First

ST. JOSEPH, Mo.

TO THE EDITOR:

The Marshall County News, published at Marysville, Kan., the headquarters of the Central division of the Union Pacific, printed in a recent issue a notice of the triennial re-examination of employees on train rules which had been conducted on that division during the past few weeks, and commenting on this work, says that it is "safety-first." This is a point which railroad men would do well to bear in mind.

To educate men to perfect themselves on the train rules is real safety-first; more so than most of the activities that go by that name. This for the reason that the prevention of collisions and derailments is more important than to keep men from falling off ladders or from burning their fingers in the fire; for the same reason that the preservation of 100 lives, on a fast-moving train, is paramount to saving a single life.

In this work on the Union Pacific, Superintendent C. E. Hedrix, and examiner O. W. Brandt held numerous rallies, conducting question-meetings at different centers where the men could be gathered, attracting 40 to 75 men on each occasion. These meetings were held on three evenings a week at Marysville and on successive Sundays at other places. Meetings of this kind are safety-first rallies of the right sort. The local newspaper is published for the general public and, of course, it cannot be expected to be well acquainted with the details of railroad management, but that editor certainly guessed right when he adopted this hackneyed title. It surely is an interesting and important truth, suitable to be laid before the general public, that Superintendent Hedrix is awake to his duty of keeping his engineers, conductors, station agents and operators keyed up to a high standard of efficiency.

By all means let us keep up our safety rallies, at shops and elsewhere, and get as many men enthused over them as possible; but at the same time bear in mind that the safety of fast-moving trains is the title of the first chapter of the railroad gospel.

There is nothing spectacular about train-rule education; success depends, not on big meetings, but on securing patient fidelity in the locomotive cab, and in jobs at other places which are comparatively lovely. The work of examining men, such as Mr. Brandt is conducting, is sometimes a tedious and exhausting work; but it is work that counts.

OBSERVER.

## Freight Rate Allowances to Plant Facilities

WARREN, Ark.

TO THE EDITOR:

In the very interesting review of Mr. Ford's doings on the Detroit, Toledo & Ironton, which you print in your issue of September 10, you say, very truly, that that road is now practically nothing but a plant facility of the Ford Motor Works. This is an important point to be kept in mind. It places this Ohio railroad in exactly the same position as the "tap lines" of the southwest, whose freight rate dealings with their trunk line connections were such a prominent subject of discussion in freight circles some 10 years ago.

It will be recalled that the Interstate Commerce Commission conducted an elaborate investigation, covering three or four years. [The principal Tap Line decision was reported in the *Railway Age Gazette* of May 3, 1912.] The Commission instituted proceedings against a large number of lines in the lumber-producing territory and orders were issued to trunk lines restricting the amounts of divisions which could rightfully be allowed to the industrial lines (called tap lines). In many instances this reduced the earnings of some short railroads so that they could not pay expenses. The same principles were later applied to industrial railroads in the north and east. The southern lines most affected were, of course, short, few exceeding 40 miles in length. At the same time many of them were actually needed more by the public as common carriers than is the D. T. & I.

The D. T. & I. is in reality more of an industrial road than many lines so-called, even though it be 400 miles long. If the principle is right as applied to short lines: if justice is to be done, then the same should also be applied to any line where conditions are similar, regardless of mileage. With the application of the principles laid down by the Interstate Commerce Commission, and with Mr. Ford's road treated as were the tap and industrial lines, his excess earnings are liable to go glimmering.

W. S. HOBBS,

General Manager Warren & Ouachita Valley.

[Prior to the decision above referred to, the Interstate Commerce Commission, in its annual report for 1911, page 12, expressed itself on this subject as follows: "The evils most difficult to detect and to prove today are those arising out of the community of interest of certain carriers and industrial corporations. The ownership of industrial corporations by carriers and of carrier corporations by industrials is frequently taken advantage of to defeat that equality between shippers which the Act contemplates. This is accomplished by unreasonable divisions of joint rates, forced upon carrier by powerful shippers who control industrial railroads. Such arrangements may be legal in form, although certainly illegal in effect. We find that a certain number of large industrial concerns control tracks and terminal facilities nominally owned by small railroad corporations which do not rise to the dignity of common carriers, but which are treated as such by the connecting carriers. As a result, the connecting carriers make a switching allowance or a division of the joint rate to such terminal lines, which practice unquestionably results in discrimination and places the industrial at an advantage in the market. Another form of discrimination is found in the leasing of property by carriers to shippers for a nominal consideration with a further agreement that all shipments made by the lessee shall be routed over the lines of the lessor. It becomes increasingly evident that entire freedom from discrimination can be secured only by a complete separation of the business of transportation from every form of commercial or industrial enterprise."—EDITOR.]

# Commission Presents Tentative Consolidation Plan

## Preliminary Report Proposes Nineteen Competing Systems— Based on Report of Prof. W. Z. Ripley with Alternatives

WASHINGTON, D. C.

**A**TENTATIVE PLAN for the consolidation of the railway properties of the continental United States into 19 systems with one alternative plan for the New England lines, was made public by the Interstate Commerce Commission on Wednesday, September 28, and served upon the railroads and state authorities as the basis for a plan to be ultimately adopted by the commission, in accordance with the provisions of paragraphs 4 and 5 of Section 5 of the interstate commerce act, after public hearings, the dates for which have not yet been announced. Under the commission's direction, Professor William Z. Ripley of Harvard University has prepared a report which is printed as the appendix to the commission's report. In some respects the commission's tentative plan does not follow his recommendations, which propose 21 systems, but presents alternatives thereto for like consideration, the main differences being indicated. The commission says it has sought to minimize dismemberment of existing lines or systems and that this tentative plan is put forward in order to elicit a full record upon which the plan to be ultimately adopted can rest, and without a pre-judgment of any matters which may be presented upon that record. Whenever a property is referred to in the tentative plan, the properties controlled thereby under lease, stock ownership or otherwise should be understood as included unless otherwise indicated.

### Proposed Systems

The commission finds for the purposes of this tentative plan that the railway properties of the continental United States may be consolidated under the statute into the following systems:

#### SYSTEM NO. 1.—NEW YORK CENTRAL

New York Central.  
Pittsburgh & Lake Erie.  
Rutland.  
Michigan Central.  
Chicago, Kalamazoo & Saginaw.  
Cleveland, Cincinnati, Chicago & St. Louis.  
Cincinnati Northern.

Western Maryland.  
Fonda, Johnstown & Gloversville.  
Lake Erie & Pittsburgh.  
Central Indiana.  
Pittsburgh, Chartiers & Youghioghenny.  
Monongahela.  
Boston & Maine.  
Maine Central.  
Bangor & Aroostook.

And all railway properties controlled by the above carriers through lease, stock ownership, or otherwise, except:

Lake Erie & Western and Toledo & Ohio Central. Both now controlled by New York Central.  
Zanesville & Western and Kanawha & Michigan. Both now controlled by Toledo & Ohio Central.  
Indiana Harbor Belt, now controlled by New York Central, 30 per cent; Michigan Central, 30 per cent; Chicago & North Western, 20 per cent; Chicago, Milwaukee & St. Paul, 20 per cent.

**NOTE.**—Prof. Ripley recommends the inclusion of the Western Maryland in system No. 5, Nickel Plate-Lehigh Valley.

Prof. Ripley makes no specific assignment of the Fonda, Johnstown & Gloversville.

The Lake Erie & Pittsburgh; Central Indiana; Pittsburgh,

Chartiers & Youghioghenny; and Monongahela may be incorporated in either system No. 1 or No. 2. Prof. Ripley makes no specific assignment of these four roads, which are controlled jointly in the interest of the New York Central and the Pennsylvania.

The Boston & Maine, Maine Central, and Bangor & Aroostook may be included in system No. 7, New England, or system No. 7a, New England-Great Lakes. Prof. Ripley rejects the trunk line treatment of the New England roads, but we present this alternative with a view to developing the situation upon hearing.

The Lake Erie & Western may be included in system No. 5, Nickel Plate-Lehigh Valley.

The Toledo & Ohio Central, Zanesville & Western, and Kanawha & Michigan may be included in system No. 9, Norfolk & Western.

The Indiana Harbor Belt is reserved for consideration in connection with terminal situations.

#### SYSTEM NO. 2.—PENNSYLVANIA.

Pennsylvania.  
West Jersey & Seashore.  
Long Island.  
Baltimore, Chesapeake & Atlantic.  
Cumberland Valley.  
Maryland, Delaware & Virginia.  
New York, Philadelphia & Norfolk.  
Pittsburgh, Cincinnati, Chicago & St. Louis.  
Waynesburg & Washington.

Grand Rapids & Indiana.  
Cincinnati, Lebanon & Northern.  
Ohio River & Western.  
Louisville Bridge & Terminal.  
Wheeling Terminal.  
Toledo, Peoria & Western.  
Lorain, Ashland & Southern.  
Lake Erie & Pittsburgh.  
Central Indiana.  
Pittsburgh, Chartiers & Youghioghenny.  
Monongahela.

And all other railway properties controlled by any of the above carriers under lease, stock ownership, or otherwise, except the Norfolk & Western and railway properties controlled by it, which may be included in system No. 9, Norfolk & Western.

**NOTES.**—The Lorain, Ashland & Southern may be included in system No. 4, Erie, which owns one-half the stock, the Pennsylvania owning the other half.

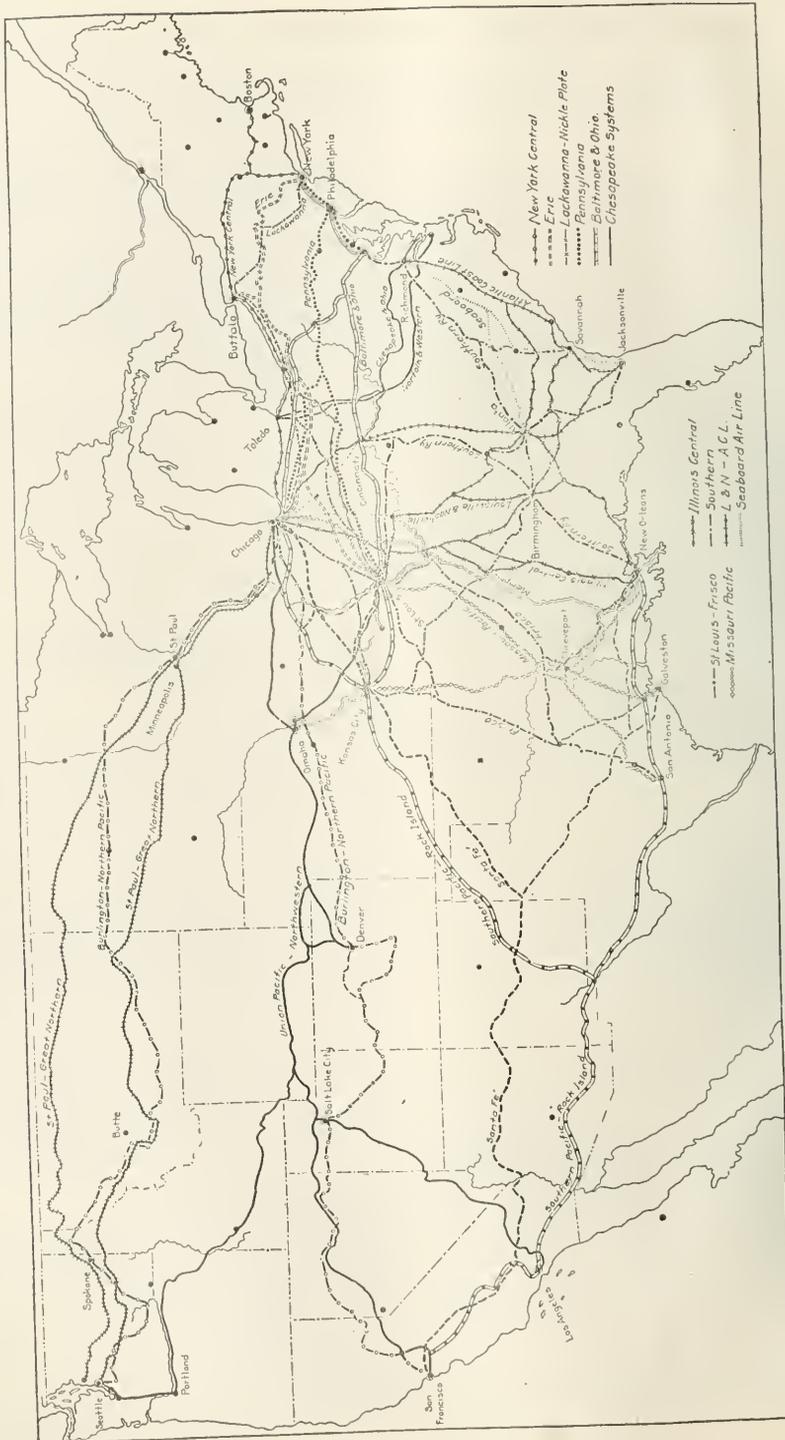
The Lake Erie & Pittsburgh; Central Indiana; Pittsburgh, Chartiers & Youghioghenny; and Monongahela may be included in system No. 1, New York Central, which controls one-half the stock, the Pennsylvania controlling the other half.

#### SYSTEM NO. 3.—BALTIMORE & OHIO.

Baltimore & Ohio.  
Sandy Valley & Elkhorn.  
Staten Island Rapid Transit.  
Reading system, comprising the Philadelphia & Reading, Central Railroad of New Jersey, and various others.  
Cincinnati, Indianapolis & Western.  
Chicago, Indianapolis & Louisville.  
New York, New Haven & Hartford.  
Central New England.  
Lehigh & New England.  
Lehigh & Hudson.

**NOTES.**—The Baltimore & Ohio Chicago Terminal is reserved for consideration in connection with terminal situations.

The New York, New Haven & Hartford; Central New



Main Stems of Twenty-one Systems Proposed by Professor Ripley

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1921

England; Lehigh & New England; and Lehigh & Hudson may be included in system No. 7, New England, or system No. 7a, New England-Great Lakes.

SYSTEM NO. 4.—ERIE.

- Erie.
- Chicago & Erie.
- New Jersey & New York.
- New York, Susquehanna & Western.
- Delaware & Hudson.
- Delaware, Lackawanna & Western.
- Ulster & Delaware.
- Bessemer & Lake Erie.
- Buffalo & Susquehanna.
- Pittsburg & Shawmut.
- Pittsburg, Shawmut & Northern.
- Lorain, Ashland & Southern.
- Wabash lines east of the Missouri River.

NOTES.—Prof. Ripley recommends including the Lehigh Valley in this system; but in this tentative plan that carrier is proposed as a main stem for system No. 5, Nickel Plate-Lehigh Valley.

The Delaware & Hudson, Delaware, Lackawanna & Western, Ulster & Delaware, Pittsburg & Shawmut, and Pittsburg, Shawmut & Northern may be included in system No. 7a, New England-Great Lakes.

The Bessemer & Lake Erie may be included in system No. 5, Nickel Plate-Lehigh Valley.

The Lorain, Ashland & Southern may be included in system No. 2, Pennsylvania.

SYSTEM NO. 5.—NICKEL PLATE-LEHIGH VALLEY.

- Lehigh Valley.
- New York, Chicago & St. Louis.
- Toledo, St. Louis & Western.
- Detroit & Toledo Shore Line.
- Lake Erie & Western.
- Wheeling & Lake Erie.
- Pittsburg & West Virginia.
- Bessemer & Lake Erie.

NOTES.—Prof. Ripley recommends the Lackawanna as main stem in this system. In this tentative plan it is replaced for that purpose by the Lehigh Valley, and made available for either system No. 7a, New England-Great Lakes, or system No. 4, Erie. He also includes the Buffalo, Rochester & Pittsburg and Wheeling & Lake Erie in this system.

The Bessemer & Lake Erie may be included in system No. 4, Erie.

SYSTEM NO. 6.—PERE MARQUETTE.

- Pere Marquette.
- Detroit & Mackinac.
- Ann Arbor.
- Detroit, Toledo & Ironton.
- Boyne City, Gaylord & Alpena.

NOTE.—The last-named road is a class-II road not specifically covered by Prof. Ripley's report.

SYSTEM NO. 7.—NEW ENGLAND.

- New York, New Haven & Hartford.
- New York, Ontario & Western.
- Central New England.
- Boston & Maine.
- Maine Central.
- Bangor & Aroostook.
- Lehigh & Hudson River.
- Lehigh & New England.

NOTES.—Prof. Ripley recommends inclusion of the New York, Ontario & Western in system No. 4, Erie.

The Lehigh & Hudson River is not included in any system under Prof. Ripley's report, but is left as a "bridge line."

SYSTEM NO. 7A.—NEW ENGLAND-GREAT LAKES.

Same as system No. 7 with addition of the following, which otherwise with, the exception of the Buffalo, Rochester &

Pittsburgh may be included in system No. 4, Erie. That carrier may be included in system No. 5, Nickel Plate-Lehigh Valley.

- Delaware & Hudson.
- Ulster & Delaware.
- Delaware, Lackawanna & Western.
- Buffalo, Rochester & Pittsburg.
- Pittsburg & Shawmut.
- Pittsburg, Shawmut & Northern.

NOTE.—The addition of these lines has not been recommended by Prof. Ripley.

SYSTEM NO. 8.—CHESAPEAKE & OHIO

- Chesapeake & Ohio.
- Hocking Valley.
- Virginian.

NOTE.—Prof. Ripley recommends consolidation of the Virginian with the Norfolk & Western, Toledo & Ohio Central, and Kanawha & Michigan, in order to afford a western outlet for coal originating on the Virginian. This apparently would involve upgrade eastbound haul of westbound coal to the vicinity of Roanoke, unless there be new construction near Gauley Bridge, W. Va. The Virginian's present outlet to the west is via Deepwater, W. Va., and the Chesapeake & Ohio.

SYSTEM NO. 9.—NORFOLK & WESTERN

- Norfolk & Western.
- Toledo & Ohio Central.
- Zanesville & Western.
- Kanawha & Michigan.
- Kanawha & West Virginia.

NOTE.—From the Norfolk & Western is excepted the branch from Roanoke to Winston-Salem, which may be included in system No. 11, Atlantic Coast Line-Louisville & Nashville and the branch from Lynchburg to Durham which may be included in system No. 12, Illinois Central-Seaboard.

SYSTEM NO. 10.—SOUTHERN.

- Southern.
- Alabama Great Southern.
- Georgia, Southern & Florida.
- Mobile & Ohio.
- Southern Railway in Mississippi.
- Northern Alabama.
- Cincinnati, New Orleans & Texas Pacific.
- New Orleans Great Northern.
- Alabama & Vicksburg.

NOTE.—Prof. Ripley recommends inclusion of the Georgia Southern & Florida branch from Valdosta, Ga., to Palatka, Fla., in the Seaboard system.

SYSTEM NO. 11.—ATLANTIC COAST LINE-LOUISVILLE & NASHVILLE.

- Atlantic Coast Line.
- Atlanta & West Point.
- Charleston & Western Carolina.
- Louisville & Nashville.
- Nashville, Chattanooga & St. Louis.
- Louisville, Henderson & St. Louis.

- Western Railway of Alabama.
- Richmond, Fredericksburg & Potomac.
- Norfolk Southern.
- Atlanta, Birmingham & Atlantic.
- Winston-Salem Southbound.
- Roanoke to Winston-Salem branch of Norfolk & Western.
- Florida East Coast.
- Carolina, Clinchfield & Ohio.
- Georgia & Florida.
- Gulf, Mobile & Northern.
- Mississippi Central.

NOTES.—Prof. Ripley recommends that the Richmond, Fredericksburg & Potomac and Florida East Coast retain their present status without inclusion in any system.

The Carolina, Clinchfield & Ohio may be included in system No. 12, Illinois Central-Seaboard. Prof. Ripley recommends inclusion in system No. 10, Southern.

The Gulf, Mobile & Northern and Mississippi Central are not specifically included in any system under Prof. Ripley's report.

SYSTEM NO. 12.—ILLINOIS CENTRAL-SEABOARD.

Illinois Central.

Yazoo & Mississippi Valley.

Central of Georgia.

Seaboard Air Line.

Lynchburg, Va., to Durham, N. C., branch of Norfolk & Western.

Gulf & Ship Island.

Tennessee Central.

Carolina, Clinchfield & Ohio.

NOTES.—Prof. Ripley recommends that a separate system be built around the Seaboard Air Line.

The Gulf & Ship Island is not included in any system by Prof. Ripley.

The Carolina, Clinchfield & Ohio may be included in system No. 11, Atlantic Coast Line-Louisville & Nashville.

SYSTEM NO. 13.—UNION PACIFIC-NORTH WESTERN

Union Pacific.

St. Joseph & Grand Island.

Oregon Short Line.

Oregon-Washington Railroad & Navigation Company.

Los Angeles & Salt Lake.

Chicago & North Western.

Chicago, St. Paul, Minneapolis & Omaha.

Lake Superior & Ishpeming.

Wabash lines west of the Missouri River.

NOTES.—Prof. Ripley recommends inclusion of the Central Pacific in this system.

The Lake Superior & Ishpeming is not specifically included in any system by Prof. Ripley.

SYSTEM NO. 14.—BURLINGTON-NORTHERN PACIFIC.

Chicago, Burlington & Quincy.

Northern Pacific.

Chicago Great Western.

Minneapolis & St. Louis.

Spokane, Portland & Seattle.

NOTES.—From the Chicago, Burlington & Quincy are expected the Colorado & Southern and Fort Worth & Denver City, which may be included in system No. 16, Santa Fe. Prof. Ripley recommends that they be included in system No. 19, Chicago-Missouri Pacific.

Prof. Ripley recommends extension of this system to the Pacific coast by including the Denver & Rio Grande and the Western Pacific. He also recommends redistribution of portions of the Minneapolis & St. Louis and Chicago Great Western.

The Spokane, Portland & Seattle may be included in system No. 15, Milwaukee-Great Northern.

SYSTEM NO. 15.—MILWAUKEE-GREAT NORTHERN

Chicago, Milwaukee & St. Paul.

Great Northern.

Chicago, Terre Haute & Southeastern.

Duluth & Iron Range.

Duluth, Missabe & Northern.

Green Bay & Western.

Spokane, Portland & Seattle.

Butte, Anaconda & Pacific.

NOTES.—The Green Bay & Western and Butte, Anaconda & Pacific are not included in any system under Prof. Ripley's report.

The Spokane, Portland & Seattle may be included in system No. 14, Burlington-Northern Pacific.

Prof. Ripley recommends that the eastern half of the Chicago & Eastern Illinois be included in this system.

SYSTEM NO. 16.—SANTA FE.

Atchison, Topeka & Santa Fe.

Gulf, Colorado & Sante Fe.

Colorado & Southern.

Fort Worth & Denver City.

Denver & Rio Grande.

Western Pacific.

Utah Railway.

Northwestern Pacific.

Nevada Northern.

NOTES.—Prof. Ripley recommends inclusion of the Colorado & Southern and the Fort Worth & Denver City in the Missouri Pacific system. He also recommends inclusion of a part of the Gulf Coast Lines in the above system.

Prof. Ripley recommends that the Northwestern Pacific retain its present status.

The Nevada Northern is not specifically included in any system by Prof. Ripley. It may be included in system No. 17, Southern Pacific-Rock Island.

SYSTEM NO. 17.—SOUTHERN PACIFIC-ROCK ISLAND

Southern Pacific Company.

Nevada Northern.

Chicago, Rock Island & Pacific.

Chicago, Rock Island & Gulf.

Arizona & New Mexico.

El Paso & Southwestern.

San Antonio & Aransas Pass.

Trinity & Brazos Valley.

Midland Valley.

Vicksburg, Shreveport & Pacific.

Chicago, Peoria & St. Louis.

NOTES.—The Nevada Northern may be included in system No. 16, Santa Fe.

The Arizona & New Mexico and Chicago, Peoria & St. Louis are not specifically included in any system by Prof. Ripley.

The Trinity & Brazos Valley may be included in system No. 18, Frisco-Katy-Cotton Belt. So recommended by Prof. Ripley.

Prof. Ripley recommends redistribution of portions of the carriers included in this system.

SYSTEM NO. 18.—FRISCO-KATY-COTTON BELT.

St. Louis-San Francisco.

St. Louis Southwestern.

Louisiana Railway & Navigation Company.

Chicago & Alton.

Missouri, Kansas & Texas.

Trinity & Brazos Valley.

San Antonio, Uvalde & Gulf.

NOTES.—The Trinity & Brazos Valley may be included in system No. 17, Southern Pacific-Rock Island.

Prof. Ripley recommends inclusion of the San Antonio, Uvalde & Gulf in either system No. 17, Southern Pacific-Rock Island, or in a Southwestern-Gulf system.

Prof. Ripley recommends redistribution of portions of the carriers included in this system.

SYSTEM NO. 19.—CHICAGO-MISSOURI PACIFIC.

Chicago & Eastern Illinois.

Missouri Pacific.

Kansas City Southern.

Kansas City, Mexico & Orient.

Kansas, Oklahoma & Gulf.

Texas & Pacific.

Fort Smith & Western.

Louisiana & Arkansas.

Gulf Coast Lines.

International & Great Northern.

NOTE.—Prof. Ripley recommends redistribution of portions of the carriers included in this system.

Certain lines such as the Minneapolis, St. Paul & Sault Ste. Marie and the Central Vermont, which are controlled by

Canadian carriers, have not been specifically included in this tentative plan because these lines form parts of through transcontinental Canadian systems in active competition with systems above set forth.

The carriers included in this tentative plan comprise most of the class-I steam railroads but very few of those in class II and class III. Those not so included, whether industrial common carriers, terminal carriers, interurban electric railways operated as a part of general steam railroad systems of transportation or engaged in the general transportation of freight, "short lines," or others, will be considered at the hearings to be hereafter assigned so that in the plan to be ultimately adopted provision can be made for their inclusion in the systems.

The report does not specifically mention water carriers. Where these carriers are now controlled by carriers by rail they will be considered as being tentatively in the systems in which the controlling rail carrier has been included.

Paragraphs 4 and 5 of Section 5 of the Interstate Commerce Act, under which this plan is prepared, read as follows:

(4) The commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems. In the division of such railways into such systems under such plan, competition shall be preserved as fully as possible, and wherever practicable the existing routes and channels of trade and commerce shall be maintained. Subject to the foregoing requirements, the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the values of the

properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties.

(5) When the commission has agreed upon a tentative plan, it shall give the same due publicity and upon reasonable notice, including notice to the governor of each state, shall hear all persons who may file or present to the commission objections thereto. The commission is authorized to prescribe a procedure for such hearings and to fix a time for bringing them to a close. After the hearings are at an end, the commission shall adopt a plan for such consolidation and publish the same but it may at any time thereafter, upon its own motion or upon application, reopen the subject for such changes or modifications as in its judgment will promote the public interest. The consolidation herein provided for shall be in harmony with such plan.

The commission's tentative plan is not discussed in detail. The balance of the report as served by the commission is made up of Prof. Ripley's report, which covers 192 printed pages and contains some 30 maps and charts. Prof. Ripley proposes 21 systems, 5 within the trunk line region, 2 lake to tide soft coal systems in the Chesapeake Bay region, in the southeast 4 systems, 5 transcontinental systems west of the Mississippi, and 2 running southwest toward the Gulf ports, and 3 outlying regional groups, in New England, in the Southern Michigan peninsula, and down the east coast of Florida toward Cuba. His report contains chapters giving a detailed discussion of trunk line territory, the New England region, the Chesapeake region, the Southeastern region, the Western transcontinental region, and the Southwestern Gulf region. An abstract of some of the more general portions of his report, contained in the introduction and the recapitulation, follows:

## Abstract of Professor Ripley's Report

It is the theory of this legislation that the railways must be considered as a whole, group by group, fixing by means of the new statutory rule of rate making, a general level of return adequate to maintain them all at a proper pitch of efficiency. To this end, the Senate bill sought to reduce the carrier corporations to a common denominator of earning power in terms of valuation by compulsory consolidation. But the measure ultimately emerged from conference committee with the procedure as above described, in place of compulsion. It was evidently expected that the new statutory rule of rate making would afford an incentive sufficiently powerful to induce the strong companies to merge with weaker ones, rather than to be compelled to pay over their surplus earnings above the rate of return fixed as reasonable, into a revolving fund for the general benefit of their respective groups. An incentive to the weaker roads might also conceivably obtain. The aid extended by the act from the surplus earnings of the strong roads consists merely of advances or loans, except in so far as a better balanced opportunity yields larger earnings. Or else possibly a fairer administration of the division of through rates may help. But the weaker roads are encouraged to seek shelter through affiliation. They are not taken care of by any definite guaranty of earnings. But the motive for consolidation, it was held, should not be permitted to bring about indiscriminate mergers, regardless of natural relationships of the carriers either to one another, or to the needs of their respective territories. It was in order that there might be consonance between such mergers as took place and the public welfare, rather than that mere immediate profit to those concerned might result, that the formal procedure as above described was enacted into law. And it is because of this causal relationship that the act further prescribes that no mergers which are not in accordance with this plan, as thus adopted, may lawfully take place.

### General Purpose of Consolidations

The leading paragraph of the statute, dealing with consolidation, contains three requirements. The first is that competition, presumably in service, shall be preserved; the second is that existing routes and channels of commerce shall not be disturbed; and the third, subject it will be noted, to the foregoing requirements, is that the financial aspects of such mergers shall be kept in view. Without having regard to the fundamental principle involved, it might appear that these several requirements were stated in the order of their importance; in other words, that the element of financial strength was less significant than the preservation of competition and of the existing traffic routes. But having

due regard to the matter in its larger practical aspects, it is evident that any plan adopted will not only be a mere paper plan, ineffectual and futile, but that it will fail to conform to the spirit of the act, unless the financial requirements be given equal weight with those of operation and traffic. For the plan will never be put into effect unless a financial motive for consolidation be afforded; and unless it is put into effect, a positive bar to the attainment of uniform reasonable rates, under which all the carriers alike may thrive, will continue to exist, if the underlying principle of the legislation is in reality sound.

One might, presumably, first ascertain the relative financial standing of the corporations; and thereafter check up the alliances thus indicated, by applying the test of operating efficiency and satisfaction of the traffic needs of the territories concerned. Or, contrariwise, one might first seek the natural alignment of these properties as operating and traffic units, before inquiry as to whether such alignment contained an effective invitation to merger, based upon considerations of earning power and financial stability. The former method appeals particularly to financial students of the subject. The latter calls for a somewhat wider range of information, dealing not alone, as it does, with the operating and traffic characteristics of the carrier companies, but also looking to the broader considerations of the traffic needs of the entire communities served. For, unless the location of its railways conforms to the commercial requirements of the country, there can be no permanent prosperity for either.

As to procedure, also, it has been represented stoutly that this plan should confine itself strictly to broad outlines; and even, perhaps, merely propose but a statement of principles. It is contended that useless complications and prejudice to future negotiations, as well as a dangerous effect upon market values, may result from descent into detail. Fully conceding the force of this reasoning, experience demonstrates that general principles and broad outlines may only be tested, as to their feasibility, by tentative elaboration of the finer points.

Certain statistical data have been compiled in order to check up the plan, as proposed, by territories and by systems. The calendar year 1917 has been chosen for the purpose, largely because the results for that period most closely approximate the standard requirement established by the statute of an operating income amounting to 5.5 per cent of the investment in road and equipment. For 1917, the actual rate of return was in fact 5.45 per cent. It should be noted that the net operating income, however, is not that of the calendar year 1917, but is based upon the standard return—the average annual net railway operating income

for the three years ended June 30, 1917. This standard return for some roads is considerably less than the actual income of the calendar year 1917. But for other roads the standard return will be found to exceed the 1917 income. The net result is that for class-I roads as a whole, the 1917 income exceeds the standard return by about 7.5 per cent. Thus it appears that for a few roads, perhaps undergoing rapid development, the standard return understates the case; but for all of the rest, the three-year average affords a safer basis than the results of any single year.

The foregoing data as segregated by systems set up under this plan, afford a rough indication of the competitive strength, geographical scope, and inherent financial stability of the relationships proposed. Statistics, as well as maps, under these given circumstances must be regarded and treated as imperfect criteria. The realignment of properties, with the consequent disturbance of all traffic, is bound to be instantly reflected in earning power. The putting together or dismemberment of individual properties may bring about results which are quite unpredictable by the arbitrary means of statistical investigation. Elaborate calculations by experts concerning the development of business under the new conditions are really necessary in order to afford a reliable forecast.

### Plan Includes Only Class I Roads

This consolidation plan, it should be noted, has thus far been concerned only with class-I roads. There remains the not inconsiderable aggregate of 39,000 miles of line, consisting of the so-called short lines, the remaining class-I roads, and those within classes II and III. A comprehensive plan of railroad consolidation would include their allocation in due course; but the data are not at present available.

As for the troublesome problem of allocation or abandonment of certain properties not serviceable to their respective communities, the matter is discussed in chapter VI. For it is in the southwestern states that the question presents itself in the most acute form.

It has been urged with some cogency that this plan does not call for wide-spread disturbance of existing relationships except to take care of the properties that are either well above par or substantially below it. In other words, it has been urged on behalf of several properties of moderate size that they are already doing fairly well under the statute, conforming to the requirements and enjoying the reasonable return fixed by the commission without further alliance with other companies. Deciding roughly, as one must under existing conditions, it is held to be more important to create self-sustaining systems as to earnings derived from as large a proportion as possible of the area of the several great subdivisions of the country, rather than to attempt to put these properties together in such an exact way that they shall all have approximately equal mileage or equal gross or net earnings within each group. Neither mileage nor volume of business is the real test of ability to exist under the statute. In brief, as illustrated by trunk line territory, it is held that a Baltimore & Ohio system adequate to satisfy the requirements of the statute may be created by giving it a mileage or a gross volume of traffic by no means commensurate with either the New York Central or the Pennsylvania. Its ability to serve may perhaps be dependent upon quite other considerations than those of size.

The purpose being to promote a more evenly balanced competition, especially by means of equalization of opportunity in originating traffic as well as in its interchange and delivery, it is conceivable that congestion may be in a measure relieved by this plan. The growth of business in future years must accrue largely to the existing stems. Sound public policy demands that this growth should be so distributed as to avoid blockades and embargoes on the strong roads, while the weak ones are coincidentally drifting toward starvation. To insure a larger proportion of the increment to the weaker roads, by rendering them more capable of efficient service, is the idea. The purpose of the legislation being not to guarantee an income but to afford an equality of opportunity to earn it, was intended to be promoted by this means.

### Size and Scope of Proposed Mergers

Fundamental differences between various plans proposed for consolidation arise concerning the size and scope of the mergers. Shall they be continental in range, or shall they conform to territorial divisions of the country? Considerations of operating

efficiency and of conformity to the traffic needs of the country, as well as preservation of competition and of the established channels of trade and commerce, are not sufficient. It is essential also that administrative organization both within the company and in its relations to the government should be likewise comprehended. Particularly is it important that correspondence be maintained between the scope of these railroad systems and the long-standing rate-making areas and statistical divisions which have commended themselves upon the basis of long experience to the parties concerned. All of these considerations join in commending a division of the country for purposes of consolidation primarily into the great sub-divisions of trunk line territory, south-eastern territory and western territory. Furthermore, local peculiarities and the marked individuality of certain areas seem to make it desirable to set off certain subdistricts within these great primary divisions. Such a general division of the territory of the United States conforms practically to the widest range thus far covered by any existing railroads or systems. Ambitious plans, notably that of the Gould system after 1901, and of the Farquhar syndicate, somewhat later, have sought in vain to constitute tenuous systems covering a wider territory than these historic areas. Any substantial system must have breadth as well as length, an amplitude of feeders as well as main stems; and there seems withal to be a pretty clearly defined upper limit of the aggregate mileage which may be efficiently operated. The experience of the federal Railroad Administration in dividing up the area of the country seems to confirm this view, that for operating and traffic purposes each system should be comprehended within the certain great territories above named.

### Territorial Divisions Condensed

The new statutory rule of rate making and the first decision rendered thereunder by the Interstate Commerce Commission—Ex Parte 74—also render it imperative in planning for comprehensive consolidation not to transgress the boundaries of these traditional territorial subdivisions. The purpose of the law being to fix reasonable rates, not for individual railroads but for entire groups, renders it essential that the grouping adopted for this purpose conform to that which is adopted in effecting the consolidations.

The preparation of a comprehensive consolidation plan necessarily upon occasion involves a disruption as well as a putting together of relationships for other purposes also than the one above mentioned. Obviously, such dismemberment should be rigidly minimized; and no proposal for so doing is made unless the evidence in its favor is most convincing. Were the plan in effect a final one involving large financial considerations, one might hesitate even under these circumstances. But having in mind that these proposals are purely tentative, that they are the preparation of a sketch or an ideal layout, the plan assumes the right to tear apart as well as to consolidate; in other words, to effect where necessary a comprehensive readjustment.

This tentative plan for consolidation proceeds upon the assumption that the distinction between so-called weak and strong roads, financially, is at present highly uncertain; and that it will require a period of experience under the new rates and under the new division of through rates as well as under the slowly readjusted commercial and industrial conditions after the war, in order to establish the relative earning power and credit of each. Yet in the meanwhile, tentative plans must be set up, in preparation for the application of the final test of relative financial strength as soon as the available data make this possible. Not infrequently it will be found that in these plans it has been necessary to put together what appears to be a disproportionate number of weak roads, or at all events, of roads which have yet to establish their claim to entire stability. Particularly has this been the case in the so-called Gulf region, where practically all of the properties seem to be below par. No strong roads exist with which these may be consolidated, without extension of the scope of consolidation far beyond the bounds which are apparently laid down by traffic and operating experience. The same condition would obtain under the so-called New England plan for that particular territory, as well as for the peninsula of Michigan. Necessarily the first step must be to provide for proper grouping in order to promote the best operating and traffic results. The responsibility for the subsequent financial success of the undertakings must then rest upon the exercise of the new rate-making powers, conferred upon the Interstate Commerce Commission by the act.

A peculiar difficulty in effecting consolidation of strong with weak roads and of reconciling such merger with existing operating and traffic relationships, arises from the tendency of the weak roads to link up in series and to form thereby through routes extending sometimes clear across the country. Under such conditions, the mandate of the statute, to preserve "as fully as possible and wherever practicable" such traffic associations, impels one of necessity toward consolidation of a number of equally substandard roads. Conformity with the other mandate of the statute by seeking to ally strong and weak properties to a like degree, thus threatens to upset the traffic relationships which have become customarily established by very force of circumstances. It is because of the clash between these at times discordant requirements, that the emergent result is so often a piebald compromise.

Several assumptions akin to the foregoing one are made in the following plan. The first is that for a number of roads a substantial readjustment of capitalization must occur as a prerequisite for consolidation. It is clear that this must be so by virtue of the authority vested in the commission under section 5, paragraph 6b. The purpose, obviously, is to bring about the re-establishment of a due relationship between the total volume of securities outstanding and the valuation assignable to the property for rate-making purposes, as well as the assurance of a sound relationship between indebtedness and capital stock. The experience of a number of recently reorganized properties is significant as indicating the recuperative effect of a drastic reorganization of capitalization.

It is likewise presupposed throughout this report that all of the new powers conferred upon the Interstate Commerce Commission by the transportation act, 1920, will be upheld constitutionally. Sporadic control by the courts, as evidenced in the pending dissolution proceedings, it is assumed, now yield place to a continuing supervision and control by the Interstate Commerce Commission, acting as a branch of the executive authority. Such a complete reversal of public policy must lead to protracted litigation; but regardless of the final outcome no course in connection with this report is possible save to hold that the will of Congress as expressed in the transportation act is governing and supreme.

### Terminals

Another far-reaching assumption is vital to the success of this plan. This has to do with the operation of terminals at great centers. Some roads are peculiarly fortified as to terminals, while possessing weak lines from an operating standpoint across the open country. For others, the reverse is true. But whatever the cause for the existing situation, a practically universal demand of shippers is that they be able freely to exercise their routing rights by the provision of open terminals, both at the point of shipment and at destination. To put together railway lines on the map without having a constant regard to the possibility of free delivery or receipt at either end would indeed be futile. Conceivably, joint ownership and operation, as at St. Louis, may succeed in that environment, while reciprocal switching may satisfactorily answer the purpose as at Chicago. But, whatever the means adopted to this end, it is submitted that a proper adjustment of the various terminal situations, always of course for due compensation, is an important adjunct to any comprehensive consolidation plan. Consolidation can never be effectively brought about without the adoption of a comprehensive policy as to terminal ownership, operation, or both. It is herein assumed that free access will be somehow provided, either under the present emergency powers as contained in section 1, paragraph 15c, or by the adoption under a consolidation plan of permanent arrangements in all of the important centers.

Another general principle constantly kept in mind in connection with consolidation and having substantial effect upon it is the encouragement of alternate routes and gateways, in order to relieve present or prospective congestion at the great railway meeting points. A tendency has been strikingly manifest for many years for all the great systems to expend funds unstintingly upon their main stems, and all of these main stems tend to run together at certain nodal points, notably New York, St. Louis, and Chicago. Such concentration upon great cities is a natural response to the commercial forces which tend with increasing power to attract traffic, even although it may not be destined for that place but may be passing through en route to points beyond. The shippers' routing often dictates such shipments in order to take advantage of a change in market conditions. The result has

been an undue congestion in times of emergency, which paralyzes the commerce of the country. There is always a certain proportion of business, however, which by careful attention to the matter might be consolidated and shipped by an alternate route which should avoid the great center. An attempt has been made wherever possible to outline such direct relationships between the different systems proposed by the establishment of definite and common gateways of this sort.

### Recapitulation of Ripley Plan

The objects sought in the foregoing plan are as follows: An inherently natural geographic scope for each system, a sound operating adaptation of each unit to its surroundings, due consideration being given to the nature of its traffic administrative practicability, that is to say, a size under each particular set of circumstances, commensurate with human capacity in management; an ever-present competition between rival roads, in order to insure the continuance of an alert and accelerated service to the public, assuming that the foregoing physical arrangements have already provided economical carriage by each competitor; and such an equalization of earning capacity between these competitors, as to perpetuate such rivalry in service on an even-handed and wholesome basis. All of these requisites for a sound consolidation plan, it should be understood, must of necessity be combined with the least possible disturbance of existing corporate integrity. The formation of a better sort of competitive system than we now enjoy, must in the nature of things probably be voluntary. The existing physical instrumentalities have been closely coordinated with the present corporate structure. Both of these circumstances therefore commend, as the most feasible governmental policy, a process of induced although necessarily voluntary trading between the existing railroad companies through interchange of their corporate securities.

Should the policy of voluntary consolidation not prevail, after due encouragement by governmental authority, it seems clear that an added incentive to government ownership will be afforded. In other words, a failure to seek earnestly the economies of large-scale and systematic operation must necessarily strengthen the arms of those who are contending for the entire supersession of private ownership through a government taking. The issue of governmental versus private ownership and operation of railroads is constantly pressing itself upon the attention of the Congress and the people. The principal argument in its favor is that it conduces to economy and efficiency because of unified operation. All the wastes of competitive management, it is alleged, may thus be avoided. Nor can it be denied that in considerable measure such economies were brought about in the United States during the period of federal control. But it is equally incontrovertible that the cessation of competition under a system of complete regional monopoly such, for example, as seems to be contemplated under the pending British plans, is destructive of one of the great incentives to efficiency. That was perhaps one reason why the cost of operation mounted so phenomenally during the war. The instrumentalities may be present; but the vigor and initiative which are commonly set on foot through rivalry are bound to be lessened. One of the larger aspects, then, of this proposed consolidation plan is that it offers a third choice, in place either of completely unified regional ownership and operation with its lack of incentive, on the one hand; or of the economic wastes which are incident to helter-skelter competition between a heterogeneous congeries of more or less imperfectly developed properties, on the other. One alternative threatens stagnation; the other has driven our railroads to the verge of bankruptcy. May not a well-ordered consolidation program offer a way out, without resorting to the ultimate expedient of government ownership from which, once adopted, there can be no withdrawal?

### Outline of 21 Systems

A total of 21 systems has resulted from the foregoing proposals, made serially in detail. These are as follows: Five systems within the trunk line region; two lake-to-tide soft-coal systems in the Chesapeake Bay region; in the southeast, four systems, five trans-continental systems west of the Mississippi; and two running southwest toward the Gulf ports. In addition to these, and completing the list, there are three outlying regional groups; in New England, in the southern Michigan peninsula and down the east coast of Florida toward Cuba, respectively. For these 21 systems the main stems are portrayed on map 27. The map throws into

the foreground certain primary bases. Some of these, like New York, Jacksonville, New Orleans, Galveston, San Francisco, and Seattle, are located along the seacoast at nodal points, generally at the corners of the great territorial divisions, trunk line, south-eastern, western, etc. In the heart of the country there are actually only two primary strategic bases, Chicago and St. Louis, although for the southern territory the Ohio River gateways are in a sense secondary bases. And Toledo, Ohio, and Norfolk, Va., are secondary bases for the group of Chesapeake Bay coal roads. But in the main everything is based, centrally, upon Chicago and St. Louis as far as the main stems are concerned. Wherever possible the systems are brought in through their main stems to these points. But it is proposed also to create detours or alternative belt lines by which congestion may be avoided at these great centers.

The general practice of basing on Chicago and St. Louis, in the heart of the country, is exemplified in detail within each great region upon the map. The five trunk lines from the Atlantic seaboard split somewhere in their westerly courses, with branches to each great central base. Similarly the five transcontinental stems which spread out on the Pacific coast, from north to south, are drawn together to the same dual base on Chicago and St. Louis; and from the southwest, likewise, the two systems, only secondarily based on Kansas City and St. Louis, each run also into Chicago. And of course there is always, at the junction points where these main stems from every direction cross one another, the opportunity of free interchange, avoiding the congested centers entirely. Only from the southeast, for the reasons fully set forth in the chapter thereon, has it been deemed wise to stop the systems at the Ohio River and to have them carried into Chicago and St. Louis over trunk line connections.

The objective of conformity to the statute as respects competition is sought wherever possible by having each considerable city all over the United States tapped by at least two railways; and all of the great competitive routes, hither and thither, are so arranged that there is a matching for competitive purposes everywhere. Thus it will be noted that the Santa Fe and the Southern Pacific-Rock Island each split in western Texas, with one branch running to the Gulf and another to the dual base on Chicago and St. Louis. For two of the remaining three western transcontinental lines the same thing happens in an inverse direction. Both the Union Pacific and the Burlington-Northern Pacific start out from Chicago (and St. Louis) and split in order to send arms to Seattle and San Francisco, respectively. The St. Paul-Great Northern system is the only transcontinental one which is localized in the north. And the possibility of its future entrance into San Francisco is clearly foreshadowed. But each and every line has another road of approximately equal competing strength set up to match it. Take the southeast as another illustration. Starting from Richmond one notes, going southwest, parallel to the seacoast, that each of the three systems splits somewhere in the Carolinas, with a southerly arm to Savannah and a northerly one to Atlanta. Or, from the Ohio River gateways, three roads enter from the north, the Southern Railway at Cincinnati, the Louisville & Nashville at Evansville, and the Illinois Central at Cairo. All three alike split into two arms, one of which goes to New Orleans and the other easterly to Savannah or Jacksonville, via either Atlanta or Birmingham. Or, turning to the Southwestern-Gulf region, one finds two systems which really spring from Kansas City and St. Louis as bases matched against each other. They each, to be sure, run up to Lake Michigan, but their Chicago operating divisions are mere bridges. The real originating stems lie southwest of the Missouri River gateways; and each of the two systems reaches San Antonio, Galveston, and New Orleans, albeit by routes which for each particular city are more or less indirect.

The foregoing description of competitive routes, matched in pairs, does not, of course, preclude the possibility of competition between a larger number of roads than two. At most nodal points, for example, it will be found that from three to five are as likely to compete as two. Thus at Seattle, San Francisco, Savannah, Atlanta, or the twin cities, one discovers three systems in competition. At Galveston four systems enter. New Orleans has three systems from the southeast and four from west of the Mississippi. Kansas City will be touched by at least four of the transcontinental lines, with the two Southwestern-Gulf systems in addition. In short, as a city rises in the scale from third to second or first place, as a strategic center, the number of systems which independently seek to provide competition increases.

The principle that earning capacity in terms of valuation con-

stituted the ultimate test of the feasibility of any proposed grouping of railroads, in contradistinction to any attempt to bring about an absolute equalization in size among these projective competitive units, was avowedly adopted at the outset. Yet the relative magnitude of the different systems proposed is not entirely immaterial. An attempt has been made in the grand summary (exhibit 8) to bring out the facts in this regard. Size, relatively, is shown in two respects. One measures the volume of business by the revenue ton-miles. The other finds expression in the mileage operated. In other words, the revenue ton-miles exhibit the density of traffic rather than the extent of the systems on the map. Each of these two tests of magnitude is significant for its own particular purpose. The range of mileage is considerable. Excluding the Florida East Coast, which of course is not a system, the smallest of the proposed groups is the Chesapeake & Ohio, with a mileage of 2,761. This is not much exceeded by either the Norfolk & Western-Virginian, the Michigan peninsula system, or the Seaboard Air Line. These four constitute a group apart in size from the rest. For all of the others run above 5,000 miles of operating length; and nine of them exceed 10,000 miles of line. The contrast between the western transcontinental systems in this respect and most of the others is notable. Four at least of these western roads are approximately 20,000 or more miles long, as operated. The only approach to this geographical scope is found in the Atlantic Coast Line-Louisville & Nashville system with 14,170 miles of lines, and in the two Southwestern-Gulf systems with 12,000 and 13,000 miles, respectively.

### Earning Capacity the Basis

Turning now to the second index of size, namely, revenue ton-miles, the same wide variation appears as in the matter of miles of line. But here, with the emergence of the density factor, the differences regionally contrast sharply in another way. Thus the proposed Pennsylvania system with 47,871,000 revenue ton-miles is nearly twice as large as either the proposed Burlington or Union Pacific systems, judging by the returns for 1917. The Lackawanna-Nickel Plate is as much smaller than its great neighbors, measured by revenue ton-miles, as the Santa Fe system is smaller than the other western transcontinental roads. Likewise, in the southeastern region the volume of business, in view of the mileage operated, is surprisingly light. It is clear that the proposed systems are as diverse in this respect of revenue ton-miles as they have appeared to be in miles of line operated.

The really significant feature of the exhibits respecting size, however, and one which has been kept in mind throughout the evolution of this plan, is the fact that the load thrown upon any single system for administrative purposes is kept well below the existing standards. The attainment of the Pennsylvania in 1917 to 47,871,000 revenue ton-miles, followed next in order by the New York Central standing at 38,477,000 revenue ton-miles, is not elsewhere approached by any of the other proposed systems. And these two great groups, above named, represent in this plan not additions to the existing corporate business handled, but at least in the case of the New York Central, a substantial subtraction therefrom. The only proposed systems which approach within hailing distance of either the New York Central or the Pennsylvania in volume of business are the Baltimore & Ohio-Reading, the Erie-Lehigh Valley-Wabash, the Burlington, and the Union Pacific systems. In fine, if it lie within the bounds of human capacity to operate the Pennsylvania and the New York Central systems as at present constituted, there is no reason to suppose that these newly suggested systems are too big to be properly managed. This consideration is indeed a very vital one.

Another reason for limitation upon the size and scope of these proposed systems operates in the interest of the local stations along the line. It is submitted that more and more do the little local communities along the lines of these primary railroads need encouragement and support in face of the commercial and industrial rivalry of the great centers of population. The cities of the intermediate class, Des Moines, Iowa, for example, can not expect all of the rivalry which would arise between carriers at a primary center like Kansas City or St. Louis. But the chances for development attendant upon first-class main-line service will be considerably increased if there are, for example, three or four competing trunk lines of large systems across the state of Iowa, rather than a smaller number. It is also true that each main

(Continued on Page 633)

# Missouri Pacific Rebuilds Station in Record Time

Passenger Terminal at Little Rock, Ark., Completed  
Within Short Period After Being Burned

By E. A. Hadley  
Chief Engineer, Missouri Pacific



On the night of April 6, 1920, the passenger station of the Missouri Pacific at Little Rock, Ark., was almost totally destroyed by fire. The building which was burned was constructed in 1908 and 1909 and placed in operation in the latter year. It was a brick structure erected on substantial concrete foundations and concrete piers which were carried to a depth of some 20 ft. below the level of the tracks to rock and consequently were not seriously damaged by the fire. The waiting room and office floors of the building, which was a two-story structure with an attic, were carried on cast-iron columns with a frame-work of steel I-beams with timber floor joists and wooden floor construction on top of which, for the waiting room floor, was laid a tile surface.

The fire, which started in the closed attic, apparently had been smoldering for some time before it was discovered and as soon as outside air was admitted to this attic by the opening of a door, the hot air mixture caused an explosion which blew out the windows in the attic and created a draft which caused the fire to spread rapidly throughout the wooden roof frame-work supporting the clay tile roofing. It was impossible for the fire department, upon its arrival, to get water onto the flames effectively with the result that practically the entire superstructure of the building was consumed or collapsed into the basement in a tangled mass of twisted I-beams, bricks, plaster and other incombustible materials, leaving only a small part of the exterior walls, including the tower, standing after the fire was under control.

Little Rock is one of the most important points on the Missouri Pacific system and a large passenger, express and mail business is handled through this point. It is also the location of the district offices of the Southern district of the system so that it was imperative that immediate steps be taken to establish facilities for the continuous handling of business. It so happened that, at the time the fire broke out, the president, accompanied by the vice-president in charge of operation, the general manager, the chief engineer and other officers were on an inspection trip of the Southern district within 90 miles of Little Rock, and their train was run special to Little Rock, arriving there while the fire was at its height.

Sufficient authority was available on the ground to authorize temporary as well as permanent facilities to replace those being destroyed. While the fire was still burning, extra labor gangs and bridge gangs from four operating divisions were

being brought into Little Rock by special trains and material was being hauled from the company's store yards across the Arkansas river at North Little Rock. Plans were perfected immediately for temporary arrangements for sheltering baggage, express and mail and for taking care of passengers on the "midway" over the tracks, which was not burned; with the construction of a ticket office and temporary settees these facilities were in use continuously without change or addition, from the day following the fire until the various parts of the new passenger station were made ready to accommodate portions of the business. Temporary quarters in adjacent hotel buildings and stores were secured for various offices and on the morning after the fire all of the passengers were cared for by temporary arrangements without a single accident or loss or damage to the property of any passenger and with no train delayed more than five minutes.

The growth of express and mail business at Little Rock had reached a point where the facilities in the station which was burned were inadequate and consideration was being given to the construction of an additional building to be located south of the passenger station for the handling of this business and which would have a second-story for additional office space required for handling the railroad company's business. It was therefore decided immediately that in reconstructing the building it should be extended to a sufficient length to accommodate the increasing business and also would be constructed three stories in height, eliminating the attic and having the third floor available for additional office space; also to extend the waiting room portion of the building to provide larger waiting rooms and a more commodious dining room and kitchen to accommodate the increasing passenger traffic.

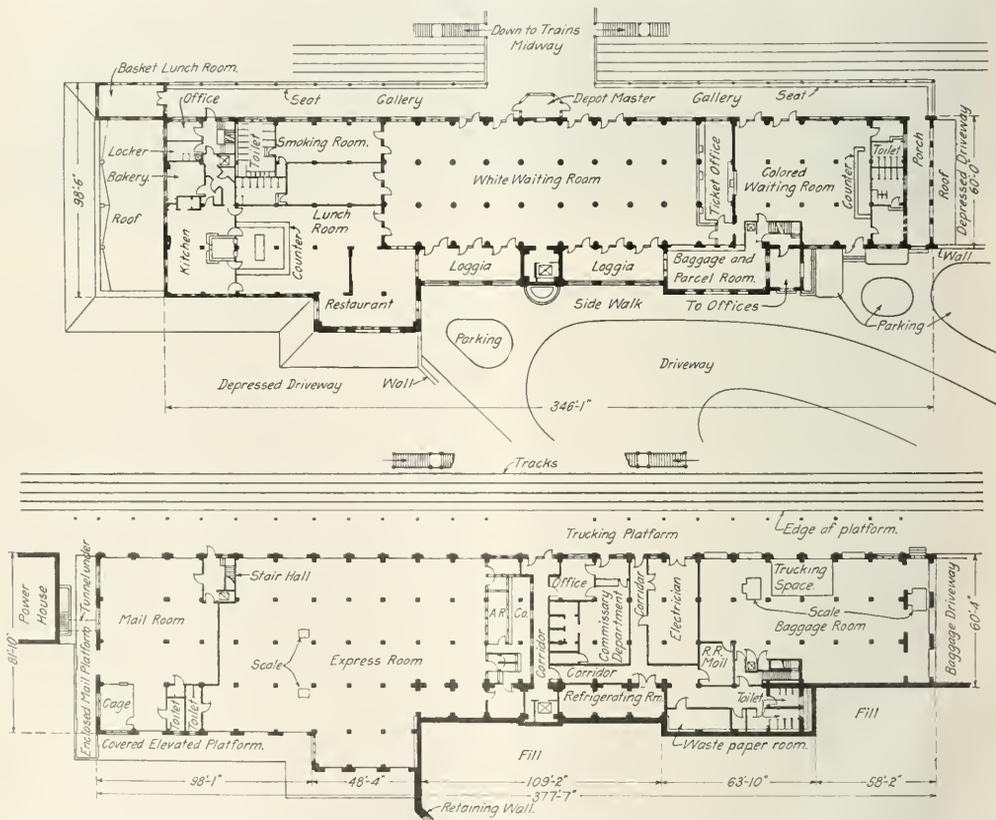
With these objects in view and before the ruins had cooled and the debris was cleared away, which work was being performed by company forces, arrangements were made with Link & Trueblood, architects, St. Louis, Mo., who had designed the structure which was burned and had in their possession plans showing the spacing of foundations for columns, etc., as previously constructed, to proceed at once with the design for a reinforced concrete frame-work to be erected inside of the original walls of the building and also to prepare an exterior design for the building, retaining such portions of the existing walls as were in safe condition and such

portions of the tower as remained in place. This tower had become a landmark in the city. Other than the design of the interior reinforced concrete frame-work and the design for the exterior of the building, all other features in connection with the architectural work of the designing and construction of the building have been handled in the engineering department of the railroad under the direct supervision of E. M. Tucker, architect.

On April 12, 1920, or within five days after the fire, contract was awarded to James Stewart & Co., Inc., on a cost plus basis for the erection of the new building which is of fire-proof construction, finished with the same kind of light-faced brick and Bedford stone which was used in the old building for the purpose of harmonizing with those parts of

uary 1 of this year, it has seemed advisable to complete the interior work before turning the waiting rooms over to the public, which was done on August 1, at which time the dining room facilities were also placed in operation.

In making the rapid progress which has characterized this work under adverse market conditions, advantage had to be taken of every opportunity for securing material and labor and to co-ordinate the operations of the several departments of the railroad and the contractor's organization. This was all the more necessary because complete plans and specifications for the work could not be prepared in advance of starting construction but were, of necessity, prepared as the work progressed, and kept just ahead of the contractors' construction. The final plans were completed just ahead of the com-



The Waiting Room and Track Level Floor Plans of Station as Rebuilt

the structure which remained standing. On March 1, 1921, eleven months after the date of the fire, the mail room in the new station was turned over to the post office department and on March 15, the entire express room was turned over to the express company for its use. On April 1, one of the offices in the third-story of the new structure was occupied by the land commissioner as the lease on his former quarters in an uptown office building expired on that date. All of the district and division officers located at Little Rock occupied their permanent offices on the second floor on June 1.

The temporary quarters in which passengers were handled subsequent to the fire proved so satisfactory that while it was possible to have occupied the new waiting room on Jan-

pletion of the entire structure. The cost of the construction, including additions to the building and all equipment was about \$1,000,000.

The work of construction has been in charge of J. A. Lahmer, principal assistant engineer, reporting direct to the office of the chief engineer.

A SPECIAL TRAIN carrying 250 men en route to the oil fields in California, where a strike has been in progress, was surrounded near Pendleton Junction, Cal., by several thousand men, who caused the train crew to return to Bakersfield, Cal., where the train was re-routed by way of San Francisco.

# Pennsylvania Declines to Appear Before Labor Board

## Carrier's Refusal to Attend Hearings Result of Restrictions on Evidence to Be Presented

THE PENNSYLVANIA RAILROAD notified the Railroad Labor Board on September 26 of its refusal to participate in further oral hearings which the Board had granted in compliance with that carrier's request. The carrier's refusal was based on the Board's action in restricting the testimony which the carrier might present "to matters over which the company maintains the Board has no jurisdiction." Instead, a statement of the carrier's position signed by Samuel Rea, president, was submitted to the Board on that date. This statement contends:

(1) That the Board has refused to grant a hearing at which which the company proposed to give concrete evidence of the fact that the great majority of its employees are satisfied with the manner of selecting employee representatives and with the rules and working conditions now in effect.

(2) That the Board, on the contrary, has restricted tomorrow's hearing to matters over which the company maintains the Board has no jurisdiction and has declined to hear any other evidence.

(3) That the real issue in this case is the fundamental right of employer and employees to deal directly with each other.

(4) That the company does not question the jurisdiction of the Board to hear and decide such disputes as fall within the purview of the Transportation Act. It does, however, deny the right of the Board to invade the domain of management.

The progress of the controversy between the Pennsylvania and the Railway Employees' Department of the American Federation of Labor, and the Brotherhood of Steamship Clerks, Freight Handlers and Station Employees, has been described in the *Railway Age* of July 16 (page 115), August 6 (page 257), August 13 (page 297), August 20 (page 352), August 27 (page 399), September 10 (page 493), and September 24 (page 579).

After quoting Sections 5 and 6 of the Pennsylvania's application (described in full in the *Railway Age* of August 27, page 399) to set aside the Board's first ruling in this controversy; sections in which are outlined the number of employees with whom new agreements have been negotiated and the satisfaction with which these agreements and the method of negotiation have been hailed by the employees involved, the carrier says in part:

"In its application (to set aside the decision of the Board) it was the earnest hope of the carrier that the Board would take cognizance of the new and changed conditions set forth in the application, and by its co-operation, counsel and advice would assist the carrier in its announced policy of endeavoring to re-establish with its employees a contented and harmonious relationship, based upon honest, efficient and economical railroad operation, which can be secured only by close and unrestricted co-operation by and between the management and its own employees."

Mr. Rea's statement then calls attention to that portion of the Board's order which restricts the testimony which the Pennsylvania could present to:

(1) The question as to what employees, if any, not in the actual and active service of the carrier, such as men laid off, furloughed or absent upon leave, shall be permitted to vote in the election of representatives to negotiate agreements on rules and working conditions.

(2) The question of how the representative capacity of

the spokesmen of unorganized employees shall be ascertained.

(3) The carrier will be permitted to offer such evidence, as it may see fit, of the adoption or ratification of its shop craft rules by the representatives of said crafts fairly selected by a majority of the employees of that class.

The statement, which is couched in legal phraseology, continues in substance:

"It is clear that Paragraphs 1 and 2 pre-suppose that the election prescribed by the Board in Decision No. 218, with all of its objectionable forms and conditions, will be held. The carrier in Section 4 of its application to vacate this decision denied the power of the Board to prescribe an election, or any other method, by which the carrier may desire to ascertain who are the authorized representatives of its employees; and the carrier hereby reaffirms its denial of any such power or authority in the Board. Therefore, it can not acknowledge the jurisdiction of the Board by the submission of any testimony relative to the subject matter of Paragraphs 1 and 2."

As to Paragraph 3, the carrier calls the attention of the Board to Section 5 of its application to vacate Decision No. 218, and particularly to the averment that contracts respecting working rules and conditions have been entered into between the carrier and the representatives of approximately 150,000 of its employees. The carrier again denies the right or the power of the Board to set aside these contracts without a hearing upon the justness and reasonableness thereof.

It is apparent that in this paragraph also the Board has in mind the election prescribed by it with a ballot having printed thereon the appellations "System Federation No. 90, Railway Employees' Department of the A. F. of L." and "American Federation of Railroad Workers," a ballot avowedly in accordance with the established method of taking a ballot among the railway labor organizations.

Therefore, the carrier does not desire to offer any evidence on the subject matter of Paragraph 3, which relates to mere procedure and which is not within the jurisdiction of the Board.

The carrier reminds the Board that in its application it asked the Board to find, in pursuance of the Transportation Act, (a) that the carrier has the lawful right to establish rules and working conditions in the first instance, either with or without first holding conferences with its employees; and (b) that the contracts respecting rules and working conditions heretofore entered into by the carrier and its shop craft employees are now in full force and effect without any further action on the part of the carrier and its employees. The Board has refused to grant a hearing and to make such a finding, and has in all respects declined to hear the carrier upon the issue of law and fact presented in its application. It follows, therefore, that there is nothing for the carrier to present in the way of oral evidence.

The carrier notes that it is referred by the Board to its Decision 224 in which the Board arrogates to itself the right to ignore the decisions of the Supreme Court of the United States determining the respective rights of employers and employees, and decides that "hitherto unquestioned legal rights" must give way to the Board's views of what is just, fair and reasonable as between the parties and the public.

The carrier cannot accept these views of the Board, novel and even startling though they may be, and if followed to their logical conclusion revolutionary in effect. It does not believe that the Transportation Act has deprived, or was

intended by Congress to deprive, either employers or employees of their constitutional and legal rights as established by the Supreme Court and other courts of the United States.

The carrier states finally that it has not denied and is now not denying the jurisdiction of the Labor Board to hear and decide such disputes as fall within the purview of the Transportation Act, but it denies the right of the Board to invade the domain of management and to assert jurisdiction over grievances of whatsoever kind and character in connection with the employment, the discipline and the discharge of its employees.

The carrier also asserts and will exercise its right to deal with its own employees without the intervention of individuals or organizations whose manifest object is the denial of the fundamental right of employer and employees to deal in the first instance directly with each other respecting wages and working conditions in which they alone are directly interested.

### General Atterbury Suggests Further Wage Reductions

Another development of significance during the past week was indicated in remarks of General W. W. Atterbury, vice-president in charge of operation of the Pennsylvania, who, in addressing the Mutual Benefit Association of the road at Philadelphia, predicted a reduction in wages for the company's employees, with the alternative of either government control or a receivership.

"Railroad rates must come down, but wages also must be cut in order to do this," Mr. Atterbury said.

He declared earnings of the Pennsylvania today do not meet expenses. "There faces us either a reduction in wages or a receivership or government ownership," he said. "It is not possible that you want to put yourselves on a par with letter carriers, clerks and other government employees, or army men, all of whom are notoriously underpaid, judged by your standards.

"There is only one solution to present problems in the United States and that is liquidation. The farmers and industries say they have liquidated. The outstanding features, coal and transportation, have not been materially touched. But both, curiously enough, have been touched with the damning effect of government control.

"The farmers are united and the industries are united. They say to us: 'Rates must come down, and if you don't bring them down we'll bring them down for you.' One of the ideas in their minds is group control in Congress.

"What does reduction in rates mean to us? What are we earning today is insufficient to meet fixed expenses, and improvements are made at the sacrifice of property.

"It is true there is not much left but a further reduction in wages, and it isn't pleasant to hear or to contemplate; but there faces us either the reduction or government ownership or receivership."

### Brotherhoods Count Strike Ballots

General chairmen and offices of the Brotherhood of Railway Trainmen are assembled in Chicago to count that organization's strike ballots. The first of these ballots opened were in favor of a strike. That the final result will show the trainmen solidly supporting a walkout is the opinion of the union leaders.

General chairmen representing the members of the Brotherhood of Locomotive Engineers, Order of Railway Conductors, Brotherhood of Locomotive Firemen and Enginemen and the Switchmen's Union of North America are scheduled to meet in Chicago on October 3. Counting of the strike votes of these organizations will start at that time.

WHEN ONE TRAVELS in America and follows with a voyage in France he has somewhat the impression that after tasting the refinements of civilization he has returned to life among the Kaffirs.—*Stephane Lauzanne in Le Matin (Paris).*

## Committee of Security Owners' Association Discusses Consolidations

THE COMMITTEE on Public Relations of the National Association of Owners of Railroad Securities has addressed to the members of the association the following letter regarding the Interstate Commerce Commission's tentative plan for railroad consolidations:

"A plan for the consolidation of the railroads of the country into 20 large railroad systems, prepared at the instance of the Interstate Commerce Commission, has recently been made public. The commission has not as yet endorsed this or any particular plan, but has announced that public hearings will be held thereon.

"The Transportation Act of 1920 (Esch-Cummins Act) directs the commission to formulate a plan for the consolidation of the railroads of the country into no less than 20 or more than 35 large systems. While the plan finally adopted by the commission cannot, under present laws, become effective without the assent of the security owners of the railroads, nevertheless all future consolidations of any railroads by whomsoever suggested or desired are required by the act to conform to whatever countrywide plan the commission now decides upon. It will be seen how vitally important it is that the basis for consolidations established by the commission shall be fundamentally sound, from the physical, traffic, operating and financial standpoints. The commission is directed to hold public hearings in respect to the plans proposed.

"One of the requirements of the act is that all consolidations shall be based on the valuation of the properties of the respective carriers, as determined by the commission, in that the amount of the securities to be issued by each new consolidated company shall not be greater than the aggregate ascertained value of the properties of the constituent railroads.

"This association, in recognition of the importance—both as to the valuation to be placed on the properties and the conditions under which consolidations coming within the meaning of the act are to be attempted—appointed a board of economics and engineering, of which you have been previously advised, to make an exhaustive study of this among other problems.

"The proposed large consolidations will have far-reaching effect upon all railroad securities, as well as on the ability of the carriers when consolidated to render an adequate and efficient public service. If there is a time when those who own the securities of railroads should prepare to meet the questions now presented, it is when their assent is essential to effect so complete a change as is contemplated in the relation of their securities to the properties that issued them, and which may adversely affect their value.

"It is self-evident that an impartial analysis of any plan of consolidation or of the questions to be considered in reaching conclusions in respect to consolidations, under the terms of the act, can best be attained through an agency representing, in its broadest aspect, all classes of securities issued by all carriers rather than by any particular railroad. Such an agency is presented in the board of economics and engineering appointed by this association. To further extend the effectiveness of its work the board has been clothed with full power of independent action. Its members, in addition to their recognized qualifications for this work, were impressed with the fact that the first consideration should be the public interest, as no plan of consolidation can be effective that is not founded principally on an efficient transportation public service economically administered.

"The board is engaged in an exhaustive study of the subject, with a view to analyzing the plan of consolidation now

before the commission, above referred to; such other plans as may be proposed either to or by the commission, and to endeavor to work out or see if there can be worked out, in the public interest, a plan from which may be obtained the results expected to be secured under the requirements of the Transportation Act.

"This association, before the committees of Congress and elsewhere, has given expression to the many difficulties, practical and legal, surrounding the questions involved in these consolidations. During the progress of the legislation leading to the Transportation Act, the association contended that consolidations should be made permissive and not compulsory. The act does not attempt to enforce them.

"In pursuance of this work by the board, the cooperation of the executives of the railroads of the country has been asked, both in the supplying of data necessary to a comprehensive study of the subject and in the way of any suggestions in respect thereto. It has been made plain that such study and suggestions as the board may make will be available to any railroad they affect, and that before action is taken by the board, its conclusions or suggestions will first be submitted to the railroads concerned.

"It is not proposed to unduly hasten so important a work. Public hearings before the commission on plans of consolidations that are not based on the intensive study that is essential to insure their practicability and effectiveness will prove disturbing in an already disturbed railroad situation. The undersigned committee therefore hopes that the Interstate Commerce Commission before acting in the premises will afford full opportunity for the careful and extensive investigation which the board of economics and engineering has undertaken."

## Additional Sales of Equipment Trust Certificates

WASHINGTON, D. C.

THE DIRECTOR GENERAL of railroads announced on September 22 that he had, with the consent of the President, confirmed additional sales of railroad equipment trust certificates in the aggregate amount of \$30,298,500. These sales, as well as those previously announced, were made through Eugene Meyer, Jr., managing director of the War Finance Corporation. Total sales of railroad equipment securities announced by the director general to that date aggregated \$63,482,600, but additional sales have since been made without announcement.

As in previous sales, these securities, which bear interest at the rate of 6 per cent per annum, were sold at par and accrued interest. Subject to minor adjustment, the detail of the sales is as follows:

To Messrs. White, Weld & Co., and Blair & Co., the last eight maturities of the following issues and in the following amounts:

Atlantic Coast Line and Louisville & Nashville as lessees of Georgia Railroad	\$631,200
New York Central	7,292,800
Michigan Central	2,729,600
Chicago & Northwestern	5,319,200
Delaware & Hudson	2,123,200
Illinois Central	5,176,800
Cincinnati, New Orleans & Texas Pacific	510,400
Total	\$23,783,200

To Hornblower & Weeks the last eight maturities of the following issue:

Richmond, Fredericksburg & Potomac	\$524,800
------------------------------------	-----------

To L. F. Rothschild & Co., the last eight maturities of the following issue:

Buffalo, Rochester & Pittsburgh	\$534,400
---------------------------------	-----------

To Freeman & Co., the last eight maturities of the following issues and in the following amounts:

Buffalo, Rochester & Pittsburgh	\$534,400
Kansas City Terminal	100,000
Terminal Railroad Association of St. Louis	182,400
Total	\$816,800

To White, Weld & Co., the 1928 and 1929 maturities of the following:

Pittsburgh & Lake Erie	\$77,640
------------------------	----------

To White, Weld & Co., the last eight maturities of the following issue:

Nashville, Chattanooga & St. Louis	\$691,000
------------------------------------	-----------

To Salomon Brothers & Hutzler, the first six maturities, that is, January 15, 1922, to January 15, 1927, both inclusive, of the following issues:

Central Railroad of New Jersey	\$1,186,500
Atchison, Topeka & Santa Fe	1,471,000
Chicago, Burlington & Quincy	1,211,000
Total	\$3,868,500

The sale of \$5,479,500, announced September 20, including issues of Atchison, Topeka & Santa Fe, Norfolk & Western, Chicago, Burlington & Quincy, Central of New Jersey and Pittsburgh & Lake Erie, represents parts of the first six maturities—that is, January 15, 1922, to January 15, 1927, both inclusive—and was made to White, Weld & Co.

Including these sales and the one to Salomon Brothers & Hutzler announced above, the director general has sold the entire amounts held by him of the equipment trust issues of the Central of New Jersey, Atchison, Topeka & Santa Fe, Chicago, Burlington & Quincy, and Pittsburgh & Lake Erie.

In addition a banking syndicate has offered publicly \$31,154,000 of Pennsylvania equipment trusts, the sale of which was not announced in Washington.

The unexpected degree of success experienced by the War Finance Corporation in disposing of equipment trust certificates held by the Railroad Administration, of which over \$94,000,000 have now been sold, is not influencing the administration to relax its efforts to put through Congress the so-called railroad "funding" bill, which would authorize the War Finance Corporation to purchase itself railroad securities held by or to be acquired by the Railroad Administration. The bill has already been delayed by the Congressional recess since its passage by the House, and the Senate, on reconvening last week, showed a disposition to give its attention first to the taxation bill and the treaties before considering the railroad bill.

The President, however, has made it known that he intends to urge speedy action on the bill, and while there is a considerable element of opposition to the bill in the Senate, the influence of the administration is counted on to insure its passage. The opposition is not confined to Democratic senators, but includes some Republicans, who are inclined to be afraid of the bill either because they consider it in the nature of some kind of charity to the railroads or because of fear that it will be so regarded by a large proportion of the public that does not understand it.

Chairman Cummins of the Senate Committee on Interstate Commerce has announced his intention of pressing the bill as soon as the Senate has disposed of the pending tax bill and treaties. The Senator objects very strenuously to the popular characterization of the bill as a "funding" bill, saying that the funding of the railroad indebtedness to the Railroad Administration was provided for in the Transportation Act and that the funding question is no longer at issue. The sole purpose of the bill is to enable the government to realize cash on the railroad securities which have been and are to be given as evidence of the railroad indebtedness so that the funds with which to pay the admitted indebtedness of the government to the railroads may be placed at the disposal of the Railroad Administration without an appropriation. The Senator believes that a great deal of unnecessary prejudice against the legislation has been aroused

by the use of a term which seems to bring the funding question into issue at this time.

If the War Finance Corporation were authorized, as the bill proposes, to purchase these securities from the Railroad Administration at par, it would provide the Railroad Administration with cash at once and it would merely carry the securities itself until it could market them in the way it is now marketing the equipment trust certificates as the agent of the Railroad Administration. Senator Cummins expressed the opinion that if the War Finance Corporation continues to be successful in its sale of the equipment securities it probably would not be necessary for it to use the full authority proposed to be conferred by the bill, which would allow it to purchase not exceeding \$500,000,000 of the railroad securities. If the entire \$300,000,000 of equipment trusts should be sold only approximately \$100,000,000 might be needed by the Railroad Administration, which still has some funds on hand.

Following Senator Cummins' return, conferences were held among the Republican senators for the purpose of making plans for the consideration of the railroad bill and there was some discussion as to the advisability of reducing the amount of the authorization to the War Finance Corporation in view of the sale of the certificates. Senator Cummins planned to confer with Director General Davis of the Railroad Administration for the purpose of getting the latest figures of the situation.

## Unemployment Conference

WASHINGTON, D. C.

THE UNEMPLOYMENT conference called by President Harding to inquire into the volume and distribution of unemployment and to consider measures that would tend to recovery of business convened at Washington on September 26. After listening to addresses by the President and by Secretary Hoover of the Department of Commerce, the conference organized by appointing nine sub-committees on various phases of the subject: Unemployment statistics; employment agencies and registration; emergency state and municipal measures and public works; emergency measures by manufacturers; emergency measures in transportation; emergency measures in construction; emergency measures in mining; emergency measures in shipping, and public hearings. Following the appointment of the committees, the conference itself adjourned to October 5, by which time the specialized committees are expected to report.

The committee on emergency measures in transportation consists of W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen; Edgar E. Clark, formerly chairman of the Interstate Commerce Commission; C. H. Markham, president of the Illinois Central; Charles P. Neill, manager of the Bureau of Information of the Southeastern Railways; Julius H. Parmelee, director of the Bureau of Railway Economics; Raymond A. Pearson, president, Iowa State College of Agriculture; D. R. Dewey, professor of economics at the Massachusetts Institute of Technology, and Clyde L. King, professor of political science at the University of Pennsylvania. Mr. Neill was appointed executive secretary and Mr. Clark was elected chairman of the committee.

The conference consists of 51 members, principally men of experience in the industries where there is the largest degree of unemployment. In addition to the list as made public last week, some additional names of those whose acceptances were received later have been added, including A. L. Humphrey, president of the Westinghouse Air Brake Company. Other industries which are involved in the railroad problem because the railroads are ordinarily large purchasers of their products are represented by several execu-

tives of steel, lumber and coal companies. Mr. Humphrey was appointed a member of the committee on emergency measures by manufacturers, which also includes James A. Campbell, president of the Youngstown Sheet & Tube Company, and Charles M. Schwab, chairman of the Bethlehem Steel Company. C. H. Markham, president of the Illinois Central, was also appointed a member of the committee on unemployment statistics.

The various committees at once went into executive sessions and were also expected to take part later in a series of public hearings. The initial efforts of the conference are being directed to meeting the emergency needs of the unemployment situation. Simultaneously with this an exhaustive study will be made to bring out the exact facts concerning unemployment. Estimates of the number of unemployed vary from 3,000,000 to 5,500,000 and it is felt that reliable data as to the extent of the agricultural distribution and industrial distribution is imperative before relief measures can be put into effect. Each committee is particularly equipped to handle the subject assigned to it and is small enough to operate with speed. Each of the committees will originate, study and recommend practical measures for meeting the emergency. After the emergency measures and the collection of statistics are completed, the conference will be re-grouped into committees whose function will be to recommend permanent measures by which unemployment can be held at a minimum.

Public hearings were to be held every day for the first week, while the work of the specialized committees is progressing. The first public hearing was held on Tuesday morning on the statistics of unemployment. This was to be followed by hearings on Wednesday on public employment service, on Thursday on public works, and on Friday on civic relief agencies. The hearing on transportation was expected to be held early next week. Secretary Hoover of the Department of Commerce and Secretary Davis of the Department of Labor are ex-officio members of all the committees.

In his address to the conference, President Harding called attention to the fact that the conference was called to consider a condition which is in no wise peculiar to the United States and that the industrial depression is a war inheritance throughout the world. He said he would have little enthusiasm for any proposed relief which seeks either palliation or tonic from the public treasury; that the excess of stimulation from that source is to be reckoned a source of trouble rather than a source of cure.

Secretary Hoover, in his opening address, said there can be no question that we are on the upgrade, but economic progress cannot under any expectation come with sufficient rapidity to prevent much unemployment during the forthcoming winter. It is the duty of the conference to find definite and organized remedy for this emergency and he hoped also that it might be able to outline for public consideration such plans as will in the long view tend to mitigate its recurrence. The remedies for these matters, he said, must in the largest degree lie outside of the range of legislation and the administration has felt that a large degree of solution could be expected through the mobilization of the co-operative action of manufacturers and employees of public bodies and local authorities.

While none of the committees has reported as yet, it is understood that the transportation committee, among other things, has given consideration to the improvement that might result from the expedition of the settlement of the accounts between the railroads and the Railroad Administration, which would give the railroads additional credit and funds with which to prosecute maintenance work and that the same subject was also discussed by the committee of manufacturers. This committee also has discussed the question of reductions of railroad rates and wages.

# Expressing Railway Grading Costs by Trend Curves

Texas and Louisiana Engineers Favor Practice Similar to That of New England Roads

By Leslie A. von Rosenberg  
Fort Worth, Tex.

IN THE *Railway Age* of January 14, there appeared an article under the title "Analysis of Railroad Grading Develops Trend Curves," describing the method developed by the New England carriers for fixing the cost of grading when establishing a basis for government valuation. This article showed eight railroads to have adopted a system of weighed

were all reduced to the "One-Way" basis of pay (that is one price from cut to fill) and a free haul of 500 ft. With these bases the work of adjustment consisted of determining the prescribed limits of haul for each job and if greater or less than the standard 500 ft., to increase or decrease the total cost as the case might be by such an amount as would give the probable cost of the work if it had been done with 500 ft. prescribed as the limit of free haul.

The method of arriving at these costs was as follows: It was primarily assumed that all material in the work was distributed uniformly within the limits of haul prescribed in the contract. If then the limit of haul for a certain job was 1,000 ft., it was assumed that the material hauled beyond the established 500 ft. limit would constitute one-half the total yardage in the job. Furthermore, being equally distributed over a distance of 500 ft., the average distance over which all the material in this section was hauled beyond

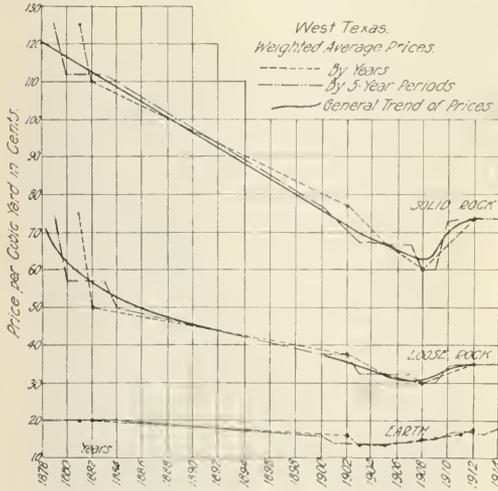


Chart of Trend Curves for Western Texas

averages and graphical analyses of unit costs as the solution of a somewhat intricate problem. This system of valuation was also employed by the Texas, also Oklahoma and Arkansas and Louisiana engineers, and in the belief that the description of such a system may well be supplemented by an account of its application in a different type of country, the following information is furnished regarding the work in Texas.

In analyzing the Texas situation studies were made of the grading done from a date as early as 1872 to 1918. In this period, as might be expected, many separate jobs, well distributed over the state, were undertaken. The sketch map, showing as it does the exact location of each project included in the computations, gives an idea of the extent of this work and its distribution, both for the entire period and for any one year, each job shown on the map being numbered to correspond with the numbers in the table and having its extent represented by a line.

A table was made in which the several jobs entering into the work were grouped according to the year in which they were undertaken. In this table, a portion of which constitutes one of the illustrations, were recorded among other things, the name of the road, the location of the work and the index number of each individual job. In preparing the data for the various trend curves, the total amount of earth, loose rock and solid rock work was determined for each job and, for the purposes of uniformity, the costs of these items

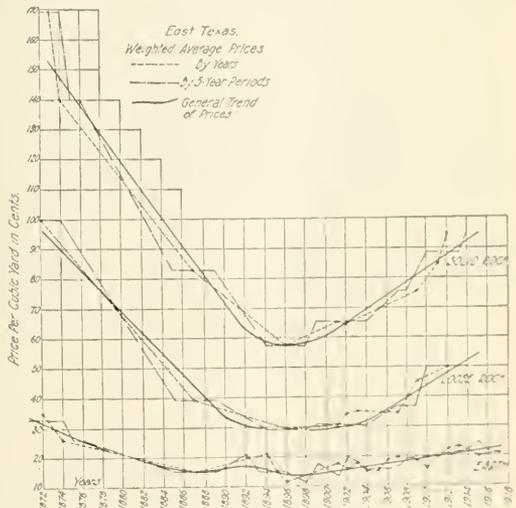


Chart of Trend Curves for Eastern Texas

the standard 500 ft. would be 250 ft. This 250 ft. is considered as overhaul and by referring to the following table, it is found that the contract price of the work done on a free haul basis of 1,000 ft. should be reduced by 1 1/3 cents per yard to give the probable cost of the work on the basis of 500 ft. The table is that used by the Western Valuation Group Cost Data committee.

1 000 ft.	add to base price	\$0.250
500 ft.		0.195
300 ft.		0.150
400 ft.		0.175
600 ft.		0.225
700 ft.	subtract from base price	0.200
800 ft.		0.175
900 ft.		0.150
1,000 ft.		0.125

Having adjusted all the costs to a uniform basis, the average unit price for each year's work may then be determined

A typical calculation will show how this work is done. Referring to the larger table shown it will be seen that three jobs are listed for the year 1905, the work in all three cases being earth excavation. The weighed average of the unit price on this work is determined as follows:

Job	Quantity Cu. Yd.	Price	Amount
33	45,647	\$0.180	\$8,160.56
34	66,069	0.201	13,279.87
125	1,115,969	0.140	156,235.66
	1,227,685		\$178,126.09

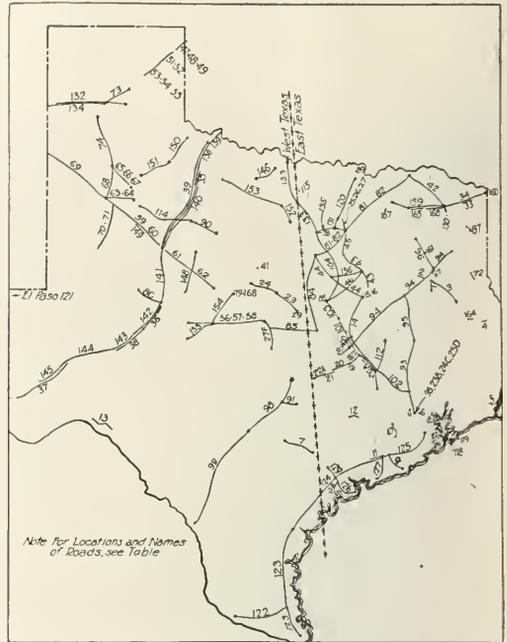
Dividing \$178,126.09 by 1,227,685 gives \$0.145 which is the weighed average price for the year 1905. The relation of this average price to the several unit prices may be seen readily by comparing it with the recorded prices for each job. In the example in question, it will be seen that the weighed average price for 1905 is but slightly different than the contract price for job No. 125, owing to the fact that this work was much larger than the other two undertaken that year. For the same reason, the value is much different than the average contract price for the year, the latter value being \$0.1736.

These weighed average values for the several years when plotted in a graph form give curves represented by the light dotted lines in the charts in which the black dots represent the years in which a weighed average value could be determined. Owing to the fact that prices for grading in west Texas were somewhat lower than for east Texas (probably due to the price of labor), a separate analysis was made for each part, hence the two sets of charts.

The second broken line on the graphs shows weighed average prices determined for a five-year period. These values were obtained by finding the weighed average price for each successive five years in a manner similar to that of determining the weighed average price for any one year, the price found being recorded as the price for the third year of the five years in question. For example, the five-year period price for 1905 is obtained by finding the weighted average price of the work done in 1903, 1904, 1905, 1906 and 1907, as follows:

Year	Quantity Cu. Yd.	Price	Amount
1903	560,210	\$0.181	\$101,657.01
1904	2,447,697	0.150	367,154.55
1905	1,227,685	0.145	177,676.09
1906	50,597	0.185	9,382.99
1907	218,941	0.181	40,249.38
	4,505,130		\$696,120.02

Dividing \$696,120.02 by 4,505,130 gives \$0.1545 or \$0.155 as the average price per cubic yard for these years. The next five-year period obviously will be 1904, 1905, 1906, 1907 and 1908, and by the same method the average price



Map of Texas Showing Jobs Represented in Trend Curves

is obtained and recorded for the year 1906. Plotting these prices in graph form gives a curve which shows a more gradual trend of prices than that of weighted average prices determined for each year. Obviously, this is due to the fact that large jobs have less effect in influencing the final

WEIGHED AVERAGE OF CONTRACT GRADING COSTS IN TEXAS

Classification	One-way			Two-way		
	Cu. Yd.	Total Cost	Weighted Av. Unit Cost	Cu. Yd.	Total Cost	Weighted Av. Unit Cost
Embankment	6,343,304	1,018,814.55	0.160613	20,882,881	2,976,838.79	0.142550
Common excavation	12,461,028	3,381,059.54	0.271331	7,141,089	1,357,706.21	0.190023
Common earth cut and fill combined	14,179,431	2,193,833.29	0.154719	10,122,238	1,443,527.50	0.142611
Loose rock	1,388,847	578,764.62	0.416723	879,414	336,635.62	0.382802
Solid rock	1,557,384	1,130,587.16	0.723953	675,436	536,132.20	0.823357
Hard pan	93,272	58,712.28	0.629474	1,184,466	297,181.96	0.250891

TABULATED DATA ON CONTRACT GRADING WORK DONE IN EAST TEXAS 1903-1912. ALL PRICES REDUCED TO ONE-WAY BASIS OF PAY AND FREE HAUL OF 500 FT.

Job No.	Year	Railroad	Location	Earth			Loose rock			Solid rock		
				Cu. Yds.	P.R.	Amount	Cu. Yds.	P.R.	Amount	Cu. Yds.	P.R.	Amount
3	1903	T. & N. O.	Mahl-Angelina R.	459,651	186	85,495.09						
163	1903	S. L. & S. W.	Saltito Reservoir.	14,383	195	2,804.64						
164	1903	S. L. & S. W.	Monteary Extension.	86,176	155	13,357.28	1,000	350	350.00			
124	1904	S. L. B. & M.	Robstown-Bay City.	2,447,697	150	367,154.55						
33	1905	L. & S. W.	Nantes Cutoff.	43,647	180	8,160.56						
34	1905	S. L. & S. W.	Texarkana-Mt. Pleasant.	66,069	201	13,279.87						
125	1905	S. L. B. & M.	Bay City-Algoa.	1,115,969	140	156,235.66						
22	1906	S. C. T. Co.	Texas City-Texas Terminal.	20,797	150	3,119.55						
31	1906	S. L. & S. W.	Mt. Pleasant.	18,963	200	3,792.60						
131	1907	C. R. I. & G.	Irving Carrollton	10,837	228	2,470.84						
165	1907	S. L. & S. W.	Mt. Vernon-Sulphur Springs.	200,648	178	35,715.34	15,240	350	5,334.00			
165a	1907	S. L. & S. W.	Mt. Vernon-Sulphur Springs.	17,795	193	3,434.44						
166	1909	S. L. & S. W.	Hubbard	4,498	200	99.60						
1	1909	T. & N. O.	Gallatin-Rusk	6,338	170	1,077.46						
126	1909	S. L. B. & M.	Bloomington-Pt. O'Conner	407,395	195	79,441.03	3,337	456	1,521.67	955	756	721.98
127	1910	S. L. B. & M.	Buckeye-College Fort	175,515	160	28,082.40						
45	1911	S. T. Co.	Dallas-Waxahachie	101,095	160	16,175.20						
89	1911	M. K. & T.	Denison	223,205	150	33,577.92						
19	1912	H. & T. C.	Caldwell	89,443	320	28,621.76				6,210	850	5,278.50
83	1912	M. K. & T.	Vaco-Hewitt	86,588	480	41,562.24						
128	1912	S. L. B. & M.	Hessler-Austwell	67,010	350	23,453.50	876	500	438.00	4,972	950	4,723.40
129	1912	S. L. B. & M.	Bloomington-Victoria	185,727	170	21,573.59						
				206,965	170	35,184.05						

results. With these two graphs or curves plotted on the same graph a line may then be drawn to represent the general trend of prices over the several years. The unbroken line on each chart represents this curve.

This work forms the basis of study of present interest to valuation engineers. From the curves themselves one could study and reason out why they develop a trend as they do and how such factors as labor, war, introduction of machinery, topography, geology, etc., affect grading prices. Furthermore, the system provides a basis for letting all contract

work. In the latter respect, the accompanying table on the weighed average prices for contract grading in Texas may be of interest, this table being based upon grading work all over the state and giving the weighed averages for both the one and two-way bases of pay for the several kinds of material. This table, together with the other data presented, was compiled from information prepared by the valuation engineers of Texas and Louisiana, the Cost Data Committee of the Western Valuation section and the Texas & Pacific railway.

## European Railroad Problems Similar to Ours

Samuel M. Felton Tells of Transportation Conditions Abroad and the Remedies Being Tried

**S**AMUEL M. FELTON, president of the Chicago Great Western, who recently returned from a two-months' trip through Europe, states that "the railway situation abroad is very much the same as in this country and the same remedies in a way are being applied for the relief of the roads."

Some interesting observations are made by Mr. Felton in the following statement regarding conditions in the various European countries which he visited:

In Great Britain the lines have just been returned to their owners, under an act of Parliament which provides that the railways shall be divided into four groups for the purpose of securing more efficient operation and greater economy. In this connection, Parliament has provided the sum of 60,000,000 pounds to be paid the railways in full satisfaction of all the claims which arise out of their operation during the war by the government. Of this amount, 25,000,000 pounds are to be distributed generally in proportion to the net receipts of the companies during the year 1913 and 25,000,000 pounds are to be distributed among the companies who, on December 31, 1920, were behind in their maintenance. This amount is to be ascertained according to an agreement to be made between the government and the carriers. The remaining 10,000,000 pounds are to be distributed to those roads which suffered abnormally from government operation.

A tribunal consisting of three members, a railroad man, a business man and a lawyer, is provided for handling rates. Their duties are somewhat similar to the duties of our Interstate Commerce Commission. It is interesting to note that Great Britain is giving its 23,691 miles of railway 60,000,000 pounds, which, at the normal rate of exchange is the equivalent of \$291,000,000 or at the rate of \$12,283 per mile. With our 239,009 miles of railways we are struggling hard to collect claims during federal control and so far 50,500 miles have been allowed but \$1,350 per mile. The only help we may get from the government is a loan, now proposed, of \$500,000,000 on account of the additions and betterments put on the properties during the war by the government, very largely to take care of war conditions—work that certainly would never have been undertaken by the railroads unless they were well able to finance it, which of course was not the case during the war and has not been since.

### French Railroads Try New Plan

In France a contract has been entered into between the minister of public works and the railroads, wherein it is agreed that the operation of each of the lines will be subject to a common organization destined to insure the co-ordination of operation of the various railroads in accordance with the general interests of the nation. This organization is to consist of a high commissioner of railways and a board of

directors. Aside from this, each line maintains its interior organization and its own methods of operation. The board is obliged to assume questions of interest representing each line in matters relating to technique, commerce, administration and financing; also such other questions of importance as may come up. It passes on questions concerning working rules, rates of pay and pensions; it is supposed to stabilize the financial condition of the railroads. A provision is made in the contract for payment of premiums to the carriers which show improved results both in traffic and operation. England's plan seems to be the best and the most liberal. That of the French is very complicated but they have the same object in view.

Taking the countries separately. The French railways apparently are in about the condition they were at the end of the war, excepting the lines that were damaged and had to be reconstructed. In that case the work of reconstruction has been very thoroughly done and in a most permanent manner and to that extent those roads in the north are in better condition. The equipment evidently requires extensive repairs but with the present business depression there seems to be sufficient equipment and facilities to take care of the business offered.

It was quite interesting to find that the locomotives and cars built by the United States for the American Expeditionary Force and sent to France are giving excellent satisfaction and are being used freely; also that the largest railroad in France has decided to adopt the American system of train dispatching.

### German Railroads In Good Condition

As to the railways in Germany. They are in better condition than those of France or Belgium and apparently in as good condition as those of England. Their rolling stock has been thoroughly overhauled and their tracks have been put in good condition. The wear and tear of the war has been taken care of and the roads are in shape to handle any amount of traffic that may be offered. Their freight business is reported to be only 15 per cent less than in pre-war times and passenger business but 35 per cent less. The deficit of the German railways in the last fiscal year was approximately 15,000,000,000 paper marks but 11,000,000,000 of this amount covered expenditures for deferred maintenance which of course is the result of war conditions, so that the actual deficit, based on normal conditions, would be about 4,000,000,000 paper marks.

The railroads of France, England and Belgium are all suffering under very high wage scales and very high costs of material, especially coal. In Germany the wages, while high in marks, are low in their equivalent in dollars, the result

being that as far as their wage scale contributes to the output of their industries they have a very decided advantage over France, England and the United States.

### Motor Transport Presents Problem In England

In England the railroads are in excellent condition but like all other roads on the Continent are suffering from a lack of business and in addition, they have a permanent interference with their traffic that will be hard to regulate. I refer to the motor truck and motor bus business. As an illustration, I understand that the cotton which formerly moved from Liverpool to the mills at Manchester by rail is now all going by motor trucks and the finished product is being handled back in the same manner. I saw a great deal of motor truck transportation on the highways and even in London, where steam trailers move over the most crowded streets with two and three trailers behind them, hauling freight through the city. The diversion of short-haul traffic from the railways to the highways is much more serious to them than it would be in this country, where our profitable traffic is long-haul business.

### Rate Problem Common to All Countries

One hardly picks up a paper in this country without finding a reference to the high freight rates. Everybody is clamoring for a reduction in freight rates when the railroads are not earning anything like the amount they are entitled to earn under the provisions of the Transportation Act. People think that a reduction in freight rates will stimulate business very much but do not seem to realize that we are confronting a condition that is world-wide; that we cannot hope for any permanent revival until the European situation is adjusted. Freight rates, in some cases, are out of line, owing to the horizontal advances during the war and since and these inequalities, where they affect the movement of traffic, are being adjusted but beyond that the railroads in this country cannot go without bankruptcy.

Before the war freight rates in Europe were very much higher than in this country. The present freight rates in England show an advance of 112 per cent over those of the pre-war period; in France 140 per cent; in Germany 600 per cent; in Belgium 100 per cent; in Switzerland 111 per cent; in Norway 186 per cent and in Sweden 170 per cent while, with all the advances made in this country by the Railroad Administration and the Interstate Commerce Commission, since the Transportation Act was passed, our rates have only increased from 80 per cent to 85 per cent. France, England, Germany, Belgium and all the other European countries are struggling with the same problem and are unable to make any substantial reduction in their rates on account of their very high wage scales and material costs.

If we could get our costs of labor and material down to pre-war times there would be no trouble about reducing rates but first the cost of living must come down so that the employees will be able to live as well as they do now on a lower wage scale. This means a readjustment of everything to pre-war times and that is not possible of accomplishment in this country until the foreign situation is cleared up and world conditions are restored, so that it is fair to presume no immediate general reduction in rates will be practicable or possible without bankrupting a large number of our railroads.

THE COLOSSAL IGNORANCE of the British public with regard to the Latin American republics is astonishing. In spite of the amount of British investments there—well over one thousand million sterling—and the attention given to these countries during the past three years by almost the entire press of this country, one hears daily of facts proving a general want of knowledge of what the Latin American countries really are.—*British and Latin American Trade Gazette.*

## Freight Car Loading

WASHINGTON, D. C.

**D**URING THE WEEK ended September 17, 853,762 cars were loaded with revenue freight on the railroads of the United States, according to the reports received from the carriers by the Car Service Division of the American Railway Association. This is the largest number loaded during any one week since the week of December 4, 1920. The total for the week was 105,644 cars greater than that for the previous week when, however, the observance of Labor Day resulted in a falling off in traffic. It was, however, 137,404 cars less than were loaded during the corresponding period last year and 141,229 less than during the corresponding period in 1919.

Increases in the loading of all commodities over the week before were reported but in making comparisons, consideration must be given to the fact that the week of September 17 contained six full working days while there was a holiday during the preceding week. Grain and grain products was the only commodity which showed an increase over the corresponding week last year.

Loading of merchandise and miscellaneous freight, which includes manufactured products, amounted to 522,434 cars, while there was an increase, compared with the previous short week, of 24,009 cars for coal, bringing the total for that commodity to 166,058 cars. This was, however, 30,045 cars below the total for the corresponding week last year and 37,400 under that for the corresponding week in 1919.

A total of 30,399 cars were loaded with live stock during the week, an increase of 5,291 over the five-day week before; and forest products totaled 46,472 cars, or an increase of 4,327 cars over the preceding week. Grain and grain products amounted to 55,331 cars, an increase of 874 cars compared with the week of September 10 but an increase of 9,051 cars over the corresponding week in 1920 and 5,861 cars more than were loaded during the same week in 1919.

Coke loadings increased 254 cars to a total of 4,853 cars while an increase of 583 cars to a total of 28,215 was reported for ore.

Compared by districts, increases compared with the week before were reported in all regions but decreases, compared with the corresponding week in 1920.

The reports to the Car Service Division also show a decrease, compared with the week before, in the number of idle freight cars. The total on September 15 was 433,536 or 17,267 cars less than were reported the week before. Of the total, 213,545 were freight cars idle because of the need of repairs while the remaining 219,991 were surplus freight cars which could be placed in immediate service if transportation demands warranted.

There was a decrease in approximately a week of 17,981 in the number of freight cars in good order but an increase in 15 days of 714 in the number of unserviceable cars.

Surplus box cars in good repair on September 15 totaled 62,372 or 3,486 less than were reported the week before, while surplus coal cars totaled 118,514, or a decrease within a week of 11,317 cars. There was also a decrease within the same period of 822 in the number of idle stock cars.

Of the 2,298,383 freight cars on line reports received by the Car Service Division showed 374,431 or 16.3 per cent in need of repairs on September 15, compared with 374,087 or 16.2 per cent at the beginning of the month. In computing the number of cars needing repairs but idle due to business conditions an allowance of 7 per cent is made to represent the number regarded as normally out of service because of their condition.

THE HOTELS of the Canadian Pacific have reduced the prices on their bills of fare 16 per cent, and on some items as much as 20 per cent, according to the statement of an officer of the road, at Vancouver, last week.

# The Field for Gasoline Railway Motor Cars

## Lessons to Be Learned from Earlier Cars—Practical Limitations for Successful Designs

By L. C. Josephs, Jr.

International Motor Company, Allentown, Pa.

WITH THE GENERAL POLICY of retrenchment in all railroad managements, the branch line and short line have been receiving lately a large amount of attention. These lines usually show a deficit at the end of the year's operation and it has even been recommended that in many cases the tracks be torn up and improved motor truck highways provided in their place.\*

The branch lines of many railroads, however, while showing a deficit for actual operation, have considerable value to the parent system as business collectors, and stations and other facilities now in existence might be made to show a profit if a cheaper means could be furnished to handle the traffic, which is of small density. A 60 or 70-ft. passenger coach or a standard box car are too large units to handle the available traffic on many of these lines. In many cases, also, the branch line service, because it did not pay, has been allowed to run down and for this reason the motor bus and motor truck have been able to step in and take away almost the entire business.

A motor bus or a motor truck adapted to operation on rails is in a preferred position as compared to similar vehicles operating on the highway, from the point of view of reduced friction and therefore a greater tonnage haul with the same horsepower as well as from the point of view of reduced maintenance because of the smoother riding on the steel rails.

The question of self-propelled motor cars for branch line service is by no means new. Many types of cars have been tried such as steam, compressed air, storage battery, gasoline and oil engine, driven both with mechanical and electrical transmission. The earliest car developed was a steam car in 1847 in England. Compressed air cars were tried in 1879 and storage battery cars in 1891. The idea of a gasoline engine driven car came simultaneously with the earliest development of the automobile. In developing the gasoline railroad car there has been a large amount of work done both in the United States and in Europe. European development has been generally successful, while the development in the United States has led to many failures.

### Causes of Past Failures

It is proposed to go over some of the causes of past failures of self-propelled motor cars in this country so that we may not fall into the same mistakes in considering the possibilities of these cars today. Briefly, steam motor cars have never succeeded in the past because they had nothing to offer in the way of advantages, over an ordinary steam locomotive. Two men were required for the head end and there were all the objectionable features, preparation time, round house care, etc., which makes the branch line operation so expensive. Compressed air and storage battery cars both failed on railroads for identical reasons, namely, limited radius of operation and inefficient transmission of power.

The gasoline cars produced in this country were of two types, mechanical drive and electrical drive and their failure to come into general use was due to two reasons: first—a failure on the part of manufacturers to size up the economics of the situation correctly; and second—inherent weaknesses in design.

The failure to take account of the economics of the situa-

\*C. A. Morse, Chief Engineer, C. R. I. & P., A. S. M. E. Annual Meeting, 1920.

tion were responsible for the rejection of most of the cars produced between 1910 and 1913 when a number of manufacturers were going into this field.

At this time it costs 60 or 70 cents a train mile to operate the ordinary steam two-car branch line train, which now costs from \$1.50 to \$2.50 a train mile. Many of these branch lines only operate a two-car train because it is necessary to provide baggage and mail space as well as passenger space and the locomotive is able to handle two cars as easily as one, and by law a full crew had to be provided anyway. The business offered, however, in many cases could be packed away in one-half of one car. Some of the motor car manufacturers, however, did not see the true situation and tried to put out a unit which could handle as much as the standard two-car train. This was the first economic mistake, because if there is enough business to fill a standard two-car train, steam operation can be made to pay. The second economic mistake was in misjudging the gasoline engine as a prime mover. The gasoline engine has been distinctly the ideal prime mover of small applications of power but has never succeeded in breaking into the field above say 100 horsepower when economic operation has been the important consideration. The only cases where gasoline motors of larger than 100 horsepower are operating in general use are for airplanes and private yachts—in both of which cases the cost of operation is not a prime consideration. Four of the manufacturers of motor cars in this country in the period referred to started out with engines of around 200 horsepower. Engines of this size were expensive, very heavy and ran into many problems in operation and maintenance that do not occur in gasoline engines of small size. Moreover, the size of these engines made the transmission of power a difficult problem which, if handled mechanically, was a continuous source of trouble, or, if handled electrically, added tremendously to the cost and weight of the outfit, thus producing a vicious circle of weight, power and cost.

Manufacturers of motor cars at this period were not alone responsible for these mistakes, as the railroad officers themselves urged them to build motor cars of this type. The idea of furnishing Pullman service on a branch line was very alluring and was the chief cause of specifications calling for cars which would be 60 or 70 ft. long, weighing 50 or 60 tons, of all steel construction and capable of making 60 miles an hour, as well as having every modern convenience in the car body.

There were at this time many manufacturers of smaller motor cars who had probably the right idea as to the economics of the situation but who through faulty design or lack of capital failed to get started. Every now and then in traveling around the country one comes across one of these small cars. In fact, last fall one of them figured in the newspaper dispatches in connection with President-elect Harding's isolation at Point Isabel, Texas.

### Limitations of a Successful Motor Car

The proposition today is to go ahead with the simple idea of taking the motor truck and motor bus which are now successfully operating on the highway and transferring these bodily to the railroad tracks and securing the economies attendant to such a transfer. Of course in making this trans-

fer it is necessary to make certain changes in design but these should be kept down to absolute essentials and the equipment should not be loaded up with features which may be required in standard railroad operation, but which have nothing to do with the operation of the motor car equipment.

In making a successful transfer of the motor truck from the highway to the railroad, the first essential is that the truck must have been a successful performer when used on the highway. Highway service as a rule is more severe than railroad service so far as shocks to parts and general wear and tear on the chassis, but the differences are not great between the two services and for this reason the truck which has not been successful on the highway is pretty certain to be unsuccessful as a railroad vehicle. The second essential to be considered in making the change is the matter of weight. A motor truck or a bus operating on the highway has a rolling friction of from 50 to 75 lb. per ton. It is known from tests that the friction of small vehicles on rails may run from 20 to 30 lb. per ton. This reduction in car friction means that the load can be somewhat increased over the load carried on the highway, but this amount of increase cannot be great. The steam locomotive because of storage of energy in its boiler is able to produce a short-time output much greater than its continuous rating. The same is true of the electric motor on a trolley car with the powerhouse back of it. This means that in these two cases the entire power can be drawn upon for a short time in acceleration or in climbing grades and that, therefore, the continuous rating is no measure of the tonnage that can be handled. The gasoline motor, however, is a strictly limited power proposition and if more tons are loaded on the equipment the speed will be correspondingly reduced.

The writer went into this matter in some detail in a paper before the Association of Railway Electrical Engineers in 1913, at which time it was brought out that in self-propelled cars about 2.3 h.p. should be provided for each ton of weight on the basis of ordinary gas engine rating, or if the gas engine were rated on its maximum output about 3.3 h.p. should be provided for each ton to be handled.

Consider for a moment what this means in a particular instance. The Mack Model AC motor truck engine, which is the largest truck engine on the market, rates at 40 h.p. (N. A. C. C. rating) and has shown from 50 to 60 h.p. on brake test. From the figures in the foregoing paragraph a motor of this size is capable of handling from 15 to 17 tons load.

A rail car of 15 tons weight equipped with such an engine and running in service which requires a stop every  $\frac{1}{2}$  mile of 20 seconds' duration would make a schedule speed of 21 miles an hour. Without changing any other conditions if the weight were increased to 45 tons the schedule speed would be reduced to 8 miles an hour. If, on the other hand, the 15-ton car were operated on a 2 per cent grade its schedule speed would be 11 miles an hour and if increased to 45 tons the speed would be 3 miles an hour.

The foregoing illustrates clearly the limitations of the railway motor car. In the first place no economical gasoline engine has been built in quantities in sizes larger than 100 h.p. In the second place it would not be advisable to develop a railway motor car of larger power than the largest commercial highway truck, for the reason that the design of the successful commercial highway truck incorporated years of experience, which is the reason for its success. This much would be lacking if a specially built railway vehicle were developed. If, therefore, the railway motor car is to be a success it should be limited to the 15 or 20 tons that can be handled with the existing truck motors and transmissions. The question that the railway man will then ask is "What can be done with 15 tons total weight of vehicle in meeting branch line conditions?"

It has been found possible in motor construction by the

use of the best practice, design and materials to make a freight carrying vehicle in which the weight of the chassis and body is about equal to the load carried. This would mean a railway motor car for freight service could probably be built that would carry a total load of 15,000 to 20,000 lb. For passenger carrying vehicles the weight of chassis and body would not be quite so low and it would probably be necessary to figure on somewhere in the neighborhood of 200 lb. per seat, or say a vehicle carrying a total of 85 passengers.

It is hoped that the foregoing thoughts on this subject, which is very much alive at the present time, will prevent some of us from falling into the same mistakes which have been made in the past in expecting to do too much with the gasoline engine, when applied to railway motor cars.

## Railroad Inquiry to Be Resumed

WASHINGTON, D. C.

CHAIRMAN CUMMINS of the Senate Committee on Interstate Commerce returned to Washington from Iowa this week and announced his intention of resuming hearings at an early date in the general railroad inquiry, which was suspended early in July because of the Senator's ill-health, the hot weather and because a number of the witnesses expected were not ready to proceed. There have been some rumors that the hearings would not be resumed, but they have probably emanated from some of those whose attitude toward the entire proceeding has been critical and who have liked to have it appear that the committee would drop the subject after hearing only the representatives of the railroads and the railroad security-holders. This class of critics prefers to couple the railroad executives and the Warfield organization as if they represented identical interests, overlooking the fact that Mr. Warfield's presentation before the committee was exceedingly critical of the executives.

The witnesses to be heard when the hearings are resumed will include the railroad labor leaders, who had asked that their hearing be postponed because they were engaged in conferences and in hearings before the Labor Board in Chicago, and also representatives of the shippers.

Senator Cummins expressed the opinion that the railroad situation had considerably improved as compared with the condition which existed when the hearings were adjourned but said that there is a tremendous demand throughout the country for a reduction in freight rates. He said he realized that the roads had already made many reductions in rates and also that they cannot live without adequate revenues, but he thought there should be a more general reduction. He said he had advised both the railroad officers and the Interstate Commerce Commission that a general reduction in rates would have an important psychological effect and that it ought to be tried for the purpose of finding out what the effect on revenues would be. He doubted whether further reductions in wages could be relied upon to assist the roads in reducing rates until there has been a more manifest reduction in the cost of living.

Discussing the suggestions that have been made both in and out of Congress that the Railroad Labor Board ought to be abolished Senator Cummins said that the creation of the board had been an experiment and that if the experiment does not result successfully it may be necessary to repeal that part of the law, but that possibly the object can be accomplished by providing some means for enforcing the board's decisions. He added, however, that the opinion is strongly held in some quarters that there is a way to enforce the board's orders by the injunction process. If both the railroads and the labor organizations refuse to abide by the decisions of the board, he said, either the board will be abolished or some means will be found to strengthen it. He

expressed no opinion as to the merits of the controversies before the board but said he thought it exceedingly unfortunate that the Pennsylvania management should have decided not to obey it and he recalled that in the Senate railroad bill the provisions intended to prevent strikes carried penalties that might be imposed against either side.

Senator Cummins said that the Transportation Act had two main purposes, one to improve the credit of the railroads and the other to prevent interruption of transportation service resulting from labor controversies. While the first part of the act had not worked out entirely as expected, he said, no law could have accomplished the purpose during such times as we have experienced recently, and without the law many railroads would have been thrown into bankruptcy.

In view of the special consideration given the railroads, he said, they could hardly expect to have the same freedom to manage their own affairs in their relations with labor that is enjoyed by other industries.

## Safety Section of A. R. A. Holds First Meeting

By William S. Wollner

AS HERETOFORE announced, the American Railway Association now has a Safety Section in the Operating Division, with a temporary Committee of Direction. The temporary officers were: Chairman, E. M. Switzer (C., B. & Q.); first vice-chairman, J. T. Broderick (B. & O.); second vice-chairman, Isaiah Hale (A., T. & S. F.); secretary, J. C. Caviston, 30 Vesey street, New York. The section held its first meeting on Monday of this week, at the Hotel Copley-Plaza, Boston. Ninety-five representatives of 85 roads registered attendance. Chairman Switzer explained the reason for the organization of the Section and the plans for its future. President R. H. Aishton of the American Railway Association also addressed the meeting. It is not intended to make the recommendations of the Section mandatory upon the members of the association but rather to provide a means for exchanging information. The Safety Section is to co-operate with the Interstate Commerce Commission's Bureau of Safety in the compilation of accident statistics so as to afford a better basis for comparing the records of different roads than is possible at present. Reduction of accidents at grade crossings and to trespassers through correlation of the educational efforts of individual roads, and a national campaign with this end in view are proposed. Mr. Aishton urged co-operation with the National Safety Council, local councils, and all organizations working toward greater safety to the public and those engaged in industry.

Professor W. J. Cunningham, of Harvard University, addressed the meeting, calling attention to the danger of placing too much stress on emotional appeals. These do not convert men. Gradual and continuous efforts for the correction of specific faults offer the greatest promise of success. Satisfactory results can only be secured when "safety" has become a state of mind.

In many cases there is too great an effort upon the part of safety officers to exalt organization and to lose sight of the fact that individual co-operation is the real test of success; that as in all scientifically directed effort ideas should be promulgated by indirection rather than as orders or instructions. The importance of safety devices should not be over emphasized. An appliance which eliminates one-half the risk may eliminate all of the care.

The report of the temporary Committee of Direction, in addition to presenting tentative regulations for the conduct

of business, suggested the following matters for consideration:

1. The question of providing for more or less summary discipline for violation of rules which prohibit the adjustment of draw-bars, couplers, steam or air hose, while cars are moving or coming together.

2. A recommendation, as standard practice, of proper end guards (rail and metal netting) on front of track motor cars.

3. A recommendation, as standard practice, of the use of auxiliary glass guards as adjuncts to metal housing of emery wheels.

4. A proposed rule making compulsory the wearing of goggles by shopmen doing work involving danger to the eyes.

5. Proposed use of whistles by track foremen for warning their men to clear all tracks when trains are approaching; the question whether the adoption of such a rule would have a tendency to increase the danger where the foreman is temporarily absent.

Subject 1 was discussed at length, many strong points being made both for and against the assessment of discipline for infractions of safety orders. It was decided to discuss the subject further at a future meeting.

On subject 2 the committee's view was approved, and was referred to the association's executive committee. The adoption of glass guards for emery wheels was referred back to the Committee of Direction.

On subject 4 a roll call was taken, resulting in 84 for, and 122 against the promulgation of a rule making wearing of goggles compulsory. It was the opinion of all who discussed the matter that while the wearing of goggles should certainly be insisted upon, that the means of accomplishing this should be left to individual roads. No action was taken on subject 5.

The report of the Committee on Publicity and Education was read by its chairman, Isaiah Hale (A. T. & S. F.). The committee proposes to establish a library of safety films, to compile publicity matter, and to prepare a standard form for the uniform reporting of accidents. It has in view the publication of bulletins, and of a plan for calling attention of school pupils to practical safety matters.

The report of the committee on prevention of grade crossing accidents of which J. T. Broderick (B. & O.) is chairman, took the form of a paper on "A National Stop, Look and Listen Campaign," by M. A. Dow (N. Y. C.), who is a member of the committee. Mr. Dow called attention to the difficulties encountered in endeavoring to reach the persons who ultimately become involved in automobile accidents at grade crossings. He sketched a plan showing how many of these difficulties might be overcome through co-operation of the A. R. A. Safety Section with automobile clubs, chambers of commerce, etc., together with the distribution of educational literature and the displaying of posters by all roads.

In the discussion Chairman Broderick proposed a national campaign such as had been outlined, and it was the unanimous opinion of those who spoke that not only could such a campaign be successfully conducted, but that its conduct should by all means be undertaken. The discussion of the subject was closed by the Section instructing the Grade Crossing Accident Committee to perfect its plans for a campaign and to place them in the hands of the Board of Direction for execution. The temporary officers and Committee of Direction were continued in office until the annual election in June, 1922, and G. G. Watkins, of the Boston & Maine, was elected an additional member of the Committee of Direction. C. L. La Fontaine (G. N.), R. Scott (A. C. L.), F. W. Mitchell (N. Y., N. H. & H.), L. F. Shedd (C. R. I. & P.), and L. G. Bentley (C. & O.) were elected as the 1922 Nominating Committee.

## National Safety Council at Boston

By William S. Wollner

THE National Safety Council held its tenth annual congress at Boston, Mass., this week, beginning on Monday. The general business meeting was held on Monday morning, C. P. Colman, president of the National Safety Council, presiding.

The steam railroad section, T. H. Carrow (Penn.), chairman, held its first session on Tuesday morning, with over 100 officers and safety committee members in attendance from about 50 roads. Mr. Carrow in his annual report as chairman of the steam railroad section told of the difficulties that had to be overcome in managing the section's affairs during the past year, due to the economic situation from which all railroad activities have suffered. He complimented the officers of the section and the committee chairmen on the efficient discharge of their duties in the face of these difficulties.

Addresses were made by John F. Moore, associate general secretary of the Railroad Y. M. C. A., on "Safety First from a Moral Viewpoint," and by the Rev. Walt Holcomb, an evangelist, of Cartersville, Ga., on "The Safety of Man."

The principal paper of the morning session was by C. W. Galloway, vice-president of the Baltimore & Ohio, on "The Importance of Safety in Railroad Operation." Following a general discussion of the history and ethics of various safety activities, Mr. Galloway gave interesting data from the records of what has been done on his own road. In 1920 the casualties among employees on that road, 6,941, were 28 per cent less than in 1915, while the train mileage increased 13 per cent. Special tests for 60 days, last spring, at a number of terminals and shops, resulted in reductions of casualties among employees ranging from 79 to 83 per cent, as compared with the same period the preceding year. [These "drives" were noted in the *Railway Age*.] Foremen and other supervising officers were held responsible for any avoidable accidents occurring among their men during that time. During the past year expenditures have been severely limited on the B. & O. as on all other roads, but the safety work was not allowed to suffer; its importance was recognized by all of the officers.

The four million warning cards sent out by the Baltimore & Ohio to automobile drivers who had been found careless at highway grade crossings are believed to have done much good. Some of the recipients wrote back expressing thanks for the admonition given them. Observations at crossings to make up a record of careless conduct have, after two years, resulted in some apparent reduction in recklessness. Reviewing six months of this year it is found that of 248,988 observations, only 3½ per cent showed failures to observe due care. Recklessness is still plentiful, however; on one division of the road 89 per cent of the persons observed were checked as negligent.

In connection with the circulation of the warning leaflets, 10,000 large posters, printed in colors were put up at garages, gasoline stations and other places. Many newspapers took editorial notice of the warnings sent out by the railroad.

Mr. Galloway exhorted the safety men to do their best to inaugurate a vigorous educational campaign, believing that genuine co-operation ought to reduce very greatly the number of automobile accidents at crossings. Automobile trucks are now becoming very common, and week-days are as bad as Sundays for crossing accidents; perhaps worse. A recent check showed that accidents happened mostly in clear weather and where there was a good view, indicating that undiluted recklessness is a main cause of these distressing tragedies.

The speaker urged greater care in granting drivers' licenses to motorists, stating that at present any person over sixteen can secure one although most automobiles are capable of

equalling the speed of an average passenger train. Investigation of the records of 50 locomotive engineers had disclosed that they had not been permitted to run a passenger train until they had averaged 17 years' experience in road service.

In closing Mr. Galloway expressed the opinion that railroad officers and employees now have the safety idea "pretty nearly right," and that the principal work of the safety officer in the future must be with the public, as the reduction of grade crossing accidents is one of the gravest problems now confronting the carriers for solution.

On Tuesday afternoon F. M. Metcalfe, assistant to general manager of the Northern Pacific, read a paper on "The Substitution of Superintendents' Staff Meetings for the Customary Safety Committee Meetings as a Medium for Promoting Accident Prevention." This paper was formally discussed by D. G. Phillips (Wabash) and informally by practically every other safety officer and safety committee member in attendance; and although Mr. Metcalfe had emphatically stated that he believed that the Northern Pacific's substitution of staff meetings for safety committee meetings had met with success, the idea of such substitution was emphatically opposed by most of the speakers.

A paper by Harry A. Adams, assistant to general manager of the Union Pacific, on "The Position, Authority and Responsibility of the Safety Officer" was spiritedly discussed and brought out the practically unanimous opinion that the safety officer's title and the amount of authority with which he is clothed have very little to do with the effectiveness of his efforts.

E. L. Blair, vice-president of the Benefit Association of Railway Employees, spoke on the interest of the railway brotherhoods in safety. When a man indulges in a dangerous practice and jeopardizes his own life or that of a fellow employee or a passenger he violates his pledge to his brotherhood. Safety should be taught and practiced by every brotherhood man. Mr. Blair also called attention to the financial burden that is placed upon the men's organizations when an employee is maimed. Although the man may receive \$5,000 or \$10,000 in compensation for his injury, his lack of business judgment nearly always results in his losing this money, and he then becomes a charge upon his organization.

A CLERK OF THE PENNSYLVANIA RAILROAD at New York City has been arrested on a charge of changing the consignee and destination of a carload of rubber, valued at \$8,000 and, with a confederate, securing possession of the rubber and selling it for \$4,200.



Photo by Keystone

Six Hundred Tons of Export Rails Going Through the New York State Barge Canal

# The Railroad Shop vs. the Contract Shop

## Obscure Elements of Cost of Freight Car Repairs Developed by Analysis of Railway Accounts

By J. W. Roberts

President, The Roberts-Pettijohn-Wood Corporation, Chicago

THE RELATIVE COST of making heavy repairs to railroad equipment in railroad shops and in outside contract shops has long been a matter of speculation, because, since the methods of accounting are radically different, a fair comparison cannot readily be made. A comparison is possible only after railroad accounts have been reconstructed, segregating shop operating costs and bringing them together from the widely divergent sources through which they are disposed of in the ordinary process of railroad accounting. Some elements of actual cost must be developed, since lack of thoroughness in accounting causes them to be ignored as current factors of operating expense.

An effort to restate railroad accounts and obtain a refinement beyond their original purpose encounters many difficulties. Finding a reasonably accurate and complete railroad shop cost is practically impossible, for reasons which are apparent when the situation is understood.

### Railroad Accounting Methods

The Interstate Commerce Commission's system of accounting as prescribed for the use of steam railroads, has characteristics peculiar to itself. It has no analogy with cost accounting as practiced by industrials, or for that matter by other public utilities whose product is marketed under strictly competitive conditions which necessitates a knowledge of departmental and unit costs. The first cost found in railroading is the ultimate cost and the system being designed accordingly, it is to be expected that accounting record would not be kept of many details essential to a redistribution of expenses to departments and thence to a job, or unit cost. Railroad operating cost has many ramifications. The preponderant element of equipment repair cost is represented by expense which is common with some other phase of operations, or with some other productive unit. The proper division of common expense is difficult under all circumstances, but particularly so when the necessity for distribution is not recognized or anticipated when record is made of the experience which should furnish the factors for making the division.

Railroad accounts are designed to show, to the extent to which it is currently accounted for, the cost of furnishing transportation. Primary accounts relating to classes of expense which are constant and of significant importance when compared with the total, are grouped to form general accounts. These general accounts represent the main sub-divisions of operating outgo, i. e., Maintenance of Way and Structures; Maintenance of Equipment; Traffic; Transportation-Rail Line; Transportation-Water Line; Miscellaneous Operations; General; and Transportation for Investment-Credit.

The line of demarcation between the maintenance of way and structures and maintenance of equipment accounts, however, is in many places indistinct; likewise between these two general accounts and the transportation-rail line account. Considering that the maintenance of the roadway and its appurtenances, the maintenance of rolling stock, and the conduct of transportation through the use of the roadway and equipment, constitute departments of expense, the traffic and



general accounts represent administrative and selling expenses common to all—then there is no completeness in the charges against either department. For instance, the expense incident to hauling materials over the carrier's own rails for use in maintaining the roadway and structures and for repairing and rebuilding equipment, etc., unless performed as special service, is not adjusted as between departments and the bulk of the expense lodges in the Transportation-Rail Line account; the maintenance of shops and engine houses, the former being used almost if not exclusively in the maintenance of equipment, is charged against the Maintenance of Way and Structures account; the expense of maintaining pile-drivers, steam shovels, and similar devices used exclusively in roadway maintenance is classified as Maintenance of Equipment. The expense entailed in hauling the fuel used to furnish power for a shop plant, as well as the materials used by it, is a very considerable item in shop operating expense when the haul is a long one, but it is not charged against the shop. Depreciation is not accrued on fixed property, although it exists as a demonstrable fact. Expense of the character referred to is not inter-departmentally accounted for; it lodges where it falls and but little is known of its extent.

The overhead burden of general expense is common to all of the activities of the railroad. Certain departments of the business are doubtless responsible for a greater proportion of it than are other departments. If the truth were known, the maintenance of equipment, being not only important in itself but likewise having effect upon the maintenance of way and the conduct of transportation, would doubtless prove to be the beneficiary or the responsible cause for a greater proportion of this expense than is commonly acknowledged. A fair proportion of general expense is of course attributable to the maintenance and operation of general shops and should be considered in reckoning the cost of the production in such shops.

The investment in railroad shops and shop equipment, in power plant service and in storehouses and service tracks is an appreciable one, and frequently subject to rapid dissipation because of the expansion of the property and the fluctuating needs of operating expediency. The amortization in losses on investment, the gross cost of providing money for railroad improvements, and the taxes involved, are all items of cost chargeable against railroad shop output but in the majority of cases most difficult of ascertaining. Even the direct money outlay made in establishing railroad shop facilities is seldom known and this fact alone is significant. The unobtrusive elements of railroad shop operating cost are var-

great. Many of them are considered intangible so far as current accounting is concerned, but are found to be most substantial when maturity forces their recognition. The consideration of such elements of expense as of casual importance may easily lead to deception having most serious consequences.

From the foregoing it may appear that in the case of a railroad, the settlement for the expense incurred in repairing cars in owned shops, other than the direct charges for productive labor and applied materials, may be confused with other issues, or so long delayed as to be disassociated with the cause of the expense. The repair of equipment being a mere incident, as it were, in operating a vast railroad system, there is opportunity for other activities to carry and absorb, perhaps without noticeable distortion, expenses pertaining thereto which would be prohibitive to the commercial success of the equipment repair department if it were an entity engaged in competitive business.

### Thoroughness in Commercial Accounting a Necessity

A commercial car plant must recover through the charges made for its product or for services performed by it not only the direct outlay upon its undertakings, such as productive labor, applied materials and the expenses incurred by the activities enclosed by the shop-yard fence, but likewise every other expense, however indirectly or even remotely it may be involved. It must also recover something to provide against contingencies, such as sub-normal production and casualty expenses. If the business is to be a firmly established and prosperous one, the outlay must be wholly recovered, which includes not only expenses which have matured, but likewise expense which is in the process of accrual but is not yet matured. There must also be included in its charges a margin above the outlay sufficient to pay taxes, and to provide a reasonable return upon the investment in fixed assets and working capital which makes activity possible. Unlike a railroad, such an enterprise has but one general source of revenue and a single outlet for expense; it is capable of self-service to a limited extent only, being obliged to pay profits upon its raw materials and their delivery which must be absorbed in the selling price. The necessity for careful management and economical performance is manifest, and their effectiveness may be measured by the prices charged for service.

In attempting the comparison of the cost to a railroad of doing general repair work in its own shops with the costs of having such work done in outside shops, we have one factor—the outside shop cost—established, after adding to it the expense to the carrier which may be incident to having its work done in a contract shop. The amount paid the contractor by the railroad may be safely assumed, under normal conditions at any rate, to comprehend every element of the contractor's cost, including the use of property and working capital and a margin for contingencies, which is commonly called profit.

It only remains then to assemble the cost factors experienced by the railroad shop and apply them to the same volume of identical work.

### A Case for Comparison of Railroad and Contract Shop Costs

An effort was recently made to ascertain the facts in the matter by selecting a typical case and making a thorough examination of it. It was desired that conditions in the test case should be normal with respect to the circumstances under which the cost of the outside work was fixed, and as to the character of the railroad shop in which the comparable work was done. It was, of course, important that a case be found where work done in a railroad shop was entirely similar, and susceptible to measurement as to volume with the work done under contract, without necessitating arbitrary adjust-

ments of various kinds which would in any manner jeopardize the integrity of the comparison. The normality of the railroad shop's production during the test period and the facility with which the railroad accounts would lend themselves to analysis and redistribution were also matters of prime importance.

An instance was eventually found which met these requirements as satisfactorily as could be expected, although because of conditions inherent to the situation, the full facts of railroad shop costs could not be assembled. To the extent that omissions exist, because of inaccessibility of information or the prohibitive expense of developing it, and likewise because of the newness and superiority in style of construction of the railroad shops as compared with the average railroad shop in this respect, the comparison is somewhat unfair to the outside work.

In the early summer of 1920 the carrier let a contract to a prominent car company, whose plant was situated on the carrier's line some 300 miles distant from its own general shops, to repair a large number of 60,000-lb. capacity box cars. The body and underframe of these cars were wood, and they were equipped with the old style couplers and double spring draft gear. The cars were to be repaired to the extent of practically rebuilding them. They received from three to six new sills, one or both new side plates and end plates, practically all new siding, decking, lining and roof sheathing; new door, corner, and end posts; Z-bar or Economy ends; "XLA" or Murphy roofs; Economy draft arms; two new side doors equipped with National door fixtures; Cardwell friction draft gear; heavier oak sills, heavier needle beams and heavier end lining; U. S. Standard safety appliances, and two coats of good paint. The trucks were overhauled, wheels, springs and truck castings being renewed as found necessary; braces were placed on the arch bars to strengthen the truck in general, and all brake attachments were repaired or renewed as required. When turned out of the shop the rebuilt cars were in first class condition and to all intents and purposes as good as new cars of the same construction.

For several months prior to letting this contract, the carrier had been repairing the same class and series of cars in substantially the same manner in its own general car repair shops. This work was continued even after the outside contract was let, cars of the type in question being sandwiched in with other classes of cars which were receiving general overhauling. It was, therefore, possible to select for test a number of cars repaired by the carrier in the same fashion and to the same extent as by the outside contractor, during a period current to the time when the outside contract was let.

The cars rebuilt by the carrier did not receive, generally speaking, quite such thorough renewal as those repaired in the outside shops. The work done by the contractor was thorough, providing for the restoration of all deterioration or damage which had accrued in the car, so that insofar as utility and life expectancy was concerned, it was in perfect condition when released. In the carrier's shops, however, the officials exercised their judgment, and observed a certain latitude as to the extent to which renewal and replacements would be made, with the result that the work done in the carrier's shops on some cars was less in volume than the work done on any of the cars repaired under contract. For this reason, there was selected from among the cars repaired by the carrier a number sufficient to stabilize an average cost, which had received as nearly as possible the identical treatment given the cars rebuilt in the outside shop. A selection of 50 such cars was made by the carrier's officials and the investigator jointly. The repairs on these 50 cars and a very large number of other cars were completed during June, July, August and September, 1920. A greater number of cars might have been selected for the test by extending the period of time, which would have necessitated analyzing the accounts.

of other months. This would have greatly increased the work without adding any value to it. For the purpose of work chosen at random from the list of cars for which final comparison, another 50 cars repaired in the outside shop bills had been rendered.

A minute comparison was made of the volume of work performed on the test cars in each shop. It was found not to be exactly the same. As measured by the quantity of materials applied, the work done in the carrier's shop was 1.1 per cent less than that done in the outside shop. This being sufficiently close for practical purposes, the difference is ignored in the comparison of the costs which follows.

**Character of the Railroad Shop**

The railroad plant in question is superior, with respect to physical condition and equipment, to the average railroad plant. The facilities are all comparatively new, the plant having been established only about five years ago. The buildings and appurtenances are of substantial construction; the service tracks are new and well built; the equipment is modern and highly efficient, and none of the facilities have reached the age where maintenance expense is normal. But very little repair expense was traceable to the plant. The records for several months of the preceding year, which was taken as the basis for maintenance experience, were missing and whether or not they contained additional charges for upkeep is not known. The charges found appear to be sub-normal. This may be accounted for by the scarcity of labor and materials which existed during the preceding twelve months, which would tend to minimize expenditures for maintenance. An attempt to compare the structure and track maintenance costs as found with system averages for previous years proved to be impracticable.

The carrier shop in question is devoted exclusively to heavy repairs. Light and running repairs are made at other shops, and therefore offer no interference with the orderly procedure of shop operations on heavy repair work.

During the period when the test costs were ascertained, the shop was operated at something more than normal capacity. The monthly man-hours worked from May, 1918, to October, 1920, inclusive, averaged 24,171; during the period of the test, the monthly average was 29,727, or 123 per cent. To the extent, therefore, that abnormal production operates to reduce productive costs, the situation favors the railroad's case.

**Basis of the Contract for Outside Repairs**

Under the terms of the contract, the work done in the outside shop was to be charged for on the following basis:

- (a) Direct labor to be based on the carrier's piece work schedules which were in effect July 1, 1917, plus 10 per cent, plus 30 per cent (the equivalent of 43 per cent) to equate such rates to the basis of the current wage schedule.
- (b) For handling materials, a charge of \$6 per car.
- (c) For milling lumber, a charge of \$8 per thousand board feet.
- (d) For blacksmith work, agreed prices per operation.
- (e) The aggregate of the foregoing items to be surcharged 100 per cent for overhead expense.
- (f) Materials to be furnished in part by the carrier and to that extent exempted from the surcharge for profit; in part to be furnished at reciprocal prices (i. e., furnished by the carrier and billed at agreed prices and rebilled by the contractor at the same prices) and subject to the surcharge for profit, and in part to be furnished by the contractor at agreed prices, subject to the surcharge for profit.
- (g) To the sum of the foregoing items to which applicable, profit to be added on a graduated scale, regulated by the amount of charge per car, the average rate of profit surcharged being between 10 per cent and 11 per cent.

The amounts billed the carrier under the terms of the contract do not, of course, represent the sole cost to it of the work done by the contractor. Among the possible incidental expenses may be mentioned:

- (a) The cost to it of free materials furnished the contractor, and not included in his bill.

(b) The cost of delivering such materials, and attendant store expenses, etc.

(c) Moving the cars to be repaired to the contract shop, and returning them, to the extent that such movement represent otherwise useless haulage.

(d) Concentrating covered scrap.

(e) Inspection of work, and reviewing accounts at the contract shop.

(f) Unoccupied space in its own shops and attendant expense, idle investment, etc.

(g) Administrative, purchasing, and accounting expense.

These, and other kindred items have received careful attention, and to the extent that such expenses were experienced, have been added to the amounts billed by the contractor in arriving at the total cost of the outside shop work.

**Development of the Total Cost**

**of Work in Carrier's Shop**

To avoid encumbering this article with voluminous detail, it will doubtless suffice to review in a brief way the particulars of the carrier's costs as found, to comment upon their reliability or the deficiencies known to exist in them, and to explain the bases used for their apportionment where it was necessary to resort to apportionments.

[The author next discusses in detail the various elements of cost assignable to the repairs of the 50 cars selected from those going through the carrier's own shop. This will be taken up in next week's issue.—Editor.]

**Commission Presents Tentative Consideration Plan**

(Continued from page 616)

stem of a system may discover such an advantage due to its location or connections as will encourage it to specialize in certain classes of business. Upon such foundations are reputations as a reward of merit based. And such a specialization of function

Systems	Revenue ton-miles	Average mileage of road operated	Investment in road and equipment per mile of line	Percentage net operating investment
<b>Trunk line region:</b>				
1. Pennsylvania	47,871,000,000	11,276	\$169,465	4.50
2. New York Central	28,477,000,000	11,414	138,789	6.11
3. Baltimore & Ohio-Reading	29,118,000,000	8,352	133,215	5.14
4. Erie-Lehigh Valley-Wabash	27,770,000,000	7,612	162,095	4.28
5. Lackawanna-Nickel Plate	16,986,000,000	4,879	143,118	4.39
<b>Chesapeake Bay region:</b>				
6. Chesapeake & Ohio	12,228,000,000	2,761	121,101	5.46
<b>Norfolk &amp; Western-Virginian region:</b>				
7. Norfolk & Western-Virginian	17,223,000,000	3,382	128,831	6.18
<b>New England regional:</b>				
8. New England regional	8,204,000,000	6,796	102,497	5.33
<b>Michigan peninsula:</b>				
9. Michigan peninsula	3,171,000,000	3,680	49,626	3.23
<b>Southeastern region:</b>				
10. Southern Railway	11,916,000,000	10,489	75,392	4.31
<b>Atlantic Coast Line-Louisville &amp; Nashville:</b>				
11. Atlantic Coast Line-Louisville & Nashville	13,757,000,000	14,170	48,634	5.34
<b>Illinois Central:</b>				
12. Illinois Central	14,637,000,000	9,389	58,005	4.83
<b>Seaboard Air Line:</b>				
13. Seaboard Air Line	2,117,000,000	3,630	54,515	3.45
<b>Florida East Coast:</b>				
14. Florida East Coast	414,000,000	7.04	67,236	4.74
<b>Western transcontinental region:</b>				
<b>Union Pacific-North Western:</b>				
15. Union Pacific-North Western	25,342,000,000	20,747	67,656	5.55
<b>Burlington-Northern Pacific:</b>				
16. Burlington-Northern Pacific	27,937,000,000	22,889	64,403	5.39
<b>St. Paul Great Northern:</b>				
17. St. Paul Great Northern	24,103,000,000	20,768	61,704	5.62
<b>Rock Island-Southern Pacific:</b>				
18. Rock Island-Southern Pacific	19,638,000,000	19,655	68,889	4.69
<b>Santa Fe:</b>				
19. Santa Fe	13,097,000,000	11,977	65,587	5.64
<b>Southwestern Gulf region:</b>				
<b>Missouri Pacific:</b>				
20. Missouri Pacific	10,490,000,000	11,588	72,024	3.80
<b>Missouri Pacific:</b>				
21. Missouri Pacific	14,931,000,000	15,304	57,120	3.75

\*Corrected.

surely promotes that high grade of transportation which it is the aim of this legislation to promote.

Quite irrespective of size, the ultimate financial test of the feasibility of the 21 systems herein proposed is applied in the subjoined table. The significant feature is the right-hand column bringing out the net operating income in percentage of investment. Further details concerning this relationship are, of course, to be

found in the grand summary (exhibit 8), from which these particular figures are compiled. This table merely assembles the data dealing with the various regions one after another; and the relativity within each region, that is to say, the earning capacity of each system as compared with its immediate neighbors, has been already discussed. In the background there is always retained the theoretical standard for the country as a whole of a 5 per cent return on valuation.

The last step in financial analysis is theoretically necessary and in a measure practicable. The systems herein proposed are intended to be matched one against another to the end that the net operating income in percentage of investment shall be the same for all. For each region this test has been applied by taking the net operating income for the year 1917 as a percentage of the property account. But this so-called investment account is purely a book statement as to capital. The supreme test must be applied by checking everything in terms of financial valuation.

### Valuation

Returns as yet available from the valuation division are of course mainly working papers. The returns may be regarded rather as straws showing the direction of the wind; that is to say, affording an indication as to whether the investment account is understated, normal, or inflated. The following table comprises the returns as of the dates indicated, for all those roads for which the engineering report, the land valuation, and the account-

by the last column of this exhibit, is very uneven for the New England group. It varies from 125 per cent—a heavy excess of valuation over capital account—for the New Haven, to 108 per cent for the Boston & Maine, falling to practical equivalence for the Maine Central and the Central Vermont, and to a deficit of 18 per cent for the Bangor & Aroostook. But the valuation dates, it should be noted, cover a range of three years, characterized by fast mounting prices. The only trunk lines cited are the Chicago & Eastern Illinois, with present value at 78 per cent of recorded investment; the Big Four, at 85 per cent; the New York, Ontario & Western, at 43 per cent; and the Pere Marquette, at 64 per cent. For the Virginian Railway the corresponding figure is only 54 per cent. None of these roads is in the most thickly settled and highly developed region, and several of them are distinctly subnormal financially. The somewhat disquieting returns for these roads, therefore, need not necessarily shake one's confidence in a full valuation or even an excess for the first-class roads like the Pennsylvania and the New York Central. The returns for trunk line territory, however, are on the whole not as reassuring as the testimony in Ex Parte 74 makes it appear.

For the southeastern region, wherein, according to Ex Parte 74, the capital account stands strongly reinforced by valuation data, the same variability is apparent. There is nothing especially to shake the testimony of Mr. Hulme, yet it is quite apparent that the conditions are most uneven as between one property and an-

COMPARISON OF VALUATION DATA WITH RECORDED INVESTMENT OF SELECTED CARRIERS FOR STATED DATES

Name of carrier 1)	Date (June 30) (2)	Reproduction cost for road and equipment		Present value of land owned (5)	Total present value (4) plus (5)	Recorded investment (7)	Ratio of present value (6) to recorded investment (7) (8)
		Cost as new (3)	Cost less depreciation (4)				
Atlanta, Birmingham & Atlantic.....	1914	\$26,041,491	\$21,228,752	\$1,733,725	\$22,636,477	\$51,531,064	43.90
Bangor & Aroostook Railroad system.....	1916	29,998,992	29,924,261	739,997	23,663,258	28,791,426	82.19
Boston & Maine Railroad system.....	1914	231,747,893	178,323,640	47,653,631	229,947,271	208,231,423	108.51
Central of Georgia Railway system.....	1915	74,559,698	57,985,344	15,358,037	73,347,381	69,600,724	106.21
Central Vermont Railway system.....	1917	25,137,058	19,549,355	2,003,976	21,553,331	21,633,562	99.54
Chicago & Eastern Illinois Railroad system.....	1915	72,331,056	54,770,938	7,107,765	61,878,703	78,990,279	78.34
Chicago, Rock Island & Pacific Railway system.....	1915	345,485,880	272,285,598	49,628,714	321,914,312	323,908,166	99.38
Cleveland, Cincinnati, Chicago & St. Louis Railway system	1915	167,406,494	132,773,913	22,598,686	154,772,599	182,267,924	84.91
Florida East Coast Railway system.....	1916	43,515,318	38,565,832	5,053,815	43,623,637	48,207,859	90.49
Georgia Southern & Florida Railway system.....	1915	10,297,657	7,690,371	1,399,003	9,019,374	12,273,374	73.49
Kansas City Southern Railway system.....	1914	46,732,105	35,316,430	4,650,328	42,997,758	111,563,890	38.54
Maine Central Railroad system.....	1916	66,063,181	51,848,465	4,040,633	55,898,098	54,983,162	101.65
Mobile & Ohio Railroad system.....	1915	47,595,933	35,932,491	4,985,751	40,918,242	46,978,830	87.10
New York, New Haven & Hartford Railroad system.....	1915	345,271,883	271,543,976	90,676,404	362,200,380	289,019,595	125.33
New York, Ontario & Western Railway system.....	1916	47,679,333	37,429,966	2,652,270	40,082,236	92,695,207	43.24
Pere Marquette Railroad system.....	1915	66,212,550	50,074,357	5,783,112	55,857,649	87,100,297	64.13
St. Louis Southwestern Railway system.....	1915	60,845,317	45,685,266	6,804,168	52,489,434	99,829,373	52.55
San Pedro, Los Angeles & Salt Lake.....	1914	33,127,960	35,701,567	4,013,749	39,745,316	73,171,509	52.80
Virginian Railway system.....	1916	52,846,225	46,111,047	3,221,853	49,332,900	91,180,245	54.10
Western Pacific Railway.....	1914	60,817,087	55,108,542	6,062,872	61,171,414	156,318,136	39.13

ing report have been rendered. At the same time the recorded investment in road and equipment for the corresponding date is afforded.

The accompanying table, then, exhibits the results thus far available concerning physical valuation. No reports as yet from the accounting division are available.

But total present value, as the recorded data show in periods like the last five years characterized by rapidly mounting prices, may be quite misleading. Certainly a total present value as of 1914 for the Boston & Maine is quite incomparable with a corresponding figure for the Central Vermont taken three years later. A superficial examination of the phenomenal price changes during that period suffices to discredit all such comparisons.

Turning now from means and methods of valuation to results, the carriers may best be treated in the great regional groups utilized for consolidation purposes. Considerable testimony along the same line was adduced in Ex Parte 74 by Mr. T. W. Hulme. Most of his statistical data concerned the same properties as are comprehended in this exhibit. His conclusion was that valuation was substantially more than capital account for New England, and for the eastern and southern regions as a whole. Only for the roads west of the Mississippi did he acknowledge that reproduction cost of road and equipment showed a slight deficiency under the capital account; and even for these western roads he excluded the so-called standard properties, such as the Burlington, the North Western, the Rock Island, etc. He contended, furthermore, that appreciation would probably more than counterbalance the depreciation during the years intervening since the date of examination.

The ratio of present value to recorded investment, as shown

other. Some will be grossly overvalued and others perhaps undercapitalized. The Rock Island is surprisingly sound with a practical correspondence of present value and recorded investment. At the other extreme stands the Western Pacific, now undergoing reorganization, with present value constituting only 39 per cent of investment account. Probably, and this confirms the general impression, conditions will be found more uniform in the Southwestern-Gulf region than almost anywhere else in the country. This valuation table includes the two most prosperous properties in that territory. For the St. Louis Southwestern the present value is only 52 per cent of recorded investment; for the Kansas City Southern it is only 38 per cent. In view of the long record of bankruptcies and reorganization for most of the roads hereabouts, the conclusion is inescapable that an excessive property valuation will have to be dealt with. Applying this conclusion to the matter in hand, namely, the percentages of return figurative under this plan for the proposed Frisco and Missouri Pacific systems of less than 3.5 per cent, it is evident that the actual rate of return is substantially higher than this figure. Whether it is enough higher, in the light of due correction of the investment account, to bring the results for these properties to a parity with those for the trunk lines, the southeastern states and the transcontinental roads, must be only a matter of surmise. But incontrovertibly the effect of any and all corrections must be in the direction of a regional uniformity for the country as a whole.

### Advantages of Consolidation

Examination of transportation conditions in the preparation of this report has disclosed a number of substantial advantages which might be attained through the larger-scale operation which such

consolidation permits. One or two of these may be mentioned in passing as indicative of the trend of events. One in particular is the greater proportion of solid train movement from points of origin through to destination, especially with the creation of shipping days between the less important places, which thus permits of solid train movement from the primary yard at least to the neighborhood of destination. The improvements recently put into effect on the Pennsylvania Railroad for coal and coke traffic and also in the carriage of steel, illustrate the point.

It is somewhat difficult to predict accurately the effect of a larger-scale operation under consolidation upon the several individual properties. The earning power of some of them which have already attained some of the foregoing efficiencies through a high degree of specialization of function will perhaps be lessened.

Another operating economy, conducive it is believed to efficiency through a better utilization of the fixed investment, is a considerable elaboration of the device of trackage. The principle, embodied for the first time in the transportation act of 1920, that it is economically sound and socially expedient to avoid useless duplication of facilities, is clearly illustrated in this connection. Already and for many years trackage has been taken by existing railroads either because a carrier was too weak financially to duplicate a line already in operation, or because the road in question was not for most purposes a competitor and therefore could afford to strengthen the lessee carrier. There is a surprising frequency of downright gaps in the very heart of some of the great systems. Whole divisions, even on the main line, will be found not owned, reliance being had upon long-time traffic agreements. The Rock Island, for example, is honeycombed with such trackage, in many cases

the contracts being very much more favorable as to maintenance than could have been expected under downright ownership. Everywhere, where trackage may be had, even as between direct competitors, the device has been resorted to freely. When the traffic develops to a point where the single line is outgrown, it may then be double tracked or a new link be constructed.

The defects and shortcomings of this comprehensive scheme are manifold and in many cases self-evident. The outcome is avowedly almost everywhere a compromise, a choice between evils. All of the warring and conflicting interests; all of the hopes, aspirations, fears and prejudices have come home to roost in the course of its preparation. An extraordinary amount of friendliness and co-operation has been encountered. But, as is inherent and natural under the circumstances, much of this assistance has necessarily been circumscribed by the particular interest of the participants; and a governmental plan, in contradistinction to one projected for private profit or interest, may not content itself with caring even for most of the properties. It must of necessity recognize the right and the interest of every last one of them. It is this requirement of universality which so often compels the halfway expedient, the compromise, the solution which falls so far short of the ideal. Administrative influences impel one in certain directions; the bankers would have some matters otherwise; the representatives of the employees entertain quite positive views, it may be; and all of the shippers' organizations have to be satisfied. But despite these divergent interests, the desirability, nay more, the downright necessity for the furtherance of consolidation on a large scale as a remedy for the existing situation is almost universally conceded.

## A Shipper's Views of Railway Needs\*

### Relation of Motor Transport to Steam Railways; Central Ownership of Freight Cars Advocated

By Geo. C. Conn

Director of Traffic, Buick Motor Company, Flint, Mich.

PASSENGER AND FREIGHT service by motor is now rapidly encroaching on both steam and electric lines—not only for short distances, but for general service up to 100 or more miles, and in some cases regular freight service is operated over longer distances. A recent advertisement of the Standard Oil Company (Indiana) contained the statement that during the past year more than six million head of cattle, sheep and hogs were moved by motor trucks directly to stockyard markets, and that farmers had found this method of transportation dependable, economical and profitable.

There seems to be the same attitude on the part of some steam railway officials toward the motor truck as they took toward the electric lines, and the same tide of progress will undoubtedly swamp those whose vision is so limited as to fail to work with the motor instead of against it. There are, of course, some who see the signs of the times. One railway in the northwest is promoting rural trucking routes in connection with its own service, and with beneficial results. W. G. Besler, president of the Central Railroad of New Jersey, says railways have nothing to fear from automobiles and should recognize them as an ally, augmenting and extending the service rendered by the railways.

Each class or method has its legitimate field, and that when the traffic is separated to meet what each has to offer, the greatest efficiency will be reached. There can be no question but what the electric line and motor truck are able to do some things more quickly than steam railways, and so

long as they can give superior service they will attract business; and with railways in their present physical condition, every known means of transportation will be required to move the commerce of the country when the tide of business turns.

It cannot be overlooked that the steam railways have unintentionally done much to encourage electric and truck service by their attitude toward less than carload traffic. They have educated everyone to the idea that there was no money for the railways in less than carload business, and by declining to accept such freight except on certain specific days, they have forced shippers to find and use other methods of transportation. If steam railway executives do not want the short-haul merchandise traffic there now seems an opportunity to get away from it—possibly with profit to all concerned.

### Railway Efficiency Improving

For reasons which it is useless to review here, and which are generally understood, government supervision and intervention have surrounded our steam railways until the officials in charge are no longer free agents, and as one prominent railroad president recently said: "It is a very grave question whether regulation has not been overdone, encroaching on the field of management, dividing responsibility and checking initiative." One of the prominent papers in New York state, in referring to government regulation of railways, says: "It would be foolish in the extreme to expect anything satisfactory results from this kind of legislation," and ventures the suggestion that the country at large would be as well off if all present restrictions of the government were

\*From a paper read before the Western Railway Club, Chicago, September 19, 1921.

removed. The present system of having one commission fix the rates and another the expenses is certainly ridiculous. If the railways are to have governmental supervision, there should be but one commission in control.

It is common practice to criticize the efficiency of our railways. What we really criticize is the efficiency of the employees either individually or collectively. If the spirit of a railway organization is gone, or is at a low ebb, it is immediately reflected in the individual acts of the employees. Representing a large shipping concern and coming in close touch with local men, I can see a marked change for the better in the attitude of many railroad men since the roads "came back home," but it must be remembered that efficiency in an organization extending over hundreds of miles and embracing many departments widely divergent in their activities is a very different proposition from efficiency in a manufacturing plant employing an equal number of men but all within a mile of each other. There is no business where good-will and individual responsibility are greater assets than in the steam railway as it stands today. It is a great industry making but one product, and that is service.

### Service More Desirable Than Low Rates

While freight rates should be adjusted to protect shippers and consignees against unfair competition, and while in some instances a very slight variation may make a lot of trouble, I venture the opinion that prompt and ample transportation is the thing most needed and most desired by the great shipping public. I do not believe there is any good reason for constantly asking for reduced rates. Much of this demand originates with semi-professionals who feel that they must "start something" against the railroads. It must, however, be remembered that the present high basis of rates is more or less of a war tax imposed to meet war expenses. The various increases were accepted by rich and poor, large and small, without protest, and the readjustments, as they are made, should benefit all classes of business alike.

It should be the duty of executive and traffic officers to foster their industries, know what they need, and endeavor to keep them on a relatively proper rate basis. Uncertainty as to freight rates is the most serious thing with which a shipper has to contend.

Nothing does more to keep a railroad in good standing with the communities it serves than regularity of local service. A railway which fails to give such service not only fails in its duty, but creates adverse public sentiment which later on shows itself in state legislatures and city councils. The time has passed when railways can ignore the towns and cities along the line and take their chances in the state senate with adverse legislation.

The joint use of terminal facilities should be seriously considered, and where they can be brought under one control, a large saving can be effected. If this subject is not given early and serious voluntary consideration, railroad people will invite merited criticism and government interference.

### Railway Corporation Directors

While it may be true that directors of any corporation should dictate its policy only and keep away from details, I think there is a great opportunity on our railways to select directors who will familiarize themselves with their properties and get away from boards of directors who merely attend the board meetings, and who many times do not see their roads for months at a time, and then only for a superficial inspection.

I know of one railroad controlled by a banking house which could, if it chose to do so, select eight of the eleven directors. Instead of doing this it selects three and allows the president to select eight who live on the property and represent the business interests of the community. These men are not dummy directors. It is a rare thing when they

fail to attend the monthly board meetings, which usually last several hours, and at which they give the president reports from their cities and their own viewpoint of current affairs. One of these men was chosen because he had previously been quite antagonistic, and he is now thoroughly converted and a great help. This railroad is on the right way to success through the upbuilding of public sentiment along with its traffic. Other roads would do well to study this plan.

### Kind of Cars a Shipper Wants

In the evolution of transportation one of the problems is that of equipment. Speaking specifically of freight equipment, there has been developed on many railways types of cars which theoretically served that particular road to greatest advantage, but which in reality were nothing more or less than the personal idea of some executive.

Recently one of the largest railway systems in the country has put in use box cars with an inside length of 40 ft. 7 in., when all the rates and classifications are based on 40 ft. 6 in. Not long ago one of the transcontinental lines built some box cars with an inside length of 41 ft. when the ratings were based on 40 ft. 6 in. A glance at the cars in any freight yard will prove the assertion that there is no uniformity in equipment.

From my education as a traffic man I am, of course, thinking of that phase of the car question. What seems desirable is a large standard car. There are so many factors which cost no more on a large car than on a smaller one that it looks wrong to build the smaller type, and I cannot figure out why the smaller and obsolete types of cars are allowed to exist. It must be true that the repair bills on these old cars are very much above the average. I do not believe there is any great demand for a car longer than 40 ft. 6 in. inside and 10 ft. high, and I think that attention should be directed to a standard of this size, and that the freight rates and classifications should be adjusted to fit the standard equipment.

The end-door box car is not in great demand. If side doors are wide enough, 90 per cent of the demand for end doors will cease. There are very few shipments which cannot now be loaded through wide side doors, and these few can go on gondolas or flat cars.

### Central Ownership of Freight Cars

If cars are to be standardized, why should they not be controlled by a central ownership, made common route cars, and leased to the using roads on a fair basis? No ordinary railroad can afford to own enough refrigerator or other special cars to care for its seasonable and perishable freight, and I am much inclined to the belief that the same principle will apply to standard box cars.

Is it not time that someone should analyze this equipment problem carefully both as to its ownership and character? The subject is very far-reaching both as to the cost of the equipment itself and as to operating expenses in the way of repairs, empty haulage, and per diem rentals. If you will go back to the years 1902 or 1903, when freight cars were interchanged on a mileage basis, you will recall the misuses of and the dissatisfaction with the system. It was about this time that the per diem system became operative, and no one seems satisfied with that because it is being constantly changed. The well-to-do roads complain that they are buying cars for the poorer roads, and the poorer lines are struggling under the heavy car rental in their operating expenses. Increasing the rental or per diem will not deter the smaller lines from using the cars. They will take what they need or can get for the movement of traffic and pay the penalty.

For the past five years I have taken every possible opportunity to advocate a central ownership of freight cars—a holding company which would build and maintain cars and

rent them to railroads for general use, on a fair basis, such cars to be known as general or open route cars to run anywhere on any railroad.

Such a company could build and maintain cars cheaper than individual lines and move them from one section to another as crops or other conditions require, thus getting the maximum of loaded miles and minimum of empty miles. This would do away with the moving of cars empty merely to send them back home, especially when the home road has no use for them.

With central ownership and a few standard types of cars, selected so as to give greatest utility, the original cost of construction could be kept very low. Naturally such central ownership would establish its own repair shops at strategic points, and this would greatly reduce, if not eliminate, individual railway car shops.

The overhead in most shops is very high and hard to determine. Much of the machinery in railway shops is old and not economical. Most of these shops operate to capacity but a very small part of the year. Very few roads today are well equipped to repair steel cars; and if all roads are to be so equipped, it will mean a tremendous expenditure for machinery and facilities, and the wisdom of such an expenditure is questionable. The centralized control can avert this duplication of equipment.

Under central control a better opportunity would be afforded for records of the actual performance of each car—a thing practically out of the question under present conditions. There were on December 31, 1920, 2,382,212 cars in existence, and the *Railway Age* gives \$626,746,636 as the amount expended in 1920 for maintenance, or about \$265 per car per year. This looks like a great field for economy, both in the cost of repairs and in the quicker return of the car to service.

In constructing cars the weight capacity is not the only factor to consider. It may be necessary to build heavy capacity box cars, but in doing so a tremendous increase in deadweight or non-revenue weight is added to every train. A few years ago I checked up the loaded movement of several Pennsylvania System cars of 100,000 lb. capacity. The heaviest load in any of them was about 80,000 lb., and most of them carried less than 30,000 lb.

Consideration should be given to the increasing number of light and bulky articles and the necessity for a large car.

During the year 1920 there were driven away from factories 470,867 automobiles, equal to about 110,000 carloads, simply because of car shortage, and the railroads lost earnings on this high-class traffic simply because equipment was not available. Our own company and our agents own over 500 flat cars used for automobile shipments, purchased solely to protect ourselves. We also made an investment of \$118,000 for steel decking to deck these cars and make them move a double load.

We have met every kind of objections from railway men to our advocacy of large cars with wide doors, but they are coming to it and are discovering that what some roads are doing others will sooner or later be obliged to do. It is not for the shippers to tell the railroads how to build cars, but it is their privilege to tell what they need, and the railroads should find the method of meeting the situation. I believe this lies in a central ownership and control of equipment.

### Organize a Department of Public Relations

Every railway should have an executive official reporting to the chief executive whose first duty should be to keep in touch with the public along the line and endeavor to create more harmonious relations between the railway and its patrons. The present organization of most railway staffs does not provide for such an official. Just what duties now handled by others should come under his supervision might depend on the size of the railroad, but regardless of the size

of the road, this official should report to the president or chief executive officer and have a title plainly indicating his position.

### Railroad Labor

Regardless of the present political labor situation, the underlying principles surrounding railroad labor are not very different from those in other lines except that the men are better organized; and because of this fact and the practice recently created, under government control, of increasing the freight and passenger rates to meet the increase in expenses, there may have developed, in some quarters, a lack of resistance by the supervisory forces.

While it is often stated that railway employees were generally underpaid, it is a fact that many of the men have been in service a long time and of their own accord, and this must speak for itself as to the desirability of their employment. Most men are willing to do an honest day's work if they are properly directed and treated fairly as to conditions as well as pay. The conditions surrounding railroad labor have been anything but good. I refer to offices, rest rooms, hours of labor, sleeping accommodations, and other things with which yard and train men are obliged to contend. These conditions would not be tolerated in an industrial plant.

Possibly one reason railways fail to control the efficiency of their employees is because the supervisory or inspection forces are too closely allied to those whom they supervise. Possibly the system or method of measuring a day's work is wrong in that the only measure is the hours of service and not the number of units of work done. In this I do not refer particularly to shop work. The laws of nature and traits of individuals do not differ much, regardless of occupation, and the principles cannot be very different in any line of commercial activity.

Very reliable figures of labor conditions in Akron, Ohio, are available, and I summarize the situation merely to illustrate the point. One concern in Akron with a capacity of about 1,000 tires per day had this experience: In May, 1920, its pay roll totaled \$108,000, and the daily average production of tires was 978. In May, 1921, the pay roll amounted to \$40,000 and the daily production averaged 1,018 tires. In 1920 it employed 950 men, and in 1921 the larger output was done by 387 men.

In a paper published by the Goodyear Tire & Rubber Company called the "Wingfoot Clan," they say that in their tube department in 1920 the average number of tubes per man per day was 20, while in 1921 the production per man is 60 tubes. The hours of labor have increased from eight to ten, and the rates of pay per hour have greatly decreased. Taken as a whole, and as an average in the various Akron plants, the efficiency per man measured by the output has increased about 75 per cent. If this increase in efficiency can take place in Akron, Ohio, it can also take place in railroad service if properly directed.

Shippers are entitled to the most efficient operation possible. Men in railway service should be paid properly and in line with what is paid for similar work elsewhere. The conditions surrounding the work should be as good as possible. The results are what really fix the cost of operation, and the better the results, the lower the cost. If the costs are reduced, the rates will also be reduced, and business will be quickened to the advantage of all concerned.

### Discussion

N. D. Ballantine, superintendent transportation, Union Pacific, agreed with the author of the paper that the private ownership of freight cars would cause more empty car miles than would result under a scheme of central ownership. Under private ownership the cost of repairing freight cars is much cheaper at home than on foreign lines. Other factors, however, must be taken into consideration in deciding the

advisability of sending foreign cars home when in need of extensive repairs. In explaining this situation Mr. Ballantine called attention to the fact that it would cost \$75, for instance, to move an empty Pennsylvania car home from Ogden, Utah. In view of the fact that the balance of traffic on the Union Pacific is east-bound, to send this car home would require the empty movement of another car west for loading which would place a total burden of \$150 on the transaction and might make it advisable to repair the car away from home.

G. E. Patterson, general superintendent, Illinois Central, expressed a doubt as to whether there would be any advantage in building cars of light capacity since so many bulky commodities must be moved under modern industrial conditions. To go to cars of lighter capacity would increase the number of cars moved, which would add to the burden on railroad facilities, particularly in terminals and transportation yards.

In answer to a question as to why a car with an inside length of 40 ft. 7 in. was any less desirable than one measuring 40 ft. 6 in., Mr. Conn explained that the carload minimum classifications are based on a length of 40 ft. 6 in. and 42 ft., and for a car that exceeds 40 ft. 6 in. the road should apply the 42 ft. minimum if traffic regulations are observed. This works an injustice on the shipper; as it costs him as much to use a 40 ft. 7 in. car as to use a 42 ft. car.

In answer to a question as to the width of side doors which would make possible the elimination of end doors for automobile loading, Mr. Conn suggested that the doors be 10 ft. wide and staggered so that about 6 ft. of the width of the two doors would be directly in line across the car. He called attention to the fact that the fastenings on the inside of the end doors form a projection which has been the source of a large part of the damage in transit to automobiles shipped from the Buick plant.

## Freight Traffic Statistics

WASHINGTON, D. C.

**T**HE number of tons of revenue freight carried by the Class I railroads of the United States in the first six months of 1921 was 800,067,738, as compared with 1,031,969,587 in the first six months of 1920, a reduction of 22 per cent. The tonnage of revenue freight originated for the six months period of 1921 was 440,543,243, as compared with 575,670,571 in 1920, a reduction of 23 per cent. These figures are indicated by the quarterly summary of freight commodity statistics just issued by the Interstate Commerce Commission for the second quarter of 1921, taken in connection with the reports for previous quarters.

For the quarter ending June 30, 1921, decreases as compared with the corresponding quarter of 1920, are shown in the totals for animals and products, products of mines, products of forests, manufactures and miscellaneous, and l. c. l. merchandise traffic, both freight originating and total revenue freight carried, but the tonnage of products of agriculture carried shows an increase from 43,445,220 in 1920 to 44,639,283 in 1921. The tonnage of wheat carried was 9,632,585 for the quarter, as compared with 6,088,429 in the corresponding quarter of 1920; corn, 5,935,075, as compared with 4,834,640; citrus fruits, 2,061,791, as compared with 1,766,587; other fresh fruits, 2,119,730, as compared with 1,807,186; potatoes 2,221,396 as compared with 2,068,278. Other items under the head of products of agriculture show decreases.

The total tonnage carried of animals and products was 10,146,292, as compared with 10,743,059, but there were increases in hogs, fresh meats, other packing house products, poultry, eggs, butter and cheese, and wool. Of products of mines the tonnage was 208,779,616, as compared with

272,179,656. Anthracite coal shows an increase from 31,129,687 to 32,924,400, but bituminous coal decreased from 144,470,058 to 121,374,695 and all other items in this class show a decrease.

Of forest products the tonnage was 36,858,931, as compared with 49,631,766. Ties show an increase from 1,876,993 to 2,124,505.

Total manufactures and miscellaneous freight carried amounted to 81,054,733, as compared with 121,664,689, increases being shown only in vegetable oils, cement and ice. L. c. l. merchandise decreased from 22,605,696 to 16,770,520. The grand total of carload and l. c. l. traffic for the quarter was 398,249,375, as compared with 520,270,086.

## Dual Control of Railroads Criticized

WASHINGTON, D. C.

**D**UAL CONTROL of our transportation systems by two separate and distinct governmental agencies, the Interstate Commerce Commission and the United States Labor Board, is declared to be the outstanding obstacle in the path of efficient and economical operation of the railroads in a statement to the press by Representative Sydney Anderson, chairman of the Congressional Joint Commission of Agricultural Inquiry.

"The Interstate Commerce Commission regulates the prices of transportation and the United States Labor Board regulates its costs," Mr. Anderson said. "This division of authority and responsibility violates the fundamentals of efficient business management. While the railroads are semi-public corporations and exercise a semi-governmental function, there is no fundamental difference between the economic laws which apply to the operation of railroads and those which apply to the operation of any other business. There are certain well-defined restrictions which can properly surround railroad operations and which are necessarily public requirements, but when these regulations or restrictions result in divided authority and responsibility for operation, and attempt to substitute arbitrary and fixed rules for economic laws, they result in imposing burdens upon the railroads which must eventually become burdens upon the public in general.

"Centralized authority and responsibility are just as essential to the management of railroads as to the management of any other business, and the existing dual control of railroad, which divides responsibility and authority, is a compromise on the fundamentals of sound business organization and efficient management, which results in excessive burdens upon the shipping public.

"Prices for transportation and costs of transportation are mutually inter-related and interdependent factors and supervisory control over them should be exercised under a single authority. The policies involved in the determination of the expenses to be assumed by the railroads are essentially policies of management rather than of supervisory governmental control, and a careful analysis of functions of management and regulation should be made, with a view to so modifying existing laws that the functions of private management and responsibility for their exercise may be left with the management of the railroads, and the control of the government limited to supervisory, regulatory functions, if private management of railroads is to continue. Any other relation will inevitably result in imposing excessive burdens upon the public.

"While the commission has come to no conclusion with respect to the recommendations which it will make with regard to railroad operations and regulations, it is undertaking an analysis of the functions of the railroads with a view to making definite recommendations for improvements, both in regulation and operation."

# General News Department

**London to Birmingham** in two hours is the time advertised for the best trains in the latest time-tables of both the London & North Western and the Great Western Railways. This is the first restoration of these fast schedules, which were discontinued during the war. The distance between the two cities, by the North Western, is 113 miles, and by the Great Western, 110 miles.

**Two bandits** were shot and killed on the night of September 14, by federal agents and railroad detectives, when they attempted to hold up Texas & Pacific passenger train No. 11, fifteen miles west of Ft. Worth, Tex. The train had been heavily guarded following information received by federal agents that bandits had planned to rob the mail car.

**The production of Portland cement** in 1920 was 100,023,245 barrels, exceeding that in 1917, the next highest year in production, by 7,209,043 barrels. This amount was an increase of 24 per cent over the production in 1919, which was 80,777,935 barrels. The stocks at the mills increased from 5,256,900 barrels at the end of 1919 to 8,941,046 barrels at the end of 1920.

**The executive and advisory committee** of the American Association of Railroad Superintendents, at a meeting held in Chicago on September 10, decided to hold the next convention in Kansas City, Mo., on August 23 to 25, 1922, inclusive. Kansas City was selected as the location of the convention in view of the fact that it had been originally planned to hold the 1921 meeting at that city, which meeting was canceled.

**The engineman** of passenger train No. 327 on the Pennsylvania, en-route from Louisville, Ky., to Indianapolis, Ind., was killed and four persons were severely injured and several less seriously injured, when the train went through a bridge into the Blue river, one mile north of Edinburg, Ind., on September 17. The train was derailed on the approach to the bridge and struck an end post, knocking part of the bridge into the river. The engine and baggage car plunged into the stream while a day coach and three Pullman cars remained on the track.

**Chief engineers' night** was the name given to a meeting held by the Western Society of Engineers at Chicago on Monday evening, September 26. Brief addresses were given by C. A. Morse, chief engineer, Chicago, Rock Island & Pacific; H. R. Safford, assistant to the president, Chicago, Burlington & Quincy; C. F. Loweth, chief engineer, Chicago, Milwaukee & St. Paul, and E. H. Lee, vice-president and general manager, Chicago & Western Indiana. The addresses were directed primarily at the young engineers and concerned the elements necessary for success, the speakers drawing largely on their own experiences.

**C. M. Candler**, chairman of the special commission appointed by the governor of Georgia to investigate the causes of a freight train derailment on the Atlanta, Birmingham & Atlantic on September 7, has made a report, signed by himself and W. H. Hudson, holding that the wreck was caused by an explosive placed on the track with criminal intent. William T. Turner, president of the Georgia Car & Locomotive Works, who is the third member of the commission, handed in a minority report holding that the derailment was due to a loose wheel of the front truck of the locomotive.

## Pennsylvania Pensions

During the first six months of 1921 the Pennsylvania Railroad paid out \$1,354,692 in pension allowances to retired employees; and 696 new names were placed on the pension list in that time. During the same period, 287 retired employees died. The total number now receiving pensions is 6,406. It is estimated that the

average term of service of these men is 40 years. The average age of all employees on the roll is 73 years and 1 month.

All officers and employees who attain the age of 70 years are automatically retired, and those from 65 to 69, inclusive, who after thirty or more years in the service become disqualified for active duty, are also eligible for pensions.

## Coal Production Increasing

Production of soft coal showed a decided improvement during the week ended September 17, according to the weekly bulletin of the Geological Survey, and for the first time since early in June passed 8,000,000 tons. The total output is estimated at 8,139,000 net tons. Production of soft coal during the first 219 working days of the year has amounted to 279,881,000 tons, which is 99,000,000 tons behind the average of the previous four years. The cumulative movement to the lakes for the season, however, stands at 17,669,670 net tons, nearly three and three-quarter million tons ahead of 1920 and 186,580 tons ahead of 1919.

## Chicago River Straightening

Four of the railroads owning tracts of land on the South branch of the Chicago river have appointed officers to negotiate with the city of Chicago on the proposed straightening of the river, as follows: E. T. Glennon, assistant vice-president, New York Central; L. C. Fritch, vice-president, Chicago, Rock Island & Pacific; W. J. Towne, chief engineer, Chicago & North Western, and G. P. Palmer, engineer of maintenance and construction, Baltimore & Ohio Terminal. These officers will serve on a joint committee of city and railroad officers to be headed by E. T. Noonan, chief engineer of the city's Railroad Terminal Commission.

## Telegraph and Telephone Appliance Association

Officers for the Railway Telegraph & Telephone Appliance Association, which met in conjunction with the Telegraph and Telephone Section of the American Railway Association at Cleveland, Ohio, last week, were elected for the ensuing year as follows: Chairman, J. Warren Young, Kerite Insulated Wire & Cable Co., New York; vice-chairman, F. W. Bayles, New York Telephone Company, New York; secretary and treasurer, G. A. Nelson, Waterbury Battery Company, New York. The members elected to the executive committee are: B. A. Kaiser, American Telegraph and Telephone Company, New York; W. T. Kyle, Page Wire & Steel Company, New York; J. W. Hackett, Okonite Company, New York; Wallace L. Cook, Reliable Electric Company, Chicago; E. V. Adams, Western Electric Company, New York, and D. H. Morris, Ohio Bell Telephone Company, Columbus, O.

## The French Exhibit in Canada

The eight-car exhibit of the life and commerce of France (heretofore noticed in the *Railway Age*) which is now traveling through Canada has drawn large crowds of visitors. The car devoted to literature, science and the arts contains the sword presented by the people of Liege to Marshal Foch. Other treasures are Rodin's "A Dancer," a painting valued at 75,000 francs, loaned by the Louvre, Caron's statue "Spring Smile," loaned by ex-President Poincaré, and busts of Clemenceau and Puvion de Chavannes. Car number two, devoted to setting forth the beauties of France as a touring ground, contains illuminated views of old chateaux and beautiful castles, maps, and models of trains and ships. The jewelry car contains a large collection of the best examples of French jewelry; diamond pendants, jewel-encrusted bracelets and unique rings; also fine cutlery, bronzes and statuary. The

French government has invited the Canadian government to send an exhibit of Canadian wares to France next year, and offers free transportation of Canadian sample goods both ways across the ocean, free housing of goods, free railway transportation and many other privileges.

### Roadmasters Elect Officers

At the closing session of the convention of the Roadmasters and Maintenance of Way Association at Chicago on September 22, the following officers were elected for the ensuing year: President, L. M. Demey, supervisor Cleveland, Cincinnati, Chicago & St. Louis, Indianapolis, Ind.; first vice-president, J. P. Corcoran, roadmaster, Chicago & Alton, Bloomington, Ill.; second vice-president, J. B. Martin, supervisor New York Central, Elkhart, Ind.; secretary, P. J. McAndrews, roadmaster Chicago & North Western, Sterling, Ill.; treasurer, T. F. Donahoe, general supervisor Baltimore & Ohio, Pittsburgh, Pa.; roadmaster W. F. Muff, Atchison, Topeka & Santa Fe, Newton, Kan., was elected to fill the unexpired term of Mr. Martin as a member of the executive committee. George W. Koontz, supervisor Delaware & Hudson, Carbondale, Pa., and C. A. Joyce, supervisor Erie, Paterson, N. J., were elected as four year members of the executive committee. Cleveland was chosen as the place for the next convention.

At the annual meeting of the Track Supply Association, held on Wednesday morning, September 21, the following officers were elected: President, Herbert Potter, Wyoming Shovel Works, Wyoming, Pa.; vice-president, F. M. Condit, Fairbanks, Morse & Co., Chicago; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, J. J. Cozens, Union Switch & Signal Company, Swissvale, Pa.; K. J. Eklund, Mudge & Co., Chicago; Alex. Chapman, Rail Joint Company, Chicago, and A. H. Told, Positive Rail Anchor Company, Marion, Ind.

### Constitutionality of Election Laws to

#### Be Tested by C. M. & St. P. Officers

H. E. Byram, president of the Chicago, Milwaukee & St. Paul, Burton Hanson, general counsel, L. K. Silcox, general superintendent of motive power, and George T. Martin, assistant to Mr. Silcox, were placed under arrest on September 26 before Judge F. S. Righimer of the Cook County Court, Chicago, on warrants charging violation of the election laws by refusing to pay employees for two hours during which they were absent from their work to cast ballots on election days. Mr. Byram and the other officers appeared before the court voluntarily with the object of making this a test case. The officers furnished bonds of \$1,000 each and their case was set for hearing on October 17.

A brief notice of the earlier developments of this case was included in the *Railway Age* of September 24 (page 589).

Subsequently attorneys representing the four officers of the St. Paul filed a brief containing 17 reasons why that section of the election law giving employees two hours with pay in which to vote is unconstitutional. Among other points, the attorneys contend that the act is invalid because "it is contrary to the policy of law that any person should be paid for performing that duty of citizenship which consists in attending the polls and voting at elections." Another contention is that the act "seeks to take the property of one citizen for the private use of another citizen."

### Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.
- AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 29 S. La Salle St., 332 South Michigan Ave., Chicago.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, November 21 and 22, Carolina Hotel, Pinchurst, N. C.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 3-6, Atlantic City. Exhibits this year will be omitted.
- AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Avenue, Chicago, Ill.
- AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, 1921.
- Division I—Operating.
- Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.
- Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.
- Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.
- Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y.
- Safety Section. J. C. Caviston, 75 Church St., New York. First annual meeting, Boston, Mass., September 26.
- Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.
- Division III—Traffic, J. Gotschalk, 143 Liberty St., New York.
- Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill.
- Construction and Maintenance Section. E. H. Fritch.
- Electrical Section. E. H. Fritch.
- Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y.
- Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Division VI—Purchase and Stores (including former activities of the Railway Storekeepers' Association). J. P. Murphy, General Storekeeper, New York Central, Collinwood, Ohio.
- Division VII—Freight Claims (including former activities of the Freight Claim Association), Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 Waller Ave., Austin Station, Chicago. Next convention, October 18-20, 1921, Hotel McAlpin, New York City. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November, 1921, Chicago.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in cooperation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-14.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY OF STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., Portland, Me. Next annual meeting, May 19, 1922, Montreal.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Convention this year has been postponed indefinitely. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.
- ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1558 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division 2.)
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, 3346 S. Artesian Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Chafon St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kluge, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koneke, St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y. Annual dinner, Thursday evening, November 10.

- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.
- CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio.
- EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.
- FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division 7.)
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856. Insurance Exchange Bldg., Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R. Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Win. Hall, 1061 W. Wabasha Ave., Winona, Minn.
- MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, which was to have been held October 4-6, 1921, at Buffalo, N. Y., has been canceled.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May, 1922.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division 5.)
- MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division 5.)
- NATIONAL ASSOCIATION OF RAILWAY TIE FRAGMENTS.—Arren C. Nixon, Westcott & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo.
- NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, October 11, Atlanta, Ga.
- NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hannover Square, New York.
- NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., 29 W. 39th St., New York. Regular meetings, March 13-16, Chicago, at convention of American Railway Engineering Association.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting, 2d Thursday in month, alternately in San Francisco and Oakland.
- RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.
- RAILWAY BUSINESS ASSOCIATION.—Frank W. Nixson, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.
- RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.
- RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
- RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelricht, 17 East 4th St., New York. Meeting with Traveling Engineers' Association.
- RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 18-20, Hotel Sherman, Chicago.
- RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.
- RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division 4, Signal Section.)
- RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division 6.)
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division 5.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.
- ROADMASTERS AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Scranton, Ill. Exhibit by Track Supply Association.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meeting, 3d Friday in month, except June, July and August.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, F. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Westcott Ry. Co., Atlanta, Ga.
- SUPPLY ASSOCIATION OF AMERICAN RAILWAY TIE FOREMEN'S ASSOCIATION.—C. N. Thulin, 935 Peoples' Gas Bldg., Chicago.
- TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.
- WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Meeting third Monday each month except June, July and August.

## Traffic News

Apples, in carloads are now moving in large quantities from the Annapolis Valley, Nova Scotia, to Pittsburgh, Cincinnati, Indianapolis, Dayton, Detroit, Buffalo, Cleveland, Toledo and Philadelphia.

The Detroit, Toledo & Ironton failed to appear before the examiners of the Interstate Commerce Commission at Columbus, Ohio, on September 15, to show cause why it should be permitted to reduce interstate freight rates.

More than 19,000,000 bushels of this year's grain from the three prairie provinces of Canada, the bulk of it destined for Fort William, have been moved by the Canadian Pacific, according to a report of that company. Of this amount 17,132,372 bushels was wheat.

Fifty-eight hours from Seattle to St. Paul is the time of the latest reported run of a trainload of silk over the Northern Pacific. The train consisted of eight cars and the silk was brought from Yokohama to Seattle by the steamship "Ixion" in 13 days. The distance from Seattle to St. Paul by the Northern Pacific is 1,904 miles, which makes the rate of speed 32.8 miles an hour.

Ferry boat fares across the Hudson river, between New York and New Jersey, have been advanced by the Delaware, Lackawanna & Western, and the West Shore railroads, following similar action recently by the Pennsylvania. The rate on the West Shore boats between Cortlandt street and Weehawken is advanced from five cents to six cents, and the Lackawanna advance, single fares, is one cent.

The "Neosho plan" of advertising and cooperative sales days is to be introduced at a number of prominent places on the Central of Georgia, by cooperation of G. R. Lowe and the industrial department of the railway company. The Neosho Community Development plan, by which the merchants of a town stimulate their business with the farmers in the country tributary, was described before the Railway Development Association at its meeting in New York City last May, which was noticed in the *Railway Age* of May 20, page 1172.

The Illinois Central in its latest newspaper advertisements sets forth the reasons why freight and passenger rates can not be reduced at the present time. Labor, material, locomotives, refrigerator and other cars, and passenger coaches have all increased considerably in price over 100 per cent since 1914. Interest on borrowed capital has advanced from five per cent to seven per cent and taxes have grown 183 per cent. It states that the abolition of the transportation tax might benefit the public. The advertisements invite constructive criticism and suggestions.

The Philadelphia & Reading is not often thought of as an important trunk-line grain-carrier; but it is one to be taken into account. In the week beginning on Monday, September 12, it moved a single shipment of 321 cars, loaded at Buffalo, N. Y., and destined to Baltimore, Md. The total quantity of grain (corn) was over 500,000 bushels. It was shipped to Baltimore for export and had to be on board boat by midnight on Thursday, the 15th. It started moving from Buffalo on Monday and continued through four days, seven solid trains. The route was over the New York Central from Buffalo to Newberry Junction, Pa., over the Reading from Newberry Junction to Gettysburg, Pa., and over the Western Maryland from Gettysburg to Port Covington Elevators, Baltimore.

Frank H. Alfred, president of the Pere Marquette, in an article in the September Service, predicts a country-wide retrenchment of local passenger train service because of local line competition. Between Howell, Mich., and Lansing, 33 miles, there is a bus line operating daily, although the Pere Marquette has five trains each way stopping at each station. The ticket agent at Howell estimates that the trains that properly should go from Howell to Lansing by the Pere

Marquette but is now handled by the bus line, amounts to \$15 a day, from this one point alone. The patrons of the bus line put up with the greater discomfort because of the slight saving in fare. On the entire Pere Marquette system the losses of this character amount to a large sum.

The fast passenger service between New York City and Havana, Cuba, over the Pennsylvania, the Richmond, Fredericksburg & Potomac, the Atlantic Coast Line, the Florida East Coast, and the Peninsula & Occidental Steamship Line, which was in vogue prior to the war, has been restored. The Atlantic Coast Line announces that southbound train No. 85, leaving New York at 9:15 a. m., will arrive in Jacksonville at 2:40 p. m. the next day, Key West the third day at 9:10 a. m., and Havana at 5 p. m., or 55 hrs. 45 min. from New York to Havana. This is 14 hours less than the time of the best train over this route in the last preceding time table. The northbound train will be run three hrs. and 25 min. quicker than heretofore. The condensed schedule appears in the Official Guide for September, page 487.

Traffic officers of the eastern and southern railroads held a conference at Washington on September 27 with Commissioner Cox, director of Traffic Hardie and Chief Examiner Quirk of the Interstate Commerce Commission, for the purpose of discussing the possibility of an agreement to make reductions in the rates on southern hardwood lumber from the southeast as requested by the Southern Hardwood Lumber Association in a formal complaint now pending before the commission. The conference came to no result, however, because of the unwillingness of the eastern and northern lines to shrink their revenues for the purpose of stimulating the movement over the southern lines and it is understood that the case will proceed to a conclusion in the usual way on formal complaint. A hearing in the case had been set for October 4, but was postponed.

The Southwestern Industrial Traffic League, Dallas, Tex., has sent out copies of recommendations adopted by the association, urging drastic changes in the Transportation Act of 1920. Congress is asked to repeal section 15A, which provides for standardization of returns and pooling of excess earnings. It is proposed that the act be amended so as to give the Interstate Commerce Commission as much authority as it had under the act prior to the amendment as construed by the Supreme Court in the Shreveport case, and no more. The Railroad Labor Board is declared to have a tendency toward nationalization of railroads, and the League is opposed to such nationalization. Congress is also asked to amend section 11 so that members of the Interstate Commerce Commission shall be required to have at least five years' experience in traffic and transportation matters before being eligible to appointment. The Winslow railroad refunding bill was endorsed.

### Traffic Club of Chicago

The Traffic Club of Chicago passed the following resolution at a special meeting on September 16: Whereas, President Harding, by the first day of January next, will have appointed not less than seven members—a majority—of the Interstate Commerce Commission; and Whereas, it would seem that the appointing power does not always appreciate the functions that his appointees to this body must discharge, therefore, the training and knowledge they must have along special lines, Therefore, be it resolved: by the Traffic Club of Chicago, composed of over one thousand members, representing both the transportation lines and the shippers who use them, and, from the very nature of their employment, being especially competent to pass on the question here involved, That the President of the United States be petitioned, not in the interest of this or that individual or locality, but to the end that he give consideration, in making future appointments to the Interstate Commerce Commission, to the importance of a place on this body, which, to a large extent, holds in its hands the destinies of our railroads, and the prosperity of the country, in order that men, not only of good character and ability, but of special knowledge and training that adapt them for this particular work, be chosen to serve.

### Reduction in Rates on Grain in Eastern Territory

The Interstate Commerce Commission has authorized eastern trunk line and New England roads (including the states of Virginia, Maryland, Delaware, New Jersey, Pennsylvania, New York and the New England states) to reduce, on ten days' notice, freight rates on grain and grain products (domestic) from, to and between points in the states in question. It is understood that the reduced rates will range from 2 to 4 cents per 100 lb., or about 12½ per cent.

### N. I. T. League Committee Denounces Labor Board

The executive committee of the National Industrial Traffic League, at Chicago on September 23, adopted resolutions calling upon the railroads for an immediate readjustment of wages and freight rates, based upon wages and working conditions more nearly on a parity with those paid in other industrial lines. The resolutions adopted read in part as follows: "Manifestly there can be no return to normal business conditions until the price of transportation bears a proper relation to commodity value. The business of this country has been developed, and the wide distribution of commodities encouraged under freight rates that bear a proper relation to the price of each commodity, and until rates are readjusted so as to approximate such a level, it is obvious that business confidence cannot be restored. . . . The failure of the railroads to reduce their operating costs is one of the principal factors in the present economic situation. The carriers are hampered by the policy and slowness of the United States Railroad Labor Board. Any condition which prevents the employer and employee from dealing directly with each other is bad and is a fertile field for dissensions. . . . It is not fair to the carriers and to the public that the railroad employees should be given preference over other employees performing work of a similar nature in private industry and until the railway employees are placed upon a corresponding basis with those of private industries it cannot be said that the railroads are efficiently or economically operated."

TWENTY THOUSAND DOLLARS, according to report, is the sum which the Philadelphia & Reading has had to spend for printing time-tables in connection with the changes necessitated by the use of Summer Time in important cities on its lines, since last June. The New England roads could tell a similar story.

THE LONDON & NORTHWESTERN and the Great Western have, according to the Railway Gazette (London), restored their pre-war two-hour schedules for express passenger trains from London to Birmingham. The distance covered is 113 miles by the former road and 110½ by the latter, which will necessitate an average speed of 56¼ and 55¼ miles per hour, respectively.



Photo by Underwood & Underwood

Passenger Train from Mexico Entering the United States—the First Since 1913

## Commission and Court News

### Interstate Commerce Commission

The Interstate Commerce Commission has issued a decision finding the proposed increased express rates on interstate traffic from, and between points in the state of Maine on the Bangor & Aroostook not justified. The suspended schedules were ordered cancelled and the proceeding discontinued.

The commission has suspended until January 24, the operation of a Boston & Maine tariff, in so far as it indicates an advance on existing commodity rates on iron and steel articles from Boston, Chelsea, Davenport, Gloucester, Cambridge, Clinton, Fitchburg and Worcester, Mass., to destinations on the Maine Central.

The commission has further suspended until November 27, the operation of an item in a Southern Pacific tariff which proposes to increase the rates on fresh vegetables, c. 1. from Hoover and other points in Oregon to El Paso, Tex., the operation of which was suspended until October 28, by an order previously entered.

The commission has further suspended until November 28, the operation of certain schedules published in a supplement to Agent J. E. Fairbanks' tariff which provide for the elimination of heater service for the protection of perishable traffic originating outside of the present cold weather zone when destined to points to Utah, Wyoming, Colorado, Kansas, Nebraska, Missouri, Iowa and Illinois, or on traffic originating outside of the present cold weather zone routed through these states when destined to points beyond, the operation of which was suspended until October 29, by an order previously entered.

### Conference on Rates on Fish

The commission has called a conference relative to charges for the transportation of fish and sea foods by freight and express throughout the United States, to be held at Washington, on October 10. It has been reported to the commission that the present rates on fish and other sea foods have resulted in curtailment of production. The proceeding will be of an informal character.

### State Commissions

The Georgia State Railroad Commission has adjourned until September 26, its hearing on the general question of revising discriminatory freight rates throughout the state.

### Court News

#### Intermediate Rate Taken in Computing Through Rate

In an action by the Missouri Pacific for a difference in freight charges on a shipment of flour, from Coffeyville, Kan., to Smithland, Tex., the parties agreed that, there being no through rate, the proper charge was to be made up by a combination of the lowest intermediate rates applicable to the shipment, but they disputed as to what rates should form the combination. The flour went to destination over the Missouri Pacific, the Kansas City Southern, and the Black Bayou railroads. The Kansas City Southern publishes a rate of eight cents from Texarkana to Smithland for shipments originating in Texarkana, and one of 18 cents for those coming from other points, including Coffeyville. The Circuit Court of Appeals, Eighth Circuit, holds that the 18 cent rate must be taken for shipments such as this. The question of the reasonableness of the 18-cent rate was not considered by the Court; basing its opinion on certain de-

terminations of the Supreme Court, it was held that a duly published freight rate is conclusive upon the courts, in the absence of any finding by the Interstate Commerce Commission that it is unreasonable. *Missouri Pacific v. Rea-Patterson Milling Company*, 273, Fed. 518.

#### Caretakers' Duty Under 28-Hour Live Stock Law

The Circuit Court of Appeals, Eighth Circuit, holds that under section 2 of the 28-hour law, where the railroad furnishes free transportation to caretakers, it is the duty of these caretakers to assist in unloading, feeding, watering, resting and reloading animals at rest stations; and their refusal to do so is a matter of defense to an action for loss alleged to have been due to improper handling by the railroad's employees; the bills of lading also expressly providing that the carrier should not be liable for any loss due to the act or default of the shipper or his agents.—*Atchison, T. & S. P. v. Merchants' Live Stock Co.*, 273 Fed., 130.

#### Sufficient Bridge With Curve, Grade and Railing

In an action for personal injuries sustained when the plaintiff's automobile skidded and went through the rail on the approach to a highway bridge over a railroad, the Circuit Court of Appeals, Eighth Circuit, holds that the fact that such a bridge was constructed with a curve approximately a 60-ft. arc of a circle, with a circumference of 290 ft., and having a grade downward from the center of about 3 per cent, does not authorize the inference that the bridge was negligently constructed. As to the railing on the approach, the court was of opinion that the law did not require that the railroad construct and maintain a railing that would resist and hold back the pressing power and force of an automobile.—*Medcina v. Hines*, 273 Fed., 52.

#### Railroad Not Liable for Negligence of Hospital Association

The employees of a railroad company having formed a beneficial association, each employee, on entering the company's service, agreed to become a member and that a small percentage of his salary should be turned over each month by the company to the association to build and equip hospitals; and surgeons were employed by the association. The railroad contributes \$50,000 yearly toward the hospitals, but does not control their management and makes no profit out of them. The Circuit Court of Appeals, Ninth Circuit, holds that the association is not the agent of the railroad company in furnishing medical treatment to the members, and the company was not liable to an employee for negligence in such treatment.—*Carr v. N. P.*, 273 Pac., 511.

#### Dunnage of Automobiles

##### Chargeable at Automobile Rates

The Circuit Court of Appeals, Eighth Circuit, holds that a railroad was entitled to charge at the automobile rate and not at the lumber rate for dunnage on shipments of automobiles in closed cars, consisting of the wooden braces and blocking used to keep the automobiles steady in the cars, the weight of which was separately specified in the bill of lading, both the official and western classification (covering the territory in which the shipments moved) containing a general provision that unless otherwise provided "charges shall be computed on gross weights."—*Butler Motor Co. v. Atchison, T. & S. Fe.*, 272 Fed., 683.

#### Value of Goods at Place of Delivery

##### Approved as Measure of Damages

The Massachusetts Supreme Judicial Court holds that, under the first and second Cummins Amendments, a provision in a bill of lading that loss or damage shall be computed on the basis of the value at the place and time of shipment does not apply where the value at the place and time at which the goods should have been delivered is less than the value at the place and time of shipment. The court says: "Evidently the effect of the second amendment is to limit the maximum recovery to the value stated in the bill of lading and does not affect cases where the loss is less than the value stated in the bill of lading."—*Crutched & Woolfolk v. Hines (Mass.)*, 131 N. E., 340.

## Foreign Railway News

### Nitrate Railways' Concession Held Up

The Nitrate Railways, a British company serving the nitrate oficinas in northern Chile, was on June 30 granted a concession for 50 more years of operation together with a 35 per cent increase in rates, according to Commerce Reports. This concession, which was granted by ministerial decrees, has been suspended pending the determination of its legality.

### New Trunk Line in Norway

A new trunk line railway from Christiania north to Trondhjem was recently completed, according to the Times (London). This line was commenced in 1909 and is built almost entirely through mountainous country. A number of tunnels and some 41,000 yards of snow sheds were involved in the work. The highest point reached by the new line is 3,160 ft., which is 900 ft. lower than the highest point on the narrow gauge line which the new road displaces.

### Direct Current Recommended for

#### Electrification in Netherlands

The commission appointed in January, 1920, to study the desirability of electrification of all railways in Holland has prepared a report which, it is understood, not only favors such a scheme but recommends the use of 1,500 volts direct current, according to the Electrical World. It is also recommended that the electrification be made in connection with the proposed unification of electric light and power service throughout the country. There is no indication, however, that this work will be undertaken in the near future.

### Electrification of Railroads in Madagascar

The governor general of Madagascar has decided to electrify the railroads of that colony from Tananarive to Tamatave, according to Commerce Reports. A hydro-electric power station will be built on the Vohitra river to furnish a maximum power of 30,000 horsepower. The length of the line is 93 miles and the total cost of the installations will reach \$4,620,000. Assistant Trade Commissioner F. G. Singer, who furnished this information, states that the governor general is also considering the electrification of the future railroad from Diego-Saurez to Joffre Ville, a road about 22 miles in length.

### High Cost of Motor Transportation in Africa

"Motor roads we have in plenty," says the governor of Britain's Gold Coast Colony in the African World. "In fact we have in the whole of the Gold Coast about 3,000 miles of motorable roads open to traffic. That is to say, 700 miles are open all the year round, but the remainder are necessarily closed for a couple of months during the height of the rains. The motor roads, although they have served very well in the past, form an up-to-date system of transport for nothing but short distances. The cost of construction and maintenance is very high; the cost of running lorries (motor trucks) on them is also high.

"As an example, the following are the comparative costs of conveying one ton (2,240 lb.) one mile on the Gold Coast:

By CARRIERS—3s. 6d. (approximately 87 cents) a Ton Mile.  
 By FORD LOBBY Carrying 15 cwt. (1,680 lb.)—3s. (approximately 75 cents) a Ton Mile.  
 By FORD LOBBY Carrying 15 cwt. and Pulling a Trailer Carrying 10 cwt. (25 cwt. equals 2,800 lb.)—2s. (approximately 50 cents) a Ton Mile.  
 By MEDIUM LOBBY Carrying Altogether About 2 Tons (4,480 lb.)—1s. 6d. (approximately 37 cents) a Ton Mile.  
 By RAILWAY—3¼d. (approximately 9.5 cents) a Ton Mile.

"A study of the above figures will convince anyone that the railways are the only means of transportation. Railways in the Gold Coast cost about £17,000 (somewhat under \$85,000) a

mile to build and equip with the present cost of materials; a motor road strong enough to take 2-ton lorries will cost £3,000 (approximately \$15,000) a mile to build and between £400 and £500 (i. e. \$2,000 and \$2,500) for upkeep. With railways direct revenue comes in; with roads expenditure goes out.

"The routes of all the new railways which the Gold Coast requires have been approximately laid out with a view to tapping those districts which are most in need of transportation, and the topographical survey of the country to determine the best routes is in hand."

### Americans to Build Railway in Bolivia

The American International Corporation, together with a group consisting of Stone and Webster, Marshall Field, Glore, Ward and Company and the Ulen Contracting Corporation, have entered into a contract with the Bolivian government for the construction of a railway 128 miles in length, connecting the railways of Bolivia with those of Argentina, according to the Wall Street Journal. As has been noted in these columns, the Ulen Contracting Corporation already had the contract for this construction, but details of finance had not been worked out. With the entrance of the other American companies into the agreement, this part of the work is taken care of. The new line will extend from Atocha, Bolivia, to Villazon, on the Argentine frontier, and will provide, with existing railways, a transcontinental route from the Pacific to Buenos Aires. The American companies will purchase \$7,000,000 of Bolivian 8 per cent bonds, the proceeds of which will be used to cover construction costs. These bonds will be payable as to principal and interest in the United States and are secured by a first lien on export duties on rubber and minerals and an absolute mortgage on the railway.

### Brazilian Market for Railway Equipment

Commercial Attaché W. L. Schurz, at Rio de Janeiro, calls attention in Commerce Reports to the difficulties being experienced in connection with the railways of Brazil. Since 1914 new construction has been limited and only restricted quantities of rolling stock purchased, with the result that the present mileage and somewhat deteriorated equipment are entirely inadequate for the growing needs of the country. A crisis has developed in the Rio Grande railway system where the farms of the interior have produced more than the carrying capacity of the railways. Similar troubles are experienced in other districts. More or less additional equipment is needed for all the lines, of which there is a total of 17,477 miles—a little less than was in the United States in 1855, and also slightly more than is now in Texas.

Both the government and private railways are unable to purchase the rolling stock or make the extensions so urgently needed, although some new purchases are under consideration and a small amount of new construction in progress. This inability is due to the following conditions: (1) Reduced receipts, resulting from reduced foreign trade, and the fact that public sentiment opposes any increase in the rates; (2) reduced value of the currency as compared with the pound or dollar, the currencies of the countries that would probably supply the materials required.

Although the present market for rolling stock is obviously far below the actual needs of the country, it is still important. Approximately 50 steam and electric locomotives have recently been shipped from factories in the United States or are in course of construction here. Further electrification and more business are expected.

The market for rolling stock is at present largely limited to the Rio Grande system (government owned); the three lines of the state of Sao Paulo, viz., the Paulista, the Mogiana, and the Sorocabana; the Central of Brazil (government owned); and the Inspectoria Federal das Obras Contra as Seccas. The last-mentioned is the administrative bureau in charge of the reclamation projects being carried out in Cearé and the adjoining states. The Noroeste, the Oeste de Minas, the Viacao Bahiana, and the Ferrocarril de Goyaz have all had certain sums placed at their disposal from the Federal budget for the purchase of limited quantities of materials. Other business would develop rapidly if the financial and legal obstacles could be overcome.

## Railway Project to Connect Brazil and Paraguay

The long-standing project for a railway to connect Paraguay and Brazil has lately been revived and is being actively prosecuted in both countries, according to information from Commercial Attaché W. L. Schurz, published in Commerce Reports. The projected line would give Paraguay an alternative outlet to the Atlantic, thereby freeing it from its present dependence on Argentina and generally improving its international position. On the other hand, the railway would open the Paraguayan market to the Paulista manufacturing interests and create a stronger current of trade between Brazil and the northeastern provinces of Argentina.

Recently the project took concrete form in the Brazilian Congress in a bill granting to the state government of either Sao Paulo or Parana a concession to build a line from Santa Cruz do Rio Pardo, the terminus of one of the lines of the Sorocabana railway system, to some point on the Rio Parana between the Guayra Falls and the mouth of the Iguassu, and also to build another connection from Guarapuva to some point on the main line to be constructed, thus offering another outlet by way of Curytiba to the Atlantic at Paranagua. This concession would carry with it a subsidy of \$44,000 a mile. In case neither state should show a disposition to utilize the proposed concession within three months from the date of the passage of the law, the concession would be offered to the highest bidder. Should no offers be made by private interests, the government would construct the line.

It is claimed that as a connection between Sao Paulo and Corrientes the proposed route would offer an economy of 684 miles over the present roundabout route by Buenos Aires, and would soon correct the unfavorable trade balance suffered by Brazil in its commerce with Argentina. There are several different schemes being advanced by the various promoters, however, so that it is possible that the bill will be altered before it is finally enacted.

## Westinghouse Reported to Have

### Received Large Chilean Contract

The Westinghouse Electric International Company has announced that it has received final confirmation of the contract to supply the equipment for electrifying the Chilean State Railway between Valparaiso and Santiago and to Los Andes, according to the Wall Street Journal.

The contract received from the Chilean government through the company's Chilean agents, Errazuriz, Simpson & Co., associated with Spruille Braden, of New York, continues the Wall Street Journal, covers the most important railway electrification since the beginning of the war and the largest ever undertaken by an American firm outside of the United States. The main line, which is 116 miles long and is now under steam operation, is the most important in Chile. It connects the leading seaport, Valparaiso, with the capital, while the line to Los Andes is 28 miles long and forms the Chilean end of the transcontinental route to Buenos Aires.

The contract, which has a total value of \$7,000,000, was secured in spite of keen competition from German and other European concerns. The award was given to the American firm because of its more complete and accurate engineering analysis of the proposition as well as its lower price.

The equipment to be furnished consists of 11 passenger locomotives, 15 road freight locomotives and 7 switching locomotives, together with five sub-stations of 4,000 k. w. each. The 3,000-volt direct current system will be used and all standards will be strictly American in character. Capacity of this equipment will be 50 per cent greater than the present traffic demands, and the plans have been so drawn that an increase of traffic capacity to three times the present amount can be readily obtained. Owing to the abundance of water power in Chile and the high price of fuel, practically all of the Chilean railways will probably eventually be electrified and the present project is the first step in this process.

Other American concerns that will participate in additional awards for the requirements of the Chilean railways, according to the Wall Street Journal, are the American Locomotive Company, the Pressed Steel Car Company and the Anaconda Copper Mining Company.

## Equipment and Supplies

### Freight Cars

THE CHICAGO, ROCK ISLAND & PACIFIC has awarded a contract for the repair of 125 steel gondola cars to the Bettendorf Company, Bettendorf, Ia.

THE PITTSBURGH & LAKE ERIE has awarded a contract for the repair of 1,000 freight cars to the Standard Steel Car Company, Pittsburgh, Pa.

THE CHICAGO, MILWAUKEE & ST. PAUL has awarded a contract for the repair of 300, 50-ton composite gondola cars to the Bettendorf Company, Bettendorf, Ia.

THE CHICAGO, MILWAUKEE & ST. PAUL has awarded a contract for the repair of 100 composite gondola cars to the Western Steel Car & Foundry Company, Chicago.

### Iron and Steel

THE WESTERN MARYLAND TERMINAL has awarded a contract for 274 tons of steel for an elevator at Baltimore, Md., to the Pittsburgh Bridge & Iron Company, Pittsburgh, Pa.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon October 12, for its present requirements of frogs, new metal hopper beams for hoppers of locomotive coaling plants, steel required for repairs to the Hudson River freight bridge and miscellaneous materials for repairs to turntables.

### Miscellaneous

THE NEW YORK CENTRAL, Lines East of Buffalo, will receive bids up to 12 noon, October 7, for its requirements up to January 1, 1922, of the following: Fuel oil, kerosene, long burning semaphore oil, turpentine substitute, coach candles, mineral seal oil, common black oil, West Virginia black oil and gas oil.

THE U. S. LIGHT & HEAT CORPORATION, Niagara Falls, N. Y., recently received several orders from the railroads including the following: Atchison, Topeka & Santa Fe, 50 2 kw. car lighting devices and 50 batteries; Car Brothers, New York, order for the Mexican Railway six, 4 kw. devices with 6 batteries, and the Norfolk & Southern, five, 1½ kw. devices.

### Railway Construction

ATLANTIC COAST LINE.—This company has awarded a contract to R. N. McEachern, Moultrie, Ga., for the construction of a one-story brick freight warehouse, 36 ft. by 188 ft., and a cotton shed, 36 ft. by 378 ft., at Bishopville, S. C.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of September 10 (page 510), as accepting bids for the substructure for a viaduct at Madison street, Chicago, has awarded a contract for this work to the Underground Construction Company, Chicago. The company has also awarded a contract to George P. Cullen, construction contractor, Chicago, for the structural work in widening Canal street, between Jackson Boulevard and Van Buren street, Chicago.

GRAND TRUNK.—This company has undertaken the construction of a subway with concrete abutments and steel span at Yonge street, Aurora, Ontario, and has awarded a contract to the Hamilton Bridge Works, Hamilton, Ontario, for the steel superstructure, erection of which will be handled by company forces.

ILLINOIS CENTRAL.—This company will receive bids until October 3 for the construction of a pipe line, well, and pumping station at Flossmore, Ill.

**ILLINOIS CENTRAL.**—This company contemplates the erection of permanent car repair sheds at McComb, Miss., to replace those destroyed by fire.

**JACKSONVILLE TERMINAL COMPANY.**—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the erection of an electric cinder conveyor at Jacksonville, Fla.

**KANSAS CITY, MEXICO & ORIENT.**—This company in conjunction with the National Railways of Mexico, contemplates the construction of an international bridge spanning the Rio Grande between Del Rio, Tex., and Las Varas, Mex.

**LOS ANGELES & SALT LAKE.**—This company has applied to the Interstate Commerce Commission for certificates authorizing an extension of its Santa Ana branch in California for a distance of fourteen miles, and also for a new line extending from its branch from La Habra east and south to Tustin, Orange County, 21.8 miles.

**MISSOURI PACIFIC.**—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for five pumping stations and water treating plants to be erected at Alexandria, La., Annapolis, Mo., Hoxie, Ark., McGehee, Ark., and Van Buren, Ark., to cost approximately \$135,000.

**OKLAHOMA & ARKANSAS.**—The Interstate Commerce Commission has issued a certificate authorizing this company to construct a line from an intersection with the Kansas, Oklahoma & Gulf near Salina, Okla., in a generally easterly direction for approximately 20 miles.

**OKLAHOMA & ARKANSAS.**—This company has awarded a contract for the construction of a 40-mile line from Salina, Okla., to Kansas, Okla., to J. W. Hoffman, Kansas City, Mo. The right-of-way is now being acquired and construction work will begin about October 1.

**PITTSBURGH & WEST VIRGINIA.**—This company has awarded a contract for a 150-ton, two-track, concrete coaling station with sand storage drying, elevating and delivery equipment at Avella, Pa., to the Ogle Construction Company, Chicago.

**QUEBEC EXTENSION.**—This company, of which A. R. Gould, Presque Isle, Me., is president, is contemplating the construction of a line from Washburn, Me., to Frontier Lake, Quebec. This company has 12 miles of road in operation at the present time and will probably begin active work on the new line next season. The work will involve the construction of two steel bridges, 500 ft. and 600 ft. in length, and a number of trestles.

**SAN ANTONIO & ARANSAS PASS.**—This company contemplates the construction of a hollow tile passenger depot at Taft, Tex., to cost about \$11,000, and a hollow tile combination freight and passenger depot at Poth, Tex., to cost about \$8,300.

**SEWELL VALLEY.**—This company is contemplating the erection of a shop building at Rainelle, W. Va., to have an erecting aisle approximately 60 ft. by 120 ft., and a machinery aisle 30 ft. by 120 ft., to be equipped with an electric crane of 25 or 30 tons' capacity covering the entire main erecting aisle.

**SOUTHERN PACIFIC.**—This company has started the construction of a 420-ft. extension to the grain elevator gallery of its Sunset elevator on Pier "A" at Galveston, Tex., equipping this gallery with a 36-in. belt. The work will be done by company forces, and the entire cost of the work is estimated at \$41,000.

**ST. LOUIS-SAN FRANCISCO.**—This company will receive bids until October 1, for the erection of a machine shop at St. Louis, Mo.

**TEXAS & PACIFIC.**—This company, which was noted in the *Railway Age* of September 3 (page 469), as receiving bids for the construction of a new passenger station at Ranger, Tex., has awarded the contract for this work to Henger & Chambers Company, Dallas, Tex.

A NEW DRY DOCK, now being built by the Government at Esquimalt, British Columbia, will be able to accommodate the largest vessels afloat. It will have a total length of 1,150 ft., a width of 120 ft. on sill and of 135 ft. on the coping level. The depth of the sill will be 40 ft. The dock will be built of concrete and granite.

## Supply Trade News

William C. Wolfe has been appointed manager of sales of the Highland Iron & Steel Company, Terre Haute, Ind., a subsidiary of the American Chain Company. Mr. Wolfe's headquarters will be at 208 South La Salle street, Chicago.

G. H. Redding has been elected secretary of the Massey Concrete Products Corporation, succeeding F. C. Shannon, formerly vice president and secretary, and the position of vice-president will remain unfilled for the time being. David A. Hultgren, has been appointed resident manager at Chicago, for the company.

Henry J. Kimman who, since 1902, has been manager of the Cleveland plant of the Chicago Pneumatic Tool Company, died in Cleveland, Ohio, on September 7. Mr. Kimman was born in Harlem, Holland, in 1863 and came to America with his parents in 1870, settling in Chicago. He served an apprenticeship with the Adams & Westlake Company and other manufacturing concerns in Chicago and in the far west. In collaboration with his brother, T. P. Kimman, he developed and manufactured the first practical portable piston air drill. He became associated with E. N. Hurley in 1898, in the formation of the Standard Pneumatic Tool Company, and with the Chicago Pneumatic Tool Company in the consolidation of pneumatic tool interests in 1901, at which time he became manager of the Cleveland plant of the Chicago company. He remained in active charge of the plant until his death.

## Obituary

Henry Eliot, Jr., president of the Eliot Frog & Switch Company, East St. Louis, Ill., died at his home at St. Louis, Mo., on September 9, from the effects of a cerebral hemorrhage.

## Trade Publications

**LIGHTING DATA.**—The Lighting Service Department of the Edison Lamp Works of the General Electric Company has issued a new series of bulletins on the general subject of electric lighting with titles as follows: Reflectors for Incandescent Lamps, The Lighting of Printing Plants, Lighting for Outdoor Sports, Ship Lighting, Railway System Lighting, Buildings and Yards and Lighting for Indoor Recreations. The numbers of these bulletins are respectively, LD123, LD125, LD126, LD127, LD128 and LD129. They are profusely illustrated, contain from 16 to 34 pages each and the information given on each subject is quite complete.



Photo by Ewing Galloway

Port of Laureno Marques, Southern Africa

# Railway Financial News

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**Authorized to Pledge Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue \$811,000 series A, and \$2,689,000 series B, 6 per cent refunding and improvement mortgage bonds to be pledged as collateral security for a 6 per cent promissory demand note for \$3,500,000 issued to the director general of railroads in payment of indebtedness to the United States for additions and betterments made during the period of federal control.

**CUBA RAILROAD.—Annual Report.**—The income statement for the year ended June 30, 1921, compares with the previous year as follows:

	1921	1920
Gross earnings .....	\$15,853,959	\$14,149,108
Operating expenses .....	14,210,562	10,601,476
Net earnings .....	1,643,397	3,547,632
Other income .....	195,272	157,240
Gross income .....	1,788,669	3,704,872
Interest on funded debt .....	1,475,711	1,264,705
Net income .....	312,958	2,440,167

**GAINESVILLE & NORTHWESTERN.—Asks Loan From Revolving Fund.**—This company has applied to the Interstate Commerce Commission for a loan of \$75,000 for five years from the revolving fund to enable it to retire outstanding indebtedness.

**GREAT NORTHERN.—Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**GRAND TRUNK.—Shareholders to Appeal.**—The shareholders of this company have decided to appeal to the Privy Council against the recent finding of the board of arbitration declaring the common and preferred stocks of the railway valueless. (See *Railway Age* of September 10, 1921, page 511.)

**MILLEDGEVILLE.—Authorized to Issue Stock.**—This company has been authorized by the Interstate Commerce Commission to issue \$30,000 of common stock and to exchange it for a like amount of the company's outstanding first mortgage bonds.

**NEW YORK CENTRAL.—Operating Contract Approved.**—The Interstate Commerce Commission has issued an order approving and authorizing the execution of a new contract whereby the Boston & Albany, through its lessee, the New York Central, operates the line of the Providence, Webster & Springfield.

**SOUTHERN.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$5,655,000 of first consolidated mortgage 5 per cent gold bonds payable July 1, 1994, for the purpose of providing funds for the retirement of a like amount of first mortgage 6 per cent gold bonds of the Georgia Pacific maturing January 1, 1922. The application states that negotiations for the sale of the bonds have been postponed until action has been taken by the commission, but that it is proposed to sell the bonds at not less than 81 and accrued interest.

**SOUTHERN PACIFIC.—Subsidiary Leases Texas State Railroad.**—(See Texas & New Orleans.)

**SUGAR PINE.—Authorized to Abandon Line.**—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its line from Ralph to Lyons Dam, Calif., a distance of 14.15 miles.

**TEXAS & NEW ORLEANS.—Authorized to Lease Texas State Railroad.**—The Interstate Commerce Commission has authorized this company to lease the Texas State Railroad. (See *Railway Age*, September 10, 1921, page 512.)

The Texas & New Orleans agrees that in determining operating revenue there shall be credited to the State no division lower than the present basis of division to the Texas State Railroad, and on traffic not now covered by division sheets, that may hereafter arise, the relative proportion of divisions shall not be lower than the divisions which now obtain. The company is not to charge any portion of overhead or general expenses of any officers above the grade of division superintendent; such expenses

as are charged shall be prorated on train mileage basis. Suitable reserve may be created currently by the T. & N. O., and set up in the accounts to cover liabilities of operation. At the termination of this contract any reserve funds so accumulated will, after settlement of all liabilities for which the reserve was created, be divided equally between the State and the company.

**TEXAS STATE RAILROAD.—Leased to Texas & New Orleans.**—(See Texas & New Orleans.)

**WESTERN MARYLAND.—Authorized to Pledge Bonds.**—This company has been authorized by the Interstate Commerce Commission to procure the authentication and delivery to its treasurer of \$1,500,000 of first and refunding mortgage 5 per cent gold bonds and to pledge \$1,527,000 of such bonds with the Secretary of the Treasury as security for a loan from the United States.

**WHEELING & LAKE ERIE.—Asks Authority to Pledge Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue and pledge \$125,000 of 6 per cent refunding mortgage bonds to be pledged as collateral for a loan from the United States government and also for authority to repledge \$924,000 of refunding mortgage 5 per cent bonds as collateral for the renewal of short term notes.

**WYOMING & MISSOURI RIVER.—Sold.**—This road, which operates between Aladdin, Wyo., and Belle Fourche, S. Dak., 18 miles, has been sold to Mahlon S. Kemmerer of Mauch Chunk, Pa., for \$51,200. The sale was ordered to satisfy a federal court judgment of \$348,000 held by Mr. Kemmerer.

## Railroad Administration Settlements

The U. S. Railroad Administration reports the following final settlements and has paid out to the several companies the following amounts: Merchants & Miners' Transportation Company, \$600,000; New York, Ontario & Western, \$500,000; Sharpville, \$14,403; New Mexico Central, \$31,394; Gulf, Florida & Alabama, \$29,100.

## Offering of Equipment Trusts

The equipment trust certificates sold by the Railroad Administration to various bankers are being offered to the public at prices to yield 5.75 to 5.80. The sale of these certificates was noted in the *Railway Age*, issues of September 17 and 24, 1921, pages 530 and 558, respectively. See also an article on another page of this issue entitled "Additional Sales of Equipment Trust Certificates."

## Treasury Payments to Railroads

Since last announcement, dated September 19, 1921, payments under Sections 204, 209, 210 and 212 of the Transportation Act, 1920, as amended, have been made by the Treasury as follows:

Alabama & Mississippi .....	\$60,295
Georgia Coast & Piedmont .....	40,000
Fernwood, Columbia & Gulf .....	6,000
Norfolk Southern .....	50,000

Total .....

Total payments to September 24, 1921, follow:

(a) Under Section 204, for reimbursement of deficits during Federal control .....	\$1,354,340
(b) Under Section 209: <ul style="list-style-type: none"> <li>(1) To carriers to which final payment of the guaranty has been made under paragraph (a) including previous advances under paragraphs (b) and (c) .....</li> <li>(2) For advances under paragraphs (b) and (c) to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission .....</li> </ul>	1,690,115
(c) Under Section 212: <ul style="list-style-type: none"> <li>(1) For partial payments in respect to the guaranty provided in Section 209 .....</li> <li>(2) For partial payments in respect to the reimbursement for deficits during the period of Federal control provided in Section 204 .....</li> </ul>	262,950,874
(d) Under Section 210, for loans from the revolving fund of \$300,000,000 therein provided .....	1,751,941
Total .....	246,417,467
Total .....	\$3,077,776,412

## Dividends Declared

Kansas City Southern.—Preferred, 1 per cent, quarterly, payable October 15 to holders of record September 30.  
 New York, Ontario & Western.—Common, 2 per cent, payable October 17 to holders of record October 8.  
 Norfolk & Western.—Adjustment preferred, 1 per cent, quarterly, payable November 19 to holders of record October 31.  
 Western Pacific.—Preferred, 1 1/2 per cent, quarterly, payable October 17 to holders of record October 8.

# Annual Report

## Cleveland, Cincinnati, Chicago & St. Louis Railway Company—Thirty-Second Annual Report

To the Stockholders of  
THE CLEVELAND, CINCINNATI, CHICAGO AND ST. LOUIS RAILWAY COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1920, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under federal control until 12:01 o'clock a. m. of the first day of March, 1920, at which time the company resumed the operation of its railroad property. The Board of Directors at its meeting of March 10, 1920, authorized the acceptance on behalf of the company of the guaranty provision of Section 209 of the Transportation Act, approved February 28, 1920, and such acceptance was filed with the Interstate Commerce Commission before March 15, 1920, as provided by the Act. The effect of this was that for the six months to September 1, 1920, the company was guaranteed a railroad operating income not less than one-half the amount named in its contract with the Government as annual compensation.

The Interstate Commerce Commission by its order of July 29, 1920, granted an increase, effective August 26, 1920, in freight rates in eastern group territory of 40 per cent and of 33 1/3 per cent between points in western group territory and other territories. It also granted an increase in passenger rates of 20 per cent, with a surcharge on Pullman fares of 50 per cent accruing to the carriers. These increases were not immediately allowed by several of the States as to interstate rates, so that the full effect, although, in most instances they were subsequently allowed under further orders of the Commission.

For the full year 1920, the freight and passenger revenues showed marked advances over the previous year. The return, however, was not as great as it would have been under normal business conditions, due to the fact that the greater part of the tonnage increase was carried at relatively low rates. The principal source of additional tonnage was in shipments of coal and other products of mines, these constituting an increase of 500,000 tons out of a total increase of 5,249,000 tons.

The number of passengers carried during the year increased 1,007,609, the increase being practically all in local and commuter passengers. This is reflected in the decrease of 36 miles in the average distance each passenger of the Interstate Commerce Commission, increased the average receipts per passenger per mile from 2.705 cents to 2.870 cents.

New industries located along the line of the company in 1920 wld, it is estimated, increase its traffic by over 100,000 carloads, yielding several million dollars in revenue.

In the matter of payment for transportation of mail, which had been before the Interstate Commerce Commission for some time, an order was entered by the Commission in January, 1920, establishing increased rates from November 1, 1916, which, under the same order were increased 25 per cent on January 1, 1918. Under this order the company received an additional compensation for the period from November 1, 1916, to December 31, 1917, approximately \$265,000, while the Railroad Administration received, as its share for the period of federal control, \$92,000.

The substantial increases in pay and the changes in working conditions during and since federal control have created a situation which is giving the company grave concern. Besides the actual increases in wages granted by the Director General or ordered by the Labor Board, there have been reclassifications of employees and special allowances which entail additional expense without compensating return in labor performance.

Under rule 60 of the Shop Craft Agreement which provides that employees who are required to check in and out on their own time will be paid one hour extra at the close of each week, and under rule 3 in the same agreement which provides 20 minutes without loss of pay for lunch, this company incurs a substantial additional annual expense. The abolition of piece work in the shops of the company has also been the cause of heavy additional expense.

The condition of the company's equipment at the end of federal control has caused an unusual outlay for repairs which are being made under way.

There was a substantial increase in the cost of fuel.

Final settlement of accounts with the Railroad Administration for the period of federal control has not been effected, but the company is actively engaged in the preparation of the data necessary for use in connection with the making of such a settlement.

The settlement with the United States Government for the guaranty provision—six months, March to August, 1920—in connection with the guaranty provision of the Transportation Act, is progressing.

The following is a comparative table of the mileage operated:

	1920		1919		Increase or decrease Miles
	Miles	Miles	Miles	Miles	
Main line and branches owned.....	1,693.03	1,693.03	.....	.....	.....
Proprietary line .....	.78	126.09	.....	.....	-125.31
Leased lines .....	205.10	204.43	.....	.....	.67
Lines operated under contract.....	326.68	301.37	.....	.....	25.31
Lines operated under trackage rights.....	195.56	183.61	.....	.....	12.25
Total road operated.....	2,421.45	2,408.53	.....	.....	12.92

In view of the status of foreign exchange, the Board of Directors authorized the purchase in France of this company's 4 per cent European Loan Bonds due in 1930, of which \$0,000,000 francs in value were sold in 1919, the company realizing net proceeds of \$8,583,286.12. During 1920 there were acquired 32,346,000 francs par value of these bonds, equivalent at the normal exchange rate (\$.1813 francs to the dollar) to \$6,242,834.81, at a total cost of \$3,149,355.

Provision was made for financing the cost of 2,000 freight cars and 35 locomotives allotted to the company, during federal control, by the Director General of Railroads, all of which have been delivered, through an equipment trust (known as Equipment Trust No. 4) established by an equipment trust agreement dated January 15, 1920, providing for the payment of 7 1/2 per cent of the cost of the equipment in the company's 6 per cent equipment notes, dated January 15, 1920, maturing in equal annual installments over a period of 15 years, the balance to be paid by an agreement dated January 15, 1920, between the Director General and the company to be deducted from the equipment depreciation and retirement credits arising in the company's favor under the standard contract with the Director General. The total cost of the equipment will amount to approximately \$6,842,300. The amount of the notes issued is \$5,130,000. In addition to the equipment allocated to it by and acquired from the Director General of Railroads, the company is to receive from the New

York Central Railroad Company, under sub-lease, 70 locomotives, 55 passenger-train cars and 3,100 freight-train cars, covered by that company's equipment trust of April 15, 1920. The sub-lease to this company provides that the sub-lessee shall assume its pro rata share of the equipment trust certificates, principal and interest, and expenses of the trust, and shall pay that part of the cost of the sub-let equipment which is not financed through the trust, and that it shall, upon the fulfillment of the trust, become the owner of the equipment sub-let to it. The estimated cost of this equipment is \$15,227,959.13 and this company's share of the certificates to cover approximately 75 per cent of the cost is \$11,416,671. Of the remainder of the cost, \$3,415,000 was obtained from the New York Central Railroad Company as a loan. For this and for \$529,000 obtained from the same source for additions and betterments to equipment, the company gave its fifteen 6 per cent notes maturing in equal installments December 23, 1921-35, aggregating \$3,944,000.

On its ten-year promissory note dated December 23, 1920, given to the New York Central Railroad Company, this company borrowed for additions and betterments to way and structures \$4,560,000.

The company also borrowed from the New York Central Railroad Company \$113,000, giving therefor its ten-year 6 per cent note secured by the pledge of a like note given to this company by the Cincinnati Northern Railroad Company to provide it with money for additions and betterments.

During the year the company's notes of a maturity of more than two years and equipment trust obligations were increased as follows:

Equipment Trust No. 44 of January 15, 1920 notes.....	\$5,130,000.00
C. C. & St. L. Ry. Co. proportion of N. Y. C. R. R. Co. Equipment Trust of April 15, 1920, certificates .....	11,416,671.00
Fifteen promissory notes of the C. C. & St. L. Ry. Co., dated December 23, 1920, given to the N. Y. C. R. Co., due serially at intervals of one year.....	3,944,000.00
Ten-year promissory notes of the C. C. & St. L. Ry. Co., dated December 23, 1920, given to the N. Y. C. R. Co.....	4,673,000.00
	\$28,163,671.00

The following bonds were retired during the year:

C. I., St. L. & C. Ry. Co. first first mortgage bonds retired.....	\$81,000.00
C. I., St. L. & C. Ry. Co. first consolidated mortgage bonds retired.....	562,000.00
C. C. & St. L. Ry. Co. (St. Louis Division) first collateral trust mortgage bonds purchased for sinking fund.....	53,000.00
Central Grain Elevator Co. bonds retired.....	26,000.00
	722,000.00

Payments falling due during the year and on January 1, 1921, were made on the company's liability for certificates issued under equipment trust agreements as follows:

N. Y. C. Lines Trust of 1907, installment due November, 1920.....	\$246,689.81
N. Y. C. Lines Trust of 1910, installment due January, 1921.....	199,625.82
N. Y. C. Lines Trust of 1912, installment due January, 1921.....	159,890.20
N. Y. C. Lines Trust of 1913, installment due January, 1921.....	116,737.71
Big Four Railway Trust of 1914, installment due June, 1920.....	373,000.00
Big Four Railway Trust of 1915, installment due July, 1920.....	115,000.00
Big Four Railway Trust of 1917, installment due June, 1920.....	237,000.00
	1,447,939.54

There were nominally issued during the year and pledged as collateral for the ten-year note for \$4,560,000 given to the New York Central Railroad Company, \$4,560,000 of this company's refunding and improvement 6 per cent mortgage bonds, series B.

In addition to the notes mentioned above, the following notes of a maturity of two years or less appear on the balance sheet:

The New York Central Railroad Company.....	\$4,000,000.00
Banks and trust companies.....	3,425,000.00
Total .....	\$7,425,000.00

### SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended		Year ended		Increase or decrease
	Dec. 31, 1920	Dec. 31, 1919	Dec. 31, 1919	Dec. 31, 1918	
Compensation accrued for the possession, use and control of the property of this company and its leased lines, as stated in contract with the Director General of Railroads—January 1 to February 29, inclusive.....					
Additional compensation accrued account completed additions and betterments—January 1 to February 29, inclusive .....					
Guaranteed net railway operating income under section 209 of Transportation Act of 1920—March 1 to August 31, inclusive.....					
Less operating income items audited March 1 to August 31, inclusive, applicable to the period prior to January 1, 1918 .....					
			\$5,153,038.52		
				93,325.40	
					\$5,059,713.12

Net railway operating income—corporate account—September 1 to December 31, inclusive	\$5,064,107.44		
Total (compared with compensation accrued in 1919 under contract with Director General of Railroads)	\$11,829,375.54	\$10,427,350.68	\$1,402,024.86
Miscellaneous non-operating revenues	\$27,480.19	\$25,913.01	\$1,567.18
Expenses and taxes	24,241.34	20,451.30	3,790.04
Net income	\$3,238.85	\$5,461.71	—\$2,222.86
Other Income—Miscellaneous rent income—Miscellaneous non-operating physical property	\$257,544.45	\$204,241.48	\$53,302.97
Dividend income	157,995.48	99,574.65	58,420.83
Income from funded securities	70,705.30	70,705.30	—0.02
Income from unfunded securities and accounts	318,492.34	72,262.65	246,229.69
Release of premiums on funded debt	810,281.07	304,768.87	505,512.20
Miscellaneous income	1,479.85	1,545.89	—66.04
	4,925.57	4,662.51	263.06
Total other income	\$1,621,424.86	\$757,761.97	\$863,662.89
Gross income	\$13,454,039.25	\$11,190,574.36	\$2,263,464.89
Deductions from Gross Income—Rent for leased roads	\$325,267.08	\$516,740.45	—\$181,473.37
Miscellaneous rents	146,613.00	159,586.37	—3,973.37
War taxes accrued	164,200.00	185,678.78	—21,478.78
Miscellaneous tax accruals	25,580.00	10,123.45	15,456.55
Separately operated properties—loss	56,566.93	1,707.22	54,859.71
Interest on funded debt	5,957,003.16	4,919,060.03	1,037,943.13
Interest on unfunded debt	680,838.22	961,709.43	—280,871.21
Amortization of discount on funded debt	128,693.67	49,569.01	79,124.66
Maintenance of investment organization	254.01	514.47	—260.46
Miscellaneous income charges	33,278.08	32,806.77	471.31
Corporate general expenses	36,359.88	204,108.42	—167,748.54
Total deductions from gross income	\$7,464,654.03	\$7,032,604.40	\$432,049.63
Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	100,606.07	3,580,183.52	—3,479,577.45
Net corporate income	\$5,888,779.15	\$577,786.44	\$5,310,992.71
Disposition of Net Income—Dividends declared (5 per cent each year on preferred capital stock)	\$499,925.00	\$499,925.00	
Sinking funds	35,174.00	33,135.66	\$2,038.34
Investment in physical property	30,341.41	9,720.38	20,621.03
Total appropriations of income	\$565,440.41	\$542,781.04	\$22,659.37
Surplus for the year	\$5,323,338.74	\$35,005.40	\$5,288,333.34
Profit and Loss Account—Balance to credit of profit and loss, December 31, 1919			\$10,724,270.81
Additions: Surplus for the year 1920	\$5,323,338.74		
From United States Government in adjustment of mail pay for years 1916-1917		253,175.21	
Accumulated unrelieving overcharges		83,836.96	
Reacquisition of securities below par		33,780.20	
Sales of land		8,544.32	
Unclaimed wages and pensions, 1914		5,386.42	
			\$16,432,632.66
Deductions: Unaccrued depreciation prior to July 1, 1907, on equipment retired during 1920	\$153,749.01		
Road property abandoned	34,547.23		
Adjustments of sundry accounts (net)	9,084.26		197,380.50
Balance to credit of profit and loss, December 31, 1920			\$16,235,252.16

Pursuant to an agreement, dated February 19, 1920, between the company and the bondholders' Committee of the Evansville & Indianapolis Railroad Company, formerly owning the railroad, 134 miles in length, extending from Terre Haute, Indiana, to Straight Line Junction, 3 1/2 miles north of Evansville, Indiana, this company at midnight June 15-16, 1920, assumed operation of the railroad, which had then been acquired in the interest of the bondholders' Committee and conveyed to Evansville, Indianapolis & Terre Haute Railway Company, an Indiana corporation organized June 12, 1920. The agreement provided that the company should operate the line as the agent—at the risk and for the benefit of the owning company for a period of three years, with an option to the company to acquire the entire capital stock of such owner, at any time within the three-year period, for \$1,000,000.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,

ALFRED H. SMITH, President.  
[ADVERTISEMENT]

# Railway Officers

## Executive

H. L. Traber has been elected president of the Oklahoma & Arkansas with headquarters at Muskogee, Okla., and E. H. Foster has been elected vice-president.

John T. Torian, whose appointment as assistant to the vice-president and general manager of Morgan's Louisiana & Texas, with headquarters at Houston, Tex., was announced in the *Railway Age* of September 10 (page 515), was born on June 21, 1866, at Lafayette, La. He began railroad work in November, 1898, with Morgan's Louisiana & Texas, with which road he has served successively as call boy, car checker, roadmaster's clerk, timekeeper on an extra gang, clerk in a local freight office and in an assistant superintendent's office, brakeman, switchman, train and engineman's timekeeper, chief clerk to assistant superintendent, and head clerk in the office of the superintendent of the timekeeping bureau, chief clerk to the superintendent, assistant yardmaster, yardmaster and transportation inspector and train rule examiner. On April 19, 1916, was appointed trainmaster of the Gulf & Ship Island, and on June 14 of the same year was promoted to superintendent, continuing in this position until March 1, 1917, when he returned to the Morgan's Louisiana & Texas. On November 1, 1917, he was appointed supervisor of wages and inspector of transportation, which position he held until the time of his recent promotion.

## Financial, Legal and Accounting

W. H. Whitehead has been appointed auditor of the Lehigh & New England with headquarters at Bethlehem, Pa., succeeding E. M. Kuntz, resigned, effective September 22.

D. N. Fink has been appointed treasurer of the Oklahoma & Arkansas, L. W. Randolph has been appointed secretary and E. R. Jones general counsel, all with headquarters at Muskogee, Okla.

George H. Parker has resigned as comptroller of the Philadelphia & Reading to become commerce counsel of the American Short Line Railroad Association with office at Washington, D. C. Mr. Parker was formerly financial assistant to the director general of railroads and later comptroller of the United States Railroad Administration. In addition to his work for the short line association, Mr. Parker will also be engaged in private practice on general railroad accounting problems.

## Operating

D. W. Steeper has been appointed acting superintendent of the Edson division of the Canadian National, with headquarters at Edson, Alberta, succeeding A. D. Carey, effective September 15.

G. H. Linney has been appointed acting assistant superintendent of the Canadian National, Western Lines, with headquarters at Humbolt, Sask., succeeding E. W. Cameron, transferred, effective September 16.

Eugene H. Daniel, whose appointment as superintendent of transportation of the Central of Georgia was announced in the *Railway Age* of September 24 (page 600), was born on March 13, 1874, at Talbotton, Ga. He was educated at LeVert College, Talbotton, Ga., and entered railway service in 1892 as a telegraph operator for the Central of Georgia. Since that date he has served consecutively as train dispatcher, chief dispatcher, trainmaster, transportation inspector, division superintendent and assistant to the general superintendent, which position he was holding at the time of his recent promotion.

### Traffic

**J. P. Baker** has been appointed general agent of the Kansas City Southern, with headquarters at Houston, Tex., effective September 16, succeeding G. M. Riley, deceased.

**J. F. Fox**, live stock agent of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., has been promoted to general live stock agent, with the same headquarters.

**O. J. English** has been appointed commercial agent of the Atlantic Coast Line, with headquarters at Atlanta, Ga., effective September 26, succeeding W. W. Johnston, resigned.

**Joseph D. Saunders**, whose appointment as general freight agent of the Southern Pacific, with headquarters at Los Angeles, Cal., was noted in the *Railway Age* of September 17 (page 556), was born on May 25, 1885. He entered railroad service as a stenographer to the chief clerk in the passenger department of the Southern Pacific at Los Angeles in 1903, since which time he has been contracting freight agent, correspondence clerk to the assistant general freight and passenger agent, chief clerk in the general freight office, and industrial agent. He was appointed assistant general freight agent, with headquarters at San Francisco, on June 1, 1916, which position he held at the time of his recent promotion.

**Herman W. Klein**, whose appointment as assistant general freight agent of the Southern Pacific, with headquarters at San Francisco, Cal., was noted in the *Railway Age* of September 17 (page 556), was born at Lathrop, Cal., on September 4, 1888. He began railroad work in the traffic department of the St. Louis-San Francisco in June, 1906, leaving that road in 1910 to enter the traffic department of the Southern Pacific. On September 1, 1916, he was appointed chief tariff clerk, which position he held until August 1, 1917, when he was promoted to chief clerk in the general freight department. One year later, he became acting assistant general freight agent at San Francisco, and on March 1, 1920, he was appointed foreign freight agent, which position he held until the time of his recent promotion.

**B. Levy**, whose appointment as assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at San Francisco, Cal., was noted in the *Railway Age* of September 10 (page 515), was born at Los Angeles, Cal., on October 29, 1885. He began railroad work in the auditor's office of the Santa Fe on June 24, 1902, and after holding various minor positions, was promoted to chief clerk in the interline department. On January 1, 1910, he was appointed tariff clerk in the traffic department at Los Angeles, and on August 1 of the same year, he was promoted to chief tariff clerk. In July, 1913, he became chief local rate clerk at San Francisco, which position he held until December, 1916, when he was appointed chief rate clerk with the same headquarters. During government control, Mr. Levy was associated with the San Francisco district freight traffic committee. Upon the return of the railroads to private ownership, he became chief clerk to the assistant freight traffic manager of the Santa Fe, with headquarters at San Francisco, which position he held until the time of his recent promotion.

### Special

**Dr. Wayland Morrison** has been appointed chief surgeon of the Santa Fe Coast Lines Hospital Association, succeeding Dr. N. H. Morrison, deceased.

**F. P. Cruice** has been appointed manager of the agricultural and industrial development department of the Atchison, Topeka & Santa Fe, with jurisdiction over the lines east of Albuquerque, N. M., with headquarters at Topeka, Kans.

### Mechanical

**A. W. Kirkland** has been appointed acting superintendent of motive power of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., during the temporary absence of J. F. Sheahan, effective September 25.

### Engineering, Maintenance of Way and Signaling

**Walt Dennis**, division engineer of the Wabash, with headquarters at Moberly, Mo., has been appointed superintendent of the New Jersey, Indiana & Illinois, with headquarters at South Bend, Ind.

**F. A. Benz**, division engineer of the Buffalo, Rochester & Pittsburgh with headquarters at East Salamanca, N. Y., has been transferred in a similar capacity to Du Bois, Pa., succeeding **J. B. Oatman**, who has been appointed roadmaster with the same headquarters, and the position of division engineer at East Salamanca has been abolished. The position of engineer of construction has been abolished and **D. S. Watkins**, who held that position, has been assigned to other duties. These changes were effective September 1.

**H. O. Kelly**, engineer of deferred maintenance of the Wabash, with headquarters at St. Louis, Mo., has been appointed division engineer, with headquarters at Moberly, Mo., succeeding **Walt Dennis**, resigned, to accept service with another company. **J. T. Vitt**, assistant engineer, with headquarters at St. Louis, has been promoted to division engineer of the St. Louis Terminal division, succeeding **H. N. Huntsman**, who has been appointed assistant engineer of the Detroit division, with headquarters at Montpelier, Ohio, succeeding **S. N. Crowe**.

### Obituary

**W. B. Lindsay**, who for the past 16 years has been eastern passenger agent of the Lehigh Valley with headquarters at New York, died on September 17 at New York.

**James E. Crosland**, chairman of the Southern Classification Committee, died at his home at Atlanta, Ga., on September 17, after an illness of several weeks. Prior to going with this committee Mr. Crosland was assistant general freight agent of the Louisville & Nashville.

**David H. Wilson, Jr.**, consulting engineer of the Erie, died in New York on September 15. Mr. Wilson was born at Paterson, N. J., in 1879, and was educated in the grade schools of Paterson, at the Bliss Electrical School, Washington, D. C., whence he was graduated in 1899, and Purdue University, from which institution he was graduated in 1902. Following his graduation, he was in charge of transmission line and electric railway construction in Porto Rico and subsequently was engaged in a similar connection in Canada. He went with the Erie in 1906 as electrical engineer, which position he held until 1911, when at his own request he was granted a leave of absence to work out a storage battery and an electric welding machine. When the Wilson Welder and Metals Company was organized he was elected vice-president. He re-entered the service of the Erie on June 1, 1921, as consulting engineer, which position he held at the time of his death.

PERHAPS the one most immediately effective measure, however, which the government could take to ameliorate the (unemployment) situation would be the funding of the existing indebtedness of the railroad companies on account of capital expenditures while the roads were under its control. That would place at the disposal of the roads \$500,000,000 and would materially improve their financial position and hasten the time when they could make the needed expenditures for maintenance, improvement and expansion.—*The Guaranty Survey*.

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Our foreign trade in railway equipment and supplies, insofar as the government is interested in it, has been entrusted to the Industrial Machinery Division of the Bureau of Foreign and Domestic Commerce. American consuls and representatives of the Department of Commerce are scattered the world over.

### Government Service to Trade

It is their business to assist our foreign trade in every legitimate way. Information regarding opportunities for the sale of American goods, reports on business conditions in the various countries, peculiar local customs and laws which may influence business relations—all this and much more is transmitted by these representatives to the Bureau of Foreign and Domestic Commerce at Washington, where the data are distributed among the several divisions specializing in various industries. It is the division's duty to assemble the information and interpret it to its industry. The chief of the Industrial Machinery Division announces the earnest desire "to co-operate in every possible way with manufacturers and exporters of railway equipment and supplies in the markets of the entire world." The value of such a service as this is obvious, but by close co-operation with the division it can be extended and increased. At a time when our exports are dwindling, a service such as this, which is designed to promote foreign trade, should be utilized to the utmost.

A year ago the Committee on Heavy Electric Traction of the American Electric Railway Association pointed out the fact that the work of the heavy electric traction committees of several associations overlapped, and much of their work was duplicated. Railroads have been called upon to answer questionnaires sent out by a number of associations, all asking for information on a single subject. A clearing house was suggested to remedy this situation. This year, apparently in an effort to correct the situation, the same A. E. R. A. committee included in its report a statement of the activities of each of the other associations which had committees at work on this subject. This is without question a step in the right direction, but in the same report the committee presents a considerable amount of data and information which is largely a duplication of what has been presented previously by the Association of Railway Electrical Engineers. The electric locomotive data table published in this year's report, except for some additions, is largely a duplication of part of a table prepared last year by the A. R. E. E. committee. Data are also presented on multiple-unit equipment in this report, and the same report states that the A. R. E. E. committee is working on this subject. The bulk of the report consists of a bibliography, based largely on data issued two years ago by the A. R. E. E. committee, enlarged, reclassified and brought up to date. This rearrangement is spoken of as co-operation, but it undoubtedly involves a duplication of effort as a new group of men have rehandled and reprinted the bibliography. An invitation will probably be sent out by the American Electric Railway Association to the executive bodies of the American Railway Engineering Association, the American Rail-

way Association, Mechanical Division, the National Electric Light Association, the American Institute of Electrical Engineers, the Association of Railway Electrical Engineers, and such other organizations as the executive committee of the A. E. R. A. may deem expedient, asking each association to appoint two representatives to serve on an American committee on electrification. This will probably meet with some opposition as the steam railroads are those most vitally interested, and it would seem logical that their representation should be in proportion to the magnitude of their interest. This opposition is probably justifiable, and it may not be entirely feasible for one committee to handle all matters pertaining to electrification. The fact remains, however, that all of the associations named should confer on the subject, and either form an American committee on electrification, or a steering committee which could assign appropriate parts of the work to each of the interested associations and thus unite and direct their efforts and do away with much unnecessary duplication and lost motion.

The financial condition of the railroads during the past four or five years has been such that the appropriations for machine tools, signaling, passing tracks, yards and similar improvements have of necessity been held in abeyance in spite of the fact that the savings that these expenditures would have produced would represent a high rate of return on the proposed investment. In order to stimulate the investigations and calculations that are now required to revise these old estimates it would seem advisable to consider the increasingly favorable conditions that will undoubtedly influence the expenditures for improvements during the coming year. In brief, the steady increase in the net income of the roads should point to the probability that the railroads will soon be in a position to finance a considerable part of the extensive maintenance and improvement program that has been delayed so long. Considering these facts it would appear self-evident that the officers in charge of the various departments should now investigate with added zeal the details of the equipment and materials listed on their proposed budget estimates in order to ascertain whether they are still in accordance with the best practice.

### Revise the Old Estimates

The New York Central on October 1, in a letter addressed by President A. H. Smith to the company's 75,000 employees, announced the adoption of a plan intended to assist them in the purchase on the installment plan of stock in the company. The accession of this important system to the ranks of those who believe in the value of this idea is a matter of congratulation. The *Railway Age* has advocated the encouragement of investment by employees in the stock of the company by which they are employed. On the one hand the employees are led to take a greater interest in their company and on the other the assistance given the employees to lay aside their funds is always praiseworthy. The value of the idea is

### Helping Employees Buy Stock

further pointed out by the success that has accompanied the plan on the Lehigh Valley which was the first large railroad to adopt it or by the favor with which similar plans are regarded and utilized by the official personnel and employees of such industrial companies as the American Telephone & Telegraph Company, the United States Steel Corporation, etc. While it is true that the stocks of certain railroads, such as the Pennsylvania, Lackawanna, etc., are held in sizable proportion by officers and employees, it is unfortunate that the railways have been as slow as they have been in adopting and pushing the idea. With three important roads—the Lehigh Valley, the Union Pacific and the New York Central—now favoring assisting their employees to purchase stock, considerably better progress may be expected in the future.

The Safety Section of the American Railway Association has made a successful start. The preparations for the Boston convention were made on rather short

#### The Safety Section of the A. R. A.

notice and it was not intended to do much talking at this first meeting; but the talking that was done was very much to the point. Not the least significant feature of the meeting was the careful attention paid to the brief address by Professor W. J. Cunningham, which was a logical appeal to avoid the error (which has been quite common) of trying to make circulars, pictures, meetings and emotional speeches accomplish the good which can be accomplished successfully only by long-continued and intimate intercourse with individual employees. The important action of the meeting was the resolution to start a national campaign to educate automobilists not to kill themselves (and other people) at grade crossings. The reader who thinks that this subject is already too hackneyed should examine with care Mr. Dow's outline of what ought to be done. The convention has practically decided that this is what *shall* be done. This means that the hopeful results already realized on a few roads are to be aimed at on every road throughout the country. The field for possible enlightenment of the public is unlimited. Last year the people killed at grade crossings numbered seventeen times as many as the passengers killed in train accidents.

### The Talk of a Railroad Strike

THE EFFECTS of government control and the Plumb plan propaganda carried on by labor leaders on the relations between the railways and the public, on the one side, and railway employees, on the other, have seldom been more strikingly illustrated than by the widespread talk recently of a general railway strike.

On July 1 a reduction averaging 12½ per cent was made in railway wages. Some changes also recently were made by the Railroad Labor Board in the rules regarding compensation for overtime work. On the whole, however, railway employees who have not been laid off are better off relatively than almost any other class of people in this country. Even since the recent reduction of wages the average hourly railway wage is about 134 per cent more than in 1914. In August, according to the statistics of the National Industrial Conference Board, the average cost of living in all parts of the United States was only about 65 per cent more than in 1914. Therefore, in spite of the recent reduction in wages, the average railway employee can buy with an hour's wage 42 per cent more of the necessities and comforts of life that he could before the war.

The average hourly wage of union labor employed in all industries increased between 1914 and 1920 only a little over one-half as much as that of railway labor, and within the

last year has been reduced much more in proportion. The average prices of farm products are now only about 15 per cent more than in 1914, while the prices of the things the farmer has to buy are still relatively much higher. The result is that he cannot buy with a given amount of his products nearly as much of other things as he could in 1914.

While, however, railway employees as a class, in spite of the recent reduction in their wages, are relatively so much better off than the farmers and most other working men, the leaders of the railway labor unions are busily engaged in taking and counting strike votes. Of course, the votes are announced as practically unanimous for a strike. They always are. The percentage of members of a railway labor union usually announced as voting for a strike is 98. Sometimes it is only 97, and sometimes it is 99. The skill the leaders have acquired in always getting practically the same percentage of their members to vote for a strike is quite remarkable. If they should submit to the unions the question whether they should strike because the science of astronomy denies to them control over the movements of the planetary system the vote in favor of striking would be announced as just about 98 per cent. The question of a railway strike is one of great public importance. Some day the public may insist on having the ballots prepared and counted by some governmental agency. We suspect the official count would then show a vote for a strike surprisingly different from the 98 per cent now usually announced.

There is one important feature of the strike votes now being taken which makes them different from any ever taken before. The Transportation Act empowers and directs the Railroad Labor Board to fix reasonable wages and working conditions for railway employees. If the Labor Board performs its duty in accordance with the provisions of the Act, a strike by railway employees in violation of its decision would be a plain violation of a federal law. Therefore, the strike votes now being taken are votes to determine whether railway employees shall commit wholesale violations of a federal law. The labor leaders have loudly denounced certain railway companies on the ground that they have violated this same law. Nobody ever has charged, however, and there never has been any ground for charging, that the railway companies as a whole ever have violated, or considered violating, the law. It is a remarkable spectacle, the significance of which the American public can hardly overlook, when the labor leaders submit to a vote of all their members the question whether they shall deliberately and openly violate a federal law, and this in spite of the fact that the changes in wages and working conditions to which they object are so small as to leave railway employees as a class better off than almost any other large class of people in the country.

The managements of the railways certainly do not want a general strike. They can now, however, listen to the talk of it with less disturbance and apprehension than they usually have felt on the numerous occasions when there has been such talk within recent years. It has cost the railway companies and the public a vast amount of money to comply with the orders regarding wages and national agreements which the Railroad Labor Board has made within the last year and a half. A strike would put railway employees belonging to labor unions entirely outside the law and leave the managements legally free to deal as they thought proper with wages and working conditions without themselves violating the law.

The traffic being handled by the railways is the smallest for some years. Therefore it would be easier for the railways to handle it, in spite of a strike, than it would have been at any time within recent years. Besides, it is estimated that there are now about 4,000,000 men out of employment in this country. About 600,000 of these are men who were employees of the railways a year ago. The difficulty of

getting men to replace the strikers would therefore be much less than it would have been at any time within at least six years.

The facts that have been mentioned are not unknown to the labor leaders and most members of the unions. Therefore, unless there are special considerations of labor union politics which are influencing the leaders, all the current talk about a railway strike will end in talk. For some years, however, there has been strong reason for believing that sooner or later there would be a general railway strike. The propaganda persistently carried on by labor leaders and the Plumb Plan League have produced sentiments and feelings among railway employees, especially the element that are disposed to be radical, which have greatly increased the possibility of a general strike at some time or other. The innumerable concessions, beginning with the passage of the Adamson Act, which the unions have obtained by constant threats of strikes, and by not infrequent sporadic actual strikes, apparently have encouraged them to believe that whatever they cannot get by reason they can get by force. If a strike there must be, the present would be, from the standpoint of the railways and the public, as good a time as any to have it. If the railway labor leaders must be taught sooner or later that they cannot dictate their own terms to the railways and the public by constant threats of force, the sooner they are taught it the better it will be for all concerned.

## Train Speeds Affect Maintenance Costs

ARE HIGH TRAIN SPEEDS a necessity or a luxury? Under the obligation imposed on the railroads to operate their properties with prudence and economy, this question is of sufficient importance to demand careful scrutiny. The relations of speed to fuel consumption and engine rating are generally recognized, but the effect of speed on the cost of track maintenance has received minor consideration. With increases in speed as with added wheel loading, the maintenance of way department is not usually consulted but must strive to meet the larger burden as it is imposed. This question has received some study in connection with analyses of the relative costs of passenger and freight service, but it has been given little consideration as a factor in the determination of the justification for increased speed, particularly of passenger trains.

Whatever the facts may be with regard to what may be termed legitimate or regularly imposed speeds, the real waste as concerns the maintenance of way department arises in the lack of regulation or control of train velocity as a consequence of which trains occasionally run at much higher speeds than those specifically authorized. In the case of wheel loading the problem of the maintenance of way officer is to insure adequacy for a definite and regularly applied burden. With speed it is one of insuring safety for an occasional velocity far in excess of that required for the needs of the traffic.

Taken as a whole the average passenger train speeds have not increased materially in the last quarter century. It is also certain that the lengthening of train schedules to permit of lower average speeds would meet with severe public objection. The answer, therefore, is not to decrease the average velocity but to exercise that degree of control which will eliminate the unnecessary, excessive speed—speed to compensate for needless delays at station, time killing, etc. In short, the need is for regulation that will prevent speeds in excess of those reasonably required for the movement of trains according to properly prepared schedules, proper measures being instituted to expedite the handling of trains at stations, terminals, etc.

Such regulation of locomotive operation is entirely within

reason and has the justification of precedent. With the maximum velocity of trains established and properly supervised, standards of track maintenance on lines of varying character may be established with a far greater degree of accuracy than is now generally possible and in consequence economies may be introduced with no sacrifice of the earning power of the lines in question.

## A New Form of "Jitney" Competition

ALTHOUGH many railway officers have taken a keen interest in the extensive highway construction programs now under way, railway managements as a whole have not taken this development as seriously as its possibilities warrant. Co-operating in the promotion of good roads in the early stages of the propaganda because of the aid which such highways would render to the farmer in bringing his products to their tracks, the railways now find that this movement has developed primarily into a system of trunk line construction having as one of its objects the connection of important cities. These highways, which have been built at public expense, are being used largely and in many cases primarily by motor trucks which have sprung up, mushroom-like, to engage in the transportation of both passengers and freight in competition with the railways. Where these trucks open routes not existing previously they are rendering an added service to the public, but in the vast majority of cases their routes parallel existing steam lines and the service offered duplicates that already existing. The public is therefore receiving little or no additional service and the only result is to divide the traffic between the two agencies to the detriment of the railways.

These motor trucks are, in general, not subject to regulation of rates, character or regularity of service or any of the other restrictions imposed on the steam roads for the protection of the public. They are free to abandon service, temporarily or permanently, at any time that it becomes unremunerative, while the steam roads must be prepared to serve the public at all times, in good weather or bad. The trucks are thus free to pick the cream of the business, leaving the less remunerative traffic to the steam roads.

The trucks are able to make inroads on the traffic of the steam roads primarily because of the fact that the highways are open to them without expense whereas the railways are required to build and maintain their tracks, structures and other fixed properties over which they operate. If the railways were able to pass on to the public their corresponding expenses they could likewise reduce their costs greatly. When the public wakes up to the fact that the highways which it has provided at tremendous public expense, are being destroyed by these motor trucks and will soon require extensive maintenance, towards which the trucks are contributing almost nothing, it will demand that the owners of the trucks pay their proportion of the added investment in the highways and in the maintenance expenses which have been incurred largely on their account. When the owners of the trucks are thus required to contribute their full share to the cost of their roadways, their operations will be restricted primarily to the transportation of short haul less-than-car-load freight, a traffic which the railways can well afford to let them have. Until that time comes the railways will continue to suffer sporadic inroads upon their traffic at one point after another, which inroads are of serious proportions in the aggregate.

This unregulated mushroom competition which the railways are now meeting is similar to that which the street railways have encountered with the jitneys in many cities in recent years. It is to be hoped that the public will see the natural results of this more recent competition in sufficient time to prevent a repetition of the experiences of Des Moines, Ia., Bay City, Mich., and other cities where the

street railways have been forced to suspend service with the result that the jitneys have then been unable to cope with the traffic and the public has suffered greatly. Railway managements can do much to educate the public to the unfairness of the competition to which they are now subjected and stem the "Ship by Truck" and other propaganda of the motor interests. By presenting these facts they will not only be protecting their own future, but will be rendering a distinct service to the public.

## The Illinois Central's Public Relations Work

EVERY RAILWAY EXECUTIVE is painfully aware that government regulation has become such that it exerts a dominant influence in determining whether the railways as a whole and individual railways can be developed and operated successfully from the standpoint of either the public or their owners. The governments represent the public, and in the long run public sentiment determines how the various governments, municipal, state and federal, regulate the railroads. It necessarily follows that if the railways are to be successfully developed and operated public sentiment must be made and kept so intelligent and fair regarding railway matters that it will cause regulation to be intelligent and fair.

On whom devolves the plain duty of causing presentation to the public of the information and arguments which will cause it to understand railway matters and to favor fair and constructive regulation? It devolves upon the railway executives themselves. It is under present conditions as much their duty constantly to present the facts about the railroad business to the public so as to bring about intelligent and fair regulation as it is to present facts to their officers and employees which will bring about intelligent and energetic operation of the properties. There are many thousands of people in this country who find, or believe they find, it is to their selfish interest to attack and misrepresent the railways. If these attacks and misrepresentations are not constantly met with presentations of the facts and of counter arguments public opinion will be constantly misled and regulation of railways will be unfair and harmful.

Of course we do not mean the executives of the railways should personally be constantly engaged in presenting to the public facts and arguments regarding the railway situation. There is no more reason why they should personally do all of this kind of work than why they should personally perform the duties of the superintendent of motive power, the general manager, or the general counsel. But they should see that the relations of the railway with the public are properly handled just as they should see that the equipment is properly maintained, that freight and passenger service are properly rendered and that the legal interests of the company are properly protected.

It is a remarkable fact that although public sentiment, acting through government regulation, has become within recent years such an important, and even dominant, influence in the development and management of the railways, only a comparatively small number of railway executives have created and maintain on their railways special departments adequately equipped to present constantly and effectively to the public the facts about the railroad situation and to make replies to the innumerable misrepresentations of the railways which constantly are being given dissemination. The worst troubles of the railways for 15 years have been mainly due to unfair regulation, and unfair regulation undoubtedly has been mainly due to failure of the railways persistently and adequately to present the facts about their business to the public.

The education of public opinion concerning the railroad

situation demands not only organized action by the railways as a whole regarding problems of national scope, but also persistent and intelligent public relations work by each individual railway in its own territory. This is a vast country with a population of over 100,000,000. The railways ramify into every part of it, and they must carry on their public relations work in every part of it if they are to make the public understand their problems and through fair and reasonable regulation help to solve them.

Among the comparatively small number of large railways on which the problem of educating the public regarding the railway situation recently has been boldly, persistently and skillfully attacked is the Illinois Central. President Markham is an ardent believer, first, that the public will deal fairly with the railways if it is given an opportunity to understand the conditions under which they are operated and the problems their managements have to solve; and, secondly, that a railway management can and should so present the facts and principles of railway economics and administration to the public as to create a friendly and intelligent public sentiment regarding the railways. Therefore, within the last year he has carried on a very unusual campaign to improve the relations of the Illinois Central with its public. An account of what has been done under his direction and of some of the results that have been obtained is given elsewhere in this issue.

Some minor details of the work Mr. Markham has done and of the way it has been done may be open to criticism, and, indeed, have been criticised. One thing, however, is certain. This is that the work which has been done has had, from a railway standpoint, a very favorable effect upon the attitude of the press and of the public in the territory that the Illinois Central serves. The facts regarding the railway situation which have been presented in the Illinois Central's advertising and the public statements made by its president and other officers have caused the press and public in its territory to understand the railway situation far better than they otherwise would have understood it. Under present conditions a better understanding by the press and public of the railway situation is bound to redound to the advantage of the railways. Therefore, the work Mr. Markham has done and caused to be done has been beneficial not only to the Illinois Central but to the railways of the country as a whole. It may or may not be significant in this connection that during the last year the Illinois Central has shown as good operating and financial results relatively as any other railway in the country.

There are certain important things about railway public relations work which many railway officers seem surprisingly slow to learn. One of these is that this is work which always will have to be done as long as the railways are privately owned or they will never be intelligently and fairly regulated. Another is that it is important work. The most able and energetic management of the railways in other respects will never make and keep them prosperous unless their public relations work is so done as to secure intelligent and fair regulation. Another fact often overlooked is that effective public relations work requires the employment of able men with special qualifications and the giving to them of opportunity to devote their whole time to it. Recognition of these facts must carry with it recognition of the further important fact that effective public relations work cannot be done without the expenditure of substantial amounts of money in perfectly legitimate ways.

Mr. Markham has recognized and accepted all these facts and acted accordingly. His example, his methods and the results obtained merit just as serious and careful consideration by other executives as a plan that his or some other railroad might adopt and carry out to increase train loads or promote safety in operation; for the intelligent and adequate handling of public relations has become just as impor-

tant and integral a part of railroad administration as the adoption of methods of increasing economy of operation or of reducing accidents.

## Central Ownership of Freight Cars

THE CENTRAL OWNERSHIP of freight cars and central control of their disposition has frequently been suggested as a way out of a situation which is far from ideal either from the viewpoint of the shipper or of the railroad. The most recent advocacy of this plan was voiced by George C. Conn, traffic director of the Buick Motor Company, in a paper before the Western Railway Club, an abstract of which appeared on page 635 of last week's issue. The advantages claimed for this plan may be summed up as follows: First, a more flexible car supply to meet seasonal demands, with a smaller investment; second, a reduction of empty mileage; third, the development of cars of standard detail design, and of standardized sizes most suitable for the shippers' requirements; fourth, the placing of rentals and repairs on a business basis, including the establishment of centrally owned heavy repair shops.

The question immediately arises, why can these advantages not be obtained with the railroads owning their own rolling stock? It may be accepted as true that the ownership of freight cars is generally regarded by railroad managements as incidental to the more direct problems of getting and moving traffic. The history of the development of interchange regulations both as to maintenance and rentals gives ample justification for this statement. Apparently the theory is held that a scale of nominal charges for repairs made in interchange and for per diem rentals is all that need be made in settling accounts between the railroads, as these settlements are merely clearing house operations with approximately equal debits and credits in each case. But the debits and credits are not equal and there is no reason to expect them to be equal.

As long as the nominal charges do not exceed the actual cost of the service rendered there is no incentive, for instance, for a weak road to tax its credit to provide itself with an adequate supply of equipment reasonably to care for its own needs. If the nominal charge is less than the cost of the service there is a good business reason why such roads should own the least possible amount of equipment that traffic conditions will permit. An analogous situation holds with respect to the maintenance of cars in interchange. As a result, neither the owning nor the using line has a real business incentive to meet its full responsibility for maintaining an adequate supply of highly serviceable equipment. These conditions are fundamentally unsound and are at the root of the generally unsatisfactory equipment situation. Improvement has been made both in per diem rates and in car repair billing prices during the past few years. But it is significant that these improvements came slowly and painfully only through agreement among the railroads.

The question of standardization has received attention for many years and progress has slowly been made toward a degree of standardization of details which, when completely carried into effect, will go far toward reducing the need for empty mileage in connection with freight car maintenance. The standardization of car sizes to satisfy completely the varying requirements of the shippers and the railroads' pocketbook is even more difficult of settlement than the standardization of details. Here again the difficulty lies in finding common ground for agreement among the railroads.

Central ownership is suggested as a solution of these difficulties. But before a plan of central ownership can be put into effect the railroads must agree on it among themselves. They must agree to accept a rental charge which will be fixed on a business basis, since a central owning corporation

will be required to charge a rental high enough, while the cars are in service, to carry its capital investment, unimpaired through depreciation, during the time the equipment is idle as well as during the time it is in service, to pay for the cost of maintenance and to provide a profit large enough to justify the owning corporation continuing in the business.

When the railroads become sufficiently alive to the business side of car ownership to agree to such a plan will not the greatest need for the plan have ceased to exist? It will be no more difficult to secure agreement to adequate per diem rates and a businesslike schedule of billing prices for labor and material used in interchange repairs than it will be to agree to these same requirements of a scheme of central ownership. Similarly, when this state of agreement has been reached, the same harmony of action could be secured in the adoption of a standard car or cars to be owned by the railroads individually. And the way now lies open to the railroads to break away from uneconomical shop conditions through the contract repair shop as effectively as though the establishment of shops under the ownership and operation of a central equipment corporation.

There might be some saving in car capacity through a scheme of central ownership which would be able to control freight car distribution to meet the requirements of varying seasonal demands. The great seasonal variation in car loadings, however, is largely coincident throughout the country, amounting to from 200,000 to 300,000 car loads a week. If the equipment is provided to meet the maximum demands of the country through the late summer and fall months, there must be a large surplus to be carried during the winter and spring months even under central ownership. Furthermore, it is doubtful whether a central owning corporation could exercise the function of distribution in times of maximum demand to better advantage than it is now exercised by the Car Service Division of the American Railway Association and it would still remain under the regulation of the Interstate Commerce Commission, just as at present.

The conclusion, therefore, seems justified that a state of mind which would make possible a general agreement among the roads to the central ownership of freight cars, with all it entails in adequate charges for services now rendered at nominal prices, and the sacrifice of individual opinions as to the best type of equipment for local needs, would automatically accomplish much the same ends with no change in equipment ownership. Whether or not this in the end should prove to be the case, the sooner a general knowledge of the business fundamentals essential to the success of such a scheme is acquired by all the railroads, the sooner a situation unsatisfactory alike to the railroads and the shipping public is likely to be effectively improved.

## Philadelphia & Reading

THE PHILADELPHIA & READING'S history is, in the main, a story of the manner in which that system engaged in the anthracite coal business—the purchase of coal lands and the mining and sale of coal—to the end that by owning its own mines the carrier would be guaranteed a steady and growing business in the transportation of anthracite coal. The Reading for many years has been the largest carrier of anthracite coal. It is not generally known, however, that its business of carrying bituminous coal is also large. The tonnage of bituminous moved in recent years has been about one-and-one-half times the tonnage of anthracite. It will no doubt surprise many to learn that the Reading—known as the country's largest carrier of anthracite—in 1920 actually carried twice as much bituminous as the Hocking Valley, or three times as much as the Virginian.

Interest in the Reading is especially active at this time

because of the pending decision of the United States Supreme Court as to the relative rights of the preferred and common share-holders of the parent Reading Company to share in the segregation of the railroad properties from the coal properties. It is especially interesting, therefore, to see what kind of a railway system the Philadelphia & Reading is and what it does.

The Reading system has a total mileage of 2,223, of which 880 is double track. This includes: Miles owned by the Philadelphia & Reading, 387; miles leased by the P. & R., 702; miles owned and leased by other companies in which the Reading Company owns the controlling interest, 1,130; the Allentown Terminal Company leased jointly by the P. & R. and Jersey Central, 3. All of the stock of the Philadelphia & Reading is owned by the parent Reading Company, which also owns the equipment and leases it to the P. & R. The owned and leased lines of the Philadelphia & Reading total 1,127, including trackage rights.

The P. & R. also operates, but reports figures separately for, the other lines in the system such as the Perkiomen, the Catawauqua & Foglesville, the Catawissa, etc., but excepting the Central of New Jersey. The latter company is controlled by the parent Reading Company through majority stock ownership. As noted, it is operated separately, but traffic and operating arrangements are in force to facilitate co-operation of the two lines to the best advantage. It is well-known that the Philadelphia & Reading Coal & Iron Company—owner of the Reading coal mines—supplies a large proportion of the railroad's total anthracite tonnage.

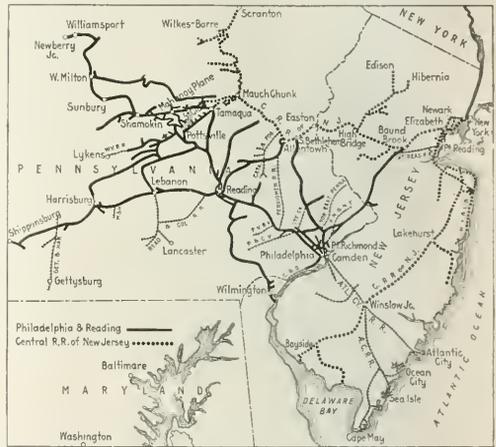
The Reading secures its anthracite from a large area lying generally north and west of Pottsville and Tamaqua and also from the Lykens district to the southwest. The area served is known technically as the southern or Schuylkill field and the western middle or Mahanoy and Shamokin field. Some of the coal moves west via Newberry Junction or Williamsport and the New York Central. The predominant movement is eastbound to Philadelphia and the Read-

from there east with loads frequently as high as 5,000 or 5,500 tons gross handled with an M1 or Mikado locomotive, the grade being about 0.5 per cent descending.

TONNAGE OF FREIGHT CARRIED BY THE PHILADELPHIA & READING—  
Tons of 2,000 Lb.

Year	Anthracite	Bituminous	Misc.	Total
1917	16,339,859	22,549,852	32,548,033	71,337,745
1918	16,277,781	24,078,596	30,918,224	71,274,602
1919	13,815,371	23,329,574	26,074,519	63,219,464
1920	15,121,124	24,875,761	29,716,679	69,713,564

Professor Ripley in his report on railroad consolidations—reproduced in part in last week's issue of the *Railway Age*—has considerable to say concerning the manner in which the Reading serves as a connecting link and terminal facility for various other roads, notably the Baltimore & Ohio. In his plan he proposes the inclusion of the Reading and its associated lines with the Baltimore & Ohio system, his reasons being the larger traffic interest in the Reading of the Balti-

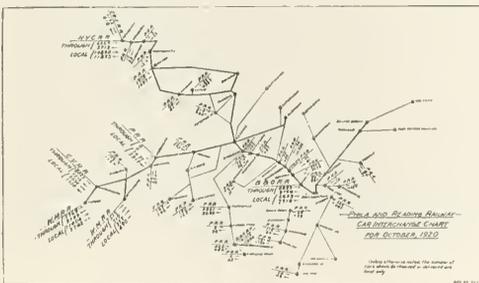


The Philadelphia & Reading and Its Controlled Lines

more & Ohio as compared with the New York Central or Pennsylvania and the desirability of furnishing the Baltimore & Ohio with better arrangements of access to its various New York terminals. The Baltimore & Ohio in effect reaches the Reading at Philadelphia and at Shippensburg and it is through these two gateways that the Reading receives the larger portion of its bituminous coal business.

Some coal is received at Williamsport from the New York Central, largely coal originating on the Buffalo, Rochester & Pittsburgh. Such coal, as well as the merchandise freight, which is received from the Baltimore & Ohio at Philadelphia moves north over the Reading and Jersey Central in through freight runs from Willsmere, near Wilmington. The coal handled in this way leaves the Jersey Central at Cranford Junction, where connection is made with the B. & O.'s Staten Island lines. The merchandise freight for New York is moved to Jersey City.

The coal from the Baltimore & Ohio which is received at Shippensburg is the most important part of the bituminous coal movement. The B. & O. does not connect directly with the Reading at Shippensburg. The coal movement is over the Western Maryland from Cherry Run and over the Cumberland Valley from Martinsburg. This coal may move over the Reading's lines in various ways. A typical movement is through Harrisburg—or Rutherford yard which has a capacity of 4,900 cars—thence to Allentown, where the coal is turned over to the Jersey Central for movement to points on that road and to New England as in the case of anthra-



From Professor Ripley's Report on Railroad Consolidations

P. & R. Car Interchange Chart

ing's territory generally, to New York via Port Reading and to New England. From Port Reading the movement to New York is on lighters. To New England the movement is all-rail via Allentown over the Jersey Central to Phillipsburg, thence over the Lehigh & Hudson, the Poughkeepsie bridge route and the New Haven, or by rail and water in the form of a barge movement from Port Richmond or Port Reading.

The coal is assembled, speaking rather generally, at various points in the coal district, moved over the mountains in some cases on planes with a barney and cable and brought to points such as St. Clair (just north of Pottsville), Tamaqua, etc. At St. Clair there is a gravity yard with a capacity of some 4,400 cars; at Tamaqua, a yard with a capacity of 2,100. The St. Clair yard is in reality the main assembling yard for the anthracite coal district. Trains move

cite coal. Other coal moves to Port Reading for delivery to points adjacent to New York City or to New England. The more important movement, however, is to the Reading's industrial territory and to Port Richmond, in the latter case for New England delivery by water or for export. This export movement is sizeable; the scheme of a tidewater coal exchange and pools is in use as at the coal piers at Baltimore and Hampton Roads.

The Reading's terminal at Port Richmond has a capacity of some 8,600 cars. There is also a grain elevator with a capacity of 1,000,000 bushels. The capacity of the yards at Port Reading approximates 4,500 cars. The coal movement over the Reading rails is its most important business. The Reading, however, also handles a merchandise business of large proportions. It stands high with shippers for the service it renders with its symbol or manifest trains and for its favorable connections.

The Reading's passenger business is noted for its high speeds. During the war this service was considerably upset. No less than 21 of the "Every hour on the hour" New York-Philadelphia trains were withdrawn. The schedule has not yet been restored and the Reading's passenger business has suffered accordingly. The Camden-Atlantic City business has done better. The road went through August, 1921, with a record of 95 per cent of its Jersey seashore trains on time. The Atlantic City schedule calls for 56 miles in 55 minutes.

Because of the conditions contingent upon federal control, in the way of increased expenses and changes in traffic arrangements, the Reading did not show favorable operating results while it was being operated by the government and it is only in recent months that it has been able to begin to show improvement. The standard return was about \$16,000,000. In 1918, the net railway operating income was but \$8,847,390; in 1919, only \$3,083,280. In 1920 there was a net railway operating deficit of \$655,107. In the first seven months of 1921 the net has been \$3,901,337 as against a deficit of \$1,139,868 in the same period of last year. The improvement in recent months is indicated by a net of about \$800,000 in April, May and June respectively, and of \$1,200,000 in July.

The Reading is not at present doing anywhere near as much business as it was doing at this time last year, its net ton-miles in the first six months of 1921 being 2,664,786,000 as compared with 3,386,271,000 in the same period of last year. The road, however, is in rather good shape from the standpoint of maintenance. Its bad order cars on September 15, to take one factor, were but 5.3 per cent as against an average for the country of 16.3 per cent. The impression one would derive, therefore, is that the Reading is showing steady recovery and should be in good shape to handle the increasing traffic that will accompany any revival in business conditions.

The Reading's corporate income account for 1920 showed a net of \$9,010,790 as compared with \$8,460,763 in 1919. The dividends paid in 1920 totaled \$6,372,255, all accruing to the Reading Company, which owns all of the Philadelphia & Reading Railway Company stock.

The operating results for 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated.....	1,127	1,127
Freight revenue.....	\$78,043,029	\$57,850,183
Passenger revenue.....	11,532,277	10,854,210
Total operating revenue.....	94,819,755	72,871,823
Maintenance of way expenses.....	10,746,542	7,490,427
Maintenance of equipment.....	26,984,497	19,296,540
Traffic expenses.....	709,292	482,181
Transportation expenses.....	48,578,617	35,476,881
General expenses.....	2,167,870	1,646,549
Total operating expenses.....	89,486,240	64,608,174
Net revenue from railway operations.....	5,333,515	8,263,649
Railway tax accruals.....	2,512,846	1,659,029
Railway operating income.....	2,796,664	6,602,723
Net railway operating income..... Def	655,107	3,083,280

The corporate income account is as follows:

	1920	1919
Compensation (January and February, 1920; year 1919).....	\$2,656,515	\$16,009,826
Guaranty, March 1 to August 31.....	7,969,539	
Gross income.....	15,514,922	16,351,892
Interest on funded debt.....	1,956,195	1,961,583
Total deductions from gross income.....	6,504,132	7,891,129
Net income.....	9,010,790	8,460,763
Appropriated for investment in physical property.....	2,538,571	4,500,100
Dividends.....	6,372,255	4,248,170

## Central of New Jersey

THE CENTRAL of New Jersey is controlled by the Reading Company through majority stock ownership. The Central owns 169,788 shares of the total of 184,200 outstanding shares of the Lehigh & Wilkes-Barre Coal Company. By the order of the court in the Reading dissolution case, the Central has been ordered to divest itself of its shares in the coal company. The government attorneys also wanted the court decree to order the sale by the Reading of its Jersey Central shares. Upon protest by the Reading Company that such an order would be unfair at this time, the court required the Jersey Central shares to be transferred to trustees appointed by the court and held until action had been taken by the Interstate Commerce Commission looking to the formulation of a plan of railroad consolidation as required by the Transportation Act. The commission has now made public the tentative plan of railroad grouping.

Bearing in mind that this tentative plan is meant merely as a starting point for discussion of the proposed consolidations, it is nevertheless patent that Professor Ripley suggests, which suggestion the commission follows, that the Central of New Jersey should be included with the Philadelphia & Reading in System No. 3 built around the Baltimore & Ohio as a nucleus. A study of the relationships between the Reading and its controlled line would make it difficult to see any other solution than to include them together in the same system, whichever it might be.

The Central of New Jersey operates 686 miles of line, including lines owned, lines controlled and mileage operated under trackage rights. It is the only railway controlled by the Reading Company which is operated separately from the Philadelphia & Reading Railway. The Central of New Jersey in 1920 carried 9,634,411 tons of anthracite coal. In the same year it carried 9,550,006 tons of bituminous; in other words, the tonnage of hard and soft coal is now approximately equal. The anthracite coal is derived from mines in its own territory or is received from the Reading. It moves to Jersey Central territory, to New England via Phillipsburg, the Lehigh & Hudson to Maybrook and thence over the New Haven. Delivery in the case of the large movement to tide-

CENTRAL OF NEW JERSEY—NET TONS HANDLED

Year	Bituminous coal	Anthracite coal
1916.....	6,616,604	9,638,951
1917.....	7,542,625	11,040,273
1918.....	7,791,545	11,078,182
1919.....	8,066,793	9,496,781
1920.....	9,550,006	9,634,411

water is made at Jersey City, Elizabethport and in periods of heavy business at Port Johnson. The Jersey Central operates no barge lines, but the Lehigh & Wilkes-Barre Coal Company has such lines.

The bituminous coal tonnage handled by the Jersey Central is secured from the Philadelphia & Reading at three important connecting points: Allentown, Pa.; Haucks, Pa., and Bound Brook, N. J. The movement through Haucks is largely B. R. & P. coal, received from the New York Central at Williamsport. Inasmuch as this bituminous coal movement is described in the review of the Philadelphia & Read-

ing which appears also in this issue, it is hardly necessary to repeat it here.

The Jersey Central has an interesting problem in connection with the operation of the route constituted in the B. & O., Reading and Jersey Central lines between Wilmington, Del., and Jersey City. Freight is moved over this line on an engine-hour basis—there being one freight district from Philadelphia to Jersey City on Reading business, and from Willsmere near Wilmington on the B. & O. to Cranford Junction, N. J., or Jersey City.

The Central of New Jersey is like the Reading in many particulars. It is built to high standards and well maintained. Its suburban service out of New York, handling some 15,000,000 passengers annually, is characterized by the use of a large proportion of vestibuled steel equipment moved in heavy trains at high speed.

The Jersey Central is not in a position to secure as heavy freight train loading as the Reading. In 1920, its average revenue train-load was 710. This was an increase of 39 tons over 1919, but it compared with the Reading's 1920 figure of 906. The Reading was characterized as a terminal road; the Central of New Jersey is even more of a terminal than the parent company. The effect of the methods of operation necessitated has prevented a high daily car mileage. The miles per car per day in 1920 were but 13.9. The tons per loaded car were 34.2 and the net ton-miles per car per day were only 299. The average distance each ton was carried in 1920 was but 71 miles.

The Jersey Central, like the Reading, did not do well during federal control. Its standard return was \$9,352,301. In 1918 it earned a net railway operating income of \$6,268,096. In 1919 its net earned for the government was but \$1,384,554. In 1920 the property was operated at a deficit of \$5,852,417. The road is now carrying a fairly heavy traffic, presumably on account of the heavier anthracite coal movement. In the first six months of 1921, the net ton-mileage, revenue and non-revenue, was 1,099,943,000 as compared with a figure for the first six months of 1920 of 1,193,021,000. With increased rates and substantial reductions in expenses, the result has been a considerable improvement in net earnings. The net railway operating income for the first seven months of 1921 was \$4,171,917 as compared with a deficit for the first seven months of 1920 of \$1,411,910. The net railway operating income in July was \$1,098,407.

The road has made substantial additions to its equipment during the last year or two. It was allocated by the Railroad Administration 21 heavy Mikado and 10 switching locomotives and 500, 50-ton box and 1,000, 55-ton coal cars. In 1919 there were also received 500 box and 500 coal cars. In 1920 there were purchased and received 11 Mikado locomotives and 950 coal cars. Equipment trusts issued in 1920 increased the total funded indebtedness of the company at the end of 1920 by \$5,895,000 over the amount at the end of 1919.

The corporate income account for 1920 showed a deficit of \$2,528,481. Dividends were paid of 10 per cent and amounted to \$2,743,680, making a net deficit of \$5,272,161. In 1919 the corporation earned a net income of \$5,095,625. Dividends in 1919 totaled 12 per cent, or \$3,292,416, and the surplus for the year was \$1,803,209. The result of the deficit for 1920 was a reduction in the surplus account from \$8,942,343 at the end of 1919 to but \$3,327,079 at the end of 1920. This, however, is not quite as serious as it looks on its face to be. The corporate income account for 1920 includes under non-operating income, an item of \$5,146,411 representing receipts from the government on account of the guaranty period. This amount is equivalent only to slightly over half the standard return; it does not include the deficit in operation for the six months of the guaranty period which was of sizable proportions. It is very likely that were this

amount to be included that the year's deficit might be eliminated.

Referring to the dividends mentioned above, it is noteworthy that of the 10 per cent dividends paid in 1920, \$548,736, or at the rate of 2 per cent, were paid out of dividends received on stock of the Lehigh & Wilkes-Barre Coal Company and in 1919, \$1,097,472, or at the rate of 4 per cent. The income account for 1920 was not credited with an amount of \$551,811 representing the coal company dividend due December 27, 1920, because of a ruling of the district court. The court later assented to the payment of the dividend and it was paid by the coal company and included in the income account in February, 1921. This explains the 10 per cent dividends in 1920 as against the usual rate of 12.

The operating results for 1920 compared with 1919 are as follows:

	1920	1919
Mileage operated.....	686	686
Operating revenues:		
Merchandise.....	\$21,324,604	\$19,063,439
Bituminous coal.....	4,999,826	3,255,700
Anthracite.....	11,874,513	10,389,975
Passenger.....	6,399,107	8,164,830
Total operating revenues.....	51,683,790	44,837,302
Maintenance of way expenses.....	7,064,229	5,510,957
Maintenance of equipment.....	20,279,617	11,869,423
Traffic.....	449,982	322,112
Transportation—rail line.....	27,845,048	21,226,447
General.....	1,315,451	1,014,676
Total operating expenses.....	57,495,096	40,273,951
Net operating revenues.....	Def. 5,811,297	4,563,352
Railway tax accruals.....	2,933,251	3,096,466
Operating income.....	Def. 8,744,769	1,466,706

#### The corporate income account is as follows:

	1920	1919
Standard return (January and February, 1920; year 1919).....	1,675,019	9,352,301
Net operating deficit (March to December 31).....	2,029,763	.....
Receipts from U. S. Government account guaranty period (March 1 to August 31).....	5,146,411	.....
Taxes.....	2,997,392	453,646
Rent for leased roads.....	1,983,685	2,326,645
Interest on funded debt.....	2,600,050	2,445,550
Net income.....	Def. 2,528,481	5,095,625
Dividends (10 per cent in 1920; 12 per cent in 1919).....	2,743,680	3,292,416
Balance of income account for year.....	Def. 5,272,160	1,803,209

## New Books

*Economics of Bridge Work* by Dr. J. G. L. Waddell. 6 in. by 9 in. 512 pages, illustrated. Bound in cloth. Published by John Wiley & Sons, Inc., New York.

The purpose of the author has been to cover the entire realm of bridge engineering from the mixing of concrete and the driving of rivets to the designing of the world's greatest bridges. There is reason to believe that the author's treatment of the more profound projects will meet with disagreement from some of the other leading authorities in bridge engineering and that they also will question the propriety of carrying comparative economic analyses to as definite conclusions as the author proposes, without recourse to the local conditions obtaining at the particular structure. However, this text contains a great fund of information of value to the engineer concerned with the design, construction or maintenance of bridges. In general the treatment is one of logic rather than mathematics. In few books does the author inject his own personality into the text as is done in the case of this work, so much so in fact that it gives the reader an impression of perhaps an undue reliance on the author's personal opinion. By the same token the prominence given to some of the more unusual problems encountered in the author's personal practice seems greater than is warranted by the frequency with which the problem would be encountered by the ordinary reader.

Following a general introduction of the subject, various chapters take up the promotion of bridge projects, market prices and alloy steels. Then follow separate chapters taking up the various types of construction used in bridge engineering, in some cases using direct comparisons between two

such types. Of these the chapter on the economics of cantilever and suspension bridges is written in a controversial tone which seems ill-suited to a text book. This chapter and the one on the economics of steel arch bridges were originally presented before technical societies, while the chapter on the economics of movable bridges appeared in an abstract in the *Railway Age* of June 17, page 1391.

Chapters on the economics of designing and other office routine and, in the latter portion of the book, on contract letting, inspection, shop work, erection, etc., may be said to comprise a detailed statement of the principles of good practice or sound management which of course in a sense implies economics. Chapter 41 covers maintenance and repair and includes an outline of the practice on the Chicago, Milwaukee & St. Paul with respect to the "classification" of old structures. Waterproofing is also treated in a separate chapter as is the economics of military bridging by Major-General L. H. Beach and Colonel P. F. Bond. In general, the text is matter that comes well within the ken of the engineer who is not a bridge specialist.

*Book of Standards—American Society for Testing Materials, 1921 edition, 890 pages, illustrated, 6 in. x 9 in. Bound in cloth. Published by the American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pa.*

In view of the large number of standards which are considered by this society at its annual meetings and the heavy expense involved in the printing of them each year, it was decided three years ago to publish these standards triennially. The present edition is the second issued under this plan and contains 160 standards. Among those of principal interest to railway officers are the specifications for steel rails, splice bars, track bolts and spikes; structural steel for bridges, for locomotives and for cars; carbon-steel bars for railway springs; billet-steel and rail-steel concrete reinforcement bars; axles, shafts and other forgings for locomotives and cars; wrought solid carbon-steel wheels; lap-welded and seamless steel boiler tubes for locomotives and boilers and firebox steel for locomotives.

*Proceedings of the American Railway Engineering Association. Bound in cloth or paper, 6 in by 9 in. 1092 pages, illustrated. Published by the American Railway Engineering Association, Manhattan Building, Chicago.*

This is the twenty-second volume to be published by this organization. This year's edition is somewhat smaller than those of previous years with the exception of 1919, and whether or not this is the result of a policy towards greater condensation or refinement of the material, the more compact form will unquestionably be welcome by most of those who have reason to consult this valuable engineering work. This volume contains the reports of 23 regular committees, which collectively covers practically every conceivable branch of maintenance of way. Two of the newer committees, namely, those on shops and locomotive terminals and economics of railway operation, present extended reports in this issue for the first time. The contents of this volume, covering the work of the 23 committees, is unusually diversified and contains a great fund of information on many different subjects. The reports of the committees on water service and track probably contain more varied subjects than the others. The volume includes two monographs, one on rail inclination and the standardization of track appliances on railways in France by W. C. Cushing, and one on rail laying with locomotive cranes on the Lehigh Valley by W. G. Barrett.

At WHITE PLAINS, N. Y., ten employees of the New York Central, with certain outsiders, have been arrested on charges of stealing merchandise from freight cars. A night yardmaster is said to have been the leader of the robbers.

## Letters to the Editor

["The RAILWAY AGE welcomes letters from its readers, and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated."]

### No Disgrace to Be Poor

MURIEL A.

TO THE EDITOR:

I have read the article entitled "Will the Mechanical Department Make Good?" in your issue of August 20, 1921. I resent the title of the article, from which the public may infer that the mechanical department of the railroads in the past has not made good.

Of course the mechanical department is going to make good, just the same as it has in the past. The mechanical departments of many roads are handicapped by the limited means available for making improvements that they know should be made. It must not be inferred, however, that the mechanical departments are in any peculiar manner lacking in ability to make good. It only resolves itself down to the old saying that while it is "No disgrace to be poor, it is very inconvenient at times."

A SUBSCRIBER.

### Stop the Leaks

SPRING VALLEY, N. J.

TO THE EDITOR:

In a noteworthy article in the New York Evening Post of August 16 W. J. Cunningham, J. J. Hill Professor of Transportation at Harvard University, lifts a corner of the blanket which covers the operations of the average railroad in respect to the handling of its material and supplies and gives us a peep at some of the concealed losses which are being incurred on nine-tenths of the railroads of this country.

Prof. Cunningham's life-long practical experience and intelligent study of the problems of railroad economics and operation constitute him an authority on such subjects, but while he touches on some of the less obvious of these concealed losses he does not, by any means, disclose all of them. There can be no question but what the railroads collectively are losing between one hundred and one hundred and fifty millions of dollars every year through their neglect of this branch of the service and their failure to grasp the underlying causes of these concealed losses and correct them. There is today no single phase of the railroad business where such large economies are possible as in the Service of Supply, and none to which so little intelligent attention and study is directed.

Prof. Cunningham points out clearly some of the losses incident to an accumulation of surplus, or unnecessary materials in the stock, which he estimates at about \$1,500,000 per annum on a typical railroad of 3,300 miles. He includes in his figures interest on the investment at 6 per cent and the losses due to depreciation and obsolescence, which he estimates at 10 per cent. He says nothing, however, about the original cost of the surplus material which, being unnecessary, represents an unnecessary expenditure at least for the time being. Nor does he mention the cost of handling and accounting for this unnecessary material, which would not have been incurred if it had not been bought, nor the cost of transporting it over the line to the storage points, nor the value of the storage space unnecessarily occupied or the facilities used in handling it, which might have been profit-

ably employed in some other direction, nor of the added taxes and insurance charges due to its presence.

His estimate of losses due to depreciation and obsolescence is very conservative. It is probably safe to say that one-half of the unnecessary material is kept on hand for an unusual length of time—often for several years—and being handled over more or less frequently and left lying around in out-of-the-way places, becomes bent, broken, rusty, partially decayed or otherwise damaged by exposure, or is lost, misappropriated or wasted by being finally adapted to uses for which it was not intended, to the extent of 15 per cent of its original value. Applied to the whole quantity of surplus material this is equivalent to a loss of 7½ per cent on account of damage and depreciation.

Obsolescence introduces a different element of loss. After standing around and occupying valuable storage space for years, being repeatedly handled to get it out of the way of the necessary material and at inventory periods, perhaps 15 per cent of this surplus material becomes useless through changes in standards and the adoption of more modern devices. It is finally consigned to the scrap pile and disposed of for 40 per cent, or less, of its original cost. This is equivalent to a loss of 9 per cent on the original value of the whole.

All of this surplus material has to be handled and accounted for in the same manner as if its purchase had been necessary. Under present conditions no railroad can handle, distribute and account for its material for less than 4 per cent of its cost if the work is properly done. As a matter of fact the cost of handling surplus material is always above the average.

The cost of transporting unnecessary material over the line is the same as any other and is, of course, a variable quantity depending on the distance it is moved to the storage points and the value of the material itself. Like the handling cost this charge is likely to be enhanced by the movement of the material from point to point in the effort to find a place where it can be used. It might be fair to estimate this cost at ½ per cent.

Taxes, insurance, the value of storage space occupied and facilities employed, additional labor at storage points in consequence of shifting the material repeatedly out of the way, all involve expense which it is impossible to allocate accurately, but it seems reasonable to place an estimate of 1 per cent on the combined costs arising from these sources.

We have then, as direct losses due to an accumulation of surplus material in the stocks:

	Per Cent.
1. Interest on the investment.....	6.0
2. Damage and depreciation.....	7.5
3. Obsolescence .....	9.0
4. Handling and accounting.....	4.0
5. Transportation .....	.5
6. Taxes, insurance, etc.....	1.0
Total .....	28.0

To be conservative the cost of carrying surplus material in stock at present may be stated as 25 per cent per annum.

During the year 1919, while the railroads were under federal control, it was definitely shown, by a comparison of the performance of the different lines, that the surplus stocks of miscellaneous materials, exclusive of fuel, rail and ties, amounted in the aggregate to \$135,000,000, which was over 28 per cent of the total investment in that class of material. The annual carrying charge on this unnecessary material, therefore, amounted to \$33,750,000, to say nothing of the money needlessly expended in procuring it.

One hundred and sixty-eight million dollars would buy a good many new locomotives, improve a great many defective engine terminals or pay dividends on a good many shares of stock. It might even occur to some one to use a small part of this wasted money, as Prof. Cunningham suggests, in offering some inducement to men of the requisite ability and experience to organize an efficient Service of

Supply and intelligently manage this large investment in material, which swallows up 36 per cent of the gross earnings, in a manner calculated to stop some of these leaks, which are apparent to every one except the average railroad executive.

The only sure remedy is a properly organized Service of Supply in the hands of a competent and adequately paid staff, entirely independent of the jurisdiction of the users of the material.

A few railroads have done this! Why not all?

GEORGE G. YEOMANS.

## College Men Not Wanted

OUT WEST

TO THE EDITOR:

I have been following with much interest your discussion of the attitude of the railways toward college men. I am a college man and have been working for a large railway system for four years.

The great obstacle in the way of the college man entering railway service is prejudice. The railways are prejudiced against college men, their ways and their knowledge. The personnel all come from the "bottom." They were "call boys." When the college graduate is out of school he is mature and cannot earn his salt as a "call boy." But the exponent of the inefficient system of "do-as-you've-always-done" thinks that is where he should begin. He thinks even the college man cannot grasp a conception of the specialized knowledge except by long experience.

Railways have persistently spurned the advice of college men. They have repeatedly refused to make a place in their ranks for the graduate. As a result, the railways find themselves several years behind the pace set by most other progressive enterprises. It gives me no pleasure to contrast the wheezing locomotives, out-of-date methods of handling material, miles of belting in the shops, inefficient rows of line-shafting, cast-off locomotive boilers doing duty as heating systems with uncovered pipes, etc., with a modern plant with a motor at each machine, plenty of light, plenty of heat and systems of conveying material without waste of time or space.

The railways have made no place for the college graduate, and the university has no place in its curriculum for the railroad man. Until both have made concessions, I see no hope for a college graduate in the railway service. I do not blame the college man for entering more inviting fields of enterprise where he is better cared for.

A. R. A. CLERK.

## Unnecessary Transferring

### of Loaded Cars

NORTH PLEASANTON, TEXAS.

TO THE EDITOR:

It is truly refreshing to read the letter of R. R. Farmer in your issue of September 17 on the unnecessary transferring of loaded cars. At least one superintendent is awakening to the uncalled-for expense for switching, per diem and labor, caused frequently by an ignorant or a vindictive car inspector, to say nothing of the loss and damage due to transfer and the delay and inconvenience to the consignee. Consider our loss and damage freight claim payments—over \$100,000,000 a year. What does it cost to switch a car from the interchange track to the yard, from the yard to some convenient point for the transfer of the lading (another car switched opposite to, or by it), thence to the rip-track and back again? And how about empty cars set back for some technical application of a rule?

My experience with the Interstate Commerce Commission

and their inspectors is that they are broad-minded and intelligent, exerting themselves to keep business moving and to eliminate unnecessary expenses, but impressing upon us "safety first." I am afraid the real trouble is that the managers of the roads are so occupied themselves that they do not realize what is actually transpiring along these lines in their large terminals, and the mechanical departments for some unknown reason feel they must stand behind their inspectors.

This evil can be corrected if vigorous steps are taken, and I would suggest a check at some large terminal of the preceding three months to ascertain the ratio of setbacks and transfers as compared with the total number of cars handled. A disinterested commission should then be appointed to pass on every car set back or ordered transferred for a month. Probably the commission would have but little to do, but I feel sure there would be a considerable reduction in the ratio. In view of the many features and expenses involved it would be worth while to ascertain what the actual conditions are.

F. L. LEWIS,

General Superintendent San Antonio, Uvalde & Gulf Railroad.

## Give the Chief Clerk Free Rein

TO THE EDITOR:

I see by the paper we're at it again!

Officer vs. Chief Clerk!

Unfortunately instead of mutual admiration and recognition of each other's ability we find a feeling of antagonism. The boss and his chief clerk co-operate; if they did not one would get discharged and it's an easy answer as to who it would be. It is an ambiguous situation; cooperation with mutual antagonism.

The chief clerk could write reams of criticism about the boss, and vice versa. But the question of "why" still remains and an analysis of the situation on the part of both would probably do a great deal of good.

One can readily recognize the fact that the writer of the original "Chief Clerk" letter was a man in the operating department. That is, transportation, mechanical or maintenance of way. These are the fellows who plod along in railroad service for years, finally reach the apex of their particular line, the position of chief clerk, and what do they find? They are up against a stone wall that is insurmountable; a blind alley from which there is no avenue of escape unless they resign.

Why? Simply because the chief clerk to the superintendent of motive power has not passed through one of the mechanical trades; the chief clerk to the chief engineer of the maintenance of way has never had actual road service; the chief clerk to the general manager has never been a conductor or train master, etc.

It took fifteen years for the writer to reach his apex in railroad clerical work, two and one-half years to wake up to his "blind alley" situation and six months to secure a position away from railroad work. Eighteen years given to railroad work and absolutely at a stand-still. Couldn't possibly become a superintendent of motive power!

### Again, Why?

Perhaps the railroad official who answered the "Chief Clerk's" letter can answer. Perhaps he can say what a chief clerk can do to better his situation. It would be interesting to read his comments.

However, let's get back to the "mutual admiration society of officials and chief clerks." Each, without the other, would be hopeless. The chief clerk needs the guiding hand of the official and the official needs the detail of the chief clerk.

Of what avail would it be to a superintendent of motive power to make a killing on his "cost per mile for main-

tenance," if the chief clerk were not able to compile this statistical information and pass it on to the general manager? How could the superintendent of motive power handle the big things in his department if he were burdened with working out the infinitesimal details that his chief clerk handles? Who would handle the mass of correspondence that daily comes in and goes out? If the official would analyze the thousand and one trifling duties his chief clerk performs and add to that the hundreds of important duties the chief clerk must attend to, the society before mentioned would have a solid foundation to begin with.

I believe the antipathy (and there is no doubt but what it exists) has its origin in the shops or on the road. On the one hand we find the apprentice machinist who must work nine or ten hours a day, inside and outside, rain or shine, usually encased in oily clothes and generally mussed up in appearance. He is probably down in a greasy pit, sweating (not perspiring) and along comes a sleek-looking timekeeper with his white collar, clean hands and face. The clerk, afraid of getting soiled, is the very essence of "snubbery." The apprentice feels like the underdog and the clerk does nothing to disillusion him.

Again we have the track laborer toiling in all kinds of weather, and the chief clerk who approaches him.

The feeling engendered in that apprentice and that track laborer is with him subconsciously when he reaches the position where he has a chief clerk and it is this feeling that is responsible for the existing difficulties between the operating official and his clerk. If the official would recognize his chief clerk as a necessity instead of a necessary evil the first step would therefore be accomplished.

In my category of railroad officials (based on actual contact) I have three classes:

1. The "iron man."
2. The "don't give a d—n."
3. The "Big Boss" with the first and second eliminated.

The "iron man" was absolutely the dictator of his department down to the last man. A man of vigorous mental and physical power, an absolute wonder. But—he had one weakness and that was the fear that an officer higher than himself would propound a question pertaining to some problem that had been handled in his department and with which he was not familiar. The result was that he was "snowed under" all the time and while he was familiar with every detail under his management, nevertheless he was continually criticised for his delay in handling important matters.

The "don't give a d—n" man didn't last long. GOLF, plus the desire to be out on the line the majority of the time, resulted in his chief clerk having to assume almost the total responsibility for his division. This man was a procrastinator and the least said of this type the better.

The third man was the "Big Boss" in every sense of the word. He did not rule with an iron fist, and still every one in the department knew who was boss. He would temper his criticism with advice and frequently would bring from his personal library data that would assist his chief clerk in understanding certain problems. He had time for everything and everyone. Why? Because he handled his work systematically. His chief clerk was no figurehead; he was an official in the department the same as the assistants. The morning mail would come in, files attached thereto, and the chief clerk would carefully go over it. At a certain hour each morning the chief clerk took all the correspondence in for conference. The boss would go over the papers with the clerk and instruct him how to answer certain letters, would keep some for his personal attention and in that way dispose of all the mail.

His ability was readily recognized and today the boss is bigger; he is in charge of the mechanical department of one of the largest railroads in the country. And that's the

get, his several chief clerks while he was climbing the ladder of success helped him along.

Who answers the official higher up when a phone call comes in while the boss is away? Who looks after the comfort of the boss during his working hours? Who reminds the boss of his engagements and important business matters that must be attended to? Who gets rid of "callers" the boss has not time to see? Who assists the most in keeping the boss posted as to general conditions on the railroad and in his department?

And who is held responsible for the handling of the department in the absence of the boss?

The chief clerk does all this and much more. I am speaking of a type which is in every sense of the word a chief clerk. It is agreed that many incumbents in that position are incapable, but it is the dyed-in-the-wool chief clerk that I refer to. The man who can do great things in the department, if given sufficient latitude. Possibly "Operating Official" has been unfortunate (?) in his men.

Were I an operating official my greatest concern upon being promoted would have to do with my chief clerk. I would study my man and if necessary make changes until I found the right one. Then, instead of restricting him, I would give him the greatest latitude as I know my interests would be his and his attitude towards me (engendered by my apparent faith in his ability) would be of such a calibre that he would seldom go wrong.

Through this co-operative plan, I would be giving him his birthright; the opportunity of using his initiative.

Try it, "Operating Official!" GRANT GIBSON.

## Forman and Ford

SAN FRANCISCO, CAL.

TO THE EDITOR:

What I wrote in your issue of September 24 relating to the 19 order was predicated upon just how far the average officer would be likely to go in the light of present knowledge or customs. No officer, I take it, would care to deviate from the Standard Code to such extent that his road could be held up as a horrible example should a collision result from some experiment which had not at the very beginning been fully worked out.

As surely as the next decade is going to see a searching investigation as to the components of concrete, with the view of overcoming its present unstable qualities, just so surely will there be made known the imperfections of our present cumbersome train dispatching system and more simple methods adopted. This may possibly result in the abolition of all written train orders. Delaying freight trains twenty minutes and passenger trains five minutes to secure signatures to train orders is so clearly wrong in principle as well as expensive and burdensome in results that relief therefrom is imperative and must eventually come about in some way.

If I were a Henry Ford and owned a railroad I should reason about as follows and would handle the train dispatching accordingly:

With the protection that the clearance card affords, made out as outlined in my letter of September 24, there should be no risk in using the unsigned order for any movement, provided it be further safeguarded by having the train order signal against the ruling train. Therefore the proposition is reduced to three general principles:

(a) There must be an order-signal which will stop the train to get the instructions.

(b) There must be a clearance card to insure that all orders issued by the dispatcher are delivered to the train.

(c) The instructions must be so clearly worded that they cannot possibly be misunderstood; and if firemen and flagmen are to be in any way held responsible for the proper

observance of train orders they must be given copies of them to retain.

When the order-signal, or its equivalent, cannot be depended upon, then, of course, acknowledgment from the conductor and engineman of the superior train must be obtained before authorizing the inferior train to move against it.

Provisions for the "X response" should not be eliminated from the new form, for the reason that it is needed at times. Neither should we omit the line on which to show when an order is "Repeated."

In religious circles one sometimes hears the expression, "If it is in the Bible, it is so." In railroad circles it is equally common to hear, "If it is in the Standard Code, it goes." Unlike the Bible, however, the Standard Code is not a finished book. A comparison of the original and present Standard Code rules will show that there have been changes—changes of a progressive nature. Devotees of this much-respected and feared document should bear in mind that even the Standard Code does not place any restrictions upon the use of the 19 form of order. And it makes no provision for the safeguard of a clearance card, to be given with all orders.

Just why every restrictive feature of the Standard Code makes such a strong appeal to everybody, while at the same time they do not endorse some of its more liberal provisions, is a problem too deep for the ordinary mind to solve.

For absolute safety the middle order is the greatest single safeguard so far devised, for the following two important reasons: (a) There are two order-signals against opposing trains. (b) It is a reminder at the most important place of all—the point where the trains are to meet. Use of the middle order is attended with unqualified success when dispatchers are permitted to instruct operators (holding such orders) to change the order-signal from "stop" to "proceed" to permit disinterested trains to pass the station without slowing them to secure a clearance card. The principal objection to the middle order, so far as I know, has been that having so many order-signals at "stop" causes delay to trains not concerned. I have made it a practice to instruct operators to change the signal as described and I know of no collision chargeable to this method of handling. It is to be frankly admitted, however, that to do so is, to say the least, a strained interpretation of Standard Code Rule 221 B.

When practicable to use it the middle order is the all-important thing; when its use is impracticable orders should be placed as near the point where they must be executed as is possible. Again, when practicable, dispatchers should refrain from issuing orders six or eight hours before operators are required to make delivery.

Telephonic dispatching is a great help which is not yet sufficiently appreciated. A telephone should be installed at every siding, without regard to the number of order offices open. Another improvement often unappreciated is to shorten the territory of train dispatchers, especially on heavy single track lines, so that they may have ample time to think and to do what is required of them without undue haste.

But where, after the adoption of the foregoing recommendations, dispatchers are permitted to become careless in the duty of underscoring each word and figure of a train order the instant it is being repeated by each operator; or habitually to read newspapers or books when on duty, there need be no hope of any such thing as safe handling of trains by the use of train orders.

H. W. FORMAN.

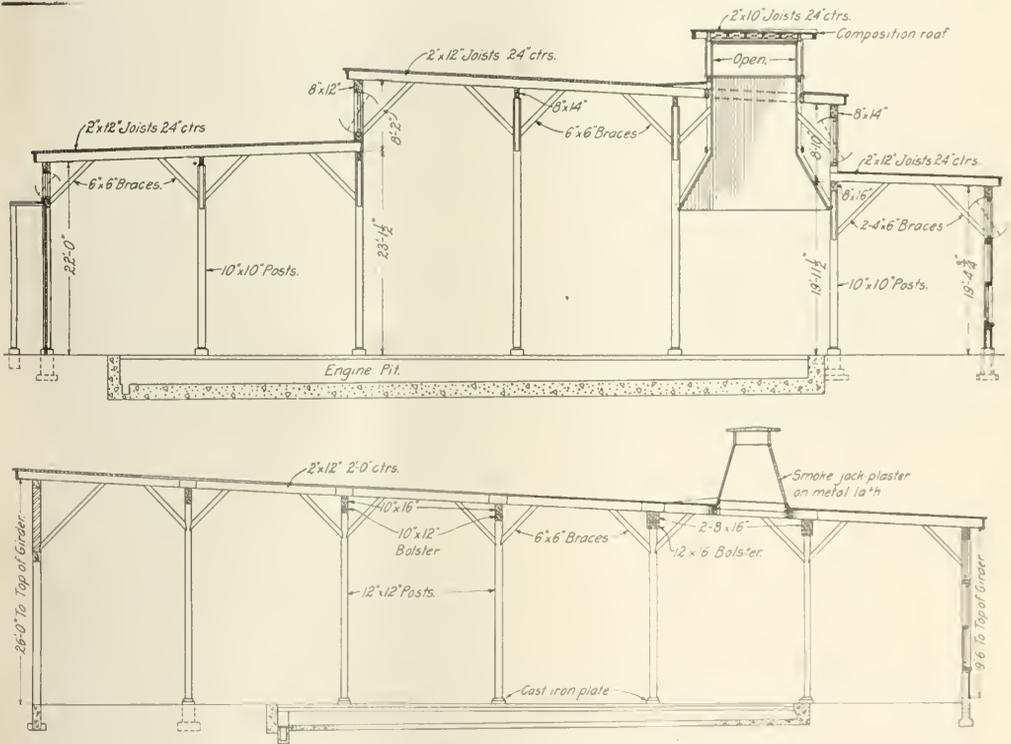
PENNSYLVANIA TRAINS departing from the Union Station, Chicago, will be held whenever the Adams street or Monroe street bridges leading to the station are open. If these bridges open within five minutes before the departure of any train, the train will be held in the station until five minutes after street traffic again begins to move over the bridge.

# Frisko Secures Maximum Benefit for Modest Outlay

## Series of Minor Projects for Second Track and Locomotive Facilities Expedite Operation

THE CAPITAL expenditures made by the St. Louis-San Francisco during 1920 and the early part of the present year for additional main tracks, grade revision and locomotive facilities, comprise a striking illustration of a minimum outlay for the maximum benefit. They serve as an object lesson in the character of improvements which may be undertaken during periods of restricted financing. In the case of second track this problem was approached by selecting those portions of the line where the greatest relief would be afforded by the construction of short sections of

and Kansas respectively. The main trunk traverses a rough country and was built with maximum grades of 1.25 per cent in both directions. The preponderance of traffic is eastbound, consisting of oil and products of agriculture, while the westbound traffic comprises manufactured goods together with an empty return movement of box and tank cars to compensate for the excess of eastbound traffic. The general program for the improvement of this line contemplates continuous double track from St. Louis to Monett with a revision grade whereby the ruling grade will be 0.8



Stall Sections Through Two Types of Roundhouse Construction Used by the Frisko

second track which would conform to a general plan for the ultimate second tracking of certain operating divisions. In the case of the locomotive facilities, the success of the program undertaken must be ascribed to the fact that the existing terminals provided ample opportunity for additions and extensions.

### Second Track Work in Four Units

Three of the sections of double track work prosecuted during the past 18 months are on the main stem of the St. Louis-San Francisco, extending from St. Louis southwestwardly to Monett, Mo., near which point it divides into three important lines extending into eastern Arkansas, Oklahoma,

per cent in both directions. However, the schedule for the completion of this work has been drawn along conservative lines with the idea of providing initially only as much of the second track as will be designed to relieve those portions of the line subject to the greatest congestion. Consideration is also taken of the revision of grades in connection with the second track work which will prove of greatest immediate benefit.

The first step in double tracking the St. Louis-Monett line comprises that portion of the line between St. Louis and Pacific, a distance of 34 miles. This embraces the territory over which the Frisko maintains a suburban service into St. Louis and also comprises a region of frequent meeting

points between inbound and outbound passenger trains during the early morning and evening hours. Previous to 1920 second track in this section had been completed as far as Windsor Springs, a distance of 13 miles. Last year an additional section of 7 miles was undertaken between Eureka and Pacific, this portion being selected because it involved light work. Its completion leaves a gap of 14 miles still to be completed and the next section to be undertaken will be the five miles from Windsor Springs to Vailey Park which will eliminate the Meramec tunnel for eastbound upgrade traffic. No work is, however, being done on this section at present.

The next section of double track line is at the center of the engine district between Newburg, Mo., and Springfield and covers a distance of seven miles between Sleeper and Lebanon. There were two reasons for selecting this stretch of line for the first second track work in the district. Its location at the midpoint of the district is a natural meeting point for trains, a condition which is further complicated by the character of the railroad right-of-way through the town of Lebanon which is built up close to the tracks. The other feature was the fact that five miles east of Lebanon there was a 1.5 per cent grade  $1\frac{1}{2}$  miles long opposing eastbound movements, the elimination of which would afford a ruling grade of 0.8 per cent for eastbound trains over the entire engine district. Surveys demonstrated that the new eastbound line could be obtained on a location about one mile south of the operated line with grades not to exceed this maximum and not over one per cent against westbound movement.

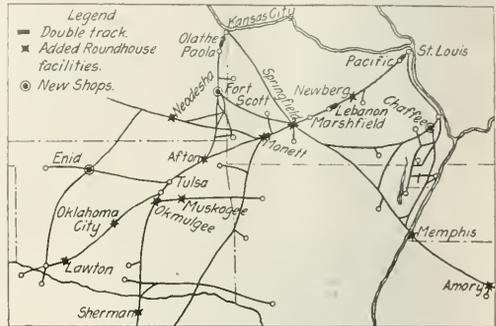
The third section authorized extends four miles eastward from Monett to Globe. This stretch of line includes a 1.1 per cent grade against eastbound traffic, beginning at the east end of the Monett yard and has been operated as a helper grade in starting eastbound tonnage trains out of the yard. Here it was found advisable to revise the grade on the old line to 0.8 per cent by cutting down the summit of the hill at Globe and to construct a new line for westbound movement alongside on the same grade.

The fourth section of second track work is on the Kansas

25, 1921. The plans of the St. Louis-San Francisco contemplate the completion of second track into Paola within the next few years.

**Grading Work of a Varied Nature**

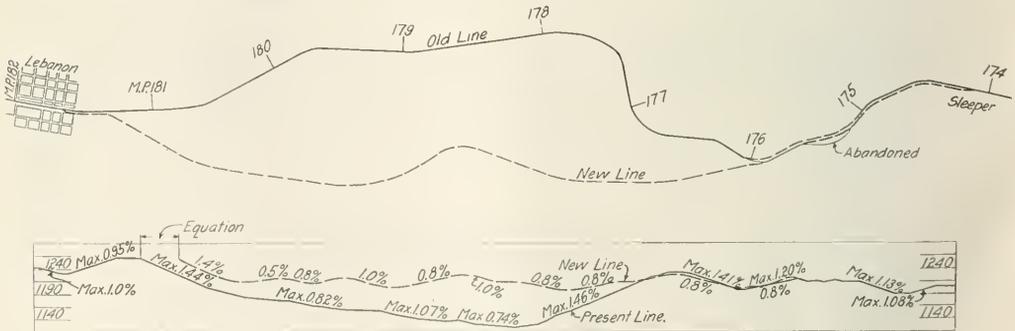
The second track work east of Pacific, Mo., was carried on under contract by the List & Gifford Construction Company of Kansas City, Mo., the contractor doing all work, including track laying and ballasting. The grading consisted principally of side earth borrow handled with teams and scrapers and one sand-stone cut that was taken out with



Map of a Part of the St. Louis-San Francisco

a revolving shovel, the material being hauled into the embankment in narrow-gage, four-yard dump cars, without interference with traffic.

The second track between Sleeper, Mo., and Lebanon, as shown in the map, consists very largely of a new independent single-track line. This was handled by contract with Scott & White of St. Louis, Mo., who did all work including track laying and ballasting. The excavation consisted of about 20 per cent of solid limestone rock excava-



Map and Profile of the New Line, Second-Track Work Between Lebanon, Mo., and Sleeper

City line extending southward in eastern Kansas for the distance of 42 miles between Kansas City and Paola, Kan., where the St. Louis-San Francisco track is also used by the Kansas City trains of the Missouri, Kansas & Texas. During times of heavy business the combined traffic of the two roads is more than can be handled satisfactorily and economically on a single track. Because of this, double-tracking of this line has been in progress for some time. In 1920, it had been completed as far as Olathe, about 20 miles. During the past year another section of 10 miles from Olathe to Spring Hill was constructed and put into service on April

tion, about 50 per cent of loose rock and cemented gravel, and about 30 per cent of earth. The excavation practically balanced the material needed for embankment, and the larger portion of the work was handled with steam shovels. The new track is now practically complete.

Between Globe, Mo., and Monett the large summit cut was handled by the railroad company's steam shovels, the material being taken care of in 16-yd. dump cars and unloaded for widening embankments as it was not needed for second-track fills. Some of the lighter grading and the masonry, bridge and culvert work was contracted to All-

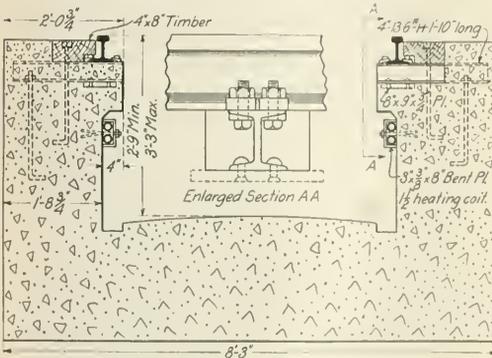
hands & Davis of Rogers, Ark. The grading consisted of about 50 per cent loose rock and 50 per cent earth.

On the 10 miles of second-track work between Olathe, Kan., and Spring Hill about 1.6 miles comprised the absorption of existing passing tracks. In addition to building second track the existing track was subject to a revision of grade involving the lowering of the summit cut a maximum of 12 ft., thereby changing the grade from 0.7 per cent to 0.5 per cent. The excavation consisted principally of earth but a shallow ledge of solid rock was taken out in the grade reduction. All the work on this project was contracted for to the Walsh Construction Company of Davenport, Iowa. The grade reduction material was handled by steam shovels with standard-gage, 12-yd. dump cars and unloaded from the main track. Some minor work was handled with an excavator and teams. The bridge work on all of the double-track projects was of a minor nature.

**Engine Terminal Work Undertaken**

**After Federal Control Period**

Although a large amount of engine terminal and shop facility improvements and additions were carried out by the United States Railroad Administration, particularly on roads in the eastern portion of the country, very little work



**Cross-Section Through a Typical Engine Pit**

of this character was done in the southwest and this was notably the case with the St. Louis-San Francisco. As a consequence the end of federal control found this property in need of considerable additions to its locomotive facilities. Fortunately the existing terminals were in such condition that the required additional housing space could be added readily to the plants already in use and only in one or two cases was the construction of additions hampered by cramped quarters. Only four new terminals were constructed and these at relatively unimportant points. The wide distribution of the engine terminal and shop improvements will be appreciated from an examination of the map.

Taken in the aggregate, the new facilities included 24 stalls in four new roundhouses, 44 additional stalls in existing roundhouses and the extension of 18 stalls in two roundhouses. Of the 86 stalls built or extended, 6 were made 120 ft. long for use by Mallet locomotives, and 22 were 92 ft. or less in length, while the other 58 were made 110 ft. long, which is the present standard of the road for the housing of Santa Fe type and heavy Mikado locomotives. These standard stalls are generally equipped with engine pits 80 ft. long.

A total of eleven 80-ft. engine pits were constructed on radial tracks outside of the roundhouses. At three of the roundhouses 75-ft. turntables were replaced by 100-ft. tables

while at two of the small new houses turntables of 75-ft. and 70-ft. lengths respectively were installed. Additions to the shop facilities were of a minor nature, consisting of four or five shop structures 40 ft. wide by 100 ft. long, and a shop building 60 ft. by 200 ft. at Enid, Okla.

The additions to roundhouses, as well as new houses built, were entirely of frame construction according to the general character illustrated in the longitudinal sections shown. These were of two general types, flat-roof type and a minor type. As far as possible the roundhouse at Enid, Okla. was extended in a construction similar to that previously built. The smoke jacks have been proportioned for large discharge.

The section of the typical engine pit illustrates in particular the manner in which the rails were attached to the pit walls through the agency of short sections of I-beams embedded transversely in the concrete. All of the improvement work on the St. Louis-San Francisco was conducted under the general direction of F. G. Jonah, chief engineer (St. Louis, Mo.), to whom we are indebted for the information presented above.

**Report on A., B. & A. Derailment**

**T**HE INTERSTATE COMMERCE COMMISSION has issued a report dated September 28, on the derailment of an eastbound freight train on the Atlanta, Birmingham & Atlantic, ten miles east of Atlanta, Ga. (at Cascade Crossing) on September 7, when the engineman was killed and three employees were injured. This is the derailment concerning which the governor of Georgia appointed a special investigating committee, at the request of former employees, who had left the road on strike several months ago. It will be recalled that this special committee, rejecting the claims made by the strikers, reported that the derailment was due to an explosion. The present report confirms this.

The derailment occurred about 8:30 p. m. It was at the foot of a descending grade and in a cut. The track was found in general fairly well maintained. The train was moving at about 15 or 20 miles an hour, having had special instructions from the train dispatcher to run cautiously because of expected trouble.

The locomotive ran only 225 ft. after it jumped the track. It was overturned and the pilot was torn off. The left front truck wheel was missing, and was found at the top of the embankment about 120 ft. east of the point of derailment. The locomotive was very slightly damaged and bore no marks to indicate the cause of derailment. The track was badly torn up, the rails displaced and the ties scattered. There was a bowl-shaped crater in the ballast beneath the left rail, about 4 ft. in diameter and 18 in. deep. The rail immediately over this hole was slightly bent and a piece 3 ft. long had been broken out of the inside of its base.

The weight on the front truck wheels was about 19,700 lb. The running gear and the underside of the engine bore no marks which would indicate the cause of the derailment. Parts of broken pilot slats were found about 420 ft. away. The axle and the right-hand wheel remained in place in the truck frame. Many persons living within 4 1/2 miles of the point of accident heard the sound of an explosion at the time of the derailment; and the surviving trainmen heard it.

A chemist, arriving on the scene at about 5:45 p. m. of the day following, found a fragment of wire and other things, and evidence of chloride of potash and sulfur. These two substances, together, form a high explosive. He concluded that this substance had been set off by a dynamite detonator. The left wheel which strikers had damaged was

loose and had been the cause of the derailment, was taken to the shop and was forced back on to the axle and then forced off again; and the opposite wheel was also forced off; and from these and other experiments it was shown that the wheel, which had run only about 1,400 miles, could not have been loose on the axle.

The conclusion of the report says that the evidence is strong that an explosive was placed between the head and the base of the left-hand rail; that this lifted the left forward engine truck wheel and forced it outward and upward. The chiller marks on the wheel made an impression on the head of the rail. The axle from which the wheel was blown off was slightly bent.

James E. Howard, engineer-physicist of the commission, made an investigation and a report supplementing the foregoing. He calls attention to the fact that 40,000 lb. per square inch is not an unusually high pressure to be exerted by a high explosive. A pressure of 200 lb. per square inch on the inner base of the wheel would have been adequate to remove it from the axle.

## Proposed National Stop- Look-and-Listen Campaign\*

By Marcus A. Dow

General Safety Agent of the New York Central Lines

UNDOUBTEDLY, grade crossing accident prevention presents one of the most difficult problems in railroad safety work. The public cannot be reached effectively by any individual railroad. The avenues of approach are difficult. The people who might be reached today are supplanted by others who cross your tracks tomorrow. These people do not confine their traveling to a limited area and they are not familiar with your crossings. The growing record of deaths and injuries; the steadily increasing expense to railroads and the lamentable loss to the nation each year of hundreds of its highest type of citizens should awaken both the railroads and the public to the need of a concentrated effort to curb the carelessness that is largely responsible. If a campaign is to be made effective at all, it would seem to be absolutely necessary for every railroad in the country to join.

1. Such a campaign should officially cover a period of say three months and be conducted at the time of the year when extensive touring is done.

2. Notify the general public through the press and ask their co-operation. An article for the press should be prepared by a special committee and distributed to all railroads to be sent to the local papers on each road; to be submitted to the papers in person by the local agent in the smaller cities and towns and by the most influential officer in the larger cities. Follow up articles could be used.

3. In a similar manner advise automobile clubs, rotary clubs, chambers of commerce, etc.

4. The secretary of the Safety Section should obtain a monthly report from each railroad, at the end of each month, of the number of persons killed and injured in crossing accidents; such information to be used in advising the public through the press, automobile clubs and otherwise of just what the monthly toll of human life amounts to because the rule of Stop, Look and Listen is disregarded.

5. Inexpensive but effective posters should be designed by a special committee and posted in every passenger and freight station on every railroad in the country. Also posters to be distributed for posting to automobile clubs, etc. Local agents should personally handle such distribution.

6. Distribution to automobile drivers of a warning notice,

printed on a small slip of paper . . . This warning slip should be personally handed to the automobile driver by a railroad representative. Crossing flagmen, station agents, freight agents, safety committee members and others should be furnished with a supply, a record kept of the number furnished the employee and report made to some officer or to the safety committee on the division of the use each employee made of his supply. Hundreds of thousands of automobilists could be personally reached in this manner.

7. (a) Pastors to be used on stationery. (b) Stickers to paste on windshields.

8. (a) Endeavor to get the International News or similar agency to include in one or more of its illustrated news posters, appropriate photographs and descriptive matter. (b) Make an effort to interest the motion picture news weeklies. Smash up an old automobile in a fake crossing accident; photograph such a scene and run it in the theatres.

9. Seek the co-operation of the secretary of state or state automobile license bureau, or similar public office, in the distribution of a special warning notice printed on a card to accompany the license plate when delivered. This should be attended to in time to have the distribution made with the next license plate. I have tried this and believe considerable attention is paid to it. I have found the secretaries of state in the states on our lines are glad to co-operate.

10. The co-operation of churches and schools should be solicited. A special form of letter should be prepared to be sent to proper officers of schools and churches.

11. For publicity purposes, early in the campaign, on a certain day to be specified, every railroad should assign observers at one or more grade crossings for a period of five or six hours. The information thus gathered when used in connection with a nation-wide campaign would be most enlightening, and would be given wide publicity. It should be sent by wire to the general headquarters of the A. R. A. for prompt distribution to the press of the country.

12. The B. & O. plan of checking automobilists is worth considering in connection with a national campaign.

So much for the traveler-on-the-highway; but railroad officers and employees have responsibilities no less important and the campaign should include a careful check of all those employees and departments of the railroad who can in any way contribute to the success of the campaign. (a) Locomotive engineer should receive a personal letter from the superintendent. (b) Station agents should receive special instructions to co-operate. (c) Crossing flagmen must be personally interviewed and instructed by the official to whom they report; make them feel a personal responsibility so that each one will resolve not to have an accident on his crossing during the campaign. (d) All trainmen and conductors to be notified of the campaign and be instructed to protect crossings while switching over them. (e) Maintenance employees to correct defective planking, or other conditions that might stall an automobile. (f) An inspection of crossings by proper officers to observe obstructions to view, such as trees, that should be trimmed or removed.

The foregoing suggestions for a national campaign do not involve any great expense. The printing of circulars, posters, etc., would be nominal for each road. The main thing is to have the full backing and enthusiastic support of the officers of each road and I believe the safety men of the roads could put such a campaign over. We, who are in the railroad safety work have found that continuous and systematic efforts have reduced the number of deaths and injuries to railroad employees. Our most effective weapon has been an appeal to the human heart. Surely human beings are alike everywhere and if, by a great united effort, we railroad men of the country can inject some of the spirit of safety into the hearts and minds of the motorist we shall render a great service to the railroads we represent, to the citizens of our communities and to the country we love to call our own.

\*A paper read before the Safety Section of the American Railway Association at Boston, September 26; abridged.—The Boston meeting was reported in the *Railway Age* of October 1, page 629.

# Can Railroads Compete With Contract Shops?

## Costs of Repairing 50 Cars in a Railway Shop for Comparison with Contract Cost of Similar Work

By J. W. Roberts

President, Roberts-Pettijohn-Wood Corporation, Chicago

[In a preceding article the author outlined the bases under which the cost of repairing 50 box cars in a contract shop was compared with the cost of similar repairs to 50 cars of the same series carried out in the shops of the owning railroad. The present article discusses in detail the elements of cost of the work done in the railroad shop.—EDITOR.]

THE CARRIER does not accumulate in its records the costs pertaining to individual repair jobs, and it was therefore necessary to examine the details and build up the costs from the beginning. The carrier's local officers and employees who were intimately familiar with the particular work the cost of which was sought, as well as the records relating thereto, rendered enthusiastic co-operation throughout, to the end that the findings might be consistent with the facts.

### Shop Labor—Direct

Direct labor on the 50 test cars, by crafts, was found as follows:

Carpenters .....	\$11,636.00
Steel workers .....	426.00
Blacksmiths .....	365.50
Air brake men .....	280.00
Painters .....	240.00
Door makers .....	140.00
Total .....	\$13,087.50

Carpenter labor was taken directly from the daily service cards turned in by the workmen, which fortunately had been continued in use as a relic of the former piece work system, which showed the individual cars worked each day and the time devoted to each operation on each car. Total time reported was checked against the payrolls. Service cards were not required of the other craftsmen, however, and it was necessary to use an average cost per car for these respective classes of labor. All cars repaired at the shop during the period when the test cars were under way received substantially the same kind of repairs. The test cars, however, were among those receiving the most extensive repairs. The total hours worked during the period by each class of direct labor other than carpenter labor, was divided by the total number of cars repaired, and an average cost per car found. This average cost in each instance was multiplied by 50 and the result assumed to be the cost of labor. This is conservative, and undoubtedly understates the actual cost since the box cars required the maximum amount of labor. Open top cars required less painting, many cars did not have draft arms applied, some cars did not require two new side-doors as did the test cars, and some cars were not completely re-rigged for air as were the box cars. The labor thus arbitrarily determined is only 11 per cent of the total direct labor.

In addition to the foregoing, certain work was done in other departments which did not record the time devoted thereto, to wit: steel men riveting coupler yokes, steel men rectifying body holsters, reclamation shop recovering 16 journal box and 4 column bolts. The cost of each of these operations was determined from a performance time study and the application of the standard rate of pay, resulting in a total charge of \$3.71 per car, or for 50 cars, \$185.50.

### Shop Labor—Indirect

Indirect labor in each department each month has been apportioned on the basis of the departmental direct labor. For instance, mill foremen and mill men have been distributed on the basis of carpenter labor; rip track foremen, laborers, material and supply men, drill press and bolt threaders, and box packers, on the basis of repair track labor exclusive of carpenters; and assistant general foremen, clerks and watchmen on the total labor to which such expense was common.

The total indirect labor charge assigned to the 50 cars amounts to \$4,395.31.

### Shop Expense

The total shop expense charged against the shop for the four months during which work was under way on the test cars was as follows:

Labor .....	\$53,896.36
Operating materials and supplies .....	11,852.68
Fuel .....	29,421.15
Electric current consumed .....	5,664.60
Ice .....	959.65
Total .....	\$101,734.64

These charges include nothing for haulage of the fuel used over the rails of the company. The tonnage of fuel used was ascertained, likewise the distance hauled over the carrier's line from the normal source of supply, and haulage cost was computed at the rate of seven mills per net ton mile, resulting in a surcharge of \$4,099.53 as the cost of transportation. This increased the shop expense for the period to \$105,834.17. The cost of transporting materials and supplies is necessarily omitted because of inaccessibility of the data as to weight and point of origin.

Shop expense was apportioned to the test cars and other work on the basis of assigned shop labor, \$2,383.31, being assigned to the test cars.

### Insurance Expense

The premium paid on commercial policies for fire insurance and the accruals to the carrier's own insurance fund to protect the margin between the insurance carried and the amount of hazard on the insured facilities comprising the shop layout, was reduced to a monthly basis and distributed on the basis of assigned shop labor. The apportionment to the test cars amounted to \$13.23.

### Maintenance of Shop, Power House, Machinery, etc.

The total expense for four months charged to accounts, 302—Shop Machinery; 304—Power House Machinery; and 335—other expenses, representing the actual expenditures during the test period at the shop in question, was apportioned on the basis of assigned shop labor, resulting in \$1,317.07 being assigned against the test cars. The records did not lend themselves to analysis in such a way as to permit of averaging the machinery maintenance expense for a longer period, which apparently would have increased the charge somewhat.

### Maintenance of Buildings and Tracks

The labor and material charged during the calendar year 1920 against the maintenance of the buildings and tracks

comprising the shop facilities was taken as the basis for ascertaining cost of maintenance of these facilities. The total charges were reduced to a four months' average and this amount apportioned on the basis of assigned shop labor, which assigned \$235.89 against the test cars.

In the charges thus distributed nothing was included for transporting the materials used over the carrier's rails, which could not be computed for lack of detail as to material quantities. The records were not always kept in such detail as to show the facilities to which repairs were made, and repair expense not described may have applied to the facilities in question. Cognizance is taken only of the charges identified to the facilities involved.

#### Maintenance Expenses Common to all Local Shops

Other shops than the one in which the test cars were repaired are located at the same point, and during the year 1920 account 235—Shops and Enginehouses, received charges common to all such shops. The charge for the period was reduced to a four months' average, and then distributed on the basis of assigned shop labor (less superintendence) in all shops, resulting in a charge of \$57.91 against the test cars.

#### Divisional Overhead—Maintenance of Way and Structures Expense

During the calendar year 1920 the divisional overhead charges applicable to maintenance of way and structures expense (exclusive of accounts not benefited thereby, as for instance, Account 275—Insurance) were as follows:

Account 269—Roadway machines .....	\$17,346.48
Account 271—Small tools and supplies.....	26,413.11
Account 274—Injuries to persons.....(Cr.)	253.97
Account 276—Stationery and printing.....	1,916.20
Account 277—Other expenses .....	157.25
Total .....	\$45,579.07

This annual overhead expense was apportioned on the basis of its relation to the total maintenance of way and structures expense supervised and \$6.27 assigned to the cost pertaining to the test cars.

#### Entire Line Overhead— Maintenance of Equipment Expense

Superintendence and other overhead expense applicable to maintenance of equipment during the calendar year 1920 was as follows:

Account 301—Superintendence .....	\$458,267.75
Account 332—Injuries to persons.....	55,206.26
Account 334—Stationery and printing.....	41,392.11
Total .....	\$554,866.12

A relationship between total overhead expense and the total expense supervised was found and on the basis of this relationship the supervised expense assigned against the test cars was applied, resulting in a charge of \$1,720.22 against the test cars.

It should be mentioned that divisional overhead expense relating to maintenance of equipment is consolidated with system charges by the carrier and could not be segregated and separately accounted for without a prohibitive amount of work. The consolidation of the expense before apportionment reduces the proportion which would otherwise be assignable to the work in question.

#### Entire Line Overhead—Maintenance of Way and Structure Expense

The charge against the test cars for system overhead applicable to all maintenance of way and structures accounts, as represented by the charges to Account 201—Superintendence, was predicated upon the equitable distribution of the total charges to this account on the basis of the total ex-

penses supervised, using the experience of the calendar year 1920. The relation of superintendence to total expense supervised was 4.838 per cent and the amount assigned to the test cars was \$14.79.

#### Entire Line Overhead—Repairs of General Office Buildings and General Storehouse

The identifiable expenditures for repairs to system general office and general storehouse buildings and appurtenances during the year 1920 were collected, and their relation to total operating expenses (less common to system repairs) and expenditures for additions and betterments was found, and on the basis of this relationship the costs assigned to the test cars were surcharged pro rata, the amount assigned for expense of this character being \$2.36.

#### Entire Line Overhead—System General Expense

System general expenses for the year 1920, comprising the items included in the various primary accounts under the sub-division "General," above referred to, were found to be equivalent to 3.4733 per cent of the total expenditures for other operating expenses plus the expenditures for additions and betterments to road and equipment, excluding the adjusting credits for property retired and the amount of liability for certain equipment allocated by a governmental order which involved no general expense during this period on the part of the carrier's organization.

The charges assigned to the test cars were burdened with this per cent for system general expense, amounting to \$2,436.20.

#### Mounting Car Wheels

In connection with the work in question thirty-one sets of 33-in. car wheels were mounted on axles. This work was done in a department which merely allocated the time worked upon different operations to each operation. During the four months' period in which the test work was done the average cost of mounting car wheels was found to be \$2.61 per set, which for 31 pairs amounted to \$80.91, which has been included.

#### Depreciation on Fixed Properties

The carrier does not exercise the option of accruing currently depreciation on its fixed properties. In view of the demonstrable fact that the maintenance policy of the company does not perpetuate the life of such property, but that deterioration not offset by current repairs does accrue, and that obsolescence and inadequacy cause a gradual consumption of the value of the assets, depreciation, as commonly regarded for accounting purposes, is considered to be an element of actual cost. It is believed to be fair to include an allowance for it in this case particularly, because of the apparent subnormality in the amount of repairs made to the property, due to its comparative newness and the influence which tended to retard maintenance expenditure during the test period.

Depreciation was therefore computed upon buildings (not tracks) and depreciable machinery (excluding all items usually replaced at the expense of repairs) used in the repair of cars. The base used for computing depreciation on each item of property was the original cost, computed by the carrier's valuation engineers if not of record. A rate was used in each case which took cognizance of the character of each item of property, and was based on experience as to the life expectancy of such property. The rates used were taken from a table promulgated by the United States Railroad Administration for use of car builders in computing cost of work performed under cost-plus contracts and which were subsequently adopted for use by many builders.

While the rates of depreciation used are considered fair and equitable for the car-building industry, they are prob-

ably too conservative for railroad use, inasmuch as they do not recognize to the full extent the effects of obsolescence and inadequacy upon the railroad properties, which is more marked than in outside plants. The need for relocating railroad shops to correct defects in original location, to make room for the expansion of other facilities and to meet the shifting requirements of operating conditions is wholly ignored in measuring life expectancy as represented by the percentages used.

The depreciation accrued for the four month period, for the freight car shop and machinery, the storehouse and appurtenances, and the powerhouse, machinery and appurtenances, respectively, was distributed on the basis of the assigned labor to which applicable, resulting in a total charge of \$332.33 being assigned to the cost of the test cars.

**Applied Materials**

The quantity of applied materials was carefully developed in minute detail with respect to each of the test cars. The piece work record form on which carpenters' time was reported also noted the quantity and kind of material used by them on each car; a record was also kept of the character of repairs made to each car. The material reported as used was checked against the work record showing operations, and from the latter record a list of minor items not reported, which of necessity were used in the repairs as made, was compiled in conjunction with the local officers and car foremen of the carrier. The different items of material were totaled and priced out from the storekeeper's and purchasing department's records at prices *l. o. b.* the carrier's rails at points of delivery. The net weight of each item was computed, the distance hauled over carrier's line from point of delivery thereto to the shop where applied was ascertained and net ton miles figured, and the cost of haulage calculated at the rate of 7 mills per net ton mile.

The prime cost of the materials applied was found to be \$45,158.96; the cost of haulage by the carrier \$1,481.43, the aggregate sum of \$46,640.39 being used as the cost of applied materials delivered for application.

It will be observed that any losses resulting from materials spoiled in fabrication have been omitted; likewise losses due to shortages in shipments, breakages in handling and like causes. Neither has anything been included for inventory adjustments, which are usually disposed of on the basis of material issues during the period between inventories.

**Proportion of Fixed Charges**

It was not possible to ascertain the taxable value of or the actual investment in the units of property devoted to shop purposes. It was likewise impossible, as may be expected, to secure the same information with respect to units of property used incidentally in connection therewith. Without such facts, moreover, it was impracticable to make direct application for the fixed charges related to the shop properties and the properties used in furnishing incidental service thereto.

During the year 1920, for each dollar disbursed as operating expense, as designated by the Interstate Commerce Commission's classification, the carrier had a further outlay of 20.0809 cents for fixed charges, consisting of taxes, interest on capital obligations, operating losses (uncollectable revenues) and rentals paid for the use of property owned by others (which is tantamount to interest on investment). This is a part of overhead expense. The outside contractor recovers his outlay on account of these items through charging a profit. In the railroad's case it must be provided for out of earnings and must therefore be reckoned with the more primary costs of services. This overhead burden being inherent to railroad operation, it must be considered at all times as a part of the cost of every operation performed in-

volving the use of property and inter-departmental service.\* For lack of a more equitable basis for disposing of this element of cost of doing business, it has been assigned to the test cars on a pro rata basis, with the belief that, notwithstanding the rough-and-ready method employed, it nevertheless does substantial justice to the situation in arriving at a comparable cost.

It is well to recall, in this connection, the previous statement that the productivity of the carrier's shops was not lessened within the period fixed by the necessity, real or apparent, of sending work to an outside shop in order to have its equipment repaired and in usable condition. Investment in its own facilities was not therefore made non-productive to any extent, nor were operating or administrative overhead expenses made unduly burdensome to activities to which they were incident.

The fixed charges include taxes, uncollectible revenues, which are operating losses, the net debits for hire of equipment and for joint facility rents, interest on fixed charge obligations and interest on certain cumulative adjustment bonds. There is not included in the sum dealt with the rentals on properties other than joint facilities, the sinking and other funds which pertain to disposition of surplus rather than accruals of contingent or unmatured expenses, losses on separately operated properties or interest on income bonds.

Application of the factor of 20.0809 to the accumulated cost of repairing the test cars results in a surcharge of \$14,640.82 for fixed charges.

**Salvage Credit for Materials and Scrap Recovered**

The recoverable material salvaged from the repaired cars was carefully accounted for, its weight ascertained, credit calculated at 75 per cent of the current cost new of usable material and at current prices for scrap, and the account credited with \$4,399.50 for the 50 cars. The cost of handling is not deducted in this connection, as the expense was included in overhead accounts and was distributed as such.

**Total Costs in Carrier's Shop**

The total costs assigned to the 50 cars repaired in the carrier shops are briefly recapitulated here, but are later given comparatively and in more detail.

Total rebuilding costs.....	\$72,909.19
Proportion of fixed charges, as assigned..	14,640.82
Less salvage credit.....	—4,399.50
Total .....	<u>\$83,150.51</u>
Average cost per car.....	\$1,663.01

[The next and concluding article will set forth the items of cost to the railroad of the repairs to 50 cars made in the contract shop, and will compare them with the costs of the work done in the road's own shop.—Editor.]

A PASSENGER COACH on the Corsicana-Mexia Oil Special of the Houston & Texas Central line of the Southern Pacific, broke its coupling as the train was leaving Mexia on September 22 and ran wild for 8 miles. The runaway coach was finally stopped on an up-grade and was later recoupled to the train. A number of men who jumped from the coach were badly bruised.

TRAIN NUMBER FIVE of the Atchison, Topeka, & Santa Fe was stopped by six robbers near Edmond, Okla., on the night of September 28, and the mail clerks were forced to deliver to them four pouches of mail. Following the robbery a reward of \$30,000 was announced for the capture of the robbers. \$5,000 for each of the six men. A motor car, which was waiting nearby, was used by the robbers to escape.

\*Expenditures chargeable to capital account are excluded from operation in connection with this burden, because the accounting rules provide for interest and taxes being included in the construct on cost of new work.

## One Senator's View of Strike Threats

THAT NOTHING so retards industrial revival in this country today as the attitude of organized labor in refusing to come down to reasonable wages and a reasonable basis of employment, was the opinion expressed by Senator Nelson of Minnesota in debate in the Senate, October 1. "All over the United States we are suffering because of that situation," he said. "In the case of transportation, the railroads are unable to reduce the rates because of the high cost of operation arising from excessive wages which their operatives demand, and which they were accustomed to receive during the war under the administration of Mr. McAdoo as director general of the railroads. Until there is a reduction in that high scale of wages and a change in the demand as to limited hours and other peculiar conditions, including the bonuses which were provided in the days of the war, the outlook for the people of this country securing cheaper transportation rates and better facilities is hopeless, and without cheaper transportation rates there will not only be a failure of industry to revive as it ought to revive, but, more than that, the farmers of this country will labor under a severe handicap.

"Aside from the railroads, I cannot conceive of any industry where there is a greater opportunity for revival, for an increase of activity in all directions, than in the building trades. We all admit that there is a scarcity of buildings throughout the country, but the high cost of labor and the high cost of material—and labor is a factor in that high cost, in fact, labor is what makes building material high—deters building operations.

"We are now threatened with a railroad strike. The men have taken a vote, and they are posing as ready to take the whole country by the throat again, as they were at the time the Adamson law was passed. Let me tell you a little incident.

"You all know that I was born in the little mountain country of Norway. It is a poor country, and practically all the railroads in the country are owned and operated by the government. Last winter the men who work on the railroads concluded to have a strike there. They laid their heads together, and undertook to tie up all the railroads in that country. What happened?

"The business men in the cities and the high officials of the railroads managed to operate enough trains in the country to carry the mails and bring supplies and provisions to the cities, so that there was no suffering, and then they let the strike go on. The strikers were all the time desiring to negotiate with the government. The government said, 'We will not negotiate with you until you quit striking;' and at the end of 14 days they were glad to lay down their arms and glad to come back to work and glad to resume their duties, as they did. I venture to say that that experience of 14 days was such a lesson to them that they will never again call a strike.

"I am getting tired of these strike threats. With that matter in view that came under my observation, I do not know but that it would be a good thing for the country if these railroad men should start on a strike. Let the people of this country once for all understand what these men mean by their striking. Let the people realize that they will be deprived of their food supply, their fuel, and everything else. If these men ever embark on a strike that leads to such results, I venture the prediction that the American people will rise in their might and wipe them from the face of the earth.

"We cannot tolerate in this country a government or a rule stronger than the people of the United States. We cannot tolerate a government within a government. We cannot afford to have any people take our country by the throat and say, 'You must do as we want or we will destroy everything in this country. We will hold up the entire transportation system of the country and deprive the cities and the towns of their fuel, their food supply, and everything else, unless you

do as we want.' It is time that we taught these men the lesson that they are not bigger than the government of the United States."

## Brotherhood Leaders

### Count Strike Ballots

LEADERS of the Brotherhood of Railroad Trainmen have undergone a decided change of heart as to their threatened strike during the past week if the interviews which have been published in the press properly express their views. But a few days ago, during the first days of the official count of the strike vote of that organization at Chicago, officers of the union openly declared that if the result of the vote indicated that a constitutional majority of the men signified a desire to strike the walkout would be called immediately. Later statements indicated that the officers of the trainmen's organization lost their belligerency and despite the fact that the announced result of the vote showed that about 90 per cent of the men had signified their willingness to strike in protest against wage cuts, it was quietly announced that the actual calling of a strike would be left to the grievance committees of the various railroads.

On September 12 Mr. Lee sent a circular letter to the men, who were then in the midst of the balloting, in which he pointed out five reasons why he thought a strike would be unwise and why the men might expect to accept some wage reduction.

"The executive of the labor organization that fears to tell the truth or point out dangerous places ahead to the membership of his organization is not worthy of the title of leader," Mr. Lee said. He then asked the men to consider the fact that wages and working conditions of all classes established since 1918 were "the result of a world war such as never before known"; that 5,000,000 men are now unemployed; that "nearly all classes of labor have been forced by mediation, arbitration, strikes or lockouts to accept reduced rates of pay during the past year; that the increased wages granted railroad men last year were based on increased cost of living and that government reports indicate a 16 per cent cut in living costs since July 1, 1920."

Mr. Lee's letter, however, apparently has failed to influence the voting, approximately 90 per cent of the men voting to walk out.

Several days later Mr. Lee announced that if the strike vote cast by the members is upheld by the grievance committees, a tentative strike order would be issued, effective only when and only if the other organizations should walk out at the same time. Thus Mr. Lee has shifted the responsibility for whatever might happen first to the members of his organization, then to the grievance committees and lastly to the other train service organizations.

On October 3 the other three train service brotherhoods and the Switchmen's Union of North America began the count of their ballots at Chicago. The result of these counts, according to union officers, indicate that a large vote in favor of a strike will be registered. However, in the case of these organizations the actual calling of a strike is in the hands of the executive officers.

The 400,000 members of the federated shop crafts voted for a strike several weeks ago, but their officers, apparently awaiting a move on the part of the brotherhoods, have taken no action.

A FIRE in the car shops of the Missouri, Kansas & Texas at Wichita Falls, Texas, on September 20, damaged the woodwork mill, several freight cars, a crude oil tank and the entire machine shop equipment—estimated loss, \$75,000; cause, unknown.

# The Division of Interline Passenger Fares

Explaining the Uniform and Simplified Basis Proposed  
by the R. A. O. A. Passenger Committee

By L. C. Esschen  
Auditor Passenger Receipts, Illinois Central

**D**URING THE PERIOD of federal control there was in effect a simplified plan for apportioning inter-road passenger revenue that was devised by committees of passenger accounting officers and observed by all carriers under federal control from June 1, 1918 to November 30, 1919. Under this plan the total monthly interline ticket sales of each carrier were apportioned on a basis of the passengers carried one mile accruing to the initial and all other interested carriers and yielded the same average revenue per passenger per mile to all the carriers concerned in such sales. With

method that was a very radical departure from past practices led the passenger committee of the Railway Accounting Officers' Association to believe that it might be possible to devise some other simplified plan that would be acceptable to carriers throughout the country and get away from the intricate bases that are now in vogue. The committee accordingly turned its efforts in this direction and after very careful consideration of various methods that might be employed, finally reached the conclusion that the best for universal adoption would be the Zone Rate Prorate Plan, which was



Map Showing the Zones Used in the Proposed Simplified Basis for Dividing Interline Passenger Fares

this simplification it was possible to perform the major portion of the interline work with inexperienced clerks and the plan unquestionably proved advantageous in many ways during this time when the division forces of practically all the carriers were depleted and the inter-road traffic, including a volume of military transportation orders, was exceedingly heavy. It would have been utterly impossible for carriers to have rendered their reports of interline passenger traffic in anything like the prescribed time if they had been obliged to continue to make their divisions by the application of former bases during the period of the war.

While the simplified basis that was in effect during federal control produced equitable results and accomplished the purpose intended, the plan was abolished by the railroad administration shortly before the roads were turned back as part of the program to restore conditions to their pre-war status. There is some question whether the basis could have been consistently continued under private control. However, the experience that was gained by the employment of a

submitted at the annual meeting of that association held at Atlantic City, June 8 to 10, 1921.

The success of this undertaking will depend a great deal on the interest and activity that is displayed by the carriers at large, as it naturally follows that it is only through the combined efforts of the carriers that the adoption of a uniform plan can be brought about.

## The Plan Proposed

To the layman and in fact even to the passenger accountant who is not so well versed in the interline division work, the plan might seem somewhat involved, but briefly summing up the situation it simply means this:

The plan proposes a uniform rate prorate basis for dividing interline fares such as is now in effect in certain parts of the country, except that as a means to simplify certain zone prorating gateways are established, the strong basis of locals is ignored except when controlled from such gateways, and from points of interchange, and the carriers are

made via the route traveled instead of observing the so-called short-line principle of division.

If measured by existing methods and practices and the conclusions are to be reached by a comparison of proportions received on individual items, the foundation of the zone plan is necessarily weakened, as it must be dealt with in its entirety and receive broad and liberal consideration. Unless the carriers are willing so to consider the proposition it is rather doubtful whether any progress can be made towards simplification that would help them get away from the existing intricate and technical methods.

Test figures as published in the 37th report of the Railway Accounting Officers' Association were prepared to show that the results produced under the proposed plan compare favorably with results produced under the so-called pre-war bases, now in effect, which in themselves are not accepted by all carriers as being entirely consistent in many of their phases, and the committee suggested that the members of the association, before passing judgment on the merits of the proposed plan, make a further test by comparing the amount of revenue accruing in the aggregate on a considerable volume of their traffic under the existing bases of division with the amount that would be produced under the proposed zone rate prorate plan.

Experience has proven that inter-road passenger traffic, when dealt with collectively yields an average revenue per passenger per mile somewhat lower than what is derived from local traffic, due very largely to the fact that the longer route carriers participate in more short line interline fares than short line local fares. There are other contributing factors, but the ultimate result is substantially the same regardless of the basis of division employed just so long as this is consistent, even to the extent of applying the passengers-carried-one-mile basis which was in effect during federal control. This fact should lead the carriers to weigh the matter very carefully as to whether there is need for the high-class refinement that now takes place in the division of interline passenger revenue, requiring the services of highly trained experts who sometimes consume as much as two hours in figuring a single division, only to have one of the interested carriers, whose division man no doubt consumed as much or more time in the refiguring, come back with a claim on account of erroneous proportion, necessitating a further refiguring by the initial carrier and in all probability resulting in long drawn-out correspondence as to who is correct. Questions of this kind arise with more or less frequency but they usually concern isolated movements of traffic, the amounts of revenue involved are of no great consequence, and are exceeded many times by the cost of the labor.

After the plan was drafted the passenger committee of the Accounting Officers' Association met in conference with a sub-committee of the American Association of Passenger Traffic Officers and that committee expressed itself as being heartily in accord with the idea of devising a plan which would have the effect of simplifying the bases of division of passenger fares throughout the United States and Canada. It is also expected that the individual passenger accountants will do their utmost in securing the co-operation of their respective traffic departments on whom so much depends in bringing about the desired simplification. When conclusions are reached the members of the Accounting Officers' Association are requested to file their concurrence with the secretary or advise him of their views and any communications offering suggestions or criticisms will be handled to a conclusion by the accounting committee.

### Present Bases Nothing More Than Tradition

To make it clearer to those who are not so well informed as to the needs for all of this it might be pointed out that the division of interline fares is acknowledged to be the most intricate part of passenger accounting work. The general

principles, bases applicable in different parts of the country, agreements, arbitrary requirements, etc., are nevertheless nothing more or less than tradition today. In New England, Trunk Line, Central, and Southeastern Passenger Association territories a mileage prorate basis of division prevails; in Western, Southwestern, and Trans-Continental Passenger Association territories a rate prorate basis is in effect. On trans-continental traffic the fares are divided by applying a rate prorate over the Missouri river with a re-division west on published percentages, derived from the rates or arbitrarily established, and the basis to be employed in the re-division east depends on the territory in which the point of origin or destination is located. In addition to this there is the re-division that is always necessary incident to the observance of the short line principle, and the analysis of the rates for the purpose of picking out small pieces of local contributed, all of which consume a great deal of time. It requires years of experience to make a competent division clerk, so there appears to be every good reason why a simplified basis of division should be adopted if it is possible to devise a plan which will be acceptable to all carriers.

It is not claimed that the proposed plan is perfect in all of its details, but it is felt that the general principles of the simplified basis as submitted will produce an equitable division of revenue for all carriers, overcome practically all of the division controversies that were heretofore met with, permit of educating clerks in this branch of the work to a high degree of proficiency in considerable less time than required under present methods, and eventually accomplish a saving of 25 per cent in clerk hire for this work.

An outline of the plan was given in the 1921 R. A. O. A. Agenda. It follows in part:

SUGGESTED UNIFORM METHOD OF DIVISION TO BE EMPLOYED IN APPOINTMENT OF REVENUE DERIVED FROM THE SALE OF INTERLINE TICKETS AND EXCESS BAGGAGE COLLECTIONS ON PASSENGER TRAFFIC INTERCHANGED BETWEEN ALL CARRIERS IN THE UNITED STATES, CANADA AND MEXICO, EFFECTIVE WITH THE ACCOUNTS FOR THE MONTH OF.....19.....

#### ZONES

The territory in the United States, Canada and Mexico will be divided into zones to be designated Atlantic, Eastern, Central, Western, Pacific, Canada and Mexico.

#### BOUNDARIES OF ZONES

ATLANTIC ZONE. Territory east of a line drawn from Buffalo, N. Y., to Mobile, Ala., via Pennsylvania Railroad. Buffalo, N. Y., to Pittsburgh, Pa., Ohio River to Cincinnati, O., C. N. O. & T. P., to Chattanooga, Tenn. A. G. S. to Birmingham, L. & N. to Mobile, Ala.

EASTERN ZONE. Territory west of the Atlantic zone to a line drawn from Chicago, to St. Louis, Mo., via C. & E. I., thence via the Mississippi river to the Gulf of Mexico.

CENTRAL ZONE. Territory west of the Eastern zone to a line drawn from Duluth, Minn., to Houston, Texas, via Great Northern; Duluth, Minn., to St. Paul, Minn., C. St. P. M. & O. to Sioux City, Ia., Missouri River to Kansas City, Mo., M. K. & T., M. K. & T. of Texas to Ft. Worth, Texas, thence H. & T. C. to Houston, Texas.

WESTERN ZONE. Territory west of the Central zone to a line drawn from the Canadian boundary line to El Paso, Texas, via Great Northern from Sweet Grass, Mont., to Billings, Mont., Nor. Pac. to Butte, Mont., Union Pacific System to Ogden, Utah, D. & R. G. to Colorado-Utah state line, Colorado-Utah state line, and A. T. & S. F. to El Paso, Texas, through Albuquerque, N. Mex., thence Rio Grande river to Gulf of Mexico.

PACIFIC ZONE. All territory west of the Western Zone.

CANADA ZONE. All territory in Canada.

MEXICO ZONE. All territory in Mexico.

#### PRORATING ZONE GATEWAYS

BETWEEN ATLANTIC AND EASTERN ZONES. Buffalo, N. Y.; Pittsburgh, Pa.; Cincinnati, Ohio; Chattanooga, Tenn.; Birmingham, Ala.; Montgomery, Ala., and Mobile, Ala.

BETWEEN EASTERN AND CENTRAL ZONES. Chicago, Ill.; St. Louis, Mo.; Memphis, Tenn.; Vicksburg, Miss., and New Orleans, La. BETWEEN CENTRAL AND WESTERN ZONES. Duluth, Minn.; St. Paul, Minn.; Sioux City, Ia.; Omaha, Neb.; Kansas City, Mo.; Ft. Worth, Tex., and Houston, Tex.

BETWEEN WESTERN AND PACIFIC ZONES. Billings, Mont.; Ogden, Utah; Salt Lake City, Utah; Albuquerque, N. Mex., and El Paso, Tex.

BETWEEN ALL UNITED STATES ZONES AND CANADA ZONES. All points of interchange.

BETWEEN ALL UNITED STATES ZONES AND MEXICO ZONE. All points of interchange.

#### SECTION I. GENERAL PRINCIPLES TO BE OBSERVED

(A) Rate prorate.

(B) Locals or joint fares contributed to or from points that are not zone

prorating gateways or interchange points shall be ignored except as specifically provided for in Section 3, Paragraph A.

The fact that more than selling fare may accrue to or from a zone prorating gateway or point of interchange in the division shall also be ignored. (C) Arbitrariness on account of bridge tolls, water transfers, also omnibus and baggage transfers when incurred, shall be allowed interested carriers. (See Section 6, Paragraph A.)

SECTION 2. RECOGNITION OF ZONE GATEWAYS

(A) On inter-zone traffic moving via two or more zone gateways within the same zone the first zone gateway en route shall be the initial prorating gateway.

(B) On inter-zone traffic moving through three zones without passing through initial authorized zone prorating gateway, the first prorate shall be made on zone prorating gateway through which traffic moves and redivision made as though traffic had originated at or was destined to such gateway.

(C) On inter-zone traffic moving through four zones without passing through Duluth, Minn.; St. Paul, Minn.; Sioux City, Ia.; Omaha, Neb.; Kansas City, Mo.; Ft. Worth, Texas, or Houston, Texas, the initial prorating gateway shall be in Chicago, Ill.; St. Louis, Mo.; Memphis, Tenn.; Vicksburg, Miss., or New Orleans, La., according to gateway used and redivision made as though traffic originated at or was destined to these gateways. In the event traffic does not move through any of the above named zone gateways the initial prorate shall be over the first zone gateway en route and redivision made as though traffic originated at or was destined to such gateway.

SECTION 3. ALLOWANCE OF AMOUNTS CONTRIBUTED TO THROUGH FARES

(A) Fare made by use of current selling or basing fares to or from the actual point of interchange via route of traffic, or to or from zone prorating gateway, such current selling or basing fares shall be allowed line or lines contributing and the remainder divided on basis applicable from or to such point or points proper.

(B) When current selling or basing fares are deducted it is understood that the remainder shall be prorated regardless of whether or not it is applicable as a selling or basing fare via route traveled.

SECTION 4. DEFINITION OF TERM "PRORATE VIA ROUTE TRAVELED"

The term "Prorate via Route Traveled" means a prorate using current one-way selling or basing fares for each line used via route of traffic.

SECTION 5. FARES TO BE USED AS PRORATING FACTORS

(A) ONE WAY—Where the through short line fare applies via route of ticket to the short line current selling or basing fares shall be used as prorating factors throughout. When through fare is constructed by use of fares higher than via direct route, prorating factors shall be the fares applicable via route of traffic.

(B) ROUND TRIP—Round trip fares made by use of double current one-way fares, the current one-way fares shall be used as prorating factors. Round trip fares that are made in part less than double locals to or from points of interchange shall be divided by using the same relative fares as prorating factors to or from prorating gateways as were used in construction of the through fare to be divided. Note: Intrastate fares should be used in the division of intrastate sales and interstate fares on interstate sales.

SECTION 6. ARBITRARIES

(A) Bridge tolls, water transfers and omnibus and baggage transfers heretofore considered in the division of interline fares and when incurred via route of ticket shall be allowed interested carriers and deducted as follows:

- 1. Intra-zone—From through fare.
2. Inter-zone—From joint proportions accruing to zone or zones in which arbitrary is incurred.

Amounts contributed on account of the same arbitraries in construction of the fares that are used as prorating factors shall be deducted from such prorating factors in establishing proportions accruing to interested carriers.

(B) Side trips and stage lines' fares—Extra charges collected for side trips and stage lines shall be allowed carriers performing the service or settling with the stage line.

SECTION 7. BASIS FOR DETERMINING PROPORTIONS ACCRUING TO BOAT LINES

The amounts accruing to boat lines will be determined on a prorate per rate basis using fares of like class over the port through which routed and the remainder redivided between rail lines, observing zone gateways.

SECTION 7-A. SPECIAL CAR AND TRAIN MOVEMENTS

Lump sum collections shall be divided using proportions accruing in division of one-way fares between points of movement.

SECTION 8. INTERLINE BAGGAGE CHARGES

Proportions for interested carriers shall be established by applying to the ticket proportions the per cent that the baggage rate per cwt bears to the one-way passenger fare, extending the amounts so obtained by the excess weight of the shipment.

SECTION 9. GOVERNMENT NET FARES

(A) Through fares made on point of interchange or made via route of traffic shall be divided as made.

(B) Through fares for traffic moving via other than net fare making route shall be divided on basis outlined herein, using commercial fares as factors.

(C) No line or lines to receive more than net local or joint net fare received for same haul on local or joint business.

(D) In case a line or lines are restricted to net local or joint fare as provided in preceding paragraph, the remainder to be apportioned on same basis as is used in the division of same class of commercial fares, eliminating factors of the line or lines receiving net locals or joint fares.

SECTION 10. ESTABLISHING PROPORTIONS FOR SYSTEM LINES

Where separate proportions are required for system lines same will be established under the rate prorate basis of division as herein provided. If

such carriers prefer, arrangement may be made to have the combined proportions for the system lines reported by the carrier and the matter of subdividing the revenue left to the carriers chiefly interested.

SECTION 11. DIVISION OF ROUND TRIP FARES

Round trip fares to be divided as constructed as between gateway and return trip, recognizing such amounts as are added to the through fares for side trips, diverse or circuitous routes, etc., each part to be redivided rate prorate, using same basis as applicable for one-way sales via the direction traveled, recognizing transfers as provided for in Section 6, Paragraph B. Report amounts added for side trips to line performing the service and for diverse or circuitous routes to the line or lines involved.

SECTION 12. INTRA-ZONE (TRAFFIC LOCAL TO ZONES)

(A) Fares made on all gateways to which such traffic is routed by use of current selling or basing fares will divide as made.

(B) Fares not made on any gateway through which traffic is routed by use of current selling or basing fares shall be prorated via route traveled.

(C) Fares made by use of current selling or basing fares to or from actual point of interchange, deduct same amount selling or basing fares and prorate remainder via route traveled.

(D) Where deductions of selling or basing fares are provided for it is understood that the remainder shall be prorated regardless of whether or not it is applicable as a selling or basing fare via route traveled.

(E) In the event originating point and destination are within the same zone but traffic for a portion of the journey passes through another zone prorate on same basis as though traffic moved entirely within one zone.

NOTE: Sections 13 to 27 inclusive are devoted to specific and detail illustrations as to how the rate prorate is to be applied in the observance of gateways, re-division within zones, etc., on traffic interchanged between zones.

SECTION 28. TRAFFIC WITH POINT OF ORIGIN AND DESTINATION IN THE UNITED STATES BUT PASSING THROUGH CANADA

Traffic with point of origin and destination within same United States zone but passing through Canada, prorate via route traveled. (See Section 12, Par. E.)

Traffic originating in one United States zone and destined to a point in another United States zone but passing through Canada:

- (a) If via any United States zone gateway, prorate recognizing same zone gateways and basis as outlined herein in Sections 1 to 22 inclusive, for traffic passing through such gateways, the total amount to and from the United States zone prorating gateways which involves a joint haul between United States and Canadian lines shall be prorated via route traveled, amounts accruing within zones to be redivided via route traveled.
(b) If no United States zone gateway is involved prorate via route traveled.

SECTION 29. TRAFFIC WITH POINT OF ORIGIN AND DESTINATION IN CANADA BUT PASSING THROUGH THE UNITED STATES

Traffic with point of origin and destination within Canada but passing through only one United States zone, prorate via route traveled.

If traffic passes through more than one United States zone, prorate recognizing same basis and United States zone gateways passed through as for traffic originating in Canada and destined to points within United States and via such gateways, the total amount to and from the first and last United States zone prorating gateway shall be prorated via route traveled.

If no United States zone gateway is involved prorate via route traveled, amounts accruing within zones to be redivided via route traveled.

BETWEEN UNITED STATES AND MEXICO

SECTION 30. VIA AUTHORIZED POINTS OF INTERCHANGE AND NOT PASSING THROUGH ANY UNITED STATES ZONE GATEWAY

Prorate over point of interchange with Mexican line and amounts accruing within United States zone or zones to be prorated via route traveled.

VIA AUTHORIZED POINTS OF INTERCHANGE AND PASSING THROUGH UNITED STATES ZONE GATEWAYS

Prorate recognizing same United States zone gateways and basis as outlined herein in Sections 1 to 22 inclusive for traffic passing through such gateways, the total amount thus established to or from the first or last United States prorating gateway, as the case may be, passed through, which involves a joint haul between United States and Mexican Lines, shall be prorated via route traveled.

SECTION 31

Bridge arbitraries which are to be considered, as outlined in preceding article as follows:

(To be inserted)

Map

The accompanying map outlines the territories and interstate zone gateways as prescribed herein.

Index

Appropriate index to be prepared.

IT IS INTERESTING to note that in many of the larger countries abroad the heavy trunk line electric traction projects in the United States have been very carefully studied and are very fruitfully referred to by foreign consulting engineers in their reports, and that in several instances standard American plans have been adopted practically complete by engineers advising foreign governments on steam railway electrification. It is believed that the experience of American manufacturers in developing suitable heavy railroad equipment in this country will be of considerable help in negotiating a foreign contract.—Commerce Department

## Unemployment Conference Makes Emergency Report

WASHINGTON, D. C.

THE UNEMPLOYMENT conference begun at Washington on September 26, on September 29 adopted a series of recommendations, formulated by the organization committee and based on the reports of sub-committees, constituting an emergency program for immediate adoption and prosecution. The conference then adjourned until October 10 to allow an opportunity for further work by its sub-committees; the views of the conference in amplification of the emergency recommendations and as to permanent measures which would contribute to the restoration of industry will be given following the receipt of further reports by the committees.

The only debate at the session of the full conference was on the question of the wording of a report by the committee on unemployment statistics, which had reported that the number of unemployed in the country is approximately 4,700,000. Secretary of Labor Davis objected to this because it ignored the estimate of 5,700,000 made by the Bureau of Labor Statistics, and Secretary Hoover suggested that to avoid controversy the report confine itself to stating that there were many millions of unemployed. After a discussion as to whether the wording should be "many millions," "several millions," or merely "millions," the report was adopted temporarily in a form stating that the conference finds that there are variously estimated from  $3\frac{1}{2}$  to  $5\frac{1}{2}$  millions unemployed and referred the report to the committee for further study.

The report as adopted stated that there has been an improvement, but pending general trade revival this crisis in unemployment cannot be met without definite and positive organization of the country. There was no reference in the report of emergency recommendations adopted to the railroad situation, although it had been given serious consideration both by the committee on emergency measures in transportation and the committee on emergency measures by manufacturers. It is understood that the former had prepared a report urging the importance of the passage by Congress of the bill to authorize the War Finance Corporation to purchase railroad securities held by or to be acquired by the Railroad Administration to provide cash for an early settlement with the railroads of their accounts for the period of federal control, but it was announced at the conference that the trans-

portation committee desired further time for the preparation of its report. Possibly the subject was omitted from the emergency program to avoid controversial subjects. The transportation committee, with several others, will report at the session of the conference on October 10.

The emergency recommendations adopted stated that the problem of meeting the emergency of unemployment is primarily a community program and recommendations were made for the organization of community emergency committees to carry through a community plan for meeting the unemployment emergency. Other recommendations include public construction by way of the expansion of municipal, state and federal building programs, and Congressional action to expedite roadbuilding work.

The report states that the greatest area for the immediate relief for unemployment is in the construction industry, which has been artificially restricted during and since the war. It was estimated that more than two million people might be employed if construction were resumed. It was recommended that the governors of the various states summon representative committees, with the co-operation of the mayors or otherwise, to determine facts, to organize community action and secure adjustments in cost, including removal of freight discriminations, and clean out campaigns against combinations, restrictions of effort, and unsound practices where they exist, that building may be fully resumed.

Another recommendation stated that the manufacturers can contribute to relieve the present acute unemployment situation by part time work, manufacturing for stock, taking advantage of the opportunity to do plant construction, repairs, etc. One of the important obstacles to a resumption of normal business activity will be removed, the report said, as prices reach replacement values, and all manufacturers and wholesalers who may not yet have adopted this policy were urged to do so. It was declared essential to the success of these measures that retail prices shall promptly and fairly reflect the price adjustment of the producer, manufacturer and the wholesaler.

An appeal to governors and mayors to co-operate in carrying out the recommendations made by the conference was sent out by President Harding on October 3. The President's statement said that in order that there may be unity of action by all of the forces which may be brought to bear, the unemployment conference is establishing an agency in Washington through which appropriate co-ordination can be promoted and through which reports on progress and suggestions may be given general circulation and co-operation.

• • • • •



Experimental Train on the Baltimore & Ohio in 1900 Designed to Reduce Atmospheric Resistance

# Manufacturers Discuss the Railroad Problem

## National Conference at Chicago Favors Repeal of Adamson Law and Abolition of Labor Board

THE RAILROAD PROBLEM and the close relation between freight rates and the high cost of labor, fuel and taxes comprised the most important subject of discussion at the National Conference of State Manufacturers' Associations which was held at the Congress Hotel, Chicago, on September 29-30. William Butterworth (Deere & Co., Moline, Ill.), president, presided at the sessions.

R. M. Barton, chairman of the Railroad Labor Board, Chicago, discussed the work of the Labor Board and the problems with which it is confronted. Clarence E. Bement, president of the Novo Engine Company, Lansing, Mich., presented a paper, "The Railroad Problem," which laid particular stress on the problems confronting the manufacturers of railway supplies because of the present freight rates. W. L. Allen, Laclede Steel Company, St. Louis, Mo., spoke on the relation of the public to the Railroad Labor Board. Samuel O. Dunn, editor of the *Railway Age*, addressed the Friday afternoon session on the problem, "How Can the Railroads Reduce Freight Rates?" Three papers, those of Samuel M. Felton, president, Chicago Great Western, Chicago; E. B. Leigh, president, Chicago Railway Equipment Company, Chicago, and A. C. Davis, Gurney Ball Bearing Company, Jamestown, N. Y., are summarized below. Mr. Davis' paper in particular was received with great enthusiasm.

The following resolution was offered by the Transportation Committee at the close of the session on Friday and adopted by the Conference:

"Resolved, That it is the sense of this meeting that the industrial, commercial and agricultural interests of this country require a decided reduction in freight rates as a necessary step towards the revival of business, and we also recognize that it is necessary in order to bring about these reductions in freight rates that the railroads be relieved of the necessity of paying a higher wage rate than prevails generally in the communities through which they pass and are paid by private corporations doing similar work. We also go on record as favoring the repeal of the Adamson law and the modification of the Transportation Act of 1920, to do away with the United States Railroad Labor Board and the power of the government to fix wages and labor conditions, such as the so-called national agreements, in connection with the railroads of the United States."

### The Principles Underlying the Present Railway Situation

By A. C. Davis

Gurney Ball Bearing Company, Jamestown, N. Y.

I am going to discuss the railway situation as an observer from two points of view, first, from experience as an engineer in railway service which began as apprentice in the machine shop; second, from the experience in following years as a manager of an independent industrial organization such as comprises the center of most of our smaller cities in this country.

The most serious menace to American business and industry is the concerted action of small but powerful groups of men who, without regard for natural economic laws, throw public welfare into the discard and proceed to exploit the people of this country for their own selfish group benefit.

It would be idle to say that this has occurred in the transportation industry alone or that this advantage has never

before been seized by any other than this labor group. The student of railway history cannot forget the financial group-exploitation of the investing public, nor the attempt of certain shippers to stifle competition by forcing secret rebates and preferential rates from the transportation companies, contrary to the best public interest. These were the problems of the last decade and were solved or placed under regulation by the Sherman Act and the Interstate Commerce Commission.

The greatest economic problem before this country today is the regulation of the activities of the labor union—how to control them effectively in the best interests of the nation.

There can be no question in the mind of any fair-minded student that the brotherhoods have been of great usefulness not only in assisting the families of their own members in cases of distress and the securing of new positions for their members if discharged for responsibility in accidents, but they also have in thousands of cases secured substantial justice for their men in the administration of discipline and have called attention of the railway officers to conditions jeopardizing the safety of travelers and welfare of the men.

#### Labor Leaders Become Active

The labor leaders, quick to perceive the trend of public opinion and the sentiment of legislators, have found eager listeners among the younger element of railway employees and from an organization originally intended for mutual benefit insurance and for fraternal assistance in sickness and accident, the railway brotherhoods became dominated by grievance committees. The right of appeal from decisions of the division officers was established and meetings arranged with the higher executives. In many cases the matters taken up in appeal were so insignificant as to be regarded as unimportant by the general officers and frequent compromises were made and the decisions and rulings of the local division officer were reversed. This rule of expediency was sometimes adopted only after threat of strike or strike votes, but regardless of the reason why, the fact remains that these compromises weakened the authority of the local foremen and officers over their men, who now looked to their union representative to get them what they wanted.

To understand certain fundamentals of the wage situation one must know that it has always been necessary in the development and growth of this country to pay higher wages in the west than those paid to eastern labor to induce it to move out to the "wild and woolly west." For this reason the Central West gave higher rates than the New England states, the Rocky mountains higher than the Mississippi valley, and the Pacific coast highest of all. These wage rates were offset by the increased cost of living or the hardships of the new localities.

Now comes forward the grievance committee of the eastern railway groups saying that their work in running of shifting engines, for example in Boston, is just as hard work and requires just as much skill as a similar crew in Seattle or San Francisco, and after much contention and appealing and taking of secret strike ballots they succeeded in laying the rates of pay in the east "equalized up" to the far western scale.

Within a short time, the western brotherhoods having data on the difference in economic conditions and rates paid to common labor, demanded an increase based upon the differences in the cost of living over the east. Then the east took up the "equalization game" again. This see-sawing of

"equalization upward" is characteristic of the period 1897 to 1914, and constitutes one of the reasons for the distortion of wage rates existing before the war, as between the railway brotherhood members and other railway employees. Wage advance upon wage advance was secured in this manner.

In the face of these rapidly increasing expenses and unbalanced conditions, the managers were confronted by the dilatory policy of the Interstate Commerce Commission, which with an ear to the ground for public opinion, heard rate case after rate case and granted appeals for delay and stays in execution of advanced rates, upon the representation of every group of interested shippers. Into this remarkable state of inaction and slow strangulation we allowed our main arteries of transportation to drift, even after two years of the World War were upon us.

Not content with the fact that they were already better paid than any class of railway workers and in some cases better than the staff officers themselves, the brotherhoods had effected a substantial alliance with the American Federation of Labor and seized upon the threatened war with Germany and the critical international situation of 1916 as their opportunity to force further wage advances. They forced the Adamson bill through an abject Congress at the behest of a political leader anxious to secure organized labor's pledge of support in the presidential campaign.

#### Labor in the Saddle

After the declaration of war in April, 1917, the railway presidents formed an operating board to co-ordinate the handling of traffic over the trunk lines, but the hampering effects of previous legislation both state and national prevented their being given a free hand, so that the administration deemed it necessary to take over the transportation systems as a war emergency measure in December, 1917. It becomes evident what was the real power behind this move when we see these very A. F. of L. leaders immediately placed in the seat of the administration's national adjustment boards clothed with the full authority of the government over all transportation systems of the country in regard to appeal from discipline, wage classifications, and rules of working. Their absurd decisions stand as a record of how not to do the job.

Having at last forced federal control and having their hands in the national treasury, the A. F. of L. and the brotherhoods proceeded to have Director-General McAdoo issue general order No. 27, establishing still further increases in wages retroactive to January 1, 1918. This was followed by Supplement No. 4, which added to it again with retroactive wage increases, making about 80 per cent increase over 1916, besides abolishing piecework in the shops and starting a "leveling downward" of shop craft efficiency. These were followed by the so-called "national agreements" in September, 1919, in which our representative, the director-general, had no hand at all, except the hand which held the pen to sign on the dotted line. They never were agreements at all—they were American Federation of Labor ultimatums—the price they demanded in times of our nation's emergency for continuing their plain duty or tie us up in a strike.

A further wage increase was made in 1919 which brought the total to 100 per cent increase over 1916. And as a parting gift from the new director-general in July, 1920, a still further increase retroactive to May 1 was allowed by the Railway Labor Board, just following the so-called "out-law strike," which finally brought the figures to 150 per cent increase over 1916.

It is a tempting bait to the workers—this getting a wage increase at the public expense by threat of strike. The labor leaders know that if they are to hold their jobs they must continue to get results. These jobs are getting into the desirable class of recent years. A recent press notice stated that one of the leaders was actually voted a salary of

\$100,000 per year. The total wage bill of the railways in 1916 was \$1,468,000,000—in 1920 it was \$3,698,000,000, an increase in four years of about \$2,230,000,000, and we must acknowledge that \$100,000 would be small commission to pay for such results!

#### A Real Agreement

Flatly refusing to consider the Plum Plan Government Ownership bill, Congress enacted the Esch-Cummins bill now known as the "Transportation Act," which returned the railways to their owners on March 1, 1920, under terms intended to insure substantial justice to shippers, owners and employees alike. One most important provision is the establishment of local adjustment boards and of a railway labor board of nine members, representing equally the public, the managers and the employees, clothed with authority to decide "any dispute in regard to grievances rules, or working conditions, which cannot be agreed upon in direct conference between any carrier and its employees, if the dispute is likely to interrupt commerce."

The rulings of this labor board are the important news of today. Yet it is questionable whether many of the gentlemen present can tell who are your three representatives on the board, much less have they heard with personal emphasis and explanation your views and experiences. How can you then expect them to represent you?

The program and ambitions of the A. F. of L. and the brotherhoods are pretty well understood by this time, but the failure of the Plumb Plan propaganda has not caused them to give up their plan to get hold of the transportation systems of this country in some effective way, if possible, through the rulings of the Labor Board. If they can perpetuate the union-made agreements and thus indirectly attain their end, then they believe they can force all railway employees to deal with the managers through the committees dominated by the union, and this being accomplished, why should the union leaders trouble about who owns the railways, so long as they can make the working rules and wage schedules to suit themselves. That is all they ever wanted government ownership for!

This is the crux of the question brought up by the Pennsylvania Railroad's working agreement negotiated with its own employees under Section 301 of the Transportation Act. The railway managers demand the right to deal directly with their own men regardless of membership or non-membership in any union. They insist that the men who do not desire to pay tribute in union dues be permitted to have a voice in the working agreements with their own employers as the Transportation Act contemplates they should do.

#### Some Things Are Worse Than a Strike

The railway managers have taken the firm stand that Congress did not delegate authority or jurisdiction to the Labor Board in cases of this kind in which a mutual satisfactory agreement has been reached between employer and employees and where no dispute has arisen and there is no threatened disruption of traffic.

Perhaps we are being treated to an "educational" strike ballot again. We expect it to be the usual 98 per cent announced through the press in favor of a strike. It is time for our public representatives to call this "strike bluff" and have a show-down. There are some things worse than a strike—one of them is a continuation of compromising with wrong when we know what principles are right—when we acquiesce for expediency's sake in continuing an unjust system.

We are not among those who would criticise the Labor Board or the provisions of the Transportation Act until it has been fairly tried out, but we cannot believe that Congress in the Transportation Act intended that the Labor Board should assume the functions of railway managers.

The transportation companies and their employees must be subject to federal supervision, but there should be closed coordination between the Labor Board and the Interstate Commerce Commission.

A plan of working rules and wage rates must necessarily vary to meet local conditions and must be readjusted from time to time to meet the changes of economic conditions. If the Labor Board will adopt the rule so fundamental in the government of our states—"the maximum of power to local authority, the minimum of federal supervision"—then we have some chance of making the Transportation Act a working success. In conclusion we can doubtless agree on some important principles: (1) That the ordinary economic laws which govern all business should apply without artificial restraint of law to the conduct of the railway's business. (2) That the operation of the railways should be in the hands of the trained body of responsible managers to whom shall be delegated sufficient authority to maintain discipline and efficiency of operation. (3) That direct working and wage agreements be established between the railway managers and their own employees, free from outside dictation. And finally, that we will never tolerate the seizure of our transportation systems for the benefit of any group of men, be they shippers, financiers or employees.

## Railway Operating Costs and Railway Rates

By Samuel M. Felton

President, the Chicago, Great Western

At almost every meeting of bodies of business men nowadays the railway situation is a subject of discussion. One feature of the railway situation which is discussed on almost every such occasion is that of freight rates. There is pretty general agreement that many of the present freight rates should be adjusted downward.

The Interstate Commerce Commission had the support and approval of most of the business interests of the country in fixing the present rates. Without most people realizing it, however, there had begun shortly before these rates were fixed a general decline of business and of prices, which continued with accelerating rapidity for some months. The result is that the rates do not bear anything like the same relationship to the prices of most commodities that they did when they were fixed.

The declines in prices which have occurred in most industries have been accompanied by reductions of most costs of production and operation. There is a natural sentiment that all the costs of production and operation of our various industries should be correspondingly reduced. Freight rates enter more or less into the costs of all industries. There have been numerous readjustments of freight rates, most of them downward, since the present rates were fixed, but there has been no general reduction. It is but natural that business men and farmers should believe that some substantial reductions in rates should under existing conditions be made, and should ask why they have not been made.

One of the subjects to be considered at your conference is that of railway operating costs and rates. The present rates were fixed solely because of enormous increases in railway operating costs. The only way conditions can be produced which will make it practicable to substantially reduce the present rates in fairness to all concerned is by reducing the present operating costs.

The managements of the railways have made enormous retrenchments within the last year. For example, in July, 1920, the operating expenses of the Class I roads were \$514,254,000, while in July, 1921, they were only \$362,800,000, a reduction of 29 per cent. A very large part of this reduction in expenses was made both possible and necessary by the heavy decline in the amount of traffic that had to be handled, and another large part consisted of deferred

maintenance. The total expenditures of the railways for the maintenance of their properties in July, 1920, were almost \$240,000,000, while in July, 1921, they were only \$160,000,000, a reduction of 33 per cent. This large reduction in maintenance was made at the cost of the physical properties. On August 15 the railways had 562,440 freight cars in bad order. This is but one of the effects of the drastic but necessary policy of retrenchment which has been followed.

In spite of all the retrenchments made the railways in the first 12 months the present rates were in effect earned a net operating income of only about \$500,000,000. Considering them as a whole, this was but little more than the amount required to pay the interest on their bonds. The rigorous retrenchment policy which has been followed to save the companies from general bankruptcy could not be long continued without an impairment of the condition of the physical properties which would render them unfit to give anything approaching satisfactory service to the public. The only real remedy for the present situation is a reduction of their unit costs which will enable the railways to make reductions in their operating expenses which will be real and permanent, and which will help them to rehabilitate their properties instead of causing them further to deteriorate.

The principal unit costs of the railways are of three kinds—cost of materials and supplies, cost of fuel, and cost of labor. There already have been considerable reductions in the costs of materials and supplies, but the costs of fuel and labor constitute about 80 per cent of operating expenses, and there have as yet been no substantial reductions of these items.

In the year 1916 the total fuel bill of the railways was \$250,000,000, and the average price they paid for coal was \$1.76 per ton. In 1920 their total fuel bill was \$673,000,000, and the average price they paid for coal was \$4.20 per ton. In the first six months of the present year the average cost of coal to the railways was \$4.43, and while it has been coming down, in June—the last month for which we have official statistics—it was still \$4.07 a ton. The railways normally consume about 150,000,000 tons of coal in a year. At the average price they were paying at the time of the last reports this much coal would cost them about \$350,000,000 more than at the average price of 1916.

The largest item of railway expenses is the cost of labor. The total wages paid in 1916 were \$1,470,000,000. In 1920, after the wage advance granted by the Labor Board, and while the railways were still handling a large traffic, the wages paid were running at the rate of \$3,900,000,000 a year, or about \$2,400,000,000 more than in 1916. This enormous increase in wages was due, first, to changes in rules and working conditions made under government control, which necessitated the employment of a largely increased number of men; and, secondly, to large advances in basic wages.

The railways made great efforts to secure abrogation of the national agreements through which the revolutionary changes in the rules and working conditions of employees were made. The Railroad Labor Board at one time ordered abrogation of the national agreements and reminded the making of new rules and working conditions to negotiation between the individual railways and their employees. These negotiations in most cases proved futile because the labor unions insisted on acceptance by the individual railways of exactly the same rules and working conditions which were incorporated in the national agreements. The Labor Board then rescinded its order for the abrogation of the national agreements, and they are still in effect except for certain changes in the rules regarding overtime. The labor unions thus far have not accepted even the overtime rules adopted by the Labor Board.

Because of the heavy decline in traffic and the drastic

retrenchment policy adopted by the railways there has been a large reduction in the number of employees. As long, however, as the present rules and working conditions remain in effect the reduction in employees must be regarded as, in the main, only temporary. Sooner or later the railways will again be called upon to handle a large traffic and to do a normal amount of maintenance work. Unless reasonable changes can be secured in the rules and working conditions they will again necessitate the employment of an excessive number of men, as was the case last year, and a corresponding increase in expenditures for labor.

The railways also asked the Railroad Labor Board to wipe out the advance in wages granted by it on July 20, 1920, which averaged 22 per cent. The board granted a reduction of wages which it estimated averaged only about 12½ per cent. About 90 per cent of railway employees are paid by the hour, and this award by the Labor Board leaves the average wage per hour of railway employees about 124 per cent higher than it was in 1916. If the railways were now employing as many men as last year, the wages being paid would be about \$2,000,000,000 a year more than in 1916.

Another large increase in outgo to which the railways have been subjected is in taxes. Their taxes in 1916 were \$157,000,000. They are now running at the rate of almost \$300,000,000 a year, or almost twice as much as five years ago.

The following is then, in brief, the situation with which the railways now find themselves confronted. Their average passenger rate is about 53 per cent more than in 1916, and their average freight rate about 74 per cent more. On the other hand, the prices of materials and supplies average about 65 per cent more than in 1916, the average hourly wage of labor is 124 per cent more, the average price of coal over 130 per cent more, and taxes almost 100 per cent more. Thus far this year, with a somewhat smaller traffic than in 1916, their total earnings have been about 60 per cent more than in the same months of 1916, and their operating expenses, in spite of all the retrenchments that have been made, have been about 110 per cent more. These figures afford a full explanation of the fact that in 1916 they earned a net operating income of 6 per cent, while thus far this year they have earned at the rate of only about 2¼ per cent.

It is undoubtedly true that the rates of our railways must be readjusted, and in many cases reduced, if they are to be made fair to the business interests of the country and such as to contribute to a revival of prosperity, but we must not forget that the high rates of the railways are not holding back a revival of business generally. There is no doubt, however, that the present operating costs of our railroads are so high that we cannot make a substantial reduction in rates until we get those costs down where they will not unduly reduce net earnings and imperil the railways, financially, and render them unable to provide the facilities and service that the welfare of the country requires.

How, then, are reasonable reductions in the operating costs to be secured? The railway managers are doing, and will do, all they can to increase the efficiency and economy of operation. The solution of the problem of reasonably and permanently reducing railway operating costs is, however, mainly in the hands of the public and of public authorities. The main cause of the present high prices of coal are the wages for miners fixed by a government commission, and the prices the railways must pay for coal will remain excessive until these wages have been reduced. The taxes the railways must pay are entirely in the hands of government authorities. The present rules and working conditions and wages of railway employees are entirely due to the action of government authorities. They were made entirely by the Railroad Administration and the Railroad Labor Board.

One-third of the members of the Labor Board are appointed to represent the public. They hold the balance of power on the board, and therefore whether reasonable rules and working conditions and reasonable wages shall be made, and the payroll correspondingly reduced, depends upon the attitude of these public members. To them, therefore, the public may, and in fairness, must look, for most of the reductions in railway expenses which are prerequisite to any reasonable reduction of rates.

The railways are in a situation unlike that of almost any other large industry in the country. The farmer and the manufacturer enjoy a degree of freedom in the conduct of their businesses that the railway manager does not possess. You manage your business without much government interference. On the other hand, while the railways are privately owned and managed, they are subjected to various kinds of government regulation, and their situation as a whole is determined by the way in which they are regulated. The railway managers will do their part in improving the railway situation with respect to operation and rates, but they cannot effect the improvements which ought to be made unless the public does its part by regulating the railways intelligently, wisely and fairly. Those attending this meeting are a part of the general public. Therefore my suggestion to you and all other business men is that while you do demand, and should demand, that the managers of the railways spare no effort to improve the present situation, you should on your own part spare no effort to bring about regulation of the railways which will make it possible for the managers to operate the properties with the efficiency and economy, and provide the service and make rates, that the business interests and, indeed, all the people of the country so greatly need.

## What Will Effectively Restore Business?

By E. B. Leigh

President Chicago Railway Equipment Company

In lieu of an address I ask leave to present a letter mailed to Herbert Hoover, Secretary of Commerce, in his capacity as chairman of the Unemployment Conference now in session at Washington:

Restoration of national prosperity can be started on its way by just one factor—purchasing power. All substitutes are bootstraps or phantoms.

Among the sources of purchasing power the largest and most definitely available is the power of the railroads to buy material and labor for maintenance, additions and betterments. In normal years the railways directly or indirectly have consumed from 40 to 50 per cent of the iron and steel production, admittedly the "barometer of business." It is the history of depressions that recovery is always accompanied by resumption of large railroad buying, and never comes without it—the only exception being the war period. The business so initiated flushes the channels of all industry and trade, including agriculture, and favorably affects every inhabitant of every community.

At present the railroads lack the money and the credit to finance proper maintenance, not to say additions and improvements. Their net income is neither sufficient nor certain. It is insufficient because railway labor is too high. It is uncertain because special groups of shippers are exerting pressure upon the roads and upon the Interstate Commerce Commission for privileged concessions which, if made general without wage reduction, would dissipate all hope of net income either adequate or stable.

In my judgment the Unemployment Conference could devise no remedy for current depression more effective than to persuade every shipper who favors lower freight rates to:

1. Participate in an organized effort to convince the Rail-

road Labor Board that railway labor cost must be immediately and substantially reduced.

2. Refrain from enlistment of executive and legislative officers of the government for exertion of pressure upon the railroads or upon the commission in connection with rates; and to employ exclusively in the discussion of proposed rate revisions negotiation with the carriers or, failing agreement with them, orderly procedure by testimony and argument before the Interstate Commerce Commission.

Purposely the so-called railroad refunding bill is not bracketed with the factors next above specified. The reason for so treating it is that its great importance would be in direct relief to the railway supply industry, and in what I shall say I am discussing not the special needs of that industry but the needs of the whole nation. Somewhere near \$500,000,000 may be made available for settlement of balances due the railroads by the government on current account if the sum due the government by the railroads on capital account can be funded. Somewhere between \$200,000,000 and \$300,000,000 may be due supply concerns from the railroads—remittances awaiting settlement of government balances. Therefore probably not much in excess of \$300,000,000 would remain for new orders, which at best would be temporary and not large compared with amount permanently involved in the rate and wage problem. Not even the whole of this sum will be paid over immediately. Settlements are the result of negotiation, and take time. The director general has predicted that the last will be completed by the end of 1922.

In discussing this topic I have exchanged ideas with many persons, and among those who have given it sustained thought there seem to be two classes. The first class are persuaded that in the upward climb from a depression the first stage is resumption of merchandise movement in such

necessary for all concerned to harmonize exactly their views as to the stage of recovery, if any, which business has reached. We ought to be unanimous in this—that if merchandise buying is now on the upward trend, large railroad buying will help mightily to give it permanence. The novel aspect in the present situation is this—that whereas during about 20 years past recoveries have found the railways able to come into the market with some vigor, though steadily less in each recurring instance, the present occasion finds them almost utterly without the means to resume purchasing. Never in the history of our railways has their physical condition been at a lower ebb, or their need of rehabilitation greater. It is respectfully suggested that the Unemployment Conference picture railroad buying and the requisites for its resumption to the public in such colors as will evoke an irresistible movement for railroad wage reduction and, that accomplished, and railway operating cost brought down, for reconsideration of railway rates by the Interstate Commerce Commission in orderly procedure as befits a quasi-judicial arm of the government charged by Congress with the responsibility of sanctioning tariffs under which the traffic can move and the railroads can grow.

### Freight Car Loading

WASHINGTON, D. C.

**F**REIGHT CAR LOADING showed another considerable increase during the week ended on September 24. According to the weekly report of the Car Service Division of the American Railway Association, the number of cars loaded with revenue freight was 873,305, an increase of 19,543 over the previous week, and the largest loading for any week since November 20, 1920. This was, however,

#### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, SEPTEMBER 24, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	This year	Corresponding		Received from connections		
											year	1920	1919	This year	1920
Eastern	1921	8,549	3,262	44,734	1,353	4,645	2,256	63,210	84,840	212,858	.....	.....	218,693	.....	
	1920	6,703	2,747	58,915	3,801	7,935	11,929	49,343	108,032	.....	249,605	241,741	.....	269,573	259,841
	1919	3,443	3,262	47,116	2,248	2,760	6,242	46,810	57,908	169,850	.....	.....	.....	112,194	.....
Allegheny	1920	2,744	3,246	63,750	7,489	3,665	15,992	40,745	75,520	.....	213,151	214,874	.....	150,257	143,348
	1921	287	447	20,687	170	1,333	171	5,647	4,080	32,822	.....	.....	.....	13,938	.....
	1920	163	417	25,313	1,010	1,931	245	5,467	4,627	.....	39,073	39,147	.....	18,944	12,601
	1921	3,615	2,225	22,417	321	15,100	352	39,370	39,634	123,443	.....	.....	.....	69,023	.....
Southern	1920	2,929	3,329	25,246	1,282	19,742	2,966	34,266	41,340	.....	130,470	131,567	.....	75,560	74,331
	1921	14,839	8,583	10,448	552	11,603	19,764	28,678	36,094	130,561	.....	.....	.....	50,332	.....
	1920	15,153	8,444	11,776	1,556	14,849	47,600	28,868	39,827	.....	168,073	165,808	.....	61,960	65,415
	1921	16,069	12,141	11,381	182	6,890	713	32,504	47,090	136,570	.....	.....	.....	56,410	.....
Central Western	1920	12,323	13,327	24,386	372	7,377	8,566	33,035	46,067	.....	140,451	137,077	.....	66,029	76,491
	1921	5,046	3,013	4,691	120	6,662	835	15,893	31,041	67,301	.....	.....	.....	49,036	.....
	1920	4,384	2,914	6,047	138	8,126	761	17,682	27,234	.....	67,286	65,625	.....	51,618	52,637
Total all roads	1921	51,848	32,943	171,474	4,946	48,702	30,333	232,312	300,757	873,205	.....	.....	.....	569,626	.....
	1920	43,749	33,474	215,433	15,648	63,535	33,659	300,606	342,645	.....	1,008,109	.....	.....	693,881	.....
	1919	43,140	35,555	218,746	9,038	65,360	69,853	151,264	400,355	.....	.....	995,901	.....	.....	684,366
Increase compared	1920	7,099	.....	.....	.....	.....	.....	22,706	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1920	.....	491	43,959	10,702	14,823	52,726	.....	41,883	134,804	.....	.....	.....	124,255	.....
Increase compared	1919	6,708	.....	.....	.....	.....	.....	81,048	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1919	.....	2,622	47,772	4,682	16,658	39,520	.....	99,598	122,576	.....	.....	.....	114,740	.....

commodities as textiles, boots and shoes, and other necessities of the individual consumer, and that the consequent improvement in railroad earnings is reflected in railroad purchases, which broaden and accelerate commercial and industrial resurrection. The other class, to which I belong, hold that as a matter of history it is railroad buying which itself initiates the whole movement, and that any recovery in general business before the roads come into the market is negligible. There is no present occasion for arguing which of the two classes is correct on the point where they differ, because the important point is that on which they agree; namely, that however it starts, a resumption of general business is strengthened and hastened by railroad buying and cannot be permanent without it.

Applying this doctrine to the present juncture, it is un-

134,804 cars below the total for the corresponding week of 1920 when the loading was 1,008,109. For the corresponding week of 1919 it was 995,901.

Increases as compared with the previous week were reported in the loading of all classes of commodities except grain and grain products and the total for those showed increases as compared with the corresponding weeks of 1920 and 1919. The largest gain over the previous week was in merchandise and miscellaneous freight, which totaled 583,069 cars, or 10,635 more than for the previous week. Coal loading amounted to 171,474 cars, an increase of over 5,000 in a week. Livestock loading was 32,933 cars, a gain of 2,534, and forest products totaled 48,702 cars, or 2,230 cars more than the week before. The loading of grain and grain products amounted to 51,848, or 3,483 cars less than the week

before. A decline is to be expected, in view of the fact that this year's crop has largely been moved. The loading of ore was 30,333 cars, an increase of 2,118. Increases as compared with the week before were reported in all districts, but all were below the figures for the corresponding week last year except the Southwestern.

A further reduction in the number of surplus freight cars is also shown by the report for the period ending September 23. The average was 201,153, of which 55,849 were box cars and 110,376 were coal cars. This was a reduction of 6,253 in the number of surplus box cars and of 8,138 in the number of surplus coal cars.

Heavier loading of refrigerator cars in order to prevent a car shortage and enable the railroads to move during the next three months the big increase in perishable freight was urged in a statement issued by the Car Service Division of the American Railway Association.

For the 12 months ended on June 30, 1921, the railroads moved 848,425 cars of citrus and other fresh fruits and vegetables, packing house products, eggs, butter and cheese. Each car carried an average load of 14.4 tons while the average maximum load was 15.7 tons per car. The average capacity of refrigerator cars is 32.1 tons. Had the cars been loaded to the average maximum amount, 15.7 tons, 74,300 refrigerator cars would have been made available for the transportation of other freight during the year or 336 cars daily. In view of the increased amount of perishable freight now anticipated to be shipped this fall it is estimated that approximately 44,450 refrigerator cars can be made available for other uses if shippers will load their cars to the average maximum amount. This means that if this heavier loading is obtained to the extent specified—an average of 15.7 tons per car—it will be possible for the railroads to provide transportation for 700,000 tons of perishable freight during the next three months that probably cannot otherwise be moved by the railways.

## Annual Convention of the National Safety Council

By William S. Wollner

THE TENTH ANNUAL CONVENTION of the National Safety Council, held at Boston, on September 27, 28 and 29, was reported in part in last week's issue. The second day of the convention was devoted to discussion of the causes of train accidents in 1920, based on the totals shown in the Interstate Commerce Commission's accident bulletin No. 74; and the nomination and election of officers.

A paper on "Negligence of Employees" was read by F. W. Mitchell (N. Y., N. H. & H.), and was spiritedly discussed. There was an increase of 10,717 train accidents during 1920 as compared with 1919, with an increase of over \$11,000,000 in expense of operation due to this cause. The number of casualties to persons did not, however, increase proportionately with the number of accidents. "Failure to control or secure hand brakes" was the most prolific single cause of train accidents, having totaled 1,122, or 15.7 per cent. Mr. Mitchell said that in his opinion "Safety First" must be more than a slogan if the number of train accidents is to be reduced. Safety must be a controlling instinct, that will mingle in proper proportion the impulses from which action springs.

S. G. Watkins (B. & M.), spoke on "Train Accidents Due to Defects or Failure of Equipment" and T. Q. McCampbell (C. C. & St. L.), spoke on those resulting from improper maintenance of way and structures.

As a result of the annual election, Isaiah Hale of the Santa Fe was elected chairman and Arthur Ridgeway (D. & R. G.

W.), vice-chairman; and A. W. Rohweder (D. M. & N.), was re-elected secretary; all without opposition.

A joint meeting of the Steam and the Electric Railway sections was held on the morning of the third day, the topic of discussion being "Highway Grade Crossing Accidents," John T. Broderick (B. & O.) presiding. The topic was discussed from many angles and members brought out much data to be used in the national campaign to be conducted by the Safety Section of the A. R. A.

I. C. C. Bulletin No. 74 was further discussed at this session and during the afternoon, train service and non-train accidents being given particular attention.

At the afternoon session, D. L. Cease, editor of the Railway Trainman, spoke on "What Is On My Mind," and was responded to by L. F. Shedd of the Rock Island. Mr. Cease had circularized men on various important roads and had found that many were suspicious of Safety-First campaigns. Most of them believed that the roads were only willing to carry out this principle when the cost was not great. A majority of those who responded to Mr. Cease's circular agreed that the men were in part to blame for the apparent failure of the safety department to properly function, as they had failed to show the proper interest in its activities.

A unanimity in agreeing that "safety work has suffered since the end of federal control" gave Mr. Cease the impression that the writers of the letters were trying to draw a contrast between organized safety effort under the government and what has been done since. Mr. Cease's paper gave interesting data from his experience in dealing with life and accident insurance of trainmen. Railroad employees have for years been incredulous when told that the railroad companies had no selfish or wrong motives in establishing safety-first committees. He thinks that the men found justification in their critical attitude, in the publications of the railroads telling the employees and the public of the benevolent motives behind their safety-first operations, while at the same time yardmasters and foremen were allowed to hurry the men in their work so that they did not feel warranted in taking precautions when, to do so, would use up time. Moreover, the ambitious and energetic trainman or yardman, however desirous he may be of following safety rules, finds his ambition to make a good record the stronger motive; in other words, he takes risks because he thinks it necessary to do so in order to maintain his standing with his fellow employees. Many men still stick to the old opinion that the only way to "railroad" is to continue the old habit of taking risks when to do so will save them a little time. It is the task of the safety department to root out this manner of feeling.

### Need of Standardizing Highway Crossing Signs

This was the main topic of an interesting paper scheduled for one of the meetings of the Electric Railway Section. It was by R. S. Messenger, claim agent of the Rochester & Syracuse (electric) Railroad. He called attention to the fact that the usual warning sign (a disk 24 in. in diameter), set 300 ft. or more back from the railroad, is too small; a larger one would be more effective. Other signs, confusing to motorists, ought to be forbidden. Mr. Messenger would have a sign at least 4 ft. square and the color would be orange, which has been found to be more conspicuous than red or white. He would prohibit all other signs on the highway within 1,500 ft. of grade crossings. On his road there has been considerable difficulty in improving the view at crossings (both from the cars and from the highway) because many landowners object to having trees and shrubbery trimmed. Their primary motive is to have a hedge to cut off the view of the railroad from their dwellings. Drivers of automobiles should always go over railroad crossings in intermediate gear so as to guard against failure of their engines while on the crossing.

## Charles C. McChord

COMMISSIONER CHARLES CALDWELL McCHORD was unanimously elected chairman of the Interstate Commerce Commission on October 3, succeeding Edgar E. Clark, who recently resigned as a member of the commission to engage in private practice. He has been serving as acting chairman. The commission's announcement said the election was pursuant to the policy adopted January 13, 1911, for rotating the office of chairman annually in the order of seniority of the members of the commission. His term was made to run until December 31, 1922, to make the term of chairman coterminous with the calendar year. For many years it was the practice of the commission to elect its chairman in March each year. Commissioner McChord was appointed a member of the commission by President Taft in December, 1910, at the same time that B. H. Meyer was appointed. He served as chairman for the year beginning in March, 1915, whereas Commissioner Meyer was chairman for the year 1916. Chairman Clark was elected in March, 1920, for the year ending June 30, 1921, but when that term expired he was re-elected, upon the motion of Commissioner McChord.

The plan of electing the chairman each year in rotation was adopted by the commission after the resignation of Martin A. Knapp, who had served as chairman for several years, had raised a question as to whether any of the commissioners should be made permanent chairman. At that time President Taft suggested the selection of Mr. Clark, but Commissioner Clements was elected as the senior member and the rotation rule has since been followed. Last year Commissioners Woolley and Eastman were elected successively and declined to accept the office. Formerly the chairmanship of the commission involved comparatively little responsibility not shared by other members of the commission. The chairman presided over the commission's conferences and at hearings and acted as spokesman for the commission in a public way. As the commission's organization has increased and as its administrative functions have been developed the office of chairman has become of greater importance and has assumed more of an executive character, although in arriving at decisions the chairman's vote counts for no more than that of any commissioner.

Under the plan of reorganization of the commission authorized by the law of April 9, 1917, under which many of its functions are assigned to divisions, Commissioner McChord has been a member of Division 1, which is charged with the conduct of the bureau of valuation, and generally with the conduct and determination of matters arising under the valuation act, also matters arising under the safety appliance acts, the accident report act, the hours of service act, the ashpan act, the block-signal resolution and the section of the act which has to do with the requirement for the installation

of automatic train stops and train control or other safety devices.

Mr. McChord had had experience in railroad regulation as a member of the Kentucky Railroad Commission for several years before becoming a member of the Interstate Commerce Commission and he also interested himself in railroad regulation matters while a member of the Kentucky legislature, but, although a lawyer, while a member of the Interstate Commerce Commission his particular work has to a large extent been identified with matters pertaining to railroad operation. He had charge of the long investigation of car service matters made by the commission in 1916. In his long experience on the commission, however, he has naturally had an active part in its work of all kinds and has written many of its important decisions. He has also been a frequent dissenter and often while agreeing with a majority decision in the main, writes a separate opinion to express his individual views wherein they differ from those of the majority. He was one of the two

commissioners who were in the minority in the 1914 eastern rate advance case as originally decided by the commission, when he and Commissioner Daniels expressed the opinion that the railroads should have been granted the increase in rates asked for. The majority of the commission finally came around to this view upon a rehearing of the case. When the commission decided the general rate case in 1920, Ex Parte 74, Commissioner McChord wrote a separate opinion as a reply to the objections made in separate opinions by Commissioners Woolley and Eastman. He took the position that the commission had attempted to deal with this case under the law in a broad, comprehensive, common-sense way, realizing that the primary responsibility for the future of the railroads rested upon its shoulders. Had the decision been left to his individual judgment, he said, he would have arrived at the same general conclusion but

perhaps by a somewhat different route, because there was no difference of opinion as to the necessity for increased revenues for the carriers. He also wrote a strong opinion in the Illinois intrastate passenger fare case last November, expressing the attitude of the commission, that the commission's power to remedy state discrimination against interstate commerce had been broadened by the transportation act. He also wrote the commission's opinion in the long contested railway mail pay case, issued in 1920, in which the commission ordered large increases in the rates for the transportation of the mails and provided for retroactive payments to the carriers by the Post Office Department for the period during which the case had been pending.

Mr. McChord was born December 3, 1859, at Springfield, Ky. He was educated at Center College at Danville, Ky. After leaving college he became a member of the bar of Kentucky and engaged in the general practice of law. He was prosecuting attorney at Springfield from 1886 to 1892. He was appointed a member of the Kentucky Railroad Commis-



© HARRIS & EWING

Hon. C. C. McChord

sion in May, 1892, and elected chairman. He resigned in 1895 and was elected a member of the Kentucky state senate, serving four years. During this time he was the author of the bill which became popularly known as the McChord railroad law, empowering the railroad commission to prescribe freight and passenger rates for railroads in Kentucky. He was again elected a member of the railroad commission in 1899 and was again made chairman. He was re-elected commissioner and chairman in 1903 and in December, 1910, was appointed member of the Interstate Commerce Commission. He was re-appointed by President Wilson for the term expiring at the end of 1922.

## The Train Service Board of Adjustment

**T**HE TRAIN SERVICE Board of Adjustment, the board which will adjudicate points of difference between train and engine service employees and the managements of the New York Central and the Baltimore & Ohio (*Railway Age*, September 24, page 592) will be composed of eight members, four to be selected by the railroads and one by the chief executive officer of each of the four unions signatory to the agreement. These organizations are the Order of Railway Conductors, the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen and the Brotherhood of Railroad Trainmen.

The agreement provides that when disputes arise from personal grievances or from the interpretation of schedules, the settlement of which by the usual method of direct conference has failed, they shall be passed upon by the Train Service Board. The decisions of this board will be final and binding on both the management of the roads and the train service employees. It will not come within the province of the board, however, to hear any disputes arising from proposed changes in rules, working conditions or rates of pay, since such matters are to be left to the Railroad Labor Board. Disputes arising prior to the termination of federal control likewise may not be considered by the board.

As soon as all the members of the board have been appointed, they will meet in New York and select from their number a chairman and a vice-chairman, who will not thereby lose their vote on questions before the board. Thereafter the board will meet regularly at stated times each month and will continue in session until all matters before it are considered. The meeting place will be New York unless otherwise agreed upon, but the board will have authority to empower two or more of its members to conduct hearings and pass upon disputes at any place the board may designate. Such a sub-division, however, may not make a final decision—the board as a whole alone has that right.

When a disagreement arises between a train or engine service employee and the management, it will be handled in the usual manner as at present, by the general committee of employees and the various officers of the roads. If, however, after the matter has been taken to the chief operating officer of the road (or some one designated by him) and no agreement has been reached, then the employees may refer the matter to the chief executive of their organization and if he approves the contention of the committee, he and the chief operating officer of the road will refer the matter with all supporting papers to the Train Service Board. If either the chief executive of the employees' organization or the chief operating officer of the railroad declines to join with the other in submitting a dispute, then either may refer the matter to the board under such regulations as it may make to govern such a contingency.

One hundred or more unorganized employees (who are engineers, conductors, firemen or trainmen) who are directly interested in a dispute may place it before the board by a

petition. No interpretation of an existing rule, agreement or practice which has been agreed to or accepted by the management of the railroads and the authorized employees' committees can be considered by the board as a dispute.

The board is authorized to act only in matters duly submitted to it as described above. In hearings before the board the railroads and employees will designate their own spokesmen.

The railroads and the employees will pay the compensation of their representatives on the board and the general expenses of the board will be borne one-half by the carriers and one-half by the employees' organizations. The board may require evidence in addition to that submitted when a dispute is referred to it. A majority vote of the full membership is required for a decision, which will be binding. If a majority cannot be obtained, the board will, on the request of either party to the dispute, submit the matter to the Railroad Labor Board.

Complete copies of all matters submitted and decisions made will be kept by the board and copies of decisions will be furnished to the representative of the railroads involved in the dispute, to the representative of each class of employees covered in the agreement and to the Bureau of Information of Eastern Railways.

The board will have no jurisdiction over discipline administered in the case of personal grievances. Its province in such cases will be solely the determination of innocence or guilt.

The agreement affecting the organization of the board will be effective for one year from the date of the organization of the board and thereafter for periods of one year. Any party may withdraw at the end of any year upon a 90-day notice.

AN AMENDMENT to the pending tax revision bill in the Senate has been offered by Senator McNary to repeal on January 1 all taxes on the transportation of freight, passengers and express.



From the Birmingham Age-Herald

If There Is a Walkout It Will Be an Accident

# Public Relations Work on Illinois Central

## Unusual Campaign Carried on by President Markham to Enlighten Public Regarding Railway Matters and Some of Its Results

ONE OF THE TRADITIONS which has come down from the early history of the railway service is the idea that railway executives should hold themselves aloof from the public, responding, to be sure, to demands from the public for information about the transportation industry, but making no initial effort to give such information or to build up a public understanding of railway affairs. Railway executives should not have all the blame, if the policy is to be criticised. When the railroads were growing out of their swaddling clothes a worshipful public invested with an air of mystery the men whose genius conceived and built and operated them, and the barrier thus erected from the outside came to represent a more or less well defined policy. The executive who violated it was not approved by his fellows for so doing. But, regardless of where the idea originated, it is true that only within recent years has there been any real attempt to find a policy to substitute for it.

Railway transportation has undergone a radical transformation in the course of the last generation. Private operation of the railroads has given way to a system whereby the real rulers of the agencies of transportation are not the titular heads of the industry, but the mass of the people, whose wishes are reflected in the proceedings of legislatures and governmental regulating bodies. New problems have made new policies necessary.

A method of dealing with the public on the Illinois Central system during the last year may be expected to play a part in the development of transportation policies in the future. The Illinois Central's attitude is summed up in a statement recently made by President Charles H. Markham:

"We are the trustees of a vast investment. We realize that railway property will be dealt with accordingly as public sentiment develops and crystallizes. We feel, therefore, that we must present our case before the court of public opinion, and we are glad to do that, having an abiding faith in the fairness and justice of the people when they have the facts before them."

For more than a year the Illinois Central has been endeavoring to strengthen the spirit of confidence and support on the part of its patrons for the management by laying its problems before the public and inviting constructive criticism and suggestions. Public statements discussing current phases of railway problems in non-technical language have been published in a uniform style as advertisements in about 500 newspapers in the cities and towns on the Illinois Central lines, and this has formed the basis of the public relations effort.

The program began September 1, 1920. A few days prior to that the management made public a statement to the patrons of the system acknowledging that the road had not been able to serve them as satisfactorily as was desired, but asking that they realize the problems which it faced and be patient until such time as equipment and facilities could be built up to the point where adequate service would be possible. Patrons were urged to take up directly with the management any constructive criticism of the service which they had in mind and to make suggestions for the improvement of service. They were also asked to let the management know of any phase of service which was being rendered to their complete satisfaction.

It was something new for a railway president to make a public statement to the effect that the system of which he was the head had failed to give adequate service. Patrons

liked the frank tone and they did not hesitate to express their approval. The double invitation which was given in the letter brought forth thousands of replies, some critical, but the majority commendatory.

### Advertisements Bring Public Response

The public statements forming the basis of the public relations work have appeared in the newspapers the first of each month. They have departed from the usual style of advertising designed to sell goods or service, and have been more in the nature of editorials discussing railway affairs. Each statement has been published over President Markham's name.

"It didn't take us long to discover that these statements were being watched for eagerly, not only by the people who would ordinarily read what a railway executive says, but by every class of men and women," Mr. Markham said. "Each statement was concluded with an invitation to patrons to submit constructive criticism and suggestions, and this invitation has led to a correspondence which has brought the personality of the Illinois Central into the homes and business places of many thousands of people who depend upon the railway system for freight and passenger service."

Every suggestion brought forth by the public relations work addressed to Mr. Markham has been given careful attention by him and promptly replied to, and he believes the value of the personal touch of this correspondence cannot be over-estimated.

That a busy railway president feels the importance of considering the wishes of the least of his patrons cannot fail to make an impression. The correspondence also opened up a channel through which he might obtain, in a way otherwise impossible, a bird's-eye view of the reaction of patrons to the service rendered by employees.

"This also deeply impressed our officers and employees," Mr. Markham continued. "It meant that complaints about unsatisfactory service could no longer be prevented from reaching the highest authority on the railroad. It meant that I as president would be brought closer in touch with the patrons than ever before. The officers and employees immediately began vying with each other to render a service of satisfaction—a service that would not result in complaints reaching me. Perhaps no innovation ever accomplished more for a railway system in stimulating the personnel and also in pleasing patrons than the invitation which we repeat every month for constructive criticism and suggestions in regard to the conduct of the Illinois Central system."

The placing of advertising in the newspapers also has served to emphasize, especially to the people of the smaller communities, that the Illinois Central system is a vital part of their community.

The plan which the Illinois Central system has followed in dealing with the newspapers is one to which Mr. Markham attaches great importance. The advertising has been placed directly from the offices of the Illinois Central at Chicago, and the correspondence with the newspapers which this has entailed has served to bring the newspaper men into touch with the Illinois Central's executive offices.

Editorials and articles appearing in the newspapers bearing upon railway questions have been carefully watched. In the few instances where articles or editorials have been published giving misinformation or false conclusions, Mr. Markham has written the editors, correcting their misinformation

or giving such comment upon the problems which they discussed as might help them to form correct judgment.

The newspapers received the innovation warmly at its inception, but as the work has progressed and as they have had opportunities to observe that the road is not trying to "put something over," but on the other hand is devoting its space in the newspapers to telling simple stories based upon truth in regard to the railroads, the newspapers have become even more friendly to the plan.

The public relations movement has by no means been confined to Mr. Markham. When the program was begun, local or division officers were given an outline of the plan to be followed and were instructed to call in person or have members of their staff call upon the newspaper men in their territory and keep in touch with them.

"This served to form still another valuable point of contact between the railway organization and its patrons," Mr. Markham said. "The officers and principal employees of the system have been advised from time to time as to the progress of the public relations work and have displayed great interest in keeping up their part of it."

#### Material for Officers on "What to Talk About"

One phase in particular of the plan for making the division officers and principal employees a part of the public relations campaign should be of special interest. The traditional reticence which has come down from the early days of railroading left its mark upon the under-officials, as well as the heads of the railway systems. Well-informed officers and employees have been reluctant to discuss railway problems, and it has developed that some of the comment upon railway affairs which has reached the public as coming from railway men has come from those who have not been well informed upon the subjects they chose to discuss. The Illinois Central has attempted to correct this by urging officials of all grades and employees to talk about railway questions with the public; not only that, but it has furnished them with the material upon which to base those discussions. A monthly bulletin entitled "Things to Talk About" is published under the direction of Mr. Markham and sent to all officers and the principal employees of the system. They are instructed to take this material and use it as the basis of talks at public gatherings, newspaper interviews and the like.

In order to give the officers and employees a working knowledge of the Illinois Central system's history, a pamphlet entitled "What Every Employee Ought to Know About the Illinois Central System" was prepared by the management and placed in their hands.

Another feature of the public relations program has been the cultivation of the farmers. One of the counties in each agricultural state served by the Illinois Central was selected, and a representative of President Markham was sent to interview a number of the leading farmers of the county about the railway problems with which the farmers have to deal.

The plan of the Illinois Central in seeking constructive criticism and suggestions was explained to the farmers and the comments which they made upon the service they had received were reported in the Illinois Central Magazine for the information of the officers and employees of the system. Such feasible suggestions as were brought out were put into practice. News stories about the interviews were released in advance to the newspapers in the Illinois Central's territory. These were printed and freely commented upon.

#### Conferences Between Farmers and Railways

One of the tangible results of the interviews with farmers was the formation of a railway committee by the Champaign County (Ill.) Farm Bureau. The railway committee holds meetings with railway men from time to time, the first meet-

ing being called shortly after the interviewer's visit, when an Illinois Central superintendent was invited to meet with the farmers.

The idea of giving patrons of the railway system a voice in the direction of the affairs of the system has made a particular appeal to the men who publish the newspapers in the cities and towns on the lines of the Illinois Central system. Scores of editorials have been written commending the management for its policy, and the newspaper editors have commented freely from time to time upon the problems which have been discussed in the public statements. It has not been unusual for literally hundreds of favorable newspaper clippings to be received by the Illinois Central during the course of a month.

The way in which the newspaper men look upon the Illinois Central's plan is expressed in a letter which an Illinois Central officer received recently from a Mississippi newspaper man. He said:

"We feel that the class of advertising which you have been using during the past year has been educational and has done a great deal toward a clearer understanding of the railroad company's point of view by the general public. It has certainly clarified some subjects in reference to the railroad's relation to the public for this writer."

An Illinois newspaper man had the following to say of the Illinois Central's policy when he was discussing another subject:

"For many months the Illinois Central has been conducting a campaign for 'service.' The idea that 'service' is the first essential in the conduct of its business is being drilled into the mind of every employee of that railroad. Recently the writer had occasion to ride over the Illinois Central and a number of other railroads, and the work that has been accomplished by this campaign of 'service' was clearly noticeable."

#### Comments of the Newspapers

A Mississippi newspaper man told editorially of President Markham's action in correcting a misstatement made by the correspondent of another paper, and said in his editorial:

"The incident is cited as an illustration of President Markham's free, open and straightforward method of dealing with the patrons of the Illinois Central . . . .

"The head of the Illinois Central believes in publicity. He has no secrets from the general public. He is ready and willing at all times to show his hand, to give patient and courteous hearing to any complaint or criticism that may be offered, and do everything that is reasonable and within his power to satisfy the critic or complainant.

"Mr. Markham goes even further than this. For the past several months he has had a well-trained newspaper interviewer touring the various lines of the system for the purpose of actually soliciting complaints and grievances from patrons. This interviewer also solicits suggestions as to ways and means of bettering the service, and President Markham frankly acknowledges that some first-class ideas have been obtained through this method, and will be put into practical operation."

The following view was said in an editorial which appeared in a Chicago newspaper when the Illinois Central announced that the public relations work would be continued another year:

"Transportation is as vital to trade and prosperity as sound money and honesty. It is to business what blood is to human life and health. The Illinois Central system's policy has quieted many animosities as a constructive and harmonizing influence in business education. People are realizing that railroads are prodigious assets which add enormously to their prosperity and comfort, and not a menace or a liability or a civic burden."

A New Orleans newspaper made the following comment

the same day from the other end of the Illinois Central system:

"Co-operation brought about by mutual understanding works steadily and surely to mutual advantage. In the matter of preventable loss and damage, millions may be saved by that sort of teamwork, which is no less profitable, directly or indirectly, in other lines. Mr. Markham's experiment interested all students of railway problems. Its success under twelve months' test constitutes fresh evidence that the railway managements who give attention to the cultivation of their 'public relations' in sound and proper ways are rendering constructive and practically helpful service."

An Indianapolis newspaper, commenting editorially on President Markham's published statement relative to the direct taxes paid by the railroads in 1920, and the transportation tax on freight and passenger traffic collected by the railroads for the government during 1920, totaling \$511,678,631, says:

"It all came out of the railway receipts from the public.

The railways merely acted as the agency through which more than \$500,000,000 was turned into the public treasuries, and there was no way in which the war tax on freight and passenger receipts, which would relieve the public of paying about \$250,000,000, could affect the finances of the railways. They still would have to pay 183 per cent more taxes than they did back in pre-war days, and that money must come from freight and passenger revenues. The thought or hope of getting back to anything approximating the prices we formerly paid for transportation is out of the question while taxes and other expenses remain at post-war levels. The raises in rates granted to the railways have to cover much more than increases in wages, and there is small prospect for material reduction in some of those items, including that of direct taxes."

The newspapers in the territory of the Illinois Central system are full of such constructive comment as has been quoted, all of which results from President Markham's work in the field of railway public relations.

## Report of A. E. R. A. on Heavy Electric Traction

### Effort Made to Coordinate with Other Organizations—Locomotives and Multiple-Unit Cars Compared

THE report of the Committee on Heavy Electric Traction of the American Electric Railway Association was presented at the annual convention, held this week at Atlantic City, N. J. The committee outlined the work in progress by the A. E. R. A. and other societies in America interested in heavy electric traction, and suggested that much of the present duplication of work should be done away with. The term heavy electric traction was defined as it applies to locomotives and multiple-unit equipment, a progress report on electric switching locomotives was made, comparative advantages of locomotives and multiple-unit cars were outlined and much data presented in the form of charts, tables, and a bibliography. An abstract of the report follows:

It is evident that considerable valuable work is being accomplished by other technical organizations which would be of interest to the members of the American Electric Railway Association; and it is possible that the work of this association would be of interest to the membership of other organizations. It is recommended, therefore, that an effort be made to coordinate the activities of various organizations with the view of eliminating so far as possible overlapping and duplication and of making more valuable to the profession the work of the technical committees, much of which represents considerable sacrifice of time and energy on the part of the members of the several committees.

#### Electric Switching

The use of electric switchers in heavy railroad operation has been relatively slight as compared with that of electric road engines. Two railroads only, the New York, New Haven & Hartford, and the Chicago, Milwaukee & St. Paul have developed electric locomotives in connection with their operation especially for switching service. The New York Central, the Norfolk & Western, the Butte, Anaconda & Pacific, and the Pennsylvania at New York City do considerable switching with their electric road locomotives, but naturally these are not especially adapted to switching requirements. Inasmuch as satisfactory records are not available in regard to electric switching it is impossible at the present time to present data either as to relative costs or as

to the number of cars switched by electric as compared with steam locomotives under same conditions.

The Butte, Anaconda & Pacific has developed a tractor truck in connection with its electric switching at Butte. These tractors consist of a truck, weighing about 40 tons, with motors, which may be coupled to a road locomotive unit. The current collection and other functions are taken care of by the locomotive, the auxiliary equipment being connected by jumpers. The use of the auxiliary tractor is said to give 50 per cent more tractive effort, at about two-thirds the normal speed, when connected in series with a single locomotive. The device also accomplishes considerable saving in wear and tear on the resistance grids.

A very large number of light electric locomotives weighing from 20 to 60 tons are in operation at the present time which are doing valuable work in industrial switching, interurban freight service, etc. This type of engine is now practically standardized just as street railway and interurban equipment has become standardized. The locomotives operate usually at either 600 volts or 1,200 volts direct current.

Light storage battery locomotives have been employed to some extent for switching. A storage battery unit for yard switching is proposed and designs are under way. Certain advantages might be obtained by the use of a storage battery locomotive for switching, notably in territory where the passage over any individual track is infrequent.

#### Locomotives or Multiple-Unit Trains?

In suburban electrification of railroads the application of multiple-unit equipment provides a solution for many important problems. This has been especially noteworthy in the case of the Pennsylvania at Philadelphia, and the New York Central, New York, New Haven & Hartford, Long Island and New York, Westchester & Boston in the vicinity of New York. Where both local and through service are operated electrically, however, the problem as to the relative amount of traffic to be handled by electric locomotives and by multiple-unit equipment is somewhat complex, and a decision is necessarily based on local conditions.

In general the advantages of multiple-unit equipment are

compared to electric locomotives may be summarized as follows:

The long heavy multiple-unit train accelerates more quickly than a train of the same weight hauled by a locomotive. Where stops are frequent a material increase in scheduled speed is thus possible.

In a multiple-unit train the motor equipment is varied to correspond to length of the train, and thus is often more efficiently used than is the case with the electric locomotive, which being of a fixed and definite size cannot be so easily adapted to varying requirements.

The reliability of operation of multiple-unit equipment (several motive power units being employed in a train) is somewhat greater than that of electric locomotive equipment. In the event of a failure on the road, one of the motor cars may often be cut out of service electrically and the train thus enabled to reach the terminal with little or no delay by means of the remaining motors.

The multiple-unit cars, being heated electrically in winter, are free from all difficulty connected with oil-burning steam boilers, and although the cost of power thus used in heating may be considerable, this convenience of operation is valuable. One of the chief sources of expense in maintenance of electric locomotives is the steam heating boiler.

Perhaps the most important advantage of multiple-unit equipment as compared with electric locomotives is in switching, especially in crowded stub-end terminals. Locomotive-drawn trains, after arrival at the terminal, must be backed out to free the locomotive. This extra double move is often necessary when the terminal tracks are most congested. The multiple-unit train, on the other hand, practically as soon as it has reached the terminal is ready for the return trip.

There are some limitations, however, to multiple-unit operation as compared with electric locomotives. Multiple-unit cars in general can be operated economically only over tracks equipped with an energized third rail or trolley (although occasionally this type of equipment is hauled outside the electric zone by steam locomotives for short distances). The result is that the cars are not available for duty outside the electrified territory in the event of a local heavy traffic demand elsewhere.

The mileage of multiple-unit motor equipment is often less than that of an equivalent electric locomotive, on account of traffic limitations. The multiple-unit motive power cannot be interchanged between local and through trains. This means that owing to the limitations of traffic, especially in the case of the so-called "fleet movement" of commuter's trains (heavy traffic in the morning and evening with little mid-day travel) much of the multiple-unit equipment can make but one round trip a day. The electric locomotive, on the other hand, which is available for hauling either local or through trains may be more intensively and thus more economically operated in this respect.

The maintenance, reduced to a seat-mile basis, is usually higher with multiple-unit equipment than in the case of electric locomotives and standard trailer coaches.

The decision between multiple-unit and locomotive equipment in each individual case is governed by local considerations. The excess cost of multiple-unit car maintenance is often offset by the saving made possible in terminal tracks, on account of elimination of switching requirements. In general, it may be said that each type of equipment has its definite place in the heavy traction field.

In designing multiple-unit equipment there is some question as to the relative advantages of trains made up of all motor cars as compared with motor cars and trailers. This question involves careful study and equipment as well as terminal characteristics. One railroad which started electric

operation with mixed motor car and trailer trains has since equipped all cars with motors, while another railroad which started operations with all motor cars has revised the initial policy by acquiring trailers.

### Charts, Tables and Bibliography

The chart showing the growth of steam railroad mileage electrified and electric locomotive tonnage in heavy traction service in the United States and Canada indicated that track mileage and locomotive tonnage has increased at approximately a constant rate from 1905 to the present time, and that now there is something more than 2,600 miles of track electrified and over 52,000 tons of locomotives in service in the United States and Canada.

### Discussion

The greater part of the discussion was offered in the form of a short paper, presented by H. H. Norris, managing editor, *Electric Railway Journal*, suggesting how an American committee on electrification might be formed, and expressing the need of such a body as follows:

"In opening the report this year with a synopsis of the electrification activities of the committees of the several national societies concerned with heavy traction, the committee has taken one step towards the formation of an American Committee on Electrification. The compilation shows that there is much duplication of effort among the committees, which could be avoided through the functioning of such a joint committee. Such a national committee could act as a clearing house for all information on this subject. On one hand it could suggest topics appropriate for consideration by the several special committees, and on the other hand could collect on its own account the data which would be of general interest. The value of a central, co-operative and unbiased agency of this kind would be very great.

"As an example of the kind of thing such a co-operative committee could do nothing would serve better than the elaborate bibliography which the committee has been able to present this year in collaboration with the Association of Railway Electrical Engineers. Here is illustrated co-operation on a limited scale. A joint committee could maintain such a bibliography continuously. This bibliography furnishes an excellent start. It will stand some editing and condensation. Having printed this year the complete list, the association might later provide a condensed list of the most important articles, including a brief summary of the salient features of each. This could be made to include articles published up to the date of the completion of the list. The danger of unconscious padding in a list of this sort lies in the fact that an important electrification is reported by the leading domestic and foreign papers in all degrees of completeness and balance. The best one or two of these would suffice, although mention could be made in small type of a few other articles on the same subject for the benefit of those who might not have access to the papers mentioned first.

"It is to be hoped that this bibliography will be used in such a way as to justify the considerable expense and effort involved in compiling and publishing it. It might be well to reprint it in pamphlet form for miscellaneous distribution. A nominal price could be put upon the pamphlet and the association could advertise it along with other reprints, so that its existence would not be forgotten.

"The compilation of the locomotive and multiple-unit car data, which the committee was able to get up with the co-operation of the two large manufacturers of heavy traction equipment, is one of the outstanding features of the committee's report and of the year's work. Particularly noteworthy is the table of multiple-unit car data. The admixture therein of data regarding heavy multiple-unit car prac-

tion on steam roads, interurban lines and rapid-transit urban lines, together with the general similarity of these data, indicates the substantial similarity of short-haul, high-speed passenger service under these different auspices. This is, we hope, a prophecy of the time when there will be a greater community of interest between the steam and electric roads in relation to suburban passenger traffic.

"It is unfortunate that the chart presented by the committee shows a zero rate of increase in electrification in 1920, after a steady, although small, rate from 1905 on. This slump merely reflects the financial condition of the steam roads. It will cease when conditions improve. There are electrification projects now developing which will at least restore the normal rate of increase; for example, the Lackawanna Railroad has been making definite plans for a considerable undertaking. The Illinois Central is, of course, on the eve of an important terminal electrification at Chicago. One of the most heartening announcements was recently made of a \$7,000,000 contract for railroad electrification in Chile.

"There has been some question as to the appropriateness of the electrification activity on the part of the American Electric Railway Engineering Association. The basis of this criticism is that the matter is properly one for the steam railroads to consider and push. It is true that no electrification project is possible unless the railroads are convinced of the savings that can thus be effected. At the same time we can well look at this matter from the other side. Electric traction, having demonstrated its success under steam road conditions, is looking for new fields to develop. It is to be expected, therefore, that initiative will be exerted by the electrical manufacturing and operating interests who are looking for new worlds to conquer. The steam railroads will necessarily be somewhat conservative in regard to this matter, partly from financial consideration, partly because they have so much money and talent tied up with their steam equipment. The electrical interests have a 'selling proposition' of enormous magnitude."

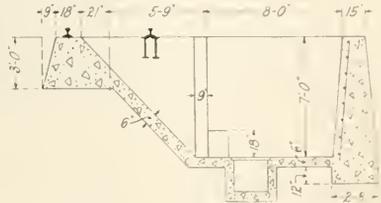
J. H. Davis, electrical engineer, Baltimore & Ohio, called attention to the fact that the diagram accompanying the report indicates that the first electrification work in the United States was started in 1903, while actually it was done in 1895.

W. B. Potter, General Electric Company, spoke of the activities in railway electrifications in foreign countries and said that many steam railroads in this country were waiting only for more favorable circumstances. Comparative operating expenses of steam and electric traction, he said, have been fairly well established, and he closed his remarks by prophesying that with better financial conditions and the development of super-power zones, electrification will progress rapidly.

### A Novel Cinder Disposal Plant

AT THE ENGINE TERMINAL of the Akron, Canton & Youngstown at Britain, Ohio, is an ash handling system which presents a number of interesting features in ash disposal at cinder pits. Essentially, the system at this point consists of a depressed pit below a track where the engines may be "spotted" and dumped before entering the roundhouse, and a steam discharging arrangement by means of which the ashes may be removed from the pit and discharged into a cinder car. The cinder pit, which is constructed of concrete, extends 12 ft. (inside dimension) along the track and about 10 ft. to one side and is divided into two compartments by a concrete wall which extends entirely across the pit parallel to the track except for a vertical opening of 2½ ft. at the center; the cross-section in the drawing is taken through this opening.

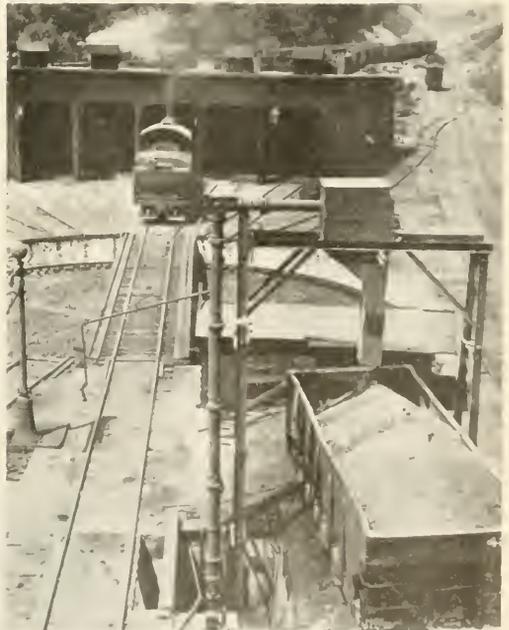
The compartment thus formed, which is below the track, is so constructed that the three outside walls of the pit slope from their tops to the bottom of the opening in the cross partition, while the other compartment has a level bottom which makes it possible for a man to rake the ashes from below the track, through the opening in the partition and over the trap of the ash-handling arrangement; the latter is similar to the equipment installed in power plants, etc., whereby ashes and cinders are removed by the force of steam injected



Cross-Section Through the Cinder Pit

into that end of the pipe line below the floor. The steam for operating this system is obtained from the engine on the cinder track, each locomotive being equipped with a quick-acting screw connection in the steam dome.

This plant was put in operation in January, 1921, and is reported to be giving satisfactory service. Originally, it was intended that the cinders should be discharged from



A View of the Cinder Plant at Britain

the pit immediately upon being dumped, but it was found that the pit afforded a sufficient capacity to permit the dumping of about three locomotives before cleaning of the pit was required. With respect to the operation of the installation, it was found that the complete cycle of dumping ashes and removing them from the pit required from 15 to

20 min., distributed as follows: 10 minutes for "pulling" the fire, five minutes for blowing the cinders and from two to three minutes for connecting and disconnecting the steam connection to the engine. The operation of blowing the cinders out of the pit and into a cinder car, requires considerable steam, but the amount of steam remaining in the locomotive has always been sufficient to move the engine into the roundhouse. In operating the system it has been found best not to wet down the cinders while in the pit, the established practice being to spray the water into the pipe conveyor near the upper end, thus killing any fire remaining in the ashes and coals.

The ash conveyor system is a product of the Conveyor's Corporation of America, Chicago, Ill. We are indebted for the information and illustrations of this equipment to S. S. Senter, chief engineer of the Akron, Canton & Youngtown.

### Safety First Must Be a State of Mind

By Prof. William J. Cunningham

**D**URING THE YEAR 1920 the aggregate of the payments made by the railroads of the United States on account of personal injury to employees, passengers, and others was over \$53,000,000; and a large proportion of the accidents resulted also in damage to property. Every injury to an employee had the effect of disturbing the organization when his work was temporarily assigned to another with less experience. Every case of personal injury to a passenger had a harmful effect on morale and upon public good will.

These factors cannot be measured in dollars and cents, but including all factors the railroad expenditures on account of accidents which caused personal injury in 1920 were certainly far in excess of \$100,000,000.

Some 12 years ago R. C. Richards, of the Chicago & North Western, launched the first organized drive against carelessness in this field. It was he who conceived and inaugurated the first systematic and comprehensive plan for stopping railroad accidents at the source. The North Western quickly began to show gratifying improvements in its accident record, and the idea was widely copied. Many extensions have been made to Mr. Richards' original plan and many innovations introduced. \* \* \* Interest and co-operation

on the part of the workers is absolutely essential to success. Many skillful specialists have emerged and the technique of safety-first practice covers a wide range of activity. \* \* \* But it may not be amiss to offer three suggestions, which in a small measure imply criticism of current methods. There is an inclination on the part of the specialists to overdo in administering stimulants. At times the propaganda has bordered upon the sensational and the appeals have been too emotional. Safety first, to be really effective, must become a state of mind—not an element in organization. That state of mind cannot be attained by sporadic or sensational appeal. It must be developed gradually, naturally, continuously.

Unlike the problem of floating an issue of Liberty bonds we are selling an ideal. When we sell the ideal of safety first the transaction has just begun. The real task is to keep it sold. There are no return privileges with the sale of the bond. With safety-first the purchaser may backslide if his interest is allowed to wane. The spectacular methods adopted by the Liberty loan committee during the war period cannot be equally effective in promoting the general adoption and continuance of safety first principles. A flaring placard in which a skull and crossbones are the most prominent feature in giving point to an admonition against carelessness may compel attention, but the mental reaction in many cases is that of amusement or ridicule.

The second suggestion is that in some quarters there is a tendency to exalt the organization. An organization should, as far as practicable, be held in the background. The appeal must be to the individual. The most successful leader is one who by indirection rather than by fiat can induce his men to adopt his ideas as their own.

When a mechanic is told that he must wear goggles to protect his eyes against flying particles of metal and is reminded that no one but a fool would work without them, the natural reaction is one of resentment against interference with personal liberty. But if by indirect suggestion the mechanic can be made by his own process of reasoning to come to the conclusion that the use of goggles is desirable the chances are that he will demand that goggles shall be furnished.

The third suggestion is that the importance of safety appliances should not be overemphasized. Paradoxically, it often happens that the most dangerous operation is the safest. Its very danger begets respect and inspires care. An appliance which eliminates one-half of the risk may eliminate all of the care. The chief field for cultivation is the state of mind and the habits of the individual worker.

<sup>2</sup>Abstract of a paper read before the Safety Section of the American Railway Association at Boston, September 26, 1921.

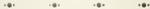


Photo from Evening Call 1135

A Railway at Khartoum, Egypt

## Short Lines Begin Series of Regional Meetings

**T**HE FIRST of a series of regional meetings of the American Short Line Railroad Association was held at Chicago on October 4, approximately 50 representatives of members of the association participating in the discussion of various phases of the present railroad situation and its relations to the short lines. The object of the meetings being primarily to disseminate information, no fixed program was arranged. Instead a list of subjects of interest to all short lines was issued with the call to the meeting and the discussion closely followed this topical outline.

The effect of the present freight and passenger rates on the movement of traffic and upon the revenues of the short lines; the present divisions on interline roads and the work that is being done to obtain more equitable divisions; the work of the Railroad Labor Board and its effect upon the short lines; settlements with the government; the requirements of the Interstate Commerce Commission; federal valuation; consolidations; the railway mail pay question; motor truck competition; the consolidation of purchases for the short lines and the prospect for new railroad legislation in both Congress and the states were topics taken up at the meeting.

Two resolutions were adopted at the meeting, one of which urges the short lines to defend the transportation act under the terms of which these carriers have been greatly benefited. This resolution declares the transportation act to be most constructive piece of railroad legislation ever passed, and that if it is given a fair trial it will ultimately save the railroads, whereas if it is not given a fair trial, government ownership will be unavoidable. The second resolution recommends the continuance of the consolidated purchasing agency which was recently established by the association, and which has, according to the resolution, already demonstrated its success in obtaining materials and supplies for the short lines at the same rates quoted to large trunk lines.

A great deal of time was given to the discussion of railroad legislation both that which has already become law and that which is contemplated. Several of the officers of the Association stated that the short lines have gained much by the terms of the Transportation Act and other recent legislation and that it was essential that every means be taken to insure that this legislation is not so changed as to take away the advantages which the short lines have gained.

The call to the meeting, discussing the need for information regarding present conditions, said:

"The transportation companies of the country are now surrounded by more and greater adverse conditions than ever before, and this is especially true of short lines. These present bad conditions are apparently growing worse, and they not only justify but demand that every owner and officer of such lines carefully and deeply study the situation, which is now so complex that nothing less than full information will enable them to protect their properties; and after having obtained necessary information, to aid in the work of re-establishing the railroads in a healthy and serviceable condition."

In all of the discussion, the officers of the association endeavored to impart this necessary information.

Similar meetings were held at St. Louis, Mo., on October 5, and at Kansas City, Mo., on October 6. Additional meetings have been arranged as follows: Denver, Colo., October 8; Salt Lake, Utah, October 10; Portland, Ore., October 12; Seattle, Wash., October 13; San Francisco, Cal., October 17; Los Angeles, October 18; Houston, Texas, October 24; New Orleans, La., October 25, and Atlanta, Ga., October 27. Meetings have also been arranged for New York and Harrisburg, Pa., but the dates have not been fixed as yet.

## Cutting Down the Labor Cost

**A** PRACTICAL ILLUSTRATION of what may be accomplished through the use of material handling equipment is illustrated by the following account of the use of a locomotive crane in the handling of ties at the treating plant of the Atchison, Topeka & Santa Fe at Albuquerque, N. M. The crane was a 15-ton Standard crane manufactured by the Industrial Works, Bay City, Mich. The information was supplied by W. E. Jackson, superintendent of the treating plant.

The daily capacity of the plant, with the zinc chloride treatment, is six charges or 96 tram-car loads of 7 in. by 8 in., 8-ft. sawed pine ties. The trams average 45 ties, making the daily output 4,328 ties.

A single load of freshly treated ties weighs approximately 7,955 lb.

Thirty trams at a time are drawn by the locomotive crane



Piling Ties 20 ft. High

from the cylinder to the unloading piles, a distance of more than half a mile. The use of a double-chaining choker enables the complete load of 45 ties to be picked up at one time and placed on the pile, the crane working at a 52 ft. radius when piling on the outside tier. An advantage of this method of piling ties is the ease with which they can again be loaded by the crane.

If manual labor was employed to handle these ties by hand, it would cost at least \$2 per 100 ties, whereas the work is accomplished by the crane at the rate of 57 cents for the same number. Loading freshly treated ties by hand requires two men to the tie and these men could only do this at a height of 20 ft.

# General News Department

By a fire on an old pier of the Erie Railroad at Twelfth street, Jersey City, N. J., on October 1, eight carloads of hides, with a part of the pier, and other property, were destroyed; estimated loss \$100,000.

Railway agricultural department representatives will hold a convention in connection with the National Dairy Show to be held at the Minnesota state fair grounds at St. Paul, Minn., beginning on October 8.

A fire in the car shops of the Missouri, Kansas & Texas at Wichita Falls, Tex., on September 20, damaged the woodwork mill, several freight cars, a crude oil tank and the entire machine shop equipment. Estimated loss, \$75,000; cause, unknown.

The Pajaro Valley Consolidated Railroad Company, operating between Salinas and Spreckels, California, a distance of 41 miles, having been authorized by the state railroad commission, will discontinue certain trains and run automobile stages in place of them. The stage line will parallel the railway and will carry passengers, baggage and express at the same rates as are charged on the trains.

Damages amounting to \$180,000 were paid to the Pennsylvania Railroad by the city of Chicago on September 28, the payment closing a legal contest which had started in 1894. The railroad had obtained in 1905 a verdict of \$105,000 against the city for damages caused by the trainmen's strike of 1894 and the accompanying riots. The case was appealed and lost again by the city, and the interest on the original judgment continued to mount until \$180,000 was required to settle the case.

Employees of the Lehigh Valley in the last 14 months have bought stock of the road to the extent of 6,482 shares. An officer of the company says that 1,348 employees have become stockholders. The per capita subscription in October, 1920, was 4.36 shares; in October, this year, it was 4.80 shares. The company buys the stock for the employee in the open market, and it is paid for at a rate of \$5 a month a share. Interest is allowed on the part payments at the dividend rate carried by the common stock, which is 7 per cent annually.

The Southern Railway Company has filed a suit in a state court in North Carolina asking an injunction to suspend the collection of taxes assessed against the company in that state, protesting against changes in valuation which have disturbed the relation between the taxes on railroad property and those on other property. A few days later the Atlantic Coast Line entered a similar suit in the Federal Court. According to an account in the Raleigh News and Observer, the Atlantic Coast Line, in taking action in the Federal Court, has violated an agreement by which it agreed to regard itself as a North Carolina corporation, as regards its property in that state.

The Pennsylvania Railroad, since May 15, has taken on about 14,000 men, the total number of employees now being 199,000, as compared with 184,625 on May 15. President Samuel Rea, in giving out these figures, said: "It is the purpose of the Pennsylvania to co-operate as far as possible with President Harding's efforts to reduce unemployment. It is our hope that still more men will be needed. We intend to utilize the additional men chiefly in putting our idle cars in order prior to the coming of winter. We have at present on the Pennsylvania system 82,149 idle cars, of which 46,691 have been stored without being repaired. None of the latter are required for current use, or, as far as can be foreseen, are likely to be needed this fall. In all probability it might be perfectly safe to defer their repair until next spring, but

we feel that if we put them in order we shall not only be prepared for a revival in business but shall also be assisting in President Harding's endeavor to improve the general employment situation."

## New England Railroad Club

The regular meeting at the New American House, Boston, on Tuesday evening, October 11, will be "Canadian Night," with an address by F. L. Wanklyn, general executive assistant of the Canadian Pacific, on the Organization, Mobilization and Activities of the Canadian Overseas Railway Construction Corps. He will show a number of lantern slides. There will also be an address by Grant Hall, vice-president of the Canadian Pacific.

## New York Signal Engineers

Fred W. Bender, chairman of the New York sectional committee of the Signal Section of the American Railway Association, announces that a meeting of the committee will be held at Hotel McAlpin, 34th street, New York City, on Thursday evening, October 20. Progress of Railroad Signaling in America will be the subject of an illustrated address by H. S. Balliet, secretary of the Signal Section; and W. H. Arkenburgh, of the National Carbon Company, will speak on dry batteries and carbon brushes. All men interested in signaling are invited to attend.

## American Engineering Council's New President

Mortimer Elwyn Cooley, dean of the College of Engineering and Architecture of the University of Michigan, was elected president of the American Engineering Council of the Federated American Engineering Societies at a meeting of the executive board of the council held at the Cosmos Club in Washington, D. C., on September 30. Dean Cooley assumes office at once and will carry out an extensive program in the interest of the public and the profession of engineering.

## Rains Cause Heavy Damage in Northern Mexico

Railroad property in northern Mexico has been greatly damaged by heavy rains during the past three months and operation of the lines has been correspondingly hampered. The present rainy season in the northwestern section of the state of Chihuahua has been the heaviest since 1907, the only rainy season approaching the severity of the present year being that of 1914. The rains have caused a considerable number of washouts and slides, sections of track have been washed away and many bridges, small buildings and structures have been moved from their foundations.

## Cause of the C. & N. W. Elevator Explosion

A report on the cause of the grain explosion in the Chicago & North Western elevator at Chicago, which resulted in the death of six persons and the loss of \$3,000,000 in property, was presented before the Western Society of Engineers on October 3, by David J. Price, engineer in charge of development work, U. S. Department of Agriculture, Washington, D. C. Mr. Price attributed the cause of this explosion, which occurred on March 19, to the ignition of dust clouds from an incipient fire in the driers. According to the speaker, the recurrence of such explosions can only be prevented by the elimination of dust, which is an exceedingly difficult problem, owing to the grain handling rules and statutes prohibiting the removal of the dust before the grain is taken into the elevator for weighing.

## Accounting Rules Amended to Provide for Stock of No Par Value

The Interstate Commerce Commission has amended the text of its uniform system of accounts for steam railroads to provide for accounting and reporting in connection with capital stock having no par value, which the commission has recently authorized in the case of several roads. The amended rules provide that when certificates or receipts issued to represent permanent interests in the accounting company, and such certificates or receipts have no par value, they shall be included in the accounts at the amount corresponding to the cash received or the cash equivalent if the consideration is other than cash.

## Hearing on Short-Lines' Claims

The Interstate Commerce Commission has announced that argument will be heard before the commission at Washington on November 4, on the question of the proper construction of the word "deficit" as used in paragraph a of section 204 of the transportation act, which provides for the reimbursement of deficits of short line railroads for that portion of the period of federal control during which they operated their own lines. The American Short Line Railroad Association has taken the position that this guaranty provision provides for the reimbursement of losses during that period and the commission has thus far held that carriers are not entitled to the guaranty unless they actually sustained a deficit. Notice of the hearing was served upon officers of the Short Line Railroad Association.

## Railroad Hearings to be Resumed

The Senate Committee on Interstate Commerce has decided to resume hearings in its general investigation of the railroad situation at Washington on October 13, the first witnesses to be representatives of the railroad brotherhoods. Frank J. Warne, their statistician, is to be one of the witnesses. The committee has called a meeting for Friday of this week to consider other matters pertaining to railroad legislation, including the valuation bill, on which some hearings have been held, to strike out the requirement that the Interstate Commerce Commission report the excess cost of acquisition of land, also the bill to authorize the War Finance Corporation to purchase railroad securities from the Railroad Administration, and possibly some of the bills designed to restore the power of the state railroad commissions to reduce rates.

## The Railroad Service as a Career

The Illinois Central, in its latest newspaper advertisement, says: "Right now, when optimism in all branches of industry is needed more than ever before, we begin to note an unorganized but none the less effective effort to make railway work appear unattractive to our young men. Non-railway men have expressed discouraging views and even some railway officers have lent their opinions to this unprogressive effort. For the most part, fortunately, these views are merely opinions without a statistic in support.

"We of the Illinois Central do not subscribe to these pessimistic opinions in any single particular. We believe—indeed, we know—that the present-day complexity of railway organization demands men better trained and more resourceful than ever before, and that opportunities for advancement, to the right men, are as good as they ever were."

After discussing the attractiveness of railroading as a business from the young man's viewpoint, and the three factors of opportunity, compensation and adventure, the article presents a brief statement of the ages of the men occupying executive positions on the Illinois Central, thus: 85 of these positions are held by men less than 30 years of age, 122 are held by men between 30 and 35 years of age, and 213 are held by men between 35 and 40 years of age.

"This," the article concludes, "proves that opportunities still exist in the railway business. The same effort wins in railway work as in other lines and the final reward compares favorably with those in most competing industries."

## New York Central Employees May Become Stockholders

The New York Central announces that, by a vote of the board of directors, the company will buy shares of its capital stock for employees and allow them to make payment in monthly instalments. The announcement says that stocks may be paid for in 24 instalments, to be deducted from the employee's pay in the first half of each month. An individual may buy from one to 15 shares. On money lent to him by the company, interest will be charged at the rate of 6 per cent. The company has no stock for sale and purchases must be made in the open market.

The company explicitly states that whether or not an employee chooses to become a stockholder, his status as an employee will not be affected in any manner. Provision is made in the plan for proper adjustment in the event of the resignation, permanent disability or death of any employee—subscribing for stock.

Employees are not to be urged to purchase stock. Employing officers are called upon to thoroughly familiarize themselves with the plan, so as to be prepared to explain fully any of its features to employees interested and to be careful not to approve an application except when reasonably assured of the ability of the employee to carry out his contract without unduly taxing his resources. In special cases where unforeseen circumstances may arise which would make it impossible for the employee to meet his obligations, exceptional consideration may be given.

## National Association of Railway and Utilities Commissioners

The thirty-third annual convention of this association will be held at Georgian Terrace Hotel, Atlanta, Ga., beginning on Tuesday, October 11, and continuing probably four days. The call for the meeting sets forth that the rights of the states in the regulation of railroads is still challenged by the great railroad corporations and that it is the duty of this association to expose unfounded assumptions and claims. The officers of the association appeal to every state to send as many representatives as possible.

A partial program shows the following speakers. On Tuesday afternoon, Hon John E. Benton, general solicitor of the association. On Wednesday afternoon, Hon. Joseph B. Eastman, member of the Interstate Commerce Commission. On Friday, Hon. M. H. Aylesworth, of the National Electric Light Association.

Reports of committees will be presented on the second day, Wednesday, in the forenoon, and presentation of reports will be continued thereafter, as opportunity offers, subject to regulation by the executive committee. On Wednesday, at 12 o'clock, the annual election of officers will take place.

On Wednesday afternoon there will be a round table discussion on "After-the-war-phases of regulation," to be led by Hon. E. I. Lewis, member of the Interstate Commerce Commission, and on Thursday afternoon, one on automobile transportation, omnibuses and jitneys, led by Hon. George McNaney, of New York City.

The president of the association is James A. Perry, of Georgia, and the secretary, James B. Walker, 49 Lafayette street, New York City.

## Conference on Public Ownership

The Public Ownership League of America, the National Non-Farmer League, the Plumb Plan League and other radical labor, farmer, civic and commercial organizations have issued a call to a public ownership conference which is to be held in Chicago on November 19-21. The invitation states that the purpose of the meeting is "to bring together the representatives of all progressive groups in America—organized labor, organized farmers, civic, educational, business and religious bodies and individuals of all classes who are interested in and earnestly seeking a better and more efficient organization, operation and democratic control of our basic public utilities, to bring into counsel the leading advocates and representatives of municipal and public ownership in the United States and Canada, for the consideration and study of the problems involved, to get the ideas of the most careful and competent utility experts in America; to hear the methods and plans of those who have

made a success of public ownership; and to consider ways and means for advancing the public ownership, efficient operation and democratic control of public utilities and natural resources!"

Among the men who have been invited to speak before this conference are William G. McAdoo, former director-general of railroads, on "Will Public Ownership Solve the Railroad Problem?"; Senator Robert M. LaFollette, on "The Repeal of the Esch-Cummins Bill as the First Step Toward Public Ownership of Railroads"; Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers; Timothy Shea, vice-president of the Brotherhood of Locomotive Enginemen and Firemen; Frank Hodges, secretary of the Miners' Federation of Great Britain; John Lewis, president of the Illinois State Federation of Labor; Alexander Howatt, president of District 14, United Mine Workers of America, and Glenn E. Plumb.

### Improved "Ferry-Car" Service on the Pennsylvania

The Pennsylvania Railroad, in its central region, by getting shippers who load freight at their stores and factories into "ferry" or "trap" cars to load in geographical order, has made a marked improvement in that branch of the service and has received commendatory letters from numerous patrons.

Shippers have been furnished with loading guides, which show in a simplified manner the correct loading to be followed; and after six months' trial the majority of shippers have permanently adopted them. Efforts are now being made to secure the co-operation of all others using the ferry car service. Both railroad men and shippers feel assured of a great improvement in expeditious handling of l. c. l. freight. Heretofore this freight was loaded indiscriminately, that destined to Eastern points being loaded in the same car with miscellaneous shipments destined to Western or Southern points; and every car had to be moved to adjacent freight stations or transfers, where the shipments were sorted and reloaded. With the new loading guide the shippers are able to assemble their shipments and so regulate their loading that the car can be forwarded to the proper transfer, the same as would be done with a car loaded at the freight house. Moreover, shippers find that it is advantageous to them to hold their shipments several days, and thus assemble a load for a proper transfer; and as compared with the old plan of indiscriminate loading the shipments reach destination more promptly. The plan is so flexible that the individual shipper can set up a ferry car program to meet his own peculiar needs. Important economies are made possible because of reduced handling of freight at intermediate transfers, the car supply is improved, and congestion is relieved at many local stations.

A report for the first six months shows that approximately 16,500 "ferry" cars were loaded in accordance with the loading guide and forwarded from industrial plants without the intermediate handling that formerly was necessary.

### Roads Earned 5 Per Cent in August

A preliminary compilation of the reports of revenues and expenses of 200 Class I railroads to the Interstate Commerce Commission for the month of August shows a net railway operating income for the month of \$90,221,000, which is the largest that has been reported for any month since the increased rates became effective last year. Reports of only two Class I roads, the Duluth, South Shore & Atlantic and the Duluth, Winnipeg & Pacific, are missing from this compilation. To earn a 6 per cent return on the valuation tentatively adopted by the Interstate Commerce Commission for rate-making purposes, the Class I roads should have earned \$108,000,000 in August, but a net of \$90,000,000 is at the rate of 5 per cent for a year and represents a closer approximation to a 6 per cent return than has been reported since the transportation act became effective.

The total operating revenues for the month were \$504,957,000, a decrease of 8.9 per cent as compared with August, 1920, while the total operating expenses were \$381,787,000, a decrease of 44 per cent. The net operating income compares with a deficit for August, 1920, of \$158,000,000, but in this connection it should be recalled that the operating expenses for last August included approximately \$79,000,000 of retroactive wage payments under

the order of the Railroad Labor Board. The actual reduction in operating expenses is, therefore, less than that indicated.

August completes a full year under the increased rates. On the basis of the preliminary returns the net operating income for the year was approximately \$530,000,000, or \$586,000,000 less than a 6 per cent return, which for the Class I roads would be \$1,116,000,000 for the year. The actual return, therefore, for the year was about 2.8 per cent.

The summary for 200 roads is as follows:

District	1921	1920	Per cent of increase 1921 over 1920
Total operating revenues:			
Eastern District	\$222,449,000	\$252,024,000	d 11.7
Southern District	71,699,000	83,445,000	d 14.1
Western District	210,809,000	218,965,000	d 3.7
United States	504,957,000	554,434,000	d 8.9
Total operating expenses:			
Eastern District	176,484,000	315,824,000	d 44.1
Southern District	66,673,000	94,213,000	d 35.6
Western District	144,630,000	271,165,000	d 46.7
United States	381,787,000	681,205,000	d 44.0
Net railway operating income:			
Eastern District	32,244,000	Def. 78,398,000	....
Southern District	7,461,000	Def. 13,175,000	....
Western District	50,516,000	Def. 66,945,000	....
United States	90,221,000	Def. 158,518,000	....

### Pennsylvania Athletic Meet

More than 1,000 contestants (winners in a series of elimination games in which 25,000 employees participated) took part in the second annual Pennsylvania System athletic championship meet held at Dennison, Ohio, on Saturday, September 24. Seven thousand employees and their families went to Dennison in 17 special trains from Philadelphia, Pittsburgh, Columbus, Cleveland, Chicago and St. Louis, and with townspeople of Dennison and Urichsville, the crowd in Panhandle Athletic park was swelled to about 25,000 people.

The athletes from the Eastern Region won the meet with a total score of 102 points. Next came the Central Region with 45, the General Office in Philadelphia with 33, the Northwestern Region with 26, the Southwestern Region with 13 and Altoona Works with 3. The special features of the program this year were tennis and a 50-yard dash for women employees, and also dashes for the sons of employees. The program began at 9 a. m. with tennis and trap shooting followed by swimming events and trials in track and field events. The finals in all events were run off after lunch.

In the first of a three-game series for possession of the Atterbury Cup awarded annually to the championship baseball team by the Pennsylvania System, the Columbus Division defeated the Philadelphia Terminal Division by a score of 8 to 4.

Vice-president James A. McCrea presented medals to the individual and team winners of first, second and third place in each event.

Among the honorary referees who were present on the field were Benjamin McKeen, vice-president in charge of the Southwestern Region; Elisha Lee, vice-president in charge of the Eastern Region; J. G. Rodgers, vice-president in charge of the Northwestern Region; R. E. McCarty, general manager of the Central Region; I. W. Geer, general manager of the Southwestern Region; T. B. Hamilton, general manager of the Northwestern Region; C. S. Krick, general manager of the Eastern Region, and P. F. Smith, Jr., manager of the Altoona Works.

Otto Schroll, P. P. Neff and H. B. Chaffin acted as referees.

The local committee in charge of all arrangements included F. A. Kerner, chairman; H. B. Chaffin, J. S. Albright, J. H. Baker, H. L. White, C. P. Davidson and C. M. Speed. For the Pennsylvania System the committee consisted of John T. Coleman, chairman; C. E. Clay, M. Y. Shuster, V. C. Ernest, E. F. Ewing and C. S. McIntyre.

The Chamber of Commerce in Dennison and Urichsville, the local post of the American Legion, the local churches and other organizations united to make excellent arrangements for feeding the large crowd. Playgrounds were provided for the small children, a field hospital tent was set up near the entrance to the park, and convenient information booths were located about the grounds. The visitors came away with the highest impression of Dennison and Urichsville hospitality.

## Traffic News

A reduction of 20 per cent on all rates over 50 cents per 100 lb., on live stock shipments from the prairie provinces of Canada to St. Paul and Chicago, has been made by the Canadian Pacific.

C. E. Carson, general agent at Chicago for the Fort Dodge, Des Moines & Southern, has been appointed manager of the Traffic Club of Chicago, effective September 15.

### Coal Production Increases

Continued improvement marked the production of bituminous coal in the week ended September 24, according to the weekly bulletin of the Geological Survey, and the resulting increase carried the output to the highest mark attained since the last week in January. The output is estimated at 8,506,000 net tons, an increase over the preceding week of 3.8 per cent and preliminary reports indicate that loadings on Monday and Tuesday of the following week will show a further increase of over 1500 cars a day.

### Panama Canal Tolls

The bill to provide free tolls for American coastwise vessels through the Panama Canal, S. 665, was briefly considered in the Senate on October 4. A unanimous consent agreement had previously been made for a vote on the bill not later than Monday, October 10. There has been very little discussion of the bill because the pending treaties and the revenue bill are absorbing the attention of the Senate and there is a report that President Harding is opposed to Congress acting at this time on the bill, for diplomatic reasons, although he has previously expressed his approval of the policy. Senator Fletcher of Florida made a long speech opposing the bill and estimated that to waive the tolls would mean a gratuity to the shipowners of at least \$1,500,000 a year, which would have to be made up by taxation.

### Preparation Urged for Heavy Refrigerator Car Traffic

Because of an expected big increase, estimated at nearly 40 percent over last year, in the amount of perishable freight to be moved during the next three months, the Car Service Division of the American Railway Association is calling for expedited movement. In a circular letter all carriers are urged to encourage the prompt loading and unloading of refrigerator cars, prompt handling in transit and preference in repairing. The circular says, in part:

"There must be very energetic action on the part of everyone. \* \* \*

"Do not load refrigerators with other than perishable traffic.

"Do not furnish refrigerators for potatoes while they can be safely transported in other cars.

"Do not hold refrigerators for other prospective loading which can be provided for without delay by refrigerators being made empty daily on your lines.

"Speed up unloading, do not use for storage purposes.

"Give the same prompt handling to the empty as the loaded cars. \* \* \*"

The situation is so serious and important that where it has not been done, it is suggested that "someone in your principal transportation office be assigned the special task of checking the refrigerator situation in detail day by day."

The task of moving this year's crop is a stupendous one, but, says the circular, "we believe it can be accomplished with reasonable success by the united support of the railroads, the shippers and their associations, with all others interested."

A check of 38 of the largest terminals last week showed 3851 refrigerator cars awaiting unloading of which 1203 had been delayed three days or more.

## Commission and Court News

### Interstate Commerce Commission

The conference relative to rates for the transportation of fish which was to be held in Washington on October 10, has been postponed to November 1.

The commission has announced that oral arguments will be heard at Washington on November 1, 2 and 3 in the valuation cases of the Los Angeles & Salt Lake and the Kansas City Southern.

The commission has suspended from November 15 until March 15, 1922, the operation of proposed increased rates on marble, jasper, onyx and slate, building and monumental, from eastern shipping points located in Groups D to J to California terminal and intermediate points.

The commission has suspended until January 31, the proposed cancellation of the existing through commodity rates on cast iron pipe from Attalla, Birmingham and other points in Alabama and Chattanooga, Tenn., to destinations in Montana, indicating the application of combination rates in lieu thereof.

The commission has suspended until January 31, the operation of an item of Trans-Continental West Bound Joint Tariff, which propose increased rates on marble, jasper, onyx and slate, building and monumental, from eastern shipping points located in Groups D to J to California terminal and intermediate points.

The commission has suspended until January 29, the operation of certain schedules published in a supplement to Agent E. B. Boyd's tariff proposing to eliminate from the list of articles taking corn rates, the commodities alfalfa feed, cane seed, cottonseed cake, cottonseed meal, copra cake, and other kindred articles, and place the same in the list of articles taking wheat rates.

The commission has suspended until January 28, the operation of certain schedules published in a Chicago, Rock Island & Pacific tariff which proposes to eliminate the existing provisions for the absorption of switching charges at St. Louis, Mo., and East St. Louis, Ill., on non-competitive traffic resulting in increases in charges to the extent of the existing switching charges on such traffic.

The commission has suspended until January 31, the operation of schedules which provide for the non-application of Group J rates from and to points on the Denver & Rio Grande Western east and south of Grand Junction, Colo., leaving applicable instead combination rates, which results in increases to the extent of the local rates to the boundary of the restricted territory.

### Hearings on Transcontinental Rates

The commission has announced a series of hearings before Attorney Examiner W. A. Disque in various western states on the application filed by R. H. Countiss, agent for the transcontinental roads, for authority to charge rates for the transportation of sugar, c. I. from Pacific Coast terminals and other western point to Chicago which are lower than the rates contemporaneously in effect to Omaha and other intermediate points.

Hearings will also be held on other similar applications filed by Agent Countiss, on ground coffee from New Orleans and Galveston to Pacific Coast terminals; on sisal and hule from New Orleans and Westwego, La., Galveston, Tex., and other Texas ports and Mexican gateways to Pacific Coast terminals; on asphalt, beans, canned goods, dried fruit, etc. from Pacific Coast terminals to New York via the shortest Gulf route through Galveston; and on various commodities from eastern defined territories to Pacific Coast terminals which are lower than the rates contemporaneously maintained on like traffic to and from intermediate points.

## Foreign Railway News

### Siam Seeks American Bridge Materials

The commissioner general of the Siamese State Railways is advertising in this country for superstructures for steel railway bridges. Bids will be received up to December 31 at Bangkok, Siam. Specifications and drawings are obtainable from C. P. Sandberg, 143 Liberty street, New York.

### Thirty-Three Passengers Killed in Paris

In a rear collision of outgoing suburban passenger trains in a tunnel in Paris, France, on the evening of October 5, thirty-three passengers were killed and a large number injured, many being injured or killed by flames.

The trains had just left the St. Lazare station, about four minutes apart; and according to reports the leading train had been stopped by the rupture of an air brake pipe. Firemen could not get within 500 ft. of the burning cars; and at the time of going to press, complete reports had not been received.

A train for Marly-le-Roi ran into one destined for Versailles. The precise cause of the fire is not known, but the flames were intensified by the explosion of a gas tank.

### Motor Trucks More Careful of Shipments Than Railways, Says English Shipper

An English architect who handles large amounts of building materials and household furniture has written to the Times (London) praising the motor trucks for careful handling of shipments and decrying the carelessness of the railways of his country, in this respect, saying that since the war he has noticed a decided tendency on the part of contractors to ship by truck rather than by rail. It would seem from his statement that increasing carelessness on the part of railway employees is largely to blame for the damage which involves the railway companies in heavy claims and diverts the traffic to the highways.

"Quite lately," he continues, "I ordered 35 kitchen ranges from Falkirk, of which 11 arrived broken. The loss falls on the railway shareholders, the inconvenience on my contractor. I have seen a truck of large and expensive baths unloaded by tipping them over the edge of the track on the platform; several were broken, amidst the laughter of the men. The loss to the companies by these methods must be very great. Surely some method of supervision of loading and unloading could be found that would prevent wilful damage, and even penalize carelessness. When I wish to make sure of a thing that I particularly want to arrive whole I do not send it by rail."

### The Railways of Spain

Commerce Reports presents the following statistics of the Spanish railways:

Four ft. 8½ in. (1,435 meter) gage railway:	
Single track .....	miles 6,773
Double track .....	miles 243
Locomotives .....	2,122
Passenger cars .....	4,803
Freight cars .....	40,304
Five ft. 6 in. (1,674 meter) gage railway:	
Single track .....	miles 2,110
Double track .....	miles 16
Locomotives .....	626
Passenger cars .....	1,250
Freight cars .....	10,230
Meter (39.37 inch) gage railway:	
Single track .....	miles 8,886
Double track .....	miles 260
Locomotives .....	2,748
Passenger cars .....	6,053
Freight cars .....	50,574

Spain is still dependent on foreign manufacture for its locomotives. When the Spanish government asked for bids on 300 locomotives and 10,000 cars in 1920, Germany offered to supply 150 of the locomotives and 5,000 of the cars within one year at prices which almost excluded competition. When the Spanish Government gave contracts early in 1921 for 119 locomotives Germany got them all.

At present nearly all the locomotives in Spain are of German, Belgian, French, Italian and English make. The American type of engine has not yet gained popularity in Spain, and American bids, being so far above those of European competitors, are not, as a rule, seriously considered. Of the Madrid, Caceres & Portugal Railway's 88 locomotives, 57 were built by the Chemnitz Works and 10 by the Cockerill. Of the Madrid, Zaragoza & Alicante Railway's 872 locomotives, 485 were built by five firms—Henschel, Maffei, Creusott, Chemnitz and Hannover.

The commonest type of locomotive in use in Spain is the English, equipped with English vacuum brakes. The dimensions and weight are governed by the gage and curve of track. The minimum curve radius for the broad gage is 250 to 300 meters (1 meter=39.37 in.); for the narrow gage, 80 to 100 meters. Wide-gage rails are 30 to 35 kilos (1 kilo=2.2 lb.) per meter on old roads and 40 to 45 kilos on modern lines; narrow-gage rails, 20 to 22 kilos per meter on the old roads and 30 kilos on the new. Each company adopts the locomotive which is judged to be best suited for its lines and work. In recent years several compound engines have been built, but they are not popular, and at present those fitted with steam superheaters predominate, mostly of the Schmit system.

### Private Operation Being Considered in Switzerland

After 25 years' experience with railway nationalization, the Swiss public is now debating a return to private operation, according to the Bureau of Railway Economics. Shortly after 1847, when the first Swiss railway was constructed and operated by private means, the feeling was so strong against nationalization that the Swiss Confederation voted that the railways should be built by private enterprise and vested sole authority in the cantons to grant concessions to the companies.

Some of the concessions expired between 1880 and 1890, but the government did not exercise its right to purchase any of the lines until 1897. The general desire at the time was not so much to secure an increase in government revenue as to free the railways from the control of foreign interests, and to operate them on behalf of the public as a whole. The last large road (the St. Gothard) was purchased in 1909, and today the railway mileage owned and operated by the government amounts to 1,769 miles, representing 54 per cent of the total railway mileage of the country.

According to the Railway Gazette (London), the present movement for denationalization is not the work of any particular party or faction, but has adherents among persons of all shades of political opinion. Before the war the government lines were operated fairly well; during the war, however, the roads were militarized. Naturally military requirements came first and civilian needs second. Public annoyance over this fact led to inquiries into railway management generally, with the following results:

It was found that in 1913 the net operating revenue of the government lines provided a margin of profit (after deducting interest and amortization charges), of nearly \$4,500,000. Since 1914 the net revenue in no year has been sufficient to meet the fixed charges, and there was a steadily increasing deficit down to 1918, when it was nearly twice as large as the deficit for 1914. Some improvement was shown in 1919, although the deficit for that year was \$5,952,904. The total operating deficit on the government lines during the six years ending December 31, 1919, was \$66,604,583, equivalent to a deficit per mile of line of \$21,789.

The chief cause of these deficits is the great increase in wages and the cost of fuel. In 1919 nearly 71 per cent of the operating expenses was absorbed by compensation to employees, while the cost of coal and other materials made up an additional 24 per cent. The operating expenses in 1920 increased at a greater rate than the receipts, so that the operating ratio was even greater than that shown for 1919.

The Swiss public seem to have concluded that railway nationalization does not pay. A petition for denationalization of the railways is being circulated, and if it is signed by 50,000 duly qualified Swiss voters, the matter is to come before Parliament and be submitted to referendum. It is expected that this movement for denationalization will obtain the necessary 50,000 signatures, since the supporters of the movement include representative persons of all political parties.

## Equipment and Supplies

### Locomotives

THE BAHIA RAILWAYS of Brazil have ordered 17 locomotives from the Baldwin Locomotive Works.

### Freight Cars

THE MONONGAHELA CONNECTING is inquiring for 50 gondola cars, of 100-ton capacity.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for 2,500 composite gondola cars of 50-ton capacity.

THE ALABAMA, TENNESSEE & NORTHERN is inquiring for 140 flat cars and 75 composite gondola cars, all of 50-ton capacity.

THE KATANGA RAILWAY (Africa), is inquiring through the car builders for 25 general service cars, of 35 metric tons capacity.

THE LAKE CHAMPLAIN & MORIAH is inquiring for 12 ore car bodies, of 50-ton capacity and for 10 hopper ore cars, of 60-ton capacity.

THE ASSOCIATED OIL COMPANY, San Francisco, Cal., has ordered 8, three-compartment tank cars of 8,050 gallons capacity, from the Pennsylvania Tank Car Company.

THE MICHIGAN CENTRAL has awarded a contract for the repair of 500, 40-ton underframe box cars and 250, 50-ton steel twin hopper cars to the Illinois Car & Equipment Company, Hammond, Ind.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has awarded a contract for the repair of 500, 50-ton all-steel box cars to the American Car & Foundry Company, the work to be done at the Madison, Ill., plant.

THE DELAWARE, LACKAWANNA & WESTERN reported in the *Railway Age* of September 10, as inquiring for 1,000 steel hopper cars of 50-ton capacity has ordered 500 from the Cambria Steel Company; 500 from the American Car & Foundry Company and 500 from the Standard Steel Car Company.

THE BALTIMORE & OHIO, reported in the *Railway Age* of September 10, as inquiring for 2,000 new car bodies, has ordered 500 steel hepper car bodies from the Cambria Steel Company, 500 box car bodies from the American Car & Foundry Company, 500 box and 500 steel hopper car bodies from the Standard Steel Car Company. The company is also asking for prices on 1,000 70-ton steel coke car bodies and 1,000 50-ton steel hopper car bodies.

THE NEW YORK CENTRAL has awarded contracts for the repair of 500, 40-ton steel underframe box cars to the Streeter Car Company, Kankakee, Ill., to the Standard Steel Car Company, Pittsburgh, Pa., and to the Ryan Car Company, Chicago. It has also awarded contracts for the repair of 500, 50-ton steel hopper cars to the Buffalo Steel Car Company, Buffalo, N. Y., to the Detroit, Mich., plant of the American Car & Foundry Company, and to the Ryan Car Company; and for 250 cars of this type to the Steel Car Company, Euclid, Ohio; also for 500 box cars to the Koppel Industrial Car & Equipment Company, Koppel, Pa.

### Passenger Cars

THE GREAT NORTHERN is inquiring for 30 complete steel underframes for first-class dining cars.

### Iron and Steel

THE COLORADO & SOUTHERN has ordered 312 tons of steel from the Chicago Bridge & Iron Company, for two oil storage tanks at Wichita Falls, Tex.

## Machinery and Tools

THE SEWELL VALLEY is in the market for shop machinery as follows: 1—1,200 lb. steam hammer; 1—36 in. by 36 in. by 10 ft. or 36 in. by 40 in. by 10 ft. planer, 3 heads, power feed, reversing motor drive; 1 No. 2 or No. 3 universal milling machine, belt drive, geared; 1—24 in. high speed, upright drilling machine, back geared belt drive with speed box; 1—58 in. or 68 in. 250-ton wheel press, inclined type, belt driven; 1—60 in. driving wheel lathe to turn straight connected and shay type drivers, variable speed motor driven. The company ordered recently 1 Greaves-Klusman 18 in. geared head engine lathe.

### Miscellaneous

THE PENNSYLVANIA ENGINEERING WORKS, Pittsburgh, Pa., are inquiring for 30, 4-wheel trucks.

THE LONG ISLAND will receive bids until 12 o'clock noon, October 10, for frogs, switches, guard rails, intermediate guard rail, and twin tie plates, track bolts and spikes.

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, October 19, for 2,500 pr. angle bars; 400 steel spring plates; parts for electrical apparatus; approximately 100,000 lb. welding and threading steel; approximately 4,300 lb. spring steel; 5,000 copper signal rail bonds and 500 lb. flux rods.

### Signaling

THE GRAND TRUNK has ordered from the General Railway Signal Company 22 signals, and other apparatus, to be installed on its line between Oxford, Me., and Danville Junction.

THE WESTERN PACIFIC has ordered from the General Railway Signal Company a mechanical interlocking, to be installed by the signal company, at the crossing of the Southern Pacific at Fourth street, San Jose, Calif. The machine will have 17 working levers. The home signals on the Southern Pacific will be electric motor, Model 2A.

## Railway Construction

CHESAPEAKE & OHIO.—This company has under construction at Logan, W. Va., a new brick and concrete freight station 33-ft. by 200-ft. with an adjoining 220-ft. transfer platform upon which work has just been started. It is also planning a new station layout at the same place to include a 35-ft. by 100-ft. passenger station and a 35-ft. by 100-ft. baggage and express building, both of brick and concrete construction. These facilities will be served by an extensive system of covered concrete platforms. It is also contemplating the extension of the present engine house at Peach Creek, W. Va., to include five additional stalls, the installation of a new 100-ft. turntable and the revision of the supporting yard to include 10 additional tracks, five of which are now under construction, new machine, forge and pipe shops, a coaling station, inspection pits, choker conveyors and other miscellaneous facilities.

CHICAGO, BURLINGTON & QUINCY.—This company contemplates the erection of a 9-stall roundhouse at Centralia, Ill.

CHICAGO & NORTHWESTERN.—This company has awarded a contract to John Marsch, Chicago, for the construction of a spur track 1½ miles in length at Conso, Iowa.

CHICAGO, ROCK ISLAND & PACIFIC.—This company contemplates the erection of a storehouse and oil house at Amarillo, Tex., to cost about \$10,000.

CHIPPWA IRON MINING COMPANY.—This company has awarded a contract to C. M. Magnuson for the grading of a 4½-mile spur track extending from the McComber mine, Vermillion Range, to the Armstrong Bay mine. The work is estimated to cost approximately \$40,000.

ILLINOIS CENTRAL.—This company has applied to the war department for permission to double-track its bridge across the Ohio river at Cairo, Ill. The cost of this work is estimated at \$8,500,000.

## Supply Trade News

The Canadian Austin Machinery, Ltd., Woodstock, Ont., has been incorporated to manufacture and distribute in Canada the equipment of the Austin Machinery Corporation.

E. E. Aldous has been appointed representative of the American Steel & Wire Company, in the St. Paul, Minneapolis and Duluth territory, with headquarters at St. Paul, Minn. Mr. Aldous has been connected with the company for 20 years.

The Central Steel Company, the National Pressed Steel Company, the Massillon Rolling Mill Company, all of Massillon, Ohio, have been brought together in a merger just completed. The new corporation takes the name of the Central Steel Company and the following officers have been elected: R. E. Bebb, chairman of the board of directors and president; F. J. Griffiths, first vice-president; C. C. Chase, second vice-president; H. M. Naugle, third vice-president; C. E. Stuart, secretary and treasurer. The reorganized company has complete modern equipment and facilities for producing all kinds of commercial alloy steels, hot and cold rolled sheets, hot rolled strip steel and light structural steel sections.

Sidney G. Down has been appointed to the newly created office of general sales manager of the Westinghouse Air Brake Company, with headquarters at Wilmerding, Pa. He was formerly Pacific District Manager of the Westinghouse Air Brake interests and president of the Westinghouse Pacific Coast Brake Company. Mr. Down served as general air brake inspector and instructor on the Michigan Central until 1901, and then joined the Westinghouse Air Brake organization. He was for several years instructor on the company's instruction car and later was appointed mechanical expert with headquarters in Chicago. In 1910 he was appointed district engineer and transferred to San Francisco and shortly afterward he was appointed Pacific district manager. He was largely responsible for the organization of the Westinghouse Pacific Coast Brake Company in California, and when it was formed, became vice-president and later president of that company. Two years ago he made an extensive tour of the Far East and established various commercial activities which have resulted in an increased business for the Air Brake Company from the Orient.



S. G. Down

The firm of Stovel & Brinkerhoff, engineers and constructors, with offices at 136 Liberty street, New York City, was organized recently by R. W. Stovel and H. A. Brinkerhoff. Mr. Stovel was graduated as an electrical engineer from McGill University in 1897 and three years later was given the degree of master of science by the same university. From 1898 to 1903 he was with the Pittsburgh & Lake Erie, where he served on the design and construction of terminals and shops. He was then to 1914 with Westinghouse, Church, Kerr & Co., serving in various positions, including those of mechanical engineer and managing engineer, directing a large variety of work involving reports, designs and construction. From 1914 to 1917 he was with Gibbs & Hill in charge of

construction on the Pennsylvania electrification and also the Elkhorn grade of the Norfolk & Western. He was with the American Expeditionary Forces as lieutenant-colonel in charge of the mechanical and electrical equipment at ports used by the American army in France from 1917 to 1919, and in the latter year he re-entered the employ of Westinghouse, Church, Kerr & Co., as consulting engineer in mechanical and electrical work and since the merger of that firm with Dwight P. Robinson & Co., has been engaged on reports and power problems with the latter firm. Mr. Brinkerhoff served with the C. & C. Electrical Company as mechanical draftsman from 1893 to 1897, and then to 1920, was consecutively draftsman, chief draftsman, superintendent, general superintendent, engineer-in-charge and managing engineer, with Westinghouse, Church, Kerr & Co. He was general superintendent of construction in charge of the installation of all mechanical and electrical equipment in the Pennsylvania Station, New York, and also in charge of many other large engineering and construction projects including manufacturing plants and power plants for railroad and industrial use. Since 1920 he has served as industrial engineer in charge of the Industrial Engineering division with Dwight P. Robinson & Co., Inc.

### Pullman Company

The Pullman Company earned a net income of \$6,120,984 or 5.10 per cent on its capital stock in the fiscal year ending July 31, 1921, which compares with \$12,913,509 or 10.76 per cent in the previous 12 months. In order to maintain its dividend rate the company drew on surplus with the result there was a deficit in the fiscal year of \$3,478,836 as against a surplus of \$3,313,709 in the preceding year. The income account with comparison, follows:

	1921	1920
Federal Compensation.....	\$979,166	\$11,750,000
Earnings of cars.....	60,315,717	2,769,777
Manufacturing profit, etc.....	5,947,181	14,519,777
Total income.....	67,242,066	27,979,777
Operating expenses, taxes, etc.....	54,853,523	1,606,268
Depreciation on cars in general.....	6,267,558	
Net income.....	6,120,984	12,913,509
Dividends.....	9,599,820	9,599,800
Deficit for year.....	3,478,836	*3,313,709

The balance sheet compares as follows:

	July 31, 1921	July 31, 1920
<b>ASSETS</b>		
Plants, etc.....	\$20,136,408	\$20,136,408
Cars and equipment.....	84,157,041	76,666,128
Repair shops.....	4,169,360	4,121,187
Pullman building, less depreciation.....	997,279	1,010,312
Other real estate.....	6,650	6,651
U. S. Government accounts.....		35,519,098
Operation supplies, linens, etc.....	10,673,342	7,979,678
Securities.....	8,373,190	8,530,528
Cash.....	20,086,452	25,596,362
Car leases.....	4,700,218	5,606,566
Bills and accounts receivable.....	9,849,221	10,019,629
Unexpired insurance.....	99,825	123,220
Total current assets.....	\$53,782,250	\$57,856,183
Total assets.....	\$163,248,989	\$195,311,967
<b>LIABILITIES</b>		
Capital stock.....	\$120,000,000	\$120,000,000
Inc. and other res.....	2,433,296	2,370,969
U. S. Government.....		29,711,792
Profit and loss surplus.....	20,199,255	23,678,091
Accounts payable.....	18,216,477	17,151,165
Accrued dividends.....	2,399,960	2,399,950
Total current liabilities.....	\$20,616,437	\$19,551,115
Total liabilities.....	\$163,248,989	\$195,311,967

\*Surplus.

## Obituary

H. E. Billau, a field representative of the Sherwin-Williams Company for the past 35 years, died at Fremont, Ohio, on September 19, 1921.

Andrew G. Young, traffic manager of the American Sheet & Tin Plate Company, died at Cleveland, Ohio, on September 29. Prior to his appointment, 20 years ago, to the position which he held at the time of his death, Mr. Young was serving as general freight agent on the Lake Erie & Western.

## Railway Financial News

**AHUKINI TERMINAL & RAILWAY.**—*Asks Authority to Issue Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue \$620,000 of capital stock, the proceeds to be used for the construction of a railway from Kapaa to Ahukini, Hawaiian Islands, 16 miles.

**CAMBRIA & INDIANA.**—*Asks Authority to Issue Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue \$500,000 additional capital stock to represent an amount transferred from surplus to capital account, which it is proposed to distribute as a stock dividend.

**CENTRAL OF NEW JERSEY.**—*Sale of Stock of the Lehigh & Wilkes-Barre Coal Company.*—At a meeting of the board of directors on September 29, 1921, Robert W. de Forest, Daniel Willard and Edward T. Stotesbury were appointed a committee to receive and consider any proposals that may be presented to it by persons wishing to purchase 169,788 shares of the capital stock of the Lehigh & Wilkes-Barre Coal Company, which the railroad company is directed to sell under order of court in the so-called Reading trust suit, and to report to the board any such proposals previous to October 27, 1921.

The total issued capital stock of the Lehigh & Wilkes-Barre Coal Company is 184,200 shares.

*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**DELAWARE, LACKAWANNA & WESTERN.**—*Declares Quarterly Dividend of 3 Per Cent.*—The directors on September 29 declared a quarterly dividend of 3 per cent, payable October 20, to stockholders of record October 8. This is the first dividend action taken by the company since the 100 per cent stock dividend distribution made last July, increasing the total stock outstanding to \$97,277,000. The par value of the stock is \$50 a share, so that the road has now been placed on a 12 per cent annual dividend basis. Under the old capitalization this would amount to 24 per cent, as compared with the 20 per cent which the road paid from 1910 to 1920, including extra dividends of 10 per cent each year.

**ETRICK & NORTHERN.**—*Claim for Guaranty Denied.*—The Interstate Commerce Commission has denied the claim of this company for \$15,816 on account of the guaranty for the six months period following March 1, 1920, on the ground that the carrier's property was not operated prior to January 20, 1919, and therefore had no contract for compensation from the government. Under these circumstances, the commission finds there is under the law no basis for any guaranty to the carrier.

**FRANKLIN & PITTSYLVANIA.**—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of its line from Rocky Mount to Pittsville, Va., 29.9 miles, which, the application states, cannot be operated except at a heavy loss.

**GREAT NORTHERN.**—*Asks Authority to Abandon Road.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of its line from Portland to Portland Junction, N. Dak., 3½ miles.

**KNOXVILLE, SEVIERVILLE & EASTERN.**—*To Be Sold.*—This road will be sold at auction at Knoxville, Tenn., on November 10. Samuel E. Cleage was appointed receiver on January 27, 1921. The road operates between Knoxville and Sevierville, Tenn., 30 miles.

**NORFOLK & WESTERN.**—*New Director.*—F. S. Royster, of Norfolk, Va., has been elected a director to succeed Victor Morawetz, of New York, who has resigned.

**PHILADELPHIA & READING.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**UNION PACIFIC.**—*Asks Permission to Be Director of Three Roads.*—W. Averell Harriman is the first railroad director to

apply to the Interstate Commerce Commission in accordance with paragraph 12, Section 20-a, of the interstate commerce act for authority to hold the position of director or officer of more than one railroad. The law provides that after December 31, 1921, it shall be unlawful for any person to hold the position of officer or director of more than one railroad unless such holding shall have been authorized by order of the commission upon due showing, in form and manner prescribed by the commission, that neither public nor private interests will be adversely affected thereby. Mr. Harriman asked authority to hold the position of director of the Baltimore & Ohio, the Illinois Central and their subsidiaries, while being at the same time a director or officer of companies of the Union Pacific System. An application dated August 19 for authority for directors and officers in common among all or any carriers comprising the Union Pacific System has been heretofore filed.

### Railroad Administration Settlements

Announcement was made at the White House on October 4, following a conference between the President and Director General Davis, that up to October 1, an aggregate of \$856,033,589 in claims had been filed by carriers on final settlement with the United States Railroad Administration. The total mileage recognized as under federal control was 241,000 miles. Claims filed represent a total mileage of 189,394 miles, or 78.705 per cent of the total mileage under federal control. If the remaining percentage of mileage files claims on the same basis as those already filed, the total claims that will be filed against the Railroad Administration will aggregate \$1,087,633,476.

The amount of claims on final settlement adjusted up to October 1, aggregates \$387,017,099. The mileage for which claims have been settled is 90,944 miles, or 47.907 per cent of the mileage of all roads that have filed claims, and 37.705 per cent of the total mileage of all roads under federal control. The amount paid in settlement of these claims is \$117,715,840, or 30.416 per cent of the amount claimed.

This indicates that the Railroad Administration has up to this time settled nearly 50 per cent of the claims which have been filed. Substantially all of these settlements have been made since the first of January.

### Treasury Payments to Railroads

The Treasury Department has announced the following payments on account of loans under Section 10 of the Transportation Act: Aransas Harbor Terminal, \$50,000; Boston & Maine, \$3,049,000; Erie, \$1,733,750; and also payment on account of the six months guaranty to the New York Dock Railway of \$64,000. The Treasury has now paid a total of \$430,000,000 on account of the guaranty for the six months' period following the termination of federal control, and \$251,000,000 on account of loans from the \$300,000,000 revolving fund.

### Dividends Declared

Delaware, Lackawanna & Western.—3 per cent, quarterly, payable October 20 to holders of record October 8.

Lackawanna Railroad of New Jersey.—1 per cent, quarterly, payable October 1 to holders of record September 3.

Northern Railroad (N. H.).—1½ per cent, quarterly, payable October 1 to holders of record September 12.

Pittsburgh & West Virginia.—Preferred, 1½ per cent, quarterly, payable November 30 to holders of record November 11.

THE PHILADELPHIA & READING announces that, beginning with November 1, passengers paying fare on trains, when they have had suitable opportunity to buy a ticket, will be charged five cents more than the regular fare. This action is similar to that taken about six months ago by the Pennsylvania. The Reading circular says: "Conductors and trainmen, by long practice, can lift, examine and cancel a ticket, all in one operation, and a trainload of ticket passengers can be quickly covered. But when (particularly in the suburban district, where the train speed averages about three minutes between stations) the conductor is confronted with a cash paying passenger he must stop, ask destination, ascertain fare and war tax, punch cash fare receipt, collect fare, and usually make change (frequently from large bills) and finally tear off and hand receipt to passenger before proceeding, all of which represents an unwarranted consumption of time

## Railway Officers

### Financial, Legal and Accounting

**G. H. Parker**, formerly controller of the Railroad Administration, has been appointed commerce counsel for the American Short Line Association.

**C. M. Sheafe, Jr.** has been appointed general solicitor of the New York, New Haven & Hartford with headquarters at New Haven, Conn., succeeding **J. C. Sweeney**, resigned to enter private practice, effective October 1.

### Operating

**M. H. Gold** has been appointed trainmaster of the Florida division of the Seaboard Air Line with headquarters at Tampa, Fla., effective October 1.

**Walter Dennis**, whose appointment as superintendent of the New Jersey, Indiana & Illinois, with headquarters at South Bend, Ind., was announced in the *Railway Age* of October 1 (page 650), was born at Alliance, Ohio, in 1879.

He graduated from the State University of Kansas in 1900, and entered railroad service in the same year as an axeman in the maintenance of way department of the Kansas City Southern. During 1902 he was in the employ of Waddell & Hedrick, Kansas City, Mo., as a bridge draftsman, and in 1903 he was employed by the Kansas City, Mexico & Orient on location and construction work. In 1904 he was appointed chief delineator on double track and new construction work of the Union Pacific, which position he held until 1906, when he became associated with Horace G. Burt, consulting engineer on special reports in connection with grade reduction and economics. In 1907 he returned to the Kansas City Southern as office engineer. He left this road in 1912 to enter the engineering department of the Chicago, Rock Island & Pacific, where he served successively as construction engineer, special engineer and assistant engineer on special investigations. In 1917 he left the Rock Island to become principal assistant engineer of the Wabash, with headquarters at St. Louis. During the war he served as major in the construction division of the American army. He returned to the service of the Wabash in November, 1918, and was appointed division engineer of that road with headquarters at Moberly, Mo., which position he was holding at the time of his recent appointment.

**B. W. Wilson** has been appointed general agent in the passenger department of the Chicago, Burlington & Quincy, with headquarters at St. Paul, Minn., succeeding **C. I. Twyman**, who has been transferred, effective October 1.

**A. B. Raine**, assistant general manager of the Tennessee, Alabama & Georgia, has been granted leave of absence on account of illness, and **H. F. Bohr**, traffic manager, has been appointed assistant general manager in the interim, effective September 1.

### Traffic

**W. T. Lyman** has been appointed general agent of the Wabash with headquarters at Boston, Mass.

**P. M. Browning** has been appointed commercial agent of the Seaboard Air Line with headquarters at Cordele, Ga.

**E. F. Austin**, formerly division freight agent of the Pennsylvania, has been appointed a member of the auxiliary committee of the Central Freight Association, succeeding **W. C. Laughlin**, deceased.

**J. F. Dyas**, traveling passenger agent of the New York Central, with headquarters at Memphis, Tenn., has been promoted to general agent in the passenger traffic department with headquarters at Omaha, Neb. **C. A. Brawner**, traveling passenger agent with headquarters at St. Louis, Mo., has been promoted to general agent in the passenger traffic department, with headquarters at Dallas, Tex. **R. J. Ross**, traveling freight agent, with headquarters at Niagara Falls, New York, has been promoted to general agent in the freight traffic department, with headquarters at Omaha, Neb. **A. C. Huggins** has been appointed general agent in the freight traffic department with headquarters at New Orleans, La., and **M. A. Greeding** has been appointed general agent in the freight traffic department with headquarters at Dallas, Tex. These changes are effective October 1.

### Purchasing and Stores

**A. Singleton** has been appointed purchasing agent and general storekeeper of the Hocking Valley with headquarters at Columbus, Ohio, succeeding **J. R. Mueller**, purchasing agent, and **Leon Stiers**, general storekeeper, assigned to other duties.

### Obituary

**Lewis E. Foster**, claim accountant of the American Railway Express, with headquarters at Chicago, died in Chicago on September 16.

**J. D. Hawks**, formerly president and general manager of the Detroit & Mackinac, died on September 20 at Gloucester, Mass. Mr. Hawks was born at Buffalo, N. Y., on October 13, 1847. He was graduated from Buffalo High School and the University of Michigan and entered railway service in 1870 as an assistant engineer on the Lake Shore & Michigan Southern. In 1875 he went to the Erie division of the same road as assistant engineer and in 1878 to the Lake Shore division. In 1881 he became superintendent of construction of the New York, West Shore & Buffalo (now a part of the New York Central) and, in 1883, engineer of maintenance of way. In 1884 he was appointed chief engineer of the Michigan Central and left that position in 1892 to become general manager of the Detroit Citizens' Street Railway. The following year he was appointed manager of the Detroit Bay City & Alpena (now the Detroit & Mackinac). In 1895 he was elected vice-president and general manager of the Detroit & Mackinac and assumed the presidency of the same road in 1896. He served continuously in that position until his retirement in May, 1920.

**J. D. Brennan**, superintendent of the Sacramento division of the Southern Pacific, died at his home in Sacramento, Cal., on September 20, after a long illness. Mr. Brennan was born in 1864 and entered railroad service in 1881. He served in various positions on different roads until 1909 when he entered the employ of the Southern Pacific, where he was successively superintendent of the Stockton, Western and Sacramento divisions of that road.



W. Dennis



J. D. Hawks

# Railway Age

Vol. 71      October 15, 1921      No. 16



Panama Canal, with Panama Railroad in Foreground, Balboa, C. Z. Photo by Keystone

## Contents

### Railway Revival Central Europe's Greatest Need ..... Page 705

Chaotic Conditions of Transportation and Endless Custom-House Formalities an Effective Barrier to Any Progress, by W. B. Causey.

### M. K. & T. Improves Its Facilities at Oklahoma City ..... 713

Engine Terminals and Yards Have Been Reconstructed to Take Care of Increased Business.

### The Cost of Contract vs. Railway Shop Repairs ..... 729

Total Cost to the Railroad Was 28 Per Cent Greater in Its Own Shop Than in a Contract Shop, by J. W. Roberts.

#### EDITORIALS

Train Crews Handling Train Orders	699
Alloy Steel for Cars and Locomotives	699
Transportation and Central Europe	699
Mechanical Devices and Supervision	699
Equipment Repairs in Contract Shops	700
Net Return of the Railways the Smallest in Twenty Years	700
Railroad Consolidations	701
Are American Locomotives Harder on Bridges?	702
Speed and Fuel Consumption	702

#### LETTERS TO THE EDITOR

Eliminating the "31" Train Order, by W. M. Whitten	703
A Good Stopping Stone, by Wm. White	703
Are American Locomotives "Rough Riders"?	by J. A. L. Waddell
The Railroads and the College Man, by John Dewar	703
Questions About Unstrutted Train Orders, by Wm. Nichols	704

#### GENERAL ARTICLES

Railway Revival Central Europe's Greatest Need	by W. B. Causey	705
Railroad Executives Confer on Rate Reductions		708
The Railroads Appeal to the Intelligent Public, by Samuel Rea		711
Unemployment Conference Recommends Rate Revision		713
M. K. & T. Improves Its Facilities at Oklahoma City		713
Freight Car Loading		716
"Perfect Package Month"		716
Strike Talk Dies as Loaders Count Strike Ballots		717
Lehigh Valley Files Segregation Plan		718
Ead Order Car Situation Presents Serious Problem, by W. J. Gormley		719
Electric Motive Power for Paulista Railway		721
Debate Federal Versus State Regulatory Powers		723
Why Are American Bridges Heavier Than European?	by P. H. Chen	727
The Cost of Contract vs. Railway Shop Repairs, by J. W. Roberts		729

#### GENERAL NEWS DEPARTMENT

732

Published weekly and daily eight times in June by the

### Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President.*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building      CLEVELAND: 4800 Euclid Ave.      LONDON: England: 34 Victoria St., Westminster, S. W. 1  
PHILADELPHIA: 407 Bulletin Bldg.      Cable address: Urasigmeo, London  
CINCINNATI: First National Bank Bldg.      WASHINGTON: Home Life Bldg.      NEW ORLEANS: Malson Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON	A. F. STUBRING	MILBURN MOORE
R. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. E. COLE
R. E. THAYER	ALFRED G. OEHLEA	J. G. LYNE
C. B. PECK	F. W. KARGER	J. H. DUNN
W. S. LACHER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOACH

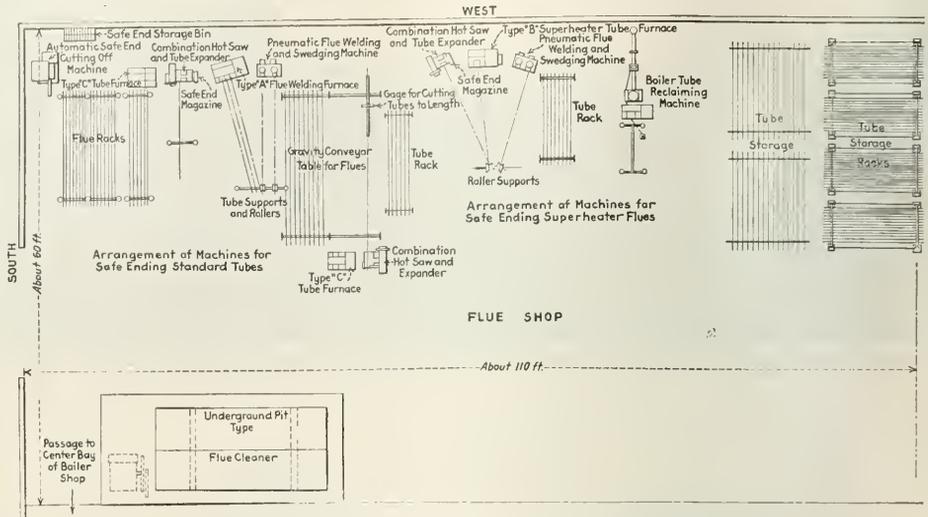
Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in 2 s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 8,800 copies were printed, that of these 8,800 copies 7,925 were mailed to regular paid subscribers, 50 were provided for counter and news company sales, 332 were mailed to advertisers, 65 were mailed to employees and correspondents and 428 were provided for new subscriptions, samples, copies left in the mail and office use, that the total was printed for a year to date were 391,500, an average of 54,000 a week.

(A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)



Ryerson Standardized Flue Shop Layout for a large Railroad

## Two Flues Every Minute

On their way through the Ryerson Standardized Flue Shop, from the time they leave the Rattler till they reach the engine, the flues never touch the ground.

They are cut off—safe ended—swedged—cut to length—expanded in continuous operations at the rate of two flues every minute or faster.

Ryerson Standardized Flue Shops increase engine repair output by turning out flue work on schedule with the erecting work.

All installations have shown great savings—one railway has cut its labor costs in half.

*Bulletin No. 19,400 describes this cost reducing flue shop machinery in detail.*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Labor Board conducted a hearing last week on a controversy between the big four train service brotherhoods and the Order of Railroad Telegraphers with the Buffalo, Rochester & Pittsburgh, which while apparently of little importance, will have far reaching effect on train operation if decided in favor of the brotherhoods. A strike has been threatened unless a rule is incorporated in the working conditions to the effect that the trainmen will not have to receive train orders by telephone direct from the dispatcher (without the intervention of a station operator). This will mean that one of the important advantages of the telephone for the operation of trains will be nullified and train dispatching in many places will again be dependent on the Morse code. Also, additional employees will be required at certain blind sidings and other locations to transmit instructions or the orders of the dispatcher to the train crews. In handling orders and getting instructions at such locations the train crew is not taking over work which belongs to operators any more than the operators are taking over work of the train crews when they line up switches for them in order to keep trains moving. This hearing raises a question in which the public is vitally interested for this rule, if placed in force, will make train operation more expensive as it will require additional employees for work which has been handled satisfactorily in the past, trains will be unable to get over the road as rapidly and poorer service will result, the cost of all of which will have to be passed on to the public. The present is no time to add to operating costs in any branch of the railroad service.

### Train Crews Handling Train Orders

The unsatisfactory performance of the coiled springs on car trucks, especially on 50-ton cars, has given trouble for some time. As a result, the Committee on Car Trucks of the Mechanical Division of the American Railway Association has recommended an alternate design of springs made of chrome molybdenum steel instead of high carbon steel. The committee contemplates the substitution of these springs for the present standard if the anticipated advantages of the new material are borne out in practice. The individual railroads have been slow in adopting alloy steel, one of the principal objections raised being the difficulty of properly treating the material. The committee's action in advocating the introduction of alloy steel in general interchange service is therefore significant. It seems to indicate that the committee does not consider the handling of this material as a serious obstacle. Furthermore, the simple heat treatment recommended in the specification shows that it would not be difficult for the roads to treat these springs in their own shops. It is interesting to see engineers again turn to alloy steel as the solution of a difficult problem. A few years ago several roads tried various alloys in an attempt to overcome the unsatisfactory counterbalancing condition caused by heavy reciprocating and revolving parts of locomotives. The adaptation of the material to this use was found difficult. Some of the roads could not secure the steel promptly during the war and the experiment was given up. The problem is still waiting for a solu-

### Alloy Steel for Cars and Locomotives

tion. It will be solved when the roads attack it with energy and courage and with a determination not to be turned aside by the discouragements that are inevitable in the development of new methods.

The economic plight in which this country would find itself if each state became a separate nation can be only vaguely imagined. If, however, we could picture such a situation and should add to it an intense nationalistic feeling on the part of each of the new nations, we should have with us just such a situation as prevails in Central Europe today. The old Austro-Hungarian empire has been dismembered into several independent states, all intensely jealous of each other. If a traveler wants to go from one country to another, he must have a passport and submit to a customs examination. Similarly, freight has to be examined by the customs authorities and because of the impediments to free passage, some important railway lines have been abandoned altogether for through traffic. If such conditions should prevail in this country it would naturally follow that little business would be done because the greater part of our commerce is interstate. America would quit producing and the whole world would suffer. Such an inexcusable barrier to the free movement of freight and passengers, together with a railway system sorely in need of physical rehabilitation, is the key to the chaotic conditions in Central Europe. Central Europe, moreover, is the chief cause of economic troubles in Europe generally and, indeed, in the entire world. Colonel W. B. Causey, American Technical Adviser to Austria, in an article appearing elsewhere in this issue, gives a first-hand analysis of transportation problems in Central Europe. His observations will be of interest to those who realize the importance to this country of world-wide economic revival as well as to those who are seeking conclusive proof of the value to a nation of an efficient system of railways.

### Transportation and Central Europe

"In output and grade of work employees receive from labor almost exactly what they are willing to take." This remark recently was made by a railroad officer in discussing the importance of intelligent supervision in all branches of railway work. In the old days of railroading the ability to drive men often was one of the chief requisites to be desired in men employed in a supervisory capacity. The day of the driver, however, is past and under present conditions the successful supervisor is the one who finds means, other than by word of mouth, of influencing his men towards increased activities. This can only be done when the men are thoroughly convinced that the boss is doing all in his power to make it easy for them to get the desired results. Comparatively inexpensive opportunities for the higher officers to co-operate, such as providing improved working conditions or a more convenient rearrangement of materials or tools and so on, often present themselves. The desire of labor to be relieved of useless drudgery suggests the important relation labor saving devices bear to the entire question of super-

### Mechanical Devices and Supervision

vision, whether the problem under consideration concerns the mechanical department, the engineering department or the handling of package goods at freight stations or transfers. Under the present state of development of material handling devices, machines for carrying on almost all classes of laborious railway work are available and their possibilities in securing higher efficiency from the labor are worthy of careful consideration.

## Equipment Repairs in Contract Shops

WHAT constitutes the actual cost of operations performed in railroad shops is a question which has seldom been given the attention it deserves. In most cases, after obtaining the direct labor and material charges, a percentage is added to cover shop expense and the result is considered to be the complete cost of the operation. In the series of articles by J. W. Roberts, comparing the cost of repairing 50 box cars in a railroad shop with the cost to the railroad of 50 cars of the same series repaired in a contract shop, concluded in this issue, a painstaking effort has been made to include every item of operating expense which logically should be charged against the work done in the railroad shop. While a lack of adequate information in the railroad accounts has compelled the selection of bases of apportionment of some of the items of overhead expense and affixed charges which may be open to question, there can be no doubt of the logic of including some part of each of these items.

When questions as to such items arise the familiar answer is that these expenses would be incurred whether the particular operation in question were to be performed or not. No doubt in many specific instances this argument is correct, but if used often enough such operations will accumulate in sufficient volume so that in the aggregate there can be no question but that they are responsible for a portion of every item of expense which a strict analysis such as that made by the author of these articles would charge against them. This applies particularly to the various manufacturing operations carried on more or less extensively in all railroad shops.

But there is a broader phase of this matter in its bearing on the primary operations of equipment maintenance. The volume of maintenance is subject to more or less fluctuation, the railroads never having succeeded in accumulating sufficient reserves to discontinue a hand-to-mouth policy largely dependent on the volume of revenues. The periods during which shop facilities are crowded beyond the limit of efficient operation are followed in cycles by periods during which considerable portions of these facilities are idle. The past year has presented a most marked example of this condition. A year ago not only were railway shops working to capacity, but a large volume of equipment repairs was being cared for in contract shops. Since the decline in traffic last fall all maintenance work has been subjected to a most drastic curtailment and railroad shops have been operating far below normal capacity.

If such cycles are to continue, and there is little reason to doubt that they will, it becomes a serious question whether, as a matter of general policy, the railroads can afford to provide the capital and the organization necessary effectively to care for these congested periods, whether they should provide for average conditions or whether they should provide only for a volume of maintenance which may reasonably be expected to continue during periods of depression. The correct formulation of policy in this matter must rest on a complete and accurate determination of the elements of railway shop costs. This, of course, applies only to heavy repairs, since light and running repairs are probably too closely related to the actual operation of the railroad to permit

them to be separated readily from the control of its own organization.

Admitting the correctness in detail of each item of operating expense charged against the railroad shop repairs by Mr. Roberts it would be unsafe to draw general conclusions on the basis of the results obtained in this specific case, and the author has made no such attempt. It is worthy of note, however, that in this case the assignment of equipment repairs to the contract shops did not result in idleness of the facilities provided by the railroad to do the same work. Had such idleness resulted, thus making a portion of the railroad's fixed charges a legitimate item in the determination of the complete cost of the contract work, the margin of saving favorable to the contract shop would be narrowed. It would then become a serious question whether the investment of capital in contract shops should be encouraged to an extent which could only be justified on the assumption that the railroads were materially to curtail operations in their existing shop facilities.

When the question becomes one of expanding existing shop facilities, however, the possibilities are much more favorable for the contract shop. It is true that a change from the present unsatisfactory and inefficient labor conditions with which the railroads are confronted might materially decrease the attractiveness of contract repairs. But one of the most effective ways to control this condition is to prevent the establishment of a railway labor monopoly in the maintenance of equipment field. This consideration alone is sufficient to justify careful consideration of whether contract shops should not be used more in future than they have been in the past.

## Net Return of the Railways Smallest in Twenty Years

THE PRESENT FREIGHT and passenger rates of the railways had been in effect twelve months at the end of August, 1921. A perfect hurricane of agitation for their reduction is raging. Many people seem to believe that on these rates the railways have earned a large net return, while others believe that they are guaranteed 6 per cent by the government.

How astoundingly different from these widespread popular impressions are the cruel facts. The facts are that the total net operating income earned by the railways in the first twelve months the present rates were in effect was smaller than they had earned in any fiscal year for twenty years, except when, as a result of government control, their returns were guaranteed. We have to go back to 1902 to find a full fiscal year when they were operating without guarantees; when their operating income was as little as \$555,666,000. Their gross earnings in that year were only \$1,726,400,000, so that they were able to keep for themselves almost one-third of what they earned. In the twelve months ended with August, 1921, the total net operating income of the Class I roads was only \$530,000,000. This figure is not strictly comparable with that already given for 1902, but it is nearly enough comparable to show that the net operating income in the first twelve months the present rates were in effect was, as already stated, the least in any year for twenty years, except when the net returns were guaranteed. The gross earnings in these twelve months were over \$6,000,000,000. In other words, while twenty years ago almost one-third of the gross earnings of the railways were net returns which they could keep, since the present rates have been in effect only one-twelfth of what the public has paid them has been net return which they could keep.

But this is not the worst of the story. Twenty years ago the investment in their properties was only a little more than half what it is now, and the net return earned then amounted

to over 5 per cent on their property investment. On the valuation of the Class I roads made by the Interstate Commerce Commission, which is somewhat less than their property investment as shown by their books, the net operating income of the Class I roads in the twelve months ending with August yielded a return of only 2.9 per cent. In its annual report for 1916 the Commission gave figures showing the percentages of return earned in every year beginning with 1892. The smallest percentage of return then shown by its figures was for 1894, the year after the great panic of 1893, and was 3.2 per cent. Therefore the percentage of return earned in the first twelve months the present rates were in effect was the smallest ever shown in any year for which statistics are available, except, as stated, when the net returns were guaranteed.

As a result of the recent relatively small reduction of wages, and of the most drastic economies ever made by the managements of the railways, the net operating income recently has been increasing. It was \$70,000,000 in July, which was at the annual rate of about 4.50 per cent on the valuation. It was over \$90,000,000 in August, which was at the annual rate of about 5 per cent on the valuation. It was assumed, however, when the present rates were fixed that on them the railways would earn an annual net return of 6 per cent, which, for the Class I roads, would have been \$1,101,998,000 in a year. The net return actually earned in twelve months under the present rates was \$571,911,000 less than the amount required to yield a 6 per cent return.

The railways are just convalescing from the most serious financial illness from which they have ever suffered. It would require not only months, but even years, of substantial net earnings to enable them to recover from the effects of what they have recently gone through. On the whole, the present rates are too high. Clearly, however, no steps should be taken toward reducing them which are not accompanied by measures to reduce present railway labor and other costs. The railways have no right to ask for any better treatment than other industries, but as one of the basic industries of the country they should be treated as well as other industries, not only in fairness to themselves, but also in the interest of the public welfare.

## Railroad Consolidations

FOR THIRTY YEARS the people and government of the United States sought to prevent any consolidation or agreement by railways which would interfere with unrestricted competition in construction, service or rate-making. A remarkable change in sentiment occurred about the time government operation was adopted which resulted in the consolidation provisions of the Transportation Act. This act directed the Interstate Commerce Commission to formulate a plan for the consolidation of all the railways into a limited number of systems. The Commission delegated to Professor William Z. Ripley of Harvard University the task of formulating the first plan, and his report to the Commission which recently was made public shows that he did his work with remarkable thoroughness, intelligence and skill. He recommended the creation of 21 systems. The Commission, in making its tentative plan, adopted that of Professor Ripley in the main, but so changed the combinations as to reduce the number of proposed systems to 19.

All discussions of the plans made by Professor Ripley and the Interstate Commerce Commission should be predicated on recognition of the fact that they worked under certain definite directions given by the Transportation Act. The act requires that "competition shall be preserved as fully as possible, and wherever practicable the existing routes and channels of trade and commerce shall be maintained." "The several systems," says the law, "shall be so arranged that

the cost of transportation as between competitive systems and as related to the value of the properties through which the service is rendered shall be the same as far as practicable so that these systems can employ uniform rates in the movement of competitive traffic, and under efficient management earn substantially the same rate of return upon the value of their respective railway properties."

Probably the most important difference between Professor Ripley's plan and that tentatively adopted by the Commission is that under the former the principal distinctively New England railways would be consolidated into a single system, while under the Commission's plan they might be consolidated into a single system or different ones of them be united with railways in Trunk Line territory. One of the Commission's suggestions is that the Boston & Maine, Maine Central and Bangor & Aroostook might go with the New York Central, while the New York, New Haven & Hartford might go with the Baltimore & Ohio. Professor Ripley suggested that the Florida East Coast Railway should be left independent, while the Commission favors putting it into the Atlantic Coast Line-Louisville & Nashville system.

Either plan apparently would carry out the provisions of the act as well as any that could be made. Before, however, any scheme of consolidation can finally be adopted by the Commission public hearings must be held, and these hearings are pretty sure to disclose a wide diversity of opinion among public men, business men, farmers and railway officers regarding the desirability of such wholesale consolidations as are contemplated and regarding each of the particular consolidations that have been suggested. It should be clearly understood that so long as the railways are privately owned, whether all or any of the consolidations proposed shall be made will depend on the voluntary decision and action of the railways themselves. The government could buy the railways, and having bought them put them together in any way it pleased, but it has no constitutional power to compel two or more privately-owned railways to unite if they do not want to. While it cannot compel any two railways to consolidate, it can, of course, prohibit any combination it may regard as contrary to the public interest.

There is one provision of the Transportation Act that is likely to prove a far more serious obstacle to effecting its purposes than its authors anticipated. This is the provision which, in substance, requires any two or more railways which may desire to consolidate but whose outstanding securities exceed their valuations to reduce their capitalizations so that they will not exceed their valuations. It has been found in the past comparatively easy for railways to consolidate by buying one another's stock, or by having a holding company buy their stock, because this did not necessitate retiring securities actually outstanding. On the other hand, it always has been found practically impossible to retire large amounts of securities except through receivership.

There can be no doubt that many consolidations, including many or most of those proposed by Professor Ripley and the Commission, would be beneficial to the railways and to the public. Many consolidations made in the past would still be in existence and many more would have been effected if the government under the anti-trust law had not broken up or prevented them. The consolidations now proposed would preserve a large amount of competition and enable it to be carried on in most parts of the country on much more equal terms; and they would thus simplify the problems of rate regulation arising from the existence in every territory of some so-called "strong" lines and some so-called "weak" lines.

It is doubtless pardonable to be somewhat skeptical as to the extent to which the consolidation program actually proposed will be carried out. It should, however, receive open-minded, fair and thorough consideration and discussion. There is no question that the prolonged efforts of the government to prevent reasonable consolidations or even agreements

did more harm than good. The policy enunciated by the Transportation Act is incomparably more sane and sound than that enunciated by and followed under the Sherman anti-trust law. The *Railway Age* believes and always has believed, that legislation should simply authorize the railroads to effect voluntarily such consolidations or make such agreements as the Interstate Commerce Commission might hold would not be prejudicial to the public interest. The Transportation Act goes farther than this, but possibly when an actual trial of them is made its provisions may be found more workable than some of them now appear to be.

## Are American Locomotives Harder on Bridges?

OCCASIONALLY technical problems that primarily concern the engineer become of vital importance to the businessman. This is the case with the questions raised by Dr. P. H. Chen in a paper before the Association of Chinese and American Engineers at Peking, China. The seeming inconsistency between American and European bridge designing practice, to which he draws attention, would seem, at first thought, to be of interest only to the bridge designer, but, as pointed out by Dr. J. A. L. Waddell in a letter to the editor, the inquiry implies an indictment of the American locomotive. Dr. Chen shows that American bridge designers use lower unit stresses, make greater provision for the effect of impact and also brace their bridges against lateral motion or vibration to a much fuller extent than do the designers of European bridges. The inference is that the American locomotives impose a much greater burden on bridges (for the same weight) than do European engines. American bridge designers are thoroughly conversant with the merits of this controversy, but Dr. Chen's paper, with the comments of an American bridge engineer now in China which appears elsewhere in this issue, presents the subject in a new light.

American railroad bridges carry much heavier loads than do those of Europe and in consequence, our bridges appear heavier even to the layman, but Dr. Chen states specifically that the inconsistency to which he refers arises in a comparison of structures intended to carry the same loads. This difference may be explained in part by a conservatism on the part of American bridge engineers born of their experience with earlier structures designed without sufficient regard for future increases in loading and which, in consequence, became obsolete long before they had suffered any appreciable depreciation. Therefore, American bridges now designed for E50 or E60 loading are expected to be safe for loads at least 25 per cent heavier.

Experience with adolescent structures is also largely responsible for the heavy details referred to by Dr. Chen. Every engineer who has ever investigated any number of old bridges knows that weak details rather than inadequate main sections have been primarily responsible for the inadequacy of the old structures. Moreover, the vibration that commonly attends the passing of the train across an overloaded bridge has had no little influence in creating a demand for heavier sway and lateral bracing. The commercial factor must also be considered. American railroad bridges are contracted for on a pound price basis on general drawings prepared by the purchaser and are fabricated according to detail plans made by the bridge company, an arrangement which obviously tends toward heavy rather than light detailing.

The most important point made by Dr. Chen concerns the allowance for impact, but as brought out in the discussion of his paper, there is no opportunity for an accurate comparison owing to the fact that there is no extended equivalent in Europe of the elaborate impact tests made upon American railway bridges carrying American rolling stock. One exception to this is a series of tests carried out on English

bridges to which reference was made recently in these columns. These tests, while not sufficiently comprehensive to be conclusive, give every indication that the impact effects of English locomotives are fully as high as those encountered in American practice and English bridge engineers are now considering the adoption of an impact factor fully as large as that now employed in this country.

There is no denying that the dynamic augment has a marked effect and that there may be pronounced differences in the extent to which this has been ameliorated in different designs of locomotives. American engineers are keenly alive to this and are endeavoring to decrease the effect of the over-balance to the greatest possible extent. It should be clear, however, to anyone who is familiar with bridge designing practice that the difference in the riding qualities of European and American locomotives is not to be measured by the difference between American and European bridge designing practice.

## Speed and Fuel Consumption

IN CONSIDERING the freight locomotive as a machine for the production of ton-miles its internal characteristics are of less interest than the character relationship between the fuel placed in the firebox and the ton-miles produced by the work done at the drawbar. Much of the data concerning locomotive performance developed by engineering tests do not convey a clear impression of these over-all characteristics, since the purpose of such tests is largely to determine correct proportions and relationships within the locomotive itself. Hence, such data as that developed by the fuel conservation committee of the Southern Pacific, referred to on the floor of the recent meeting of the Traveling Engineers' Association, are of special interest and value.

The test was made with a 2-10-2 type oil-burning locomotive with a 1,000-ton train. The fuel consumption for 1,000 gross ton-miles was measured at speeds varying by increments of five miles an hour from five miles an hour to 50 miles an hour, other conditions remaining constant. The unit fuel consumption varied from .3 gallons at the lower speed to 28 gallons at the higher speed, and throughout the range the rate of fuel consumption varied remarkably closely as the square of the speed. Such an increase was to be expected through the higher ranges of speed but it is especially worthy of note that in this test the same law held for the lower speeds.

This rate of increase in unit fuel consumption is the result of several factors, such as the increase in train resistance with the increase in speed and the internal characteristics of the locomotive itself, both thermal and mechanical. While the law of variation apparently established in these tests may not hold strictly for all locomotives or for trains of all weights, the results illustrate in a striking manner that fuel consumption is likely to increase much more rapidly than the speed is increased. Since with present average freight train speeds the cost of fuel under average conditions is approximately equal to the wages of engine and train crews, the prospect of economy from increasing the running speeds of freight trains does not look promising.

There is a real opportunity, however, for fuel economy as well as for decreasing the unit cost of crew wages, by the elimination of delays at terminals and on the road. Data obtained in these same tests indicate that for every hour of delay there is a fuel stand-by consumption to keep the locomotive hot and maintain brake pipe pressure on the train great enough to produce 10,000 gross ton-miles at 20 miles an hour under the conditions obtaining in the previously mentioned speed tests. It must be remembered that the same relationship would not hold where the fuel is coal, but even though the stand-by losses in the case of coal might be less the fact remains that whatever their extent they are complete losses so far as the production of ton-miles is concerned.

## Letters to the Editor

[*"The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated."*]

### Eliminating the "31" Train Order

DALE L.

TO THE EDITOR:

I have read with much interest in the *Railway Age* of September 10 the letter to the editor on signatures to train orders with reference to extending the use of the 19 train order; also your editorial. I have been advocating the abolishment of the 31 train order for a good many years, for I believe it has passed into antiquity.

The Missouri, Kansas & Texas is now making a study of the subject and we hope within the near future to formulate a plan whereby we can, with safety, eliminate entirely the use of the 31 train order. I see no reason why train operation cannot be safely conducted through the use of the middle order and the clearance card, and I feel positive, insofar as our road is concerned, that we shall have something tangible and effective to put forward in the near future.

W. M. WHITEENTON,  
Assistant Chief Operating Officer

### A Good Stepping Stone

VERNON S. COE

TO THE EDITOR:

I have read with interest the letter from "One of Them," entitled "The Official Goats," which alludes to the position of secretary to a railroad official, and which appeared in your issue of September 24.

After almost five years' experience as a secretary, and during a period which has been trying for all railroad officials, I must say that my experience has been both pleasant and profitable. I may have been blessed with exceptionally pleasant bosses, but I have come in contact with a great many railroad officials and their secretaries during that period and have found that the majority are congenial and considerate.

Men, to be really big and to successfully operate their properties, must command the confidence and respect of the great numbers of employees who come under their jurisdiction and in this advanced age it cannot be done by "raw-hiding." In this majority, whose respect and confidence an official must command, is included his secretary, in whom he must confide, and who is closer to him than any other employee, not excluding his chief clerk.

To my mind there is no better avenue of progress in the transportation department of any railroad than through a division and general office, and through this avenue a secretary has a decided advantage because of the officials with whom he comes in contact and to whom he becomes known. This does not imply that a man must have pull, but it must be admitted that to be known is an advantage.

It is generally considered that office men have a very limited opportunity for advancement in railroad business, but that is a fault of the office men in that the majority of them prefer to remain in a swivel chair instead of eventually getting out on the road and taking the hard knocks which are part of the road experience and which help to make them hard-skinned.

Read the biography of almost any railroad official who has

come up through the ranks without office experience and it will be found that most of them were just a little above the men with whom they were associated with the result that they stood out. It is equally necessary for an office man to push himself ahead and stand out to secure recognition.

We all sympathize with "One of Them" for being the "goat," but the fact that he was a secretary for nine years indicates that perhaps he has not taken advantage of his opportunity, and it is only natural that he should be sore at officials in general.

WILLIAM WHITE

### Are American Locomotives

### "Rough Riders"?

PERKINS, CHINA

TO THE EDITOR:

The *Journal of the Association of Chinese and American Engineers* for May, 1921, contains a paper comparing American and European bridge standards\* and a report of the discussion which followed. The matter at issue is an important one for the United States, because a claim is being made here by Chinese engineers to the effect that the impact from American locomotives is far greater than that from European ones. If this notion is not driven out of their heads, they will continue to buy Belgian and French locomotives. They have been buying both European and American ones of late years, and I should hate to see the business get away from the United States.

The question is one for our locomotive manufacturers and engineers to solve. I cannot deny the claim of a large difference in impact from the two different types, because I have never experimented with European locomotives, but I state that I am of opinion that the difference—if any—is small.

I have lately had occasion to reply to a claim made in writing by an Austrian engineer to the Railway department concerning the greater expense of American bridges as compared with European ones on account of this matter of impact. They seem to doubt the correctness of our impact experiments.

J. A. L. WADDELL,  
Consulting Engineer

### The Railroads and the College Man

CHICAGO, ILL.

TO THE EDITOR:

As a college bred man and a railroad employee, I have read with much interest the current discussion in your columns with reference to the employment of college men by the transportation and operating departments of our railroads. The problem of employment is today a complicated one, and requires more serious consideration and more mature study than ever before. The herculean effort which is being put forth by the railroad managements to develop an organization which will effect the highest degree of economy in the manufacture of transportation, and which will render the equivalent service to the public, must be supported by the very best human intelligence to be had.

I do not believe that it is a question as to whether the railroads want college men. Rather it is whether the college man wants to work for the railroads, and whether the railroads need the college man. The average college man does not want to work for the railroads, for two reasons. First because employment in the ranks of railroad workers is not presented attractively or thoroughly to the college student and graduate. Second, the remuneration for the railroad beginner is not sufficient to attract him, especially in the face of his lack of knowledge of the handsome rewards ahead for the man who works hard and diligently.

The engineering, mechanical, electrical and vibration de-  
\* Abstracted elsewhere in this issue under the title "Why Are American Bridges Heavier Than European?"

partments of our railroads require college graduates and want them, and offer reasonably good wages for the initiate. It is a question whether the college or university can provide a course on transportation and operation which will be complete enough to develop a man to such an extent as to warrant the railroads employing him for service which will command a substantial remuneration and place him alongside of the man of years of practical experience in transportation and operation. If they can, so much the better. But from my personal experience the actual daily association with the many problems practical is necessary to effect the required grounding. However, merely to instruct the college student in the fundamentals would be an invaluable aid, and serve to direct him towards the railroad field.

To influence the railroads to offer financial inducements to the college man is an up-hill grind, especially in the face of the present mandatory methods of establishing the daily wage set by the Labor Board. This cannot be overcome at present, and we must leave that issue to time and education.

Does a college man want to work for a railroad? Suppose he does. Is he willing to put in the hardest kind of mental study and physical application to the duties demanded of him? Is he willing to plod along day after day, apparently unnoticed, disregarding the advancement of men he may believe to be less worthy than he, ever keeping his eyes on the goal ahead? Is he determined to hang on? If he is all this and has natural ability he will be rewarded.

I know of no field that offers a wider scope or a more fascinating study than the railroad field, and I see no reason why any young man who leans towards railroading should not follow the path. We cannot all be rich in material effects, but we all have it in us to earn a moderate success and attain a position of trust and confidence.

Do the railroads need college bred men? I believe they do, and furthermore I believe the railroads want them. By virtue of his four years' application to concentrated study, the college man has sharpened his intellect, and is more capable of getting down to bed rock, of seeing a situation quicker. His ability to study prepares him to assimilate facts easier, and apply what he learns. The potential ability to analyze and grasp a situation, the ability to think accurately, and the ability to stick to facts and to follow instructions, all these attributes are ingrained in the college bred man, and are necessary factors in producing a constructive, well-rounded and responsible executive. It is intelligence any business house or railroad wants, and I believe the college man offers a quality of intelligence which the railroads can well afford to take advantage of.

Some constructive means must be established by the railroad and the college to induce the college man to look favorably on the railroad field. When once employed the railroad must give him the opportunity and the necessary encouragement so that he will enjoy his work and stick to it.

JOHN DEWAR,

Assistant Car Accountant, C. M. & St. P. Ry.

## Questions About Unsigned Train Orders

TO THE EDITOR:

I have read, with interest, your editorial of September 10, on "Why Require Signatures to Train Orders?" The unrestricted use of the 19 form of train order means that the train dispatcher may issue all his orders, both restrictive and those that confer right, on the 19 form and issue as many as may be necessary for a train to receive at one point, and then dismiss them from his mind. If one of the orders is lost in making delivery, or the operator misplaces or overlooks one or more of them, the dispatcher may be immune from responsibility. That fact, no doubt, enters to quite an extent into the desire on the part of the average train dis-

patcher to use the form without restriction. This should be taken into account by each management when its train dispatchers so strongly advocate the practice.

When a dispatcher sends a number of orders to a certain train at one point, using Form 31, and the operator fails to transmit the signatures to all of them, then it is clearly his duty to require the operator to obtain and transmit the signatures to those that have been overlooked before he completes any of them. This is the one great protective feature of the 31. Form 31 cannot with reason be entirely abandoned; but we can increase the use of the 19 form to probably 95 per cent of all orders issued.

With clearance cards indicating the number of train orders and checked by the dispatcher, and the rules and practice properly stiffened up, we may provide for a large percentage of cases; but before changing any rules let us carefully enumerate the typical situations in which signatures must be required. Consider Rule 217. For an order sent through third parties to a conductor at a non-telegraph station, the dispatcher must get signatures. Why? Because the dispatcher must know that the order has been received by the superior train.

Take Rule 219, covering the case where the engine has passed a train order signal. Unless you require the signature, the train may pull out while the operator is trying to deliver the order. This has happened a good many times.

If you have a work extra between B and D, and you desire that it shall protect against an extra after a specified time, what assurance has the dispatcher that the work extra has received its order which places it under flag, if he does not obtain the signatures? If the dispatcher desires to annul the right of a work extra before its time limit expires, how may he positively know the annulling order is in the hands of the work extra without obtaining signatures?

Should the dispatcher desire to reduce a time order, how may he know all who are using the time have received the annullment of it before permitting the train to run a less amount late if he does not obtain signatures?

If a dispatcher desires to give an extra right over all trains, A to Z, the order must be placed ahead of all trains on the section of road so restricted and the signatures obtained before the extra can be authorized to run. Why? Because he must know that each restricted train has reached the point where the order has been placed for it and has actually received it. Otherwise, it is a lap order and the extra so created and given right beyond the point where the order is placed could collide with the train against which it holds right, if such restricted train had not the order in its possession.

Other conditions arise occasionally where the dispatcher must know positively that the restricting order is in the possession of the restricted train before he can authorize the use of the order by the train upon which it confers right.

The 19 form should never be used to restrict a train at a meeting point, for the reason that the operator may become confused, especially where he has many duties to perform, and hand the restricting order to the engineman without stopping him. When an operator standing in front of his office holds up a 19 order to an engineer, nearly all engineers assume that the order does not affect them at that station; and so, in many cases, they run at such a high rate of speed that it would be impossible for them to stop before they side-wiped an opposing train, entering the siding beyond the office.

The middle order and block signals should not be considered in this problem. If considered, then we admit our system is faulty and that we are distrustful of it.

Mr. General Manager, when your over-zealous train dispatchers come to you with a proposition to use the 19 Form without restriction, ask them what they would do under the conditions as herein outlined. I will guarantee that they will immediately begin to hedge or attempt to cloud the issue.

WM. NICHOLS.



Electric Train on the Peggau-Uebelbach Line, Austria

## Railway Revival Central Europe's Greatest Need

Railway Chaos and Endless Custom-House Formalities an  
Effectual Barrier to Any Progress

By Colonel W. B. Causey  
Technical Adviser to Austria

WHEN THE UNSETTLED economic conditions prevailing in Central Europe, which are the subject of the deliberations of various councils and high-councils, commissions and high commissions, are brought to a final analysis they resolve themselves into one problem—transportation.

The nations of Central Europe will never become self-sup-



Hollenburger Bridge, Karawanken Railway

porting unless reasonable international trade relations and reasonable co-ordination of lines of transportation are re-established and apparently without some strong hand this co-ordination will not take place. When the treaty makers dismembered the old Austro-Hungarian empire they took no account of existing railway systems, although they undertook to

give consideration to every other phase of human life from ethnology to military contingencies.

Some slight conception of the unnatural barriers which are placed in the way of transportation under the present absence of co-ordination may be gleaned from the following. Before the war a traveler could take a train at Trieste (see map) and go through Vienna, Cracow, Lemberg and to the eastern extremity of Galicia without a passport or other custom-house formalities. Now in making the same journey the passenger must submit to passport and customs examinations at five international boundaries, viz., Italy-Jugoslavia, Jugoslavia-Austria, Austria, Czechoslovakia, Czechoslovakia-Poland, Poland-Roumania—in a total distance of only 968 miles—or practically the same as that from New York to Chicago.

The inconvenience and discomfort to passengers, aggravated as it is, is a mere incident compared with the hindrance which such customs formalities place in the way of the free movement of freight. It is now three years since the dissolution of the old Austro-Hungarian monarchy and commercial treaties between the new states are still in the making. Travel between the countries is almost as difficult as ever and many railroad lines, some of which before the war carried a heavy traffic, have not even been re-opened to international commerce. The result of this separation of states can only be appreciated by a study of the map. The Austrian State Railways are, of course, less extensive than before the war. Furthermore, some of the succession states, notable Czechoslovakia, have their rail lines radiating from Vienna, a foreign city. In order for Czechoslovakia to have adequate transportation service, free movement of freight and passengers over the Austrian border line is essential. It is as if, in America, all of the principal east and west rail routes passed through the province of Ontario, Canada. Under such conditions artificial and unnecessarily stringent customs regu-

lations would greatly impede commerce even between two points in the United States.

Before the war, with the exception of the Southern Railway, 1,385 miles in length (333 miles of which were in Hungary); the Bustiehrader Railway, 262 miles; the Aussig-Tepelitz Railway, 157 miles; and some other private railways of lesser importance, the railways of Austria were owned and operated by the government and constituted the Austrian State Railways. Similarly the principal railways of Hungary were owned and operated by the government as the Hungarian State Railways. The Austrian State Railways and the Hungarian State Railways were as entirely independent of each other as any two systems in the United States, but these two systems had interchange agreements with each other and with the other railways of Central Europe very similar to such agreements between the railways of the United States.

It will be remembered that the Austro-Hungarian empire before the war included, besides Austria and Hungary, what are now Jugoslavia and Czechoslovakia and portions of Italy and Poland. The former through route from the English channel to Constantinople followed the valley of the Rhine, crossed Germany to the Austrian border, followed the valley of the Danube to Vienna, Budapest and Belgrade, and led thence to Sofia and Constantinople. From Budapest there was another main line of travel to Bucharest and the Black Sea. Vienna and Budapest are connected by a double-track line north of the Danube and a single-track line south of the Danube. The double-track road was formerly the main line of travel. It runs through what is now Czechoslovakia and because of the friction between the Czechs and the Hungarians there has been no through traffic on this double-track line since the revolution in November, 1918. Therefore, all of the traffic from Vienna to Budapest and other parts of Hungary has since the revolution been moved over the direct single-track line on the south side of the river and over a roundabout line of the Southern Railway.

The Southern Railway is double-tracked between Trieste and Vienna and on account of this, as well as of its more favorable grades, it is the principal line of travel from Vienna

to the Adriatic and to the East. From Pragerhof, about halfway between Trieste and Vienna, a single-track line runs to Budapest, thus placing Budapest in direct connection with Trieste. This single-track line runs through a flat country



Doessenbach Bridge, Tauern Railway

and was built for heavy traffic, but for nearly two years there has been no movement on this line across the Yugoslav-Hungarian border at the Mur river—with the exception of three trains of American foodstuffs which were forced through by



Principal Railways of the Former Austro-Hungarian Empire

the Allied Railway Mission in the fall of 1919. In spite of all the pressure brought to bear on the Yugoslavs they have steadily refused to open this line to traffic, alleging political and military objections. This attitude of the Yugoslavs forced the movement of 50,000 tons of American flour to Budapest in the summer of 1920 over the long and mountainous route via Graz, Fehring and Steinamanger.

Recently a partial resumption of through schedules from Budapest to Belgrade has been secured. Passenger trains from Paris to Constantinople are now running through the Simplon tunnel, Milan, Venice, Trieste, Laibach, Steinbruck and Zagreb, thence to Belgrade, Sofia and Constantinople—instead of Paris, Vienna, Budapest, Belgrade, which is the direct line and which, as before stated, was the pre-war route.

As a result of the new frontiers the Southern Railway, although a private corporation, instead of being operated under one administration, is cut up into practically four systems: Italian, Yugoslav, Austrian and Hungarian. However, the Austrian and Hungarian lines work very closely together and the Hungarian lines recognize the authority of the central administration of the Southern Railway Company in Vienna. To a certain extent the Yugoslavs also recognize this central administration. The Italians do not recognize it.

Instead of a system of 10,893 miles the Austrian State Railways now total only 2,581 miles, and instead of one central administration in Vienna the lines in Bukovina are operated, when they work at all, from Bucharest; the lines in Galicia from Warsaw; the lines in Czechoslovakia from Prague; the lines in Jugoslavia from Belgrade; and the lines in the South Tyrol and in Goerz, now Italian territory, from Rome. Apparently no consideration was given to the economic and transportation consequences entailed by the fixing of new frontiers, as in fixing these frontiers no effort

crews, and on local passenger trains of equipment, is the present practice at all these borders.

In another case on the northern border of new Austria the boundary line was manipulated so as to leave an important junction, railway station and repair shop in Czechoslovakia, while the town which the station served was left on the Aus-



On the Mittenwald Railway in the Tyrol

trian side of the boundary, thereby making it necessary for the people to go through passport formalities in order to reach the railway station. This railway station was also the terminus of two narrow-gage lines running into Austria and passengers have been compelled to leave the trains at highway crossings before reaching the station unless properly supplied with passports. Anyone who is familiar with present conditions in the succession states can testify as to the difficulties surrounding the passport problem.

The double-track line from Vienna to Lemberg and to the Galician oil fields south of Lemberg is one of the most important transportation routes in Central Europe. Before the war the heavy traffic in grain and oil from Eastern Galicia and coal from Upper Silesia and the district around Teschen (see map) made this one of the busiest and the most profitable lines in Central Europe. There was also a heavy traffic in manufactured articles from West Galicia, Moravia and Vienna, as well as from the great manufacturing districts in the coal fields. In addition to the traffic mentioned there was a heavy passenger traffic over this line from Vienna to Germany and Russian Poland and to Galicia and other Austrian territory.

Now, instead of being operated under one administration, this line is divided up into Austrian, Czechoslovak and Polish sections, and for weeks at a time during the past twelve months there has been an absolute interruption of through traffic due to the political differences of the new states. Although both the Czechs and the Poles are Slav peoples there has been much more friction between them and the difficulties of railroad operation have been much greater



Typical Country Through Which Austrian Railways Pass

whatever was made to maintain the integrity of certain transportation routes, although no strategic or political advantages were involved. For instance, the Southern Railway line from Marburg in Jugoslavia to Innsbruck in Austria runs for a short distance through Jugoslavia, thence through Austria to Imichen, thence through Italian territory to the Brenner Pass, then again into Austria. Changes of engines and

than between the Czechs and the Austrians. These little pleasantries of life are things that can only be fully appreciated by residents in this part of the world. Chauvinism and ultra-nationalism are two great obstacles to the resumption of normal life in the territory comprising the succession states.

## Railroad Executives Confer on Rate Reductions

WASHINGTON, D. C.

**I**MPORTANT QUESTIONS of policy with particular reference to rate and wage reductions are to be considered at a meeting of the member roads of the Association of Railway Executives at Chicago on Friday of this week, following a report of the executive committee of the association which has spent three days in Washington going over the entire railroad situation with the President and other governmental authorities. As a result of the conferences the railroad executives found brought to bear upon them a tremendous pressure for more definite action on the part of the railroads themselves in the direction of rate reductions, on the basis of which the committee has prepared recommendations for action by the member roads.

The executives met in Washington on Friday, Saturday and Sunday. They conferred with Chairman McChord of the Interstate Commerce Commission and Secretary Hoover of the Department of Commerce on Friday. On Saturday morning they called on President Harding and later they talked with Chairman Cummins of the Senate Committee on Interstate Commerce, Chairman Winslow of the House Committee on Interstate and Foreign Commerce and Chairman Anderson of the Congressional Joint Commission of Agricultural Inquiry. Among other subjects discussed with the President and particularly Secretary Hoover was the topic of unemployment. It is understood that the railroad men told that the roads were now increasing their forces to some extent as the volume of traffic and their earnings have increased, and a statement issued by the Department of Commerce referred to conferences held by Mr. Hoover with the heads of great national industries, including railways, "from which have resulted definite steps undertaking to meet the emergency in many practical directions." In this connection the early passage of the War Finance Corporation bill now before the Senate was urged as an important means of enabling the railroads to take steps to increase their forces and their expenditures.

The railroad bill was also discussed with others with whom the railroad executives conferred; and while it appears that the bill will be passed, as soon as the Senate disposes of other measures which have been allowed to take precedence, it was pointed out to the railroad executives that the so-called "agricultural bloc" in the Senate, consisting largely of western senators and some of the radicals, is preparing a most vigorous fight against this bill, and in favor of Senator Capper's bill to repeal Section 15-a, unless something can be done to insure a reduction in freight rates. If the railroads could see their way clear to do something in the direction of silencing some of the clamor from the west the prospects for early action on the bill might be improved. While the railroad executives were in Washington there was a meeting of the "agricultural bloc" senators at the home of Senator Capper, where plans for a strong effort to reduce rates were discussed but deferred for another meeting to be held this week.

It is understood that the railroad executives went away from Washington strongly impressed with the view that some sacrifice on the part of the railroads in response to the general demand is practically forced upon them by the situation

if they are to escape the consequences of public resentment and a loss of sympathy in high circles in Washington. A number of predictions that the conference would result in rate reductions, to be followed by further efforts toward wage reductions, have appeared in the Washington newspaper correspondence, evidently inspired by some of those with whom the railroad presidents talked. Senator Cummins was quoted as saying he believed the executives would vote at the Chicago conference to reduce freight rates and that the carriers would then probably ask the Labor Board for a further reduction in wages or appeal to Congress for legislation to meet the situation.

Chairman McChord of the commission had been carrying on an interchange of views with the railroad executives previous to the conference last Friday, in which he has urged that they would improve their standing with the public by taking earnest steps toward a more general downward revision of rates and the suggestion was made to the railroads in several quarters that they would receive public support in an effort to bring about further wage reductions if they would first take action themselves to reduce rates. While the executives pointed out that to reduce rates before there is a further reduction in expenses would mean that many roads would have to give up their entire net income under present conditions, while some would merely have their deficits increased; and while they did not talk for publication, it is believed that the recommendation of the committee is in the direction of some reduction now in the rates as to which there has been the most complaint and the promise of further reductions to come at a later date and to the amount of any further wage cut.

The members of the Interstate Commerce Commission called on President Harding in a body on October 6. It was officially stated that the call was merely for the purpose of paying respects to the President, who had not met all of the commissioners, somewhat in the manner that the Supreme Court justices call on the President at the opening of the fall term each year, but there is a belief in many quarters that the present administration is seeking to make the commission a more responsive part of its organization than it has been heretofore and the conference gave rise to rumors that something more than official courtesy was involved. However, the commissioners were with the President but 15 minutes.

The Senate Committee on Interstate Commerce held a meeting on October 7 to discuss the railroad securities bill and adjourned to hold another meeting on Wednesday of this week. The committee has already reported favorably the Townsend bill, which differs somewhat from the Winslow bill to the same purpose, which was passed in the House. The House bill as passed contained an amendment providing that no claims on account of the so-called inefficiency of labor during the period of federal control should be paid from any of the funds provided for in the bill and this was worded in such a way that a railroad which failed to settle with the Railroad Administration might be barred from obtaining a court decision on this point. The Senate committee considered a possible modification of this amendment providing that except for the payment of a final judgment, order, or decree of a court no money in the Treasury shall be used to make, in connection with the claim of any carrier, any payment or allowance on account of the so-called inefficiency of labor, and also that a final settlement with such carrier shall forever bar the carrier from prosecuting any further claim against the United States arising out of or incident to federal control. It is distinctly understood that the railroads will secure no allowance for inefficiency of labor in any settlement which is effected with the Railroad Administration, but it is believed that some roads will desire to make a further test of their claims on this account in the courts.

# The Railroads' Appeal to the Intelligent Public\*

Pressing Need for a Sound Transportation Policy—Statesmen  
Standing Helpless—Clear the Decks for Action!

By Samuel Rea

President of the Pennsylvania Railroad

A SEVERE business depression exists, and notwithstanding the high wages, shorter hours and easier working conditions that have existed for several years, a program of discontent is being disseminated. However, I take it that we are prepared to take our share of the burden to preserve law and order and regular employment. The railroads have much to lose by a policy of pessimism, delay or silence. Dividends have been reduced and loss of traffic has brought many of the eastern railroads down to the figures of 1912, and which combined with heavy wages and taxes shows a return of about 3 per cent. per annum earned in the last 12 months. The mandate of the Transportation Act entitled the railroads to rates that would produce a return of up to 6 per cent. on their property investment taken in groups, but the mandate failed of its purpose; it was not a guarantee in any sense of the word; and attempts to enforce it would cause a more serious restriction in business.

The President of the United States called a conference on unemployment. That conference is to deal solely with the practical proposition of securing steady employment, but the first proposition for its consideration that appeared in the newspapers was the reduction in railroad rates and the reduction of railroad wages. There is always a feeling that nothing should stand in the way of reducing railroad rates no matter how low they are, but unprofitable rates prevent railroad expansion and improvement and in the end the shipper reaches his limit of profit because of lack of cars or facilities, or bad service. Our splendid new highways, many of them paralleling the railroads, with the heavy cost for their repairs and the corresponding increase in taxation will in very large part fall upon the railroads. In the State of Pennsylvania, however, the Public Service Commission has made an equitable attempt to deal with situations of this character by declining to authorize common carrier motor service where the railroads or the trolleys were already giving a reasonable public service, and the public could not support both; but this foresight is by no means a common experience.

The taxation that has been placed on the backs of the railroads is now so heavy that it is a serious menace to their ability to pay their fixed charges. Further, the railroads need relief through the Government Labor Board from the National Agreements on wages and working conditions. It is a gratification to say that our sensible employees on the Pennsylvania have materially improved their working efficiency and shown the greatest interest and loyalty in restoring prosperity to the railroads; and if encouraged and not terrorized they will do much more.

## Measures to Improve Conditions

Now this brief summary of conditions which place an embargo on prosperity need not frighten us. No real remedy can be provided for the railroad situation until the steel, coal and building industries revive at prices that will encourage the public to buy. The first positive step that could be taken is the passage of the funding bill by Congress. This of itself would do little to help the railroads, but it will enable the Railroad Administration to use its holdings of railroad se-

curities to obtain cash and pay over to the railroads amounts due them. With this four or five hundred million dollars the railroads could pay off their current obligations and resume the upkeep of their equipment, roadway and stations and so give additional employment. After this funding will come the maintenance claims which are still undisposed of by the Government. And settlements have not yet been effected for the guaranty period by the Interstate Commerce Commission. If our estimate of the amounts due is correct, fully \$1,000,000,000 actually held by the Government might enable railroads to carry on a fair volume of maintenance and replacement work. This is not a fanciful sketch nor a bid for generosity to the railroads. The President of the United States is anxious for a final settlement, but Congress has not yet shared the same convictions—although the House passed the funding bill and many able minds in the Senate see its great benefits. It will require speeding up by the Railroad Administration, the Congress and the Interstate Commerce Commission if the funds are to be available to help out in the present depression. Meanwhile the railroads are grateful for what the President has done and are anxious to help him in reducing unemployment.

## Freight Rates

A further help to business would unquestionably be lower rates, but would we ask any manufacturer today to buy raw material and manufacture and sell new goods, with the knowledge that they will not realize their actual production cost? That is what the railroads are requested to do. They have had glowing promises of increased business if lower rates were made effective, but most of these glowing promises have not materialized; the public is not displaying any purchasing power and waits for lower commodity prices.

## Wages

The law of supply and demand should ultimately settle railroad wages and working conditions, but meanwhile a realization of the conditions by the Federal Labor Board and the labor leaders would do much to promptly adjust that situation. Railroad managements do not desire to have under-paid or discontented working men. We have no quarrel with the Labor Board or with labor unions, and desire none. On the contrary, I have long waited for the time when the labor leaders, and the labor journals, instead of believing that their position was more secure by hostility to railroad managements and railroad owners, would realize that co-operation was much better for both and was the only way to induce the public to pay for their railroad service an amount which would mean fair wages to the employees, a fair return to the owners and a constantly improving and reliable service to the public. The Transportation Act should be amended so that subordinate railroad officers are not thrown under the same regulations as to wages and working conditions as the men. This is breaking down discipline and encouraging laxity. It can all be adjusted without loss or suffering if the labor leaders will do their duty. They are in stronger position if they rely upon the public support for fair wages and working conditions than to talk about strikes which would settle nothing and continue a

\*Address before the Pennsylvania State Chamber of Commerce at Harrisburg, Pa., October 19.—Abridged.

policy which leaves railroads no alternative but to maintain high rates for transportation service so as to continue war-time pay and working privileges. The labor leaders must, therefore, answer the public demand as to what they are willing to do to help decrease unemployment and promote prosperity throughout the country. So far they have conceded nothing.

The Pennsylvania Railroad is reported to be in conflict with the labor unions, and especially with the Labor Board. That is not true. \* \* \* None of us is infallible. The Labor Board makes some slips and also rectified some. We shall never question the Board's actions and powers so long as they enable us to establish and keep harmonious relations with our employees, maintain the credit of the Company and continue an efficient and economical transportation service. Congress intended by the Transportation Act to encourage direct negotiations with employees, for the act makes it the duty of a carrier and its employees to exert every reasonable effort, through conferences, to bring about settlement of disputes. But Congress did not undertake to regulate the manner in which these conferences should be carried on or the method of selection of representatives. The Pennsylvania inaugurated, with the co-operation of the employees, a method of employee representation which adhered to that vitally important principle, "employee representation," and which has deservedly earned commendation of both employers and employees. The Labor Board has, in effect, directed us to annul and disregard these agreements. Compliance with this order would necessarily involve an abandonment of the method of conducting negotiations with its own employees which has been approved by a large majority thereof. The Company is desirous of avoiding conflict with the Labor Board, but when compliance with the order involves disregard of public duties and the principles of sound management, and such order in its opinion deals with a subject matter over which the Board has not been given jurisdiction by Congress, the Company believes that non-compliance is a duty.

#### Lower Taxes

The Governments, Federal, State and Municipal, could do much to help railroad conditions and the industries by relieving the heavy burden of taxation. In addition the Government might relieve the public by the abolition of the Federal tax of 8 per cent on passenger fares and 3 per cent on freight shipments. A suggestion has been made to cut these in half, and that is a step in the right direction. Taxation, however, cannot be finally reduced without wiping out a great number of unnecessary Governmental expenditures, Federal, State and Municipal, together with the numerous bureaus for so-called regulation and investigation, which are the result of unnecessary restrictive laws no longer beneficial to the public.

#### Freedom From Excessive Regulation

The Federal Transportation Act and the legislation of all the states and municipalities should now be revised and an attempt made to give the railroads the greatest freedom from Government interference and regulation, with the ability to carry on their own business with their employees and the public in a way that will restore initiative. Under present conditions Federal and State expenditures for railroad regulation and taxation are particularly costly, and their advantage to the public, aside from avoiding discrimination in rates, which is a very great advantage, has become questionable. I refer to amending or wiping out laws such as the Adamson act, the full crew laws, various provisions of the Hepburn act and some provisions of the Clayton act. They would relieve and correspondingly strengthen the Interstate Commerce Commission and the state commissions in the discharge of their widespread duties.

#### A Sound Transportation Policy Needed

The whole transportation question must be faced in a businesslike way. The country must decide whether it wants strong or weak railroads. A cabinet officer like a Secretary of Transportation would be helpful to enforce a continued constructive policy and prevent waste or duplication of government appropriations for transportation purposes. If we do not want strong railroads, and do not want them operated under commercial conditions, let the country so decide. The whole tendency of the time is that from lack of requisite courage to enforce a real policy affecting the railroads, we have tied their hands by unnecessary restriction and regulation and increased their expenses so that we are getting close to a condition where either the Government, with the consent of the citizens, must purchase the railroads and assume through taxation the costs that are not covered by rates, or else give a fixed guaranteed return sufficient for that purpose and put it all on the backs of the citizens in the shape of taxes. I need not tell you how greatly I deplore what appears to be a world-wide idea that in some miraculous way these great public enterprises, which are owned by our citizens and provide the cheapest transportation service in the world and the most efficient service, shall not be given the freedom to work out their own problem and be made self-sustaining out of their own revenues, but that in some way if we can only put them on the backs of the Government, Federal, State and Municipal, and hide their cost and expense, and subject them to a changing policy every few years, we shall have cheaper and more efficient transportation. Further, that we can take the so-called strong and weak railroads and irrespective of cost or necessity so route the traffic and put them into some kind of system omelets that will prove less costly than the present systems.

#### Government Competition in Transportation

Motor trucks on the highways are much more expensive and less reliable than rail transportation, although in some places they are a great convenience in developing the country. I do not condemn them, for I regard good modern highways as a necessity. I only ask that they pay a fair share of the cost and taxation.

There is not a large railroad system today that has not been supporting and operating for public use hundreds of miles of unproductive railroads. We have in the Pennsylvania System a couple of roads on the Maryland, Delaware and Virginia peninsula, and these lines also operate steamers as feeders, that connect them with Baltimore and develop a part of the country where transportation facilities are scarce. No money has been made out of these railroads, but on the contrary several millions of dollars have been spent for their construction and to pay their operating losses and fixed charges, and keep them operating for public use. Since the roads were built much of the business which formerly went to Baltimore now has a North and South movement, or a direct motor movement. This is due to changed commercial conditions resulting from the use of storage warehouses, and the method of competitive purchasing of crops on the ground by the commission houses in various cities, and to the use of motors on the adjacent state and local concrete highways. In addition to the new highways the State of Maryland has subsidized ferries across the Chesapeake, which are and will be competitive with the boat lines of these weak companies, but it seems unwilling to subsidize the boats of the companies that have been endeavoring to provide facilities across Chesapeake Bay for so many years in connection with these rail lines. I am not criticising the State for what it conceives to be its best highway policy for the benefit of its own citizens, but I am pointing out that when these new highways and subsidized ferries are provided

by the States these railroads and steamer lines will have lost the traffic, and the cost of these competing routes is laid largely on these railroads as taxpayers. These lines, with such a loss of business, with high taxes and wages cannot, therefore, be much longer maintained. We can also ask what is the encouragement for railroad expansion and improvement under such conditions. The public pays the cost of having no definite policy to adopt.

We are gradually, by extreme regulation, putting the railroads deeper into politics, and the deeper they get the less satisfactory they will be to the people and the more costly

they will be. But the statesmen and fair-minded representatives in the State and National legislatures who realize the situation and are deeply concerned in the transportation service of the country as a whole, stand almost helpless. While, therefore, I am convinced that prosperity will return and the country will again prove its ability to exceed all past records for productivity and business, yet to clear the decks for action some of these questions must be tackled in an earnest way; and the sooner it is done the sooner shall we as a nation enter upon the high road to national contentment and prosperity.

## Unemployment Conference Urges Rate Revision

Other Steps Agreed Upon by President's Conference—Urge Speed in Passing Financial Legislation

WASHINGTON, D. C.

**R**EADJUSTMENT of railway rates to a fairer basis of the relative value of commodities, with special consideration of the rates upon primary commodities, at the same time safeguarding the financial stability of the railroads, was the first of a series of recommendations for measures for the permanent recovery of employment and business generally adopted by the President's Conference on Unemployment at its meeting on Tuesday, October 11. The conference also recommended "settlement of the financial relationships between the government and the railroads, having in mind the immediate necessity for increased maintenance and betterments, making effective increased railway employment and stimulation of general employment, in order that the railroads may be prepared for enlarged business as it comes."

The recommendations were reported to the conference by the organization committee on the basis of such parts of reports submitted by the various subcommittees of the conference as to which there was complete agreement among the committee members. Recommendations proposed within the committees which involve controversial points were reserved for further discussion at a session of the conference on Thursday, the purpose being to present to the country a program on which the whole conference could unite and thus to avoid many points on which sharp conflicts between the representatives of business and of labor have developed in conference. For example, the reference to the financial relationships between the railroads and the government was the result of recommendations favored by a majority of the members of the committees on transportation and on manufactures urging the passage of the railroad bill now pending in the Senate designed to provide the funds for a settlement. W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen, had, however, insisted upon a qualification of the recommendation to provide that the funds received by the railroads should be used exclusively for the purpose of employing additional forces and should not be used for work performed in outside contract shops. The labor element in the manufactures committee, which included Samuel Gompers, also took the same position with reference to a similar recommendation made by a sub-committee of the manufactures committee. The latter had prepared a report which also proposed wage reductions, the reduction of freight rates, the repeal of the Adamson law and the transfer of the functions of the Railroad Labor Board to the Interstate Commerce Commission. This was approved by a majority of 11 to 3 in the committee. The transportation committee report had also expressed the opinion that business would be improved if people stopped waiting for price and rate reductions.

The recommendations in the form presented by the organization committee were adopted by the conference practically without discussion. When the reference to the financial settlement was adopted Matthew Woll, vice-president of the American Federation of Labor, stated that no objection was made on the ground that it was merely a declaration of principle and that some special considerations with reference to it would be presented by the labor representatives on Thursday.

In addition to the two recommendations referred to the report as adopted included the following:

"Recovery of our industry and employment must necessarily be a process of gradual healing of the great economic wounds of the world war. This healing is making distinct progress. Without attempting the impossible task of assessing the relative weight of different forces, the conference presents the following summary of the more important matters that require constructive and immediate settlement if recovery in business and permanent employment are to be more expeditiously accomplished:

"Speedy completion of the tax bill with its contemplated reduction of taxes, in order that business now held back pending definite determination may proceed.

"Definite settlement of tariff legislation in order that business may determine its future conduct and policies.

"Limitation of world armament and consequent increase of tranquillity and further decrease of the tax burden not only of the United States but of other countries.

"Steps looking to the minimizing of fluctuations in exchange, because recovery from the great slump in exports (due to the economic situation in Europe) cannot make substantial progress so long as extravagant daily fluctuations continue in foreign exchange, for no merchant can determine the delivery cost of any international shipment.

"Definite programs of action that will lead to elimination of waste and more regular employment in seasonal and intermittent industries, notably in the coal industry, in order that the drain upon capital may be lessened and the annual income of workers may be increased.

"In the field of all the different industries and occupations the rapidity of recovery will depend greatly upon the speed of proportionate adjustment of the inequalities in deflation. A table is attached hereto, drawn from various sources, showing the percentage of present levels above the levels of the same commodities and services of the pre-war period. It will be observed that agriculture has reached an unduly low plane, while transportation, coal and some branches of the construction industries are of the highest. It will also be observed that there is an entire disproportion between the

price of the primary commodities and the ultimate retail price. These disproportionate increases in the progressive stages of distribution are due to increased costs of transportation, enlarged profits, interest, taxes, labor and other charges.

"If the buying power of the different elements of the community is to be restored, then these levels must reach nearer a relative plane. For example, the farmer cannot resume his full consuming power and thus give increased employment to the other industries until either his prices increase or until more of the other products and services come into fair balance with his commodities, and therefore the reach of his income."

### Conference Opened by Hoover

In opening the conference Secretary Hoover said that the major purpose of the conference had been to provide suggestions and means for emergency organization to meet the situation of the coming winter, and that this object had to a large extent been accomplished by the adoption of the emergency program which had met an extraordinary response from many communities. The second purpose was to suggest permanent measures for the recuperation of industry and employment and as to these the organization committee had prepared the recommendations previously quoted based on the committee reports.

He pointed out that the conference is not a legislative body whose decisions are binding, apparently for the purpose of suggesting that one of the primary objects to be accomplished is the enlistment of public interest in the problem, and he said that the most important object is to afford some relief locally for the 10 to 20 per cent of the unemployed that will be in an actually destitute condition.

At the meeting of the conference on October 12 the committee on construction industries presented a report urging a reduction in freight rates, as follows:

"This group, recognizing that transportation problems are not within its peculiar province desires, nevertheless, to express the conviction that every reasonable step should be taken, necessary to enable the railroads to resume their customary activities, and to reestablish efficiency, economy, and regularity in transportation service.

"Readjustments of, and reductions in, freight rates on construction materials are essential to a sustained revival of building activity. Increases in rates on construction materials imposed during the war left the construction industry under a relatively heavier handicap of increased transportation costs than had been imposed on most other commodities.

"To this war-time increase in freight rates has since been added an increase of 25 to 40 per cent, thus perpetuating and even magnifying the effect of the war-time policy of restricting general construction activity.

"The construction industry can not effectively function under a freight rate fabric artificially distorted by the continuation of restrictive war measures. A great economic waste would be incurred if, because of failure to reduce and readjust freight rates existing plants for the production of construction materials had to be abandoned and a new alignment of producing facilities established in accordance with the present rates, a fabric originally designed, in the public interest, to discourage the very thing which, in the public interest, the government now desires to encourage; that is, the normal operation of industry. The financial burden of such a readjustment of plants would have to rest ultimately upon the public; and its necessary effect would be to curtail existing competition and to limit the radius of distribution of many of the construction materials.

"In addition to such readjustment of freight rates on construction materials as will permit construction activity, freed from unnecessary artificial restriction; it is urged that such inequalities as may after such general readjustment, exist in the rates on various construction materials be investigated and removed by the Interstate Commerce Commission. We

suggest the consideration of the practicability of encouraging during winter months the transportation of materials used in road and other construction work, thus utilizing transportation equipment which might perhaps otherwise remain idle.

"To meet the present unemployment emergency and to make renewed activities in the construction field possible does not require special concessions to the industry. But it does require a complete and prompt removal of unnecessary handicaps, restrictions and limitations, both direct and indirect, these including credit, freight rates, priorities, undue costs in relation to labor and materials, wasteful building codes, and the like."

It was recommended that Secretary Hoover appoint a committee selected from the various elements interested in construction, such as financiers, labor, engineers, architects, contractors, material manufacturers, and others to be known as the Committee on Construction Development, to be charged with the responsibility of preparing and making effective plans for co-operation with the governors and mayors in the several states in carrying on community conferences on construction.

### Critical of the I. C. C.

The report also contained a paragraph saying that "the Interstate Commerce Commission did declare without full hearing from all the parties interested an emergency which took away from the construction industry the use of open top cars." "In the interest of an equal opportunity to all industry," the report said, "the Interstate Commerce Commission should provide full hearings to all interested in matters of this kind in the future." E. E. Clark, former chairman of the Interstate Commerce Commission, said he felt he must call the attention of the conference to the paragraph on priorities as he did not think the committee wants to add to the great volume of misunderstanding throughout the country on that subject. He said that Congress had delegated to the commission emergency powers over car service in the interest of the public and the commission had required for a considerable period the use of open top equipment in the transportation of coal in preference to other commodities in response to the most urgent public demand that coal be transported. The commission had no thought or idea of preferring one industry over another and this action was obviously necessary and the only thing to prevent people from suffering from want of coal. It would be absolutely impracticable, he said, to exercise such a power if it could not be done until after hearing all who insisted that their interests are paramount above all others, because the emergency would have passed. C. P. Neill, of the Bureau of Information of the Southeastern Railways, also protested against the attempt of the committee to make the conference go on record as criticizing the Interstate Commerce Commission when the conference itself was not fully acquainted with the facts. At the suggestion of Mr. Hoover the committee agreed to delete the paragraph and bring in a separate report on this subject. With this and one other slight amendment, the report of the committee was adopted.

The conference also adopted reports of the committee on employment agencies, foreign trade and shipping. At the session on Wednesday, Mr. Hoover announced that the conference had received information of from 20,000 to 25,000 additional men recently taken into employment by railroads.

THE EL PASO POST of the Travelers' Protective Association, El Paso, Tex., adopted resolutions on October 1, urging legislation providing for the reestablishment by the railroads of the mileage book system and approving the Watson bill now before Congress. Telegrams were sent to senators and representatives of the states of Texas, New Mexico and Arizona, asking for their support of the bill.

# M. K. & T. Improves Its Facilities at Oklahoma City

Engine Terminals and Yards Have Been Reconstructed to Take Care of Increased Business

**T**O OBTAIN an improved terminal operating arrangement and provide more adequate facilities for the handling of its locomotives, the Missouri, Kansas & Texas has completed a new engine terminal at Oklahoma City, Okla., together with a relocation of one of its entrances to the city, which improvements have the effect of expediting its yard operations greatly. These improvements form part of a gen-

eral plan for the rehabilitation and intensive development of the Missouri, Kansas & Texas lines which has been in progress since 1916 and are made necessary by the increasing importance of Oklahoma City as the terminal or junction of a line extending northeastward to Parsons, Kan., with one to the southeast through Shawnee to Atoka on the main line of the Katy system.

Being the center of the oil fields of the same name and increase the car capacity from 520 cars to 982 cars and three-quarters of a mile of main track was relocated. However, the principal improvements have been made at Oklahoma City and these have been carried out with the purchase of sufficient right-of-way to permit of ready future enlargement to several times the present capacity.

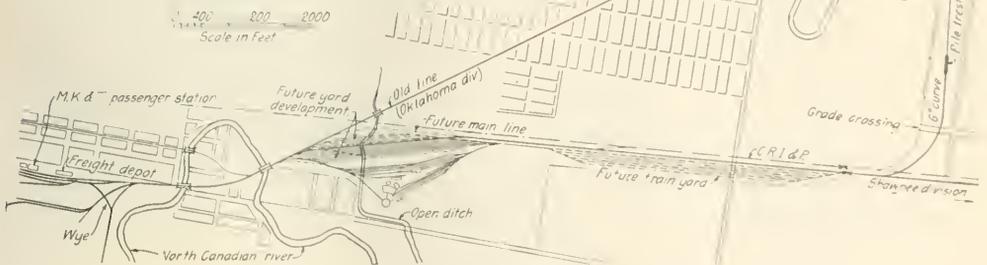
The junction of the Oklahoma and Shawnee divisions occurs only about 2,000 ft. east of the throat of the Oklahoma City passenger station yards (see map) and just south of a crossing with the Chicago, Rock Island & Pacific which lies parallel to the Shawnee line. Because of this it had been necessary in the past to locate the entire freight yard and engine terminal east of the junction of the two lines with the result that freight trains on the Oklahoma division could enter and leave the terminal only with a reverse movement that fouled the approach to the passenger station and also interfered with the service to various industry tracks in the business center of the city. It also resulted in frequent blocking of two important streets which crossed the railway at grade. The presence of the Rock Island tracks and the acute angle of the junction between the two M. K. & T. lines, as well as the industrial development in the neighborhood, precluded any local change in the Oklahoma division track



The Roundhouse as Seen from the Power House Side

eral plan for the rehabilitation and intensive development of the Missouri, Kansas & Texas lines which has been in progress since 1916 and are made necessary by the increasing importance of Oklahoma City as the terminal or junction of a line extending northeastward to Parsons, Kan., with one to the southeast through Shawnee to Atoka on the main line of the Katy system.

Being the center of the oil fields of the same name and



General Layout of the M. K. & T. Terminals at Oklahoma City

which would overcome this difficulty. The situation as to the engine terminal was also objectionable. The layout was such that it was impossible to increase the number of stalls or to lengthen the existing stalls to accommodate larger locomotives. Moreover, the turntable was only 65 ft. long.

The situation was obviously one requiring drastic treatment and was accomplished as shown on the small map. A cut-off was constructed from a point about three miles out on the Oklahoma division to a connection with the Shawnee division about 9,000 ft. east of the junction. This enables

which would overcome this difficulty. The situation as to the engine terminal was also objectionable. The layout was such that it was impossible to increase the number of stalls or to lengthen the existing stalls to accommodate larger locomotives. Moreover, the turntable was only 65 ft. long.

The situation was obviously one requiring drastic treatment and was accomplished as shown on the small map. A cut-off was constructed from a point about three miles out on the Oklahoma division to a connection with the Shawnee division about 9,000 ft. east of the junction. This enables

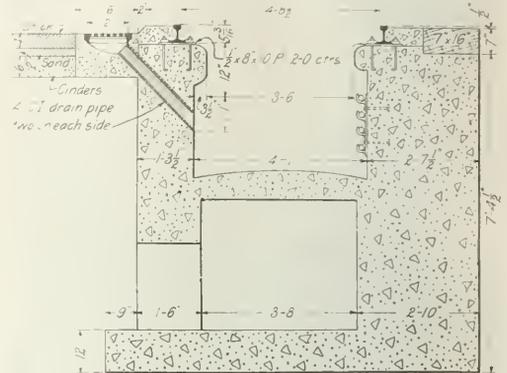
trains from both lines to enter and leave the freight yard over the Shawnee tracks and therefore by a direct movement. It also releases from main line service a portion of the Oklahoma division track which passes through a built up section of the city, involving a great many skew grade crossings with the city streets. This old line will now be used only for emergency or local industrial track service. The cut-off junction is located at a sufficient distance east of the existing yard to permit of the future construction of a train yard between the existing terminal and the junction and right-of-way for this purpose has been acquired by the railroad.

The old engine terminal has been replaced by a new plant built to the south of the freight yard on a site that will allow of a nearly full-circle development of the roundhouse whenever this is required, together with corresponding enlargement of the other facilities. The yard tracks and leads were modified only sufficiently to fit into the changes in the engine terminal and main track. One detail was to construct a switching tail track at the east end of the yard. Owing to the fact that the engine terminal site interfered with an existing wye track, a new wye was built just east of the passenger station so that it could be used as well for the turning of the passenger trains, so that all trains, whether outbound or inbound, may be backed into the passenger station.

A three-track car repair yard and a four-track coach yard were also provided just south of the freight yard. The coach yard is served with steam, water and compressed air.

The locomotive facilities in the new terminal embrace a 10-stall roundhouse with 5 additional radial tracks in the open, served by a 100-ft. turntable, with a machine shop, boiler house and engine room in a wing at one corner. The auxiliary facilities include a 300-ton reinforced concrete coaling station built by the Roberts & Schaefer Company, Chicago, a water softening plant with a 100,000 gal. capacity steel water tank for softened water built by the Graver Corporation, Chicago, a storehouse, a car repair shed and a fore-

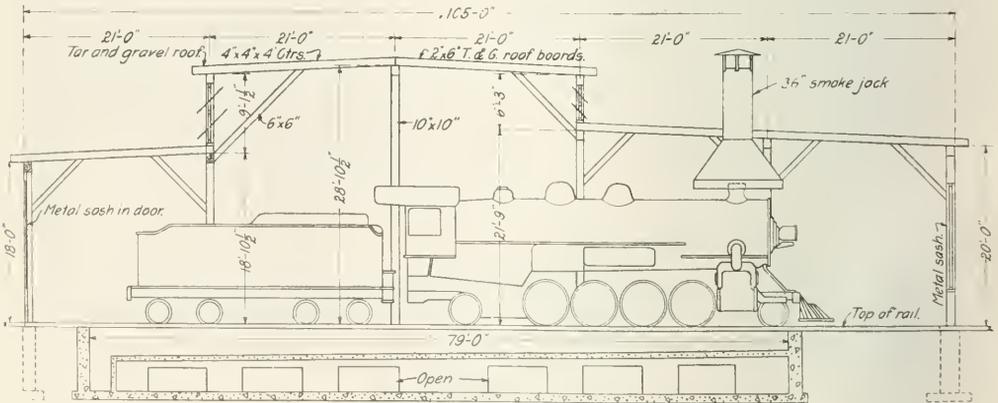
Flood lights are provided at four points between each pair of stalls so that the interior of the house is truly "flooded" with light. White washing of the walls, timbers and ceiling add greatly to the effect of the illumination in either the natural or the artificial light. This is brought out emphatically in the photograph showing the house illuminated by the flood lights. Considerable of the illumination is obtained through



Typical Section Through an Engine Pit

the monitor lights which are pivoted so that they can be washed from the roof and therefore require no washing scaffold on the inside. Improved ventilation is insured by the use of Johns-Manville asbestos smoke jacks of large area with stacks 36-in. in diameter extending through the roof.

The floor is paved with brick on a cinder base. One fea-



Typical Section Through a Roundhouse Stall

man's office (both moved from the old site and rebuilt), two Robertson cinder conveyors, a lavatory and locker building and a National boiler washing system.

The roundhouse follows the general lines of the more common type of roundhouse construction with a timber frame and roof and brick walls, but with the modern tendency towards large window areas in steel frames carried out to the fullest extent. In this connection the proportion of glass in the track doors is unusually large, as may be noted in one of the photographs.

Artificial lighting has also been given particular attention.

ture of the engine pit that is of interest is the provision of the rounded coping as a protection for the radiators which are mounted on the wide walls. The rails rest on steel plates placed directly on the concrete walls to which they are bolted.

The power plant, machine shop and engine room wing is of construction similar to the roundhouse with the roof carried on wooden roof trusses. The boiler house contains two 250-hp. Heine boilers with furnaces designed for burning coal but modified to permit the use of oil as a fuel. The power plant is designed mainly for a supply of steam heat, hot water for the boiler washing, compressed air, etc., as the electric

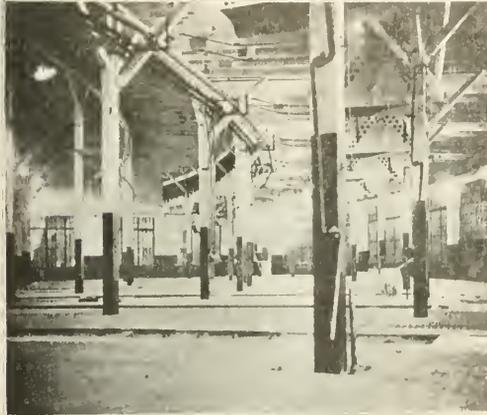
light and power is purchased from a local public utility. The floors in the wing are of three types. Mastic floors are used in the engine room and a portion of the machine shop which also is provided in part with a cinder floor, while the boiler room has a concrete floor.

The 100-ft. turntable is operated by a Nichols tractor and is equipped with an essentially original type of end bearing,

his time is occupied each day in the work at the treating plant. A matter of incidental interest is presented in the fact that a test of the treated water by the state health authorities resulted in the water being approved as satisfactory for drinking purposes, whereas the untreated water had been declared unfit for drinking.

**Combined Storehouse and Oil Building**

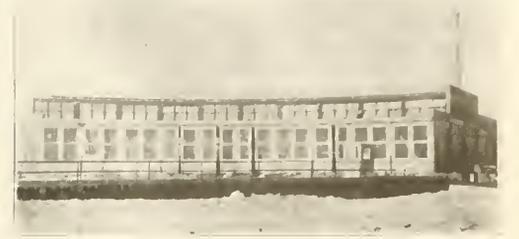
The storehouse is a brick and concrete building 105 ft. by 50 ft. in area with a platform at one end 55 ft. 10 in. long which also extends along one entire side of the building.



**An Example of Modern Roundhouse Illumination**

comprising the use of four M.C.B. car springs to act as shock absorbers when the locomotive runs onto the table. The design of these end trucks was worked out by the engineering department of the railway in co-operation with the American Bridge Company, the contractor for the table.

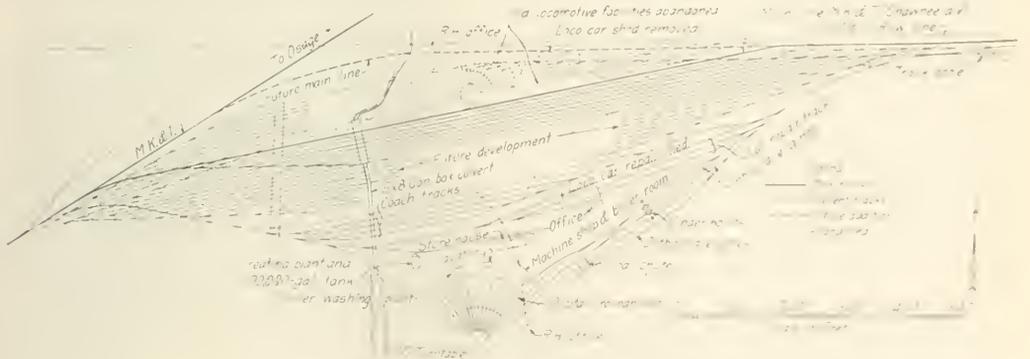
The water softening plant was provided to treat water from the city supply, this being water from the Canadian river,



**The Track Doors Contain Unusually Large Glass Areas**

This storehouse also houses the oil storage which is equipped with pumps supplied by the St. Louis Pump and Equipment Company. The portion of the building used for this purpose has a basement containing oil tanks ranging from 120 gal. to 1,000 gal. capacity each.

The site chosen for the new engine terminal is in the flats of the Canadian river occupied by some portions of an abandoned channel of that stream and was available for terminal purposes only after 175,000 cu. yd. of filling had been placed. Some of this material was obtained from borrow pits nearby and from the excavation for a creek channel with the use of a dragline excavator. However, a large portion of



**The Yard and Engine Terminal Reconstruction**

which contains about 24 grains of incrusting solids per gallon. The plant has a capacity of 20,000 gal. of treated water per hour, and reduces the hardness to less than 3.5 grains per gallon. In addition to the use of soda ash and hydrated lime, the plant provides for the use of ferrous sulphate as a coagulant to the extent of one grain per gallon during times when the river water is turbulent. The arrangement of the plant is such as to secure very economical operation, one man dividing his time between the treating plant, boiler washing plant, coaling station, ash pit and the stationary boilers in the powerhouse. Only about one hour of

the material was obtained with steam shovels and trains in a cut west of the yard on the site of the future train yard. The presence of a creek extending through the site of the yard not only entailed the excavation for its new channel but required the construction of 200 ft. of a 5-ft by 8-ft concrete box culvert under seven of the yard tracks.

The low land at the site of the terminal also added to the cost of the building foundations owing to the need of carrying the footings down to solid material. To avoid the use of excessive amounts of material in the foundation construction the building wall foundations were constructed for the most

part according to the beam and pedestal design with natural spread footings. A different plan was followed for the engine pits which were built with the two walls extending down to a footing slab with the engine pit floor suspended between the walls at a suitable elevation. In order to save material, the continuity of the side walls of the pit was broken at intervals by openings 6 ft. 8 in. long between the footing slabs and the floor slabs. The foundation conditions were such that natural foundations were permissible for all of the structures except the turntable and the coaling station which required pile foundations. The turntable center was heavily reinforced with a grillage of old rails and the entire turntable pit was paved with a concrete floor.

The building of the cut-off, which has a length of about 10,000 ft., involved the construction of two grade separation structures, an overhead highway viaduct to carry Twenty-third street, Oklahoma City, over the tracks, and a three-span subway to carry the cut-off over Alice avenue. Both of these are reinforced concrete structures which were built in place complete before traffic was turned over the line.

The entire project has been developed under the direction of F. Ringer, chief engineer of the Missouri, Kansas & Texas, assisted by J. M. Metcalf, principal assistant engineer, and A. L. Sparks, architect. D. I. Stevens, assistant engineer, was in direct charge of the construction. The roundhouse and other buildings were built under contract by H. D. McCoy of Cleburne, Texas. The List and Gifford Construction Company, Kansas City, had the contract for the grading.

## Freight Car Loading

WASHINGTON, D. C.

THE volume of freight being handled by the railroads continues to show large increases from week to week, as indicated by the weekly car loading reports of the American Railway Association, Car Service Division. While the increase is, of course, seasonal, the car loading figures are now showing a closer approach to the record figures for last year than they have at any previous time during the year. For the week ending on October 1 the total car loading was 901,078 cars, an increase of 27,773 cars as compared with the week before. It was, however, 91,205 cars less than were loaded during the corresponding week of 1919.

Except for livestock, which showed a slight decrease, and ore, gains were reported in the loading of all classes of commodities as compared with the previous week, while, for the first time this year, loading of merchandise and miscellaneous freight, which includes manufactured products, eclipsed the total for the corresponding week of last year. Grain and grain products also exceeded both the corresponding weeks of the past two years but other commodities fell below last year.

Compared with the week before, the largest gain was made in the loading of merchandise and miscellaneous freight, which totaled 551,656 cars or a gain of 18,587 cars. This was also a gain of 1,619 cars over the total for the corresponding week in 1920. Loading of coal amounted to 178,005 cars which was an increase over the previous week of 6,531 cars. Grain and grain products totaled 57,075 cars, a gain of 5,227 cars in a week and 13,443 cars more than were loaded during the corresponding week last year. This was also 13,286 cars in excess of the total for the same week in 1919.

Forest products increased 704 cars to a total of 49,466 compared with 48,702 the week before while coke loadings were 5,615 cars, an increase of 669 cars compared with the previous week. Livestock loading fell off 65 cars, compared with the preceding week, the total being 32,868 cars, while ore

dropped to 26,393 cars, a decrease of 3,940 cars within a week.

Increases as compared with the week before were shown in the loading of all commodities by districts but the central western and southwestern were the only districts to show increases over the corresponding week in 1920.

The following table prepared by the Car Service Division compares the car loading with the peak weeks of 1920 and 1919, showing that the loading for the week of October 1 was within 10 per cent of the highest loading during the last two years, while the grain loading was considerably higher. During the first six months of 1921 railroad freight traffic was about 23 per cent less than during the corresponding period of 1920.

	October 1, 1921. Peak, 1921	As compared with					
		October 1, 1920	Per cent	October 23, 1920. The peak, 1920	Per cent	September 25, 1919. The peak, 1919	Per cent
Grain and grain products	57,075	43,632	130.8	30,886	184.8	45,140	126.4
Live stock	32,868	33,383	98.5	34,971	94.0	35,555	92.4
Coal	178,005	209,895	84.8	229,043	77.7	213,746	81.4
Coke	5,615	14,790	38.0	16,898	33.2	9,628	58.3
Forest products	49,466	62,085	79.7	58,820	84.1	65,360	75.7
Ore	26,393	78,458	33.6	73,182	36.1	69,853	37.8
Merchandise, L.C.L. and miscellaneous	551,656	550,037	100.3	559,161	98.7	551,619	100.0
Total	901,078	992,283	90.8	1,010,961	89.1	995,901	90.5

A large further decrease in the number of surplus freight cars and in the number of cars in bad order was also reported by the Car Service Division. For the period from September 23 to October 1 the number of surplus cars was 172,420, a decrease of 28,733 in approximately a week. This included 42,093 surplus box cars, a reduction of 13,756 and 98,040 surplus coal cars, a reduction of 12,328. The number of freight cars in need of repairs on October 1 was 364,372, or 15.8 per cent, as compared with 16.3 per cent on September 15.

## "Perfect Package Month"

THIS is the name of the country-wide campaign to promote good packing of freight which is to be conducted during November jointly by the American Railway Association, through its committee, and the American Railway Express Company; and elaborate preparations are being made.

In previous campaigns, the railroads have succeeded in getting large shippers to give better attention to their shipping methods, and the losses formerly entailed in the transportation business, due, in part, to poor packing, have been much reduced. By the "Perfect Package" drive, the carriers hope to reach the smaller shippers. This is the first campaign in which all of the carriers of the country have taken part. It will reach practically every shipper in the United States. At the larger places committees of employes of the transportation companies will handle the campaign and keep in touch with local shippers' associations.

Throughout the month of November, all shipments, freight and express, will be more carefully examined than usual, and suitable notations will be made on special "Exception Reports." These forms are issued separately for express and freight, the latter being on white paper and the express on pink.

The "exception reports" are made up so that the most common errors in packing or marking can be quickly checked up, with a minimum of handwriting. If, for example, the shipper's name is missing or old and confusing marks are found, an "exception" will be made and an "exception report" filled out by the employee making the examination.

These exception reports will be used only in connection with the outbound business from each point; incoming shipments will not undergo this special examination. The issuance of these reports will not delay the shipment.

The exception reports will be sent daily by each of the carriers, to shippers of the packages on which exceptions are made, and they can thus immediately take steps to correct the errors. At regular intervals the carriers will inform the local Chamber of Commerce or other traffic bodies, who act for shippers in the movement, regarding the number of exceptions made on the outbound business of that city, giving the names of the shippers. Exception reports will be regarded as confidential information, only for the shipper affected.

In each city the agents of the railroads and of the express company have been requested to get together and form a local Joint Perfect Package Campaign Committee. These will distribute printed matter, give notices to local newspapers and present the matter to the leading shippers' organization.

The carriers do not intend to throw any unnecessary burden on these local organizations or to ask them to make any expenditures, unless they wish to do so on their own volition.

The shippers' associations will be asked to put up notices on their bulletin boards, publish articles about the campaign, and make announcements of it at their meetings. At the conclusion of the campaign, the carriers will notify the associations what the total number of outbound shipments by all carriers was during November. By comparing the total number of "exceptions" with the total outbound business during that month, the shipping "score" of local industries may be determined. The percentage attained will be publicly announced and information sent to the central joint campaign committee of the railroads and express companies. That committee will prepare a list that will show, for the whole country, the cities which make the best records. This list will be made public after the campaign is over and the cities heading the list will achieve such reputation as they deserve.

The "Perfect Package Month" activities are to be directed by a Joint Campaign Committee of the American Railway Association and the American Railway Express Company; and the representatives are: Lewis Pilcher, Secretary, Committee on Freight Claim Prevention, A. R. A., Chicago, and J. H. Butler, Manager, Loss and Damage Department, American Railway Express, New York.

## Strike Talk Dies As Labor Leaders Count Ballots

### Pennsylvania Cited for Failure to Obey Board's Order—New Adjustment Board for Western Roads

THE THREATS of a general railroad strike which were so indiscriminately thrown about several weeks ago have been abandoned by leaders of the railroad labor organizations who have been in Chicago for the past week, the consensus of opinion now being that the only difficulty which is even possible might be between the Pennsylvania shopmen, and members of the Federated Shop Crafts, employed by that road. One well known labor leader was recently quoted in the press as saying: "If a walkout should be ordered, half the workers affected would become 'scabs' and the other half would become tramps. There will be no strike because both the men and their leaders know it would be a foolhardy move. If the men vote to quit work it is merely to strengthen the hands of their officers in seeking concessions from the carriers. They trust their officers not to lead them into this winter's bread line." The name of the union leader quoted was withheld at his request. This leader was also quoted as stating that the strike votes already polled by the brotherhoods mean nothing and that, since W. G. Lee, president of the Brotherhood of Railway Trainmen, has announced that his organization will not strike unless the other brotherhoods join the movement, there will be no general walkout because the officers of these other organizations have the power to veto a strike vote.

L. E. Sheppard, president of the Order of Railway Conductors, later made the statement that there will be no extensive tie-up of the country's transportation facilities.

"I made this promise to President Harding," Mr. Sheppard was quoted as saying, "and I know of no reason why I should not give the same assurances to the public. If we have to break with the railroad officials we will do it with just as slight inconvenience to the public as possible."

#### Labor Board Favors Pennsylvania in Five Decisions

Five recent decisions of the Labor Board, although rendered in minor disputes involving in each case the claim of an individual employee, are significant in that the decision in each case is in favor of the Pennsylvania. Coming, as these decisions do, immediately after the publication of a great

deal of information regarding the Pennsylvania's attitude toward the Labor Board and the Labor Board's attitude toward the Pennsylvania, the rulings may, according to the views of members of the Board, serve to establish the fact that, despite the discussion which has taken place in the last month, the Labor Board will continue to decide disputes which are properly certified to it free from prejudice because of developments in other controversies. It was pointed out at the same time that the Pennsylvania has likewise signified its approval of the Board's jurisdiction over and judgment in, controversies in which there is no question of jurisdiction or authority by recently certifying to the Board a case involving a wage reduction for dining car stewards in the eastern region of Pennsylvania.

A hearing to determine whether the Pennsylvania has violated the Transportation Act by its refusal to accept the decision of the Board ordering a new election of employees' representatives will be held within the next ten days, according to a recent announcement of the Board. The Board will proceed under Section 313 of the Transportation Act.

#### B. R. & P. Dispute Before Board

Threat of the train service brotherhoods and the Order of Railroad Telegraphers to call a strike on the Buffalo, Rochester & Pittsburgh unless that road incorporates in its working conditions a rule against trainmen having to receive train orders by telephone, was basis of a rather significant dispute heard by the Board on October 7.

The carriers' executives are unwilling to concede that "employees other than those covered by the telegraphers' agreement shall not be required to or permitted to handle train orders or messages pertaining to the movement of trains except in cases of wrecks, washouts, snow blockades, or personal injury."

T. F. Brennan, vice-president of the road claimed that adoption of the rule would "nullify the advantage of the telephone over the telegraph from the standpoint of convenience, safety and the prompt movement of trains." He declares it would seriously interfere with train

operation, create misunderstandings and enforce the employment of operators where they are not needed now and never have been employed.

The unions claim that train service men have been required to receive and write out train orders while regular telegraphers were laid off, at the same time placing upon the train service men more responsibility without additional compensation and introducing another element of danger. They declare the operation of the rule would not prevent trainmen "getting block" or reporting "in clear" at points where operators are not maintained regularly for this particular purpose and where no other telegraph service is necessary or required.

#### Arrangements for New Board of

##### Adjustment Completed

The new Board of Adjustment, created recently to handle disputes between certain western carriers and the train service brotherhoods and their members, is now fully organized and is making preparations to take up and dispose of the large number of grievances which have arisen since the end of Federal control.

W. E. Morse, formerly assistant general manager of the Chicago & North Western and more recently vice-president of the Denver & Salt Lake, was named a permanent member and chairman of the new body, which is composed of four representatives of the railroads and four representatives of the train service brotherhoods.

Other members of the board are: J. T. Gillick, general manager of the Chicago, Milwaukee & St. Paul, (Lines East); F. G. Pettibone, vice-president and general manager of the Gulf, Colorado & Santa Fe; Frank Bell, general manager of the Great Northern (Lines East); Harry Dougherty, vice-president of the Brotherhood of Locomotive Engineers; E. P. Curtis, vice-president of the Order of Railway Conductors; C. F. McLaughlin, vice-president of the Brotherhood of Locomotive Firemen and Enginemen, and A. F. Whitney, vice-president of the Brotherhood of Railroad Trainmen.

As soon as suitable office space can be found a permanent office will be opened in Chicago and the new board will go into continuous session until the accumulation of grievances of the "big four" against the member roads since Federal control has been disposed of. After that, meetings will be held at stated intervals.

The railroads which signed the agreement for one year are the Union Pacific, the Atchison, Topeka & Santa Fe, the Chicago, Burlington & Quincy, the Colorado & Southern, the Northern Pacific, the Illinois Central, the Chicago, Milwaukee & St. Paul and the Minneapolis, St. Paul & Sault Ste. Marie.

The board will continue its jurisdiction to the adjustment of "disputes growing out of personal grievances or out of the interpretation or application of the schedules, agreements or practices now or hereafter established on the railroads signatory hereto which cannot be adjusted by direct conference between the representatives of the individual railroad and its respective employees."

The agreement continues:

All disputes arising out of proposed changes in rules, working conditions or rates of pay are specifically excluded from the jurisdiction of the board.

The board shall not assess punishment or change the discipline administered. In the determination of disputes involving personal grievances the decision of the board shall be limited to the guilt or innocence of employees as charged.

All decisions of the board shall be approved by a majority vote of the full membership of the board and shall be final and binding upon the parties to the dispute.

If a dispute had been considered by the board, but a majority vote cannot be obtained, then upon the request of either party to the dispute, the board shall certify such dispute to the United States Railroad Labor Board for final decision, accompanied by all supporting papers

On October 11 the Railroad Labor Board cited the Pennsylvania for failure to obey its order directing a new election of employees' representatives and ordered that further hearings be held beginning October 20.

## Lehigh Valley Files Segregation Plan

THE LEHIGH VALLEY on October 6 filed with the United States District Court of New York a plan to segregate its coal properties in accordance with the decree of the United States Supreme Court, noted in the *Railway Age* of December 10, 1920, page 1030. The plan calls for no assessment from the stockholders and results in no sacrifice of their equity in the coal company investment. The government filed objections to the plan.

E. E. Loomis, president of the Lehigh Valley, outlined the segregation plan in the following statement:

"The stockholders of the Lehigh Valley Railroad Company are the owners not only of the railroad company itself but also, through the railroad company, of the entire capital stock of the Lehigh Valley Coal Company and of Coxie Brothers & Co., Inc.

"The Supreme Court of the United States, however, on December 6, 1920, declared that the railroad company must sever its control of the Lehigh Valley Coal Company and Coxie Bros. & Co., Inc., and the management of the company has devoted its best thoughts to finding a way to do this, and at the same time insuring full protection to the rights of all having an interest in the matter.

"On January 10, 1921, the boards of directors and officers of the railway company and the two coal mining companies were changed, eliminating all interlocking directors and officers. Each company now has a separate and distinct set of officers and board of directors, in accordance with the requirements of the decision of the Supreme Court.

"In considering its stockholders, the management recognizes a particular responsibility because of the fact that they are 19,122 in number, representing an average holding of 63 shares. Of its stockholders, also, 7,028 are women, and 615 are corporations of one character or another—banks, insurance companies, fiduciary concerns, charitable institutions, etc., with the funds or interests of thousands of persons partially invested in its stock. Also, 1,350 employees of the Lehigh Valley have placed their savings in the shares of the company, and are looking to the management to protect them.

"The management, in seeking a solution of this problem, has kept constantly in mind the necessity of complying fully with the letter and spirit of the decision of the Supreme Court and at the same time protecting the interests of its many small stockholders as well as those of the owners of bonds issued under the general consolidated mortgage. In other words, the management conceives it as its duty to see that the stockholders of the company shall receive full consideration and that the bondholders and their trustee are assured that the values subject to the mortgage lien are not impaired.

"To accomplish these results the management has offered the following plan:

"First: The Lehigh Valley Coal Company will issue \$30,000,000 non-cumulative preferred stock (with no voting rights) of \$100 par value per share, yielding dividends at the rate of 7 per cent. per annum, which will be turned over to the Lehigh Valley Railroad Company in the form of a stock dividend declared out of surplus. The \$2,100,000 annual income from this preferred stock will be payable to the railroad company.

"Then, in order that the railroad company may completely dissociate itself from control of the coal company, in accordance with the court's order, it will convey all of its interests in the common stock to a trustee, which will then issue, at the

direction of the railroad, to the holders of the railroad company stock, 242,432 certificates of interest in the common stock of the coal company in the ratio of one certificate for every five shares of common or preferred railroad stock.

"These certificates of interest will be dividend-bearing, based on the dividends earned by the coal company on its common stock, and in addition will give their holders the same voting rights as if they actually held the coal company stock. The trustee, under the general consolidated mortgage, will give the new trustee a proxy, such as it has given the railroad in the past, enabling the new trustee to vote the stock as directed or authorized by the holders of the certificates of interest.

"These certificates of interest are evidences that, upon the maturity of the general consolidated mortgage and the release of the coal company stock pledged thereunder, the holders will be entitled to a pro rata distribution of the shares of the coal company stock.

"So far as the trustee under the general consolidated mortgage is concerned, the segregation makes no change in the value of the property subject to the mortgage lien.

"Second: The stock of Cox Bros. & Co., Inc., will remain as at present until the maturity, in less than five years (February 1, 1926) of the collateral trust agreement under which it is pledged, except that the voting power in the meanwhile will be assigned to a trustee to be appointed by the United States District Court. After that time the stock is to

be sold, the proceeds to go into the treasury of the Lehigh Valley Railroad Company.

"Third: The stock of the Delaware, Susquehanna & Schuylkill Railroad Company, owning a small branch line in the coal regions, which is also pledged under the collateral trust agreement, to be held until February 1, 1926, the maturity date of the agreement, and in the meanwhile application to be made to the Interstate Commerce Commission for authority to consolidate this line with the Lehigh Valley Railroad Company under the provision of the Interstate Commerce Act which permits the commission to allow consolidation of railroads notwithstanding the anti-trust laws. In the meanwhile, the voting power of this stock will be assigned to a trustee, as in the case of Cox Bros. & Co., Inc.

"This plan leaves the Lehigh Valley Coal Sales Company in position to negotiate a new contract with the mining companies."

The government filed objection to the plan on the ground that the segregation plan does not contemplate the disposition of the stock of the coal company, or the railroad company's equity therein, to persons not connected with or interested in the railroad company. The doctrine laid down in the case of the Union Pacific and Southern Pacific segregation, to the effect that in dissolving combinations in violation of the Anti-Trust Act the parts into which the combination is divided shall be placed under independent ownership, management and control, has been followed in subsequent cases.

## Bad Order Car Situation Presents Serious Problem

Essential That Railway Equipment Should Be Sufficient to Take Care of Maximum Traffic

By M. J. Gormley

Chairman Car Service Division, American Railway Association

TODAY THERE IS NO actual shortage of transportation with the possible exception of perishable traffic, and no complaint about the movement of traffic of any kind. That this is the condition in the face of the fact that there were loaded on the railroads during the week ending September 24, 1921, 873,305 cars, which is 86.6 per cent of the cars loaded during the corresponding period of last year, is the very best indication that there has been a very remarkable improvement in the efficiency of the transportation machine. The maximum business of last year was during the week ending October 23, when 1,010,961 cars were loaded, and this exceeded any previous records of the railroads. The record of September 24 this year is only 13.6 per cent less than the peak week of last year when considered only from standpoint of cars loaded and not tonnage. During this week there was a heavy increase in the movement of grain and grain products over the same week of the previous year, but this unfortunately was offset by a greater decrease in coal, forest products, coke and ore. If we stop with the presentation of these facts it would appear that the freight service does not need a general building up, but this is only part of the story. We must face the following facts. There are in the country today 374,431 cars in bad order, divided into 183,480 box, 153,275 coal and 37,670 miscellaneous types. There are also 201,153 surplus cars; that is, cars for which there is no demand. This means that there is a total of 575,584 cars out of commission today, classed as surplus and bad order, or 24.6 per cent of the total ownership. In considering this, however, we must

keep in mind that the bad order situation is always with us but to a less extent than it is at the present time. Considered from the standpoint of a liberal allowance, under present conditions there should not be an excess of 7 per cent of the freight cars of the country in bad order. There should be only about 160,886 cars in bad order, which means if that were the condition, the number of cars now reported as surplus, or available in excess of the demand, would be 414,698.

The problem now before the railroads is to repair or rebuild the bad order cars that can be so treated, and to replace with new cars those that cannot be economically repaired or rebuilt and make other necessary additions to the equipment. These facts, with the further fact that there were in existence 27,048 less cars under date of July 1, 1921, than on July 1, 1920, gives you what might properly be termed a "bird's-eye view" of the car situation today.

The heavily decreased earnings, with the extremely high operating costs, have made it necessary for the railroads to curtail their maintenance expenditures to the lowest possible limit that would enable them to furnish good service. With an immediate prospect of a business increase, the carrying out of the proposed plan for funding of the indebtedness of the railroads to the government for capital expenditures will have the effect of providing funds for the rebuilding program of the railroads which are not available from any other source.

With this accomplished we believe the railroads could put in condition all cars that are awaiting repairs in excess of 7 per cent and thereby make available sufficient equipment

\*Address before the Traffic Group, National Retail Dry Goods Association, Washington, D. C., on October 7, 1921.

to handle up to at least the past records of performance; but what concerns the railroads and the shippers today is the providing of facilities that will not only take care of business up to the maximum of the past but the possible maximum of the future, and unless the revenues of the railroads are sufficient to attract capital to that channel it follows to a certainty that commercial expansion of the country will be impossible.

I do not want to tire you with post mortems as I believe that now is the time to look forward and not backward, but post mortems are often performed to find out what caused the death of the patient in order that the knowledge gained thereby may be used in finding a cure for future cases. Our memories are very short in this country, but if you will recall, the railroad officers were for several years pointing to the people that unless there was an increase in their revenues they would be unable to expand to meet the growing transportation needs of the country. It is regrettable that they were able to convince only themselves of this fact. This is the real reason why a building up program of the railroads is now necessary and in progress.

By not obtaining sufficient net earnings the railroads will be unable to enlarge their facilities to provide for the movement of the possible maximum traffic of the future with a service equal to that rendered today. We maintain that the people of this country are always entitled to as good service as they are getting today and, if they will keep this in mind and not let the mistakes of the past be their guide post in the future, and insist on a constructive program for commercial expansion, we believe this service can be furnished and maintained. This brings to our minds the wholesale demand today for a decrease in the freight rates. A great many people apparently can only see this situation from the standpoint of rate reductions and they have the mistaken idea that the only way traffic can be stimulated is by reduction in the freight rates. I do not qualify as competent to discuss the freight rates but I do not think that any one needs to be an expert in that direction today to realize if he takes the time and the trouble to study the situation from every angle that the rate situation has but a very small bearing on the question of the traffic movement today. Without a doubt there are rates that are out of line but a great many modifications have been made in these rates and are being made daily. A glance at the freight loadings today I think will convince anyone who has an open mind that these are the facts. It has been shown that a decrease in the selling prices of commodities very many times in excess of any possible reduction in the freight rates has failed to move the traffic. In my opinion, and I would like it understood that this is my opinion only, the fact that there has been so great a clamor for freight rate reduction has had more to do with holding back the movement of traffic than any excessive freight rates.

I know there are some very well defined opinions that the railroads are unnecessarily losing short haul traffic to trucks, barges, etc., by reason of these high freight rates, but I maintain that if transportation can be provided by trucks or barges for short haul traffic more economically than can be provided by the steam lines then most certainly it should go to the cheaper lines of transportation provided they, like the railroads, are required to pay their proper part of the country's taxation expenses; and right at this point I call your attention to what I doubt if many of you know, and that is that the taxes paid by the transportation companies of this country amounted in the year 1920 to \$278,868,668, an increase of \$180,241,820 over 1911 or 183 per cent.

I think you all agree that the only time there is a general public clamor for a reduction in freight rates is at a time when business is moving in small volume and the service on the railroads the best. Without a doubt every one here will recall that at some time in the past three years you have

said that what we need is service; the most expensive thing for us is low rates and poor service. This country has gone through in the past four years periods when the service was anything but satisfactory, due of course in a large measure to the war conditions but to other causes too numerous to mention today, but I would ask of any of you to answer your own question as to whether you would prefer seeing that the railroads obtain sufficient net earnings to provide the same service you are getting today, or would you prefer a lowering of the freight rates and what would consequently follow a blocking of the expansion of the transportation machine of this country?

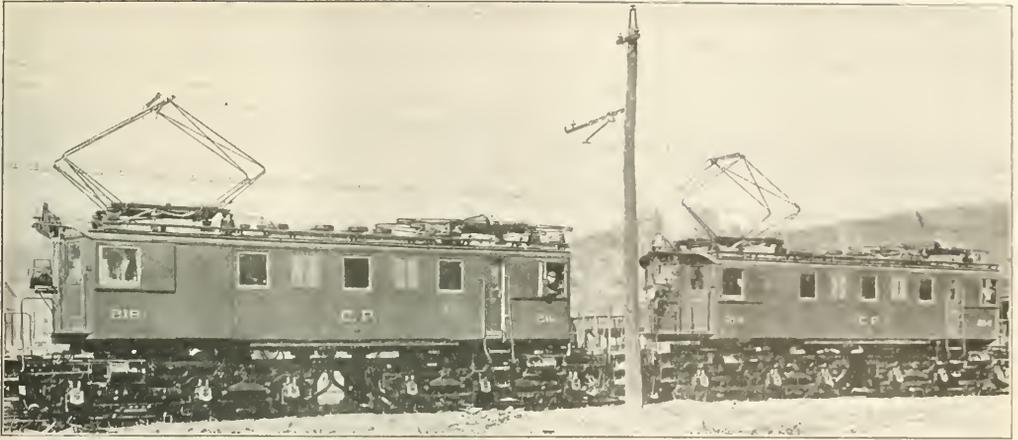
I have been fortunate enough to have spent nearly all of the last two years on the industrial side and I know there were times during that period when the answer to that question would have been—"The cheapest thing for the industry is that the railroads be maintained at a level that would attract capital to railroad investment and thereby expand the transportation machine so that it would be able at all times to move the maximum business with entire satisfaction."

We should never lose sight of the fact that to provide first class service at times of peak movement of traffic means that for certain seasons of the year there must be maintained a very great surplus capacity. Right at the present moment the energies of the railroads are being directed to moving the largest perishable traffic in their history, estimated to be 40 per cent in excess of last year, when it was considered that there was a very heavy movement; this must be made with no more refrigerator cars in service and, in fact I think a detailed check would show less cars in service than in previous years. In looking over these estimated figures I could not help recalling that the refrigerators now being used for that movement have been standing on the side tracks of the railroads of this country awaiting business for as long as five or six months. This surplus capacity can only be maintained at a very considerable expense.

I wonder how many of us today really realize that transportation is the right hand of industry. The lack of transportation today has more to do with famine in China and Russia than anything else. I assume you all know that in this country there are about 270,000 miles of main line tracks and if we include all of the sidings this mileage would reach 400,000. Transportation is the biggest industry in the United States and for a great many years the railroad development was very much ahead of the industrial development. The foresight of the railroad officers that made that possible in the past is just as great today as it was then and they will meet the situation and again bring railroad development to the point where it leads the industrial development if they are given a reasonably free hand where their incentive and initiative can be used to its fullest extent. Take away the initiative of an organization and you have undermined its foundation.

If your organization and other similar organizations and individual shippers will study this and view it from the standpoint of your own future interests, I am sure you will see that the transportation industry is given an opportunity to again resume its proper place in the commercial development of this country.

THE CHICAGO, BURLINGTON & QUINCY has presented to conductor William H. McGee, of the St. Joseph division, a gold watch and chain, in recognition of his capture of a robber on the night of September 10. Conductor McGee was in charge of southbound passenger train No. 16, near Parkville, Mo., 12 miles north of Kansas City, when the robber forced him down and bound him. McGee later cut the bonds from his hands and feet, secured a revolver from the mail car, disarmed the robber and finally turned him over to the proper authorities.



Two Baldwin-Westinghouse Electric Freight Locomotives for the Paulista Railway

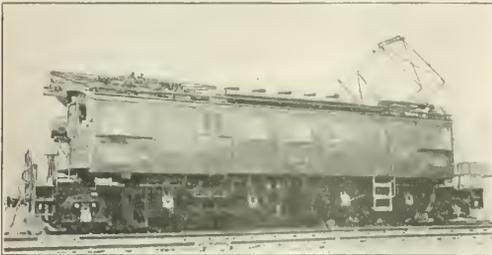
# Electric Motive Power for Paulista Railway

## Two Freight and Two Passenger Locomotives Built for Brazilian Road by Westinghouse Company

A TOTAL of 16 electric locomotives, six for passenger and ten for freight service, were purchased in the United States for the Paulista Railway, Brazil. Two passenger and two freight locomotives were supplied by the Westinghouse Electric International Company and are described in this article. The remainder of the locomotives, consisting of two types manufactured by the General Electric Company,

2-4-0 + 0-4-2 wheel arrangement and each driving axle is equipped with a 580 h.p., 3,000-volt twin motor and quill drive.

The passenger and freight train weights and schedule speeds are such as to require locomotive horsepower ratings in almost exact ratio of four to three, so that by using eight armatures on the passenger locomotive and six on the freight locomotive, it was possible to use the same identical motors in both services, except for the external frames. The passenger motors are in twin frames, while the freight motors are in axle and nose suspension frames, but the motors are identical electrically and all replacement parts, coils, complete armatures, field poles, brushes, armature bearings, etc., are interchangeable throughout. This is, of course, a tremendous operating advantage and is obtained without the sacrifice of fitness of type of each engine for its service. The freight locomotives operating at speeds up to 40 m.p.h. with comparatively light axle loads, have the mechanical simplicity inherent in axle-mounted motors and direct geared drive, while the passenger locomotives for speeds up to 65 m.p.h. have the advantages of high center of gravity and large proportion of spring-borne weight given by the quill drive.



Electric Passenger Locomotive

were described in the *Railway Age* of July 9, 1921, page 80, together with an outline of general conditions on the railroad and a description of other electrical apparatus.

### Freight and Passenger Motor Parts Interchangeable\*

The freight locomotives are of the six-axle type, with two six-wheel articulated trucks. There are six axle-mounted motors rating 280 h.p. each at the one-hour rating. The motors are wound for 1,500 volts for operation two in series on 3,000 volts and are arranged for field control. Each motor drives its axle by a single flexible gear.

The passenger locomotives included in this order have a

### Mechanical Construction

The frames are of solid slab steel with the openings drilled and burned out by torch. The brake rigging and equalizer parts are fitted with case-hardened pins and bushings throughout, minimizing wear and facilitating replacement. The pedestal shoes are of bronze and the journal boxes are arranged for grease lubrication of the hub liners.

The control equipment has been worked out to give the greatest possible degree of simplicity consistent with good engineering and the proper degree of operating flexibility. All switches required to break heavy current are of the unit type mounted in two rows just below the main grid resistors. Motor combination circuits for motoring and regenerating are set up by cam switch groups and stabilizing resistor con-

\*Abstract of an article on the Paulista Railway electrification by S. B. Cooper, general engineering department, Westinghouse Electric and Manufacturing Company.

nections for regeneration are made by smaller unit switches without blowout coils.

Continental type couplers with take-up screws are used on passenger cars, but only open links on freight equipment. For this reason it is particularly desirable to have a high degree of flexibility and smoothness in the control. This is accomplished by having three motor combinations of six, three and two armatures in a series on the freight locomotives, giving, with field control notches, six running speeds. The main handle on the master controller has 18 positions, giving a total of 54 notches. On the passenger locomotives, the armatures are connected eight, four and two in series, giving six running speeds and 54 notches.

#### Regeneration Provided For

Regeneration is provided for in all three combinations, with 13 notches in each combination, giving a particularly wide range of regenerating speeds, a most desirable feature with the various classes of trains and varying grade conditions existing on the Paulista.

The brake equipment consists of a combination of air and vacuum brakes. The space requirements for the cylinders made it impossible to use vacuum brakes on the locomotives, so they are equipped with air brakes. The control of the brakes is so arranged that air on the locomotive and vacuum brakes on the train is handled from a single valve with uniform rates of application and release. An independent straight air valve is provided for the separate control of the locomotive brakes as desired, thus making it possible to shut down the exhauster during light engine or switching movements.

#### Provision For Future Conditions

The auxiliary equipment is simply arranged; a single high voltage auxiliary motor-generator set furnishes power for control, lights, motor excitation during regeneration, and for the blowers, compressor and vacuum exhauster. The motors driving the exhauster and blowers are practically identical. The control and auxiliary equipment throughout is the same on the freight and passenger locomotives, excepting for such detailed differences as are required for the control of six and eight armatures respectively.

The traffic on the Paulista system is growing at a very

healthy rate and even with double track it will not be many years before track capacity becomes a serious consideration. It seems probable that by that time both the Sao Paulo Railway and the Paulista Company will change over to M. C. B. type couplers and therefore be able to handle much larger trains. With this end in view, these locomotives have been equipped for multiple operation so that they can be double-headed with a single crew and handle 1,400-ton trains instead of 700. The bumper castings have been so designed that M. C. B. couplers can be very easily applied to replace the Continental type.

#### GENERAL DIMENSIONS AND RATINGS

Wheel arrangement.....	Freight 60-0-0-6-0	Passenger 2-4-0+0-4-2
Rigid wheelbase.....	14 ft. 0 in.	8 ft. 4 in.
Total wheelbase.....	37 ft. 0 in.	41 ft. 2 in.
Length over buffers.....	50 ft. 2 in.	52 ft. 11 in.
Total height over cab roof.....	12 ft. 7 in.	12 ft. 7 in.
Total height with trolley down.....	14 ft. 10 in.	14 ft. 10 in.
Diameter driving wheels.....	40 in.	63 in.
Total weight.....	234,000 lb.	282,000 lb.
Weight on drivers.....	234,000 lb.	206,000 lb.
Number of motors.....	6	4
Gear ratio.....	16:63	28:86
One hour rating, per motor.....	280 h.p.	560 h.p.
Locomotive ratings—short field:		
Horse power (one hour).....	1,680	2,240
Tractive effort.....	29,400 lb.	19,400 lb.
Speed, m. p. h.....	21.4	43.2
Horse power (continuous).....	1,350	1,800
Tractive effort.....	21,600	14,300
Speed, m. p. h.....	33.4	47.2
Tractive effort at 25% adhesion, lb.....	58,500	51,000
Maximum safe speed, m. p. h.....	40	65

The more important ratings and dimensions are shown in the table. Ratings are on the basis of the A. I. E. E. rules throughout, the continuous rating being based on 85 deg. C. rise by thermometer, or 105 deg. C. rise by resistance, thus giving conservative total temperatures with the high air temperatures encountered at certain seasons in Brazil.

The freight locomotives are now in Brazil ready for service, and the passenger locomotives have been completed and shipped from the works of the Westinghouse Electric and Manufacturing Company at East Pittsburgh, Pennsylvania.



Copyright by Keystone

A Train on the Mt. Tamalpais & Muir Woods, California

# Debate Federal versus State Regulatory Powers

## State Utility Commissioners Question Extent of I. C. C. Authority Under Transportation Act

THE National Association of Railway and Utilities Commissioners was accustomed to formulate a theme for its annual meetings, it would probably have chosen for the convention held this week at the Georgian Terrace Hotel, Atlanta, something like the following: "The Attempt to Construe the Transportation Act to Mean the Transfer of State Jurisdiction Over Railroads to the Federal Government." This was the keynote of the meeting. One of the most important reports was that of the Committee on Litigation formed in September, 1920, to take action in the various cases before the Interstate Commerce Commission relative to the increase in intrastate to agree with interstate rates.

The convention, which began on the morning of October

11, was welcomed to Atlanta by Thomas W. Hardwick, governor of Georgia. In addition to the presentation and discussion of the committee reports, there were two round-table discussions, one on "After-the-War Phases of Regulation" and the other on the subject of "Automobile Transportation—Omnibus and Jitney." The convention was also addressed by James A. Perry of the Georgia Railroad Commission, president of the association, by John E. Burton, general solicitor of the association, who presented a report on the work of his office, and by Joseph B. Eastman, member of the Interstate Commerce Commission. The meeting opened with President Perry in the chair with 72 commissioners representing 31 states in attendance.

### President's Address

Opposition in the strongest terms to a centralization in Washington, in the Interstate Commerce Commission, of control over all railroad rates, thereby destroying the power of the states to regulate their domestic commerce, was a distinguishing feature in the address of James A. Perry, of the Georgia Railroad Commission, President of the association.

The Transportation Act is being construed by the Interstate Commerce Commission in such a manner as practically to destroy the right of the states to regulate railroad rates and fares within their own borders, declared Mr. Perry, and a continuance of this interpretation of the act will amount to nothing less than complete abrogation of the fundamental principle of the sovereignty of the states as embodied in the federal constitution.

The Interstate Commerce Commission, Mr. Perry, contended, has construed the Transportation Act too much in the light of a revenue producing measure for the railroads, instead of in the light of an act to further regulate commerce. He called attention to the fact that the National Association of Railway and Utilities Commissioners some months ago appointed a committee to confer with the I. C. C. in an effort to work out a policy of harmonious co-operation, whereby the right of the states to prescribe intrastate rates would be preserved, but the conferences, he declared, "amounted to nothing, and nothing can be accomplished along this line so long as the Interstate Commerce Commission holds its present views."

The issue of states' rights, he pointed out, is now before the United States Supreme Court in the Wisconsin case and other cases, but he did not believe a satisfactory final solution of the issue could be obtained in that direction. Only by legislative action, in the form of amendments to the Transportation Act so as to re-establish clearly and indisputably the right of the states, can the issue be settled in his opinion, as expressed at the meeting. "If the present views of the Interstate Commerce Commission remain the law of the land," said Mr. Perry, "then we have suffered a

most serious blow at our dual system of government."

Local self-government, he declared, is essential to the success of our political institutions in this country. One central body can never deal intelligently or satisfactorily with local conditions, he continued, and remarked that "the people had a taste under Secretary McAdoo of the nationalization of the railroads, and quickly grew sick of it."

He pointed out that the Interstate Commerce Commission's rule of procedure, where advances in rates are sought by the carriers, is to allow the carriers to file schedules of the proposed advances, and if the same are not objected to within 30 days they become effective; whereas, the practice of a majority of the state commissions is to require the carriers, when applying for rate advances, to justify them before they are authorized. "To require the carriers to go to Washington and justify every advance, whether interstate or intrastate," said Mr. Perry, "would speedily bankrupt the weak railroad lines, would stifle completely the expression of protest by affected communities, and would mean that communities seeking relief from unreasonably high rates would spend great sums of money and months of traveling back and forth to Washington."

Mr. Perry further contended that the "utter futility," as he called it of federal regulation was clearly demonstrated in *Ex Parte 74*, *The I. C. C.*; in that case he said, "applied a horizontal increase to all roads alike, rich, poor, bankrupt short and long—all were given the same increase. And notwithstanding that increase, giving the roads the highest rates in 35 years, they have lost money at a shocking rate. They are back before Congress at this time, appealing for financial help. Every known principle of rate-making was violated in *Ex Parte 74*. Without knowledge or inquiry as to whether the traffic would stand these undreamed of increases, the Commission granted them. The inevitable happened when the movement of various commodities to a large degree stopped. Millions of dollars worth of perishable farm products rotted in the fields with staggering losses to carriers and producers alike."

### Commissioner Eastman's Address

Commissioner Joseph B. Eastman of the Interstate Commerce Commission in an address before the convention on Wednesday discussed the relations between the federal government and the state commissioners in the matter of interstate and intrastate rates.

"I feel confident," he said, "that you will all agree that

a sound national policy calls for harmony between state and interstate rates.

"We know from experience, and would know even without experience, that the absence of such harmony can only be a source of complaint and confusion."

Continuing, he said:

In some parts of the country the state and the interstate rates are now on a reasonably consistent basis; in other parts they differ. In my judgment harmony will eventually be established all over the country. I am also convinced that if it is not attained with the aid of the states, it will in due time be brought about by the exercise of national authority. This may seem to you a rash prophecy and I hope there may never be occasion for proving its truth. I make it merely because harmony in rates is so clearly a matter of vital national interest that I believe its attainment sooner or later to be inevitable. I am just as thoroughly persuaded, however, that it will be most unfortunate if it cannot be accomplished with your assistance and co-operation.

Whether or not co-operation is possible does not depend upon the law, it seems to me, for the law already authorizes and definitely contemplates such a getting together. It really depends, like many other things in life, upon the good will and good sense of the individuals who are called upon to do the co-operating. If we in Washington are arbitrary or inconsiderate, for example, or if you are sensitive or short-sighted in your views of what you deem to be local interests, the difficulty will be very great. Now I assume that you will discuss our own errors and infirmities in this respect and keep us informed as to how we may mend our ways to advantage.

I realize that you may think this idle talk in view of our decisions during the past year in the various state cases. But the court has not spoken in those cases as yet, and they dealt with an issue which is not at all the same as the issue which I am now discussing. There it was a question of accomplishing uniformity of increase rather than harmony in rates and the two, as you know, may be very different things.

Coming back to the suggestions: First of all I suggest that it would be well to keep in mind continually the fact that you are dealing with a national railroad system whose operations are affected with a national interest, and that national policies, so far as important matters are concerned, are bound in the long run to prevail. This means mutual concessions and a spirit of give and take. No state can fairly expect to mould the national policy in complete accordance with its views, or to win 100 per cent of its contentions.

I suggest that you be long-suffering and patient in your dealings with us, because the inconsistency of state and interstate rates is only one of our troubles. Nor ought you to entertain the fear, which I understand exists in some quarters, that where inconsistency is present we always reach the conclusion that it is the state rate which is wrong. To use one of the favorite phrases in our reports, such fear is not justified by the record.

I suggest that it is well not to allow your energies to be wasted by exasperation with the carriers, and I make this suggestion because their attitude toward the state commissions in recent months has in some cases furnished cause for irritation.

I suggest that it may be possible for you to adjust differences among yourselves and take the initiative in bringing about harmony in state and interstate rates instead of waiting until the issue is thrust upon you. In this way you will gain the advantage of being positive rather than negative factors in the controversy. I realize that there may be many obstacles to such procedure of which I am not aware, but let me illustrate what I mean by the situation right here in the south. Probably there is no part of the country where there is more lack of consistency between the state and the interstate rates, and it seems to be very generally agreed that sooner or later this situation must be adjusted—at least, that is my impression of the general sentiment. Broadly speaking, the desirable thing is that the adjustment should be made with as little change as possible in the average level of rates, and such an adjustment is not easy of accomplishment. It occurs to me that if the state commissions of the south could get together and become the active proponents of a plan for bringing about harmony in rates within their territory they would stand on stronger ground than if the issue is brought to the front upon complaint of the carriers or upon our own initiative in Washington. And why should agreement between the states be impracticable? Surely no state wishes advantages at the expense of another. I feel confident, also, that the shippers of the south are not opposed to harmony in rates,

but are only concerned that it shall not be made the excuse for a further increase in the general rate level.

The opportunities for co-operation between the federal commission and the state commissions are wellnigh unlimited. Many of the matters over which we now have jurisdiction often appear to have more of local than of national interest. It may be that we shall not always retain jurisdiction in all these cases, but so long as we do we need your help. Consider, for example, the jurisdiction over the construction of new lines and the abandonment of old lines. \* \* \*

The field of regulation is so huge, in short, that whether our jurisdiction is enlarged, curtailed, or remains as it is, I cannot conceive of the time arriving when there will not be plenty of opportunity in railroad affairs for usefulness on the part of state commissions responsible to local authority and thoroughly in touch with local conditions. It is impossible, as I see it, to administer all these matters from Washington with any degree of satisfaction. But I caution you again to bear in mind that you are dealing with a national transportation system which must be guided in many respects by a national policy. And I further suggest that our duties are so numerous and our jurisdiction so wide that we may neglect at times the initiative in co-operation which you may think we ought to take, and that the burden of this initiative may appropriately be borne by you as well as by us. \* \* \*

I think I can foresee tremendous possibilities in the development of our national transportation system. For example, there are the possibilities in the reconstruction and joint use of the terminal facilities of our great cities, a matter to which far too little constructive thought has been devoted; the possibilities in electrification and the economical production and use of power; the possibilities in the development of waterways and motor transport and their relation to and co-ordination with the rail systems; and the possibilities which go with the phrase economy and efficiency in management and concentration upon the details of operation which have so much importance in the mass. And aside from these possibilities, the country is continually growing and if the experts are to be believed, our national transportation system has not for some years kept pace with this growth and now falls far short of its proper capacity.

Now it is not difficult to list the essentials, if growth is to be normal and if the country is to reap the full measure of the possibilities which I have described. Clearly there must, first of all, be adequate inducement for the investment of capital. Billions of dollars will be needed. There must be harmony and co-operation between the managements of the great railroad companies. Manifestly, it will deadlock any well-rounded development of our national transportation system if each has thought only for its selfish advantage, however such a course may profit a few industries or a few localities. There must be opportunity for the executives, particularly the operating executives, to manage their properties without the strain of continual financial worry or of too frequent public attack and investigation. Initiative does not show to advantage in fetters. Finally, and above all, there must be co-operation between the managements and the employees, for no railroad can operate efficiently with labor which is disloyal or disheartened. But to list these essentials and to say how they shall be attained are different matters.

It occurs to me that railroad discussion in recent years has been on a painfully low level. I am not thinking of the ignorance and demagoguery which always enter into any public controversy, but of discussion from sources which are presumptively intelligent. Rather than being an earnest and constructive effort to seek the truth, it has too often, if my impression be correct, been largely an endeavor to shift the blame, in other words to find a "goat," an endeavor productive of nothing but rancor and bad blood. For a long time, in the minds of railroad operators and investors, the Interstate Commerce Commission was apparently the sole obstacle to progress and increases in railroad rates the sole panacea. We have heard less of this since Ex Parte 74, but no doubt our turn will come again and so will yours. More recently the vials of wrath have been emptied upon the Railroad Administration, upon labor, and more recently still upon the Railroad Labor Board. \* \* \*

## Safety of Railroad Operation

Following are abstracts of some of the committee reports presented at the meeting. Other reports and additional details concerning the other business of the convention will be given in next week's issue of the *Railway Age*.

The report of this committee, of which C. C. McChord of the Interstate Commerce Commission is chairman, dealt primarily with safety on interurban lines. The report said that "while much has been accomplished in the direction of safety,

there has been a tendency to focus attention upon the larger steam lines, with a result that improvement on the smaller roads, particularly the interurban lines, has not kept pace with the larger steam systems."

"In nearly all instances," the report continued, "the interurban electric lines originated in street railways, doing an ordinary city street railway business. With the growth of cities and the rapid development of the surrounding country

they have gradually branched out and extended their lines into suburban territory, forming connecting links between towns and cities, until they have become important factors of the transportation system of the country and carry no small part of the nation's commerce. In their inception the interurban electric systems were comparatively small, their traffic was light, operating conditions were simple, and few, if any, operating rules were required. But with the development and extension of these systems there has been introduced more complex operating conditions and requirements, until they have approximated, if not equalled, those on the average steam railroad. In the meantime, however, there has not been adequate advancement or improvement in operating methods or practices. The result is that many such systems, practically trunk lines railroads, are today operating under primitive street railway rules and regulations, which constitute a serious menace to life and property."

The report instanced one road, a single track line, approximately 50 miles in length, over which there were operated

during a daily period of 20 hours, 56 trains, but on which road none of the employees were furnished with time-tables. Train crews were required to secure such information as they might need from a time-table made with pen and ink and posted on the walls of the terminal station. Complaint was made of other roads that failed to have proper train dispatching. Some roads, it was maintained, lack adequate and safe operating rules and arrangements, while still others which may have elaborate codes are constantly menacing the lives of their patrons through failure to require the enforcement of such rules. Laxity of time regulations and the absence on many interurban lines of signal systems and other safety devices also came in for severe condemnation, as did the lack of care in the selection, training, etc., of train service employees.

The report is signed by C. C. McChord, I. C. C., chairman; G. E. Halderman (Colo.), E. C. Kash (Ky.), W. A. Dutton (Mt.), Geo. R. Edwards (Miss.), B. H. Cooper (Ala.), D. F. Johnson (Ariz.).

## Grade Crossings and Trespassing on Railroads

The committee in its report said in part:

Of all careless travelers the automobilists are the worst offenders. The reckless things they will do are almost unbelievable. Their favorite pastime seems to be to race with a train in order to pass over the crossing just ahead of it. After frightening the engineer half out of his wits, causing him to blow the whistle and put on the emergency brakes, the automobilist, with a grin and wave of his hand, disappears in a cloud of dust. Of course, these cases are unusual but not so exceptional as they should be.

### Reckless and Careless Automobilist Worst Offender

But beside the daredevil reckless driver we have the careless driver, who is either too lazy or indifferent to danger to slow down, and, not having his car under proper control, he stalls his engine upon the tracks of the railroad, or discovers the approaching train too late to stop before the train hits him. If it were not for the automobilist it might be said that grade crossings under the modern methods of protection are reasonably safe. Notice the word safe is qualified. It is recognized that no grade crossing is or can be made absolutely safe.

But to return to the automobilist, some means must be devised to make him slow down, or, still better, stop his car before passing over the railroad tracks. If this can be brought about the greatest danger at grade crossings will be eliminated. Various states have endeavored to do this by passing a law requiring all motorists when approaching a railroad crossing and at a certain distance therefrom to reduce the speed of his car to 5 or 10 miles an hour. The difficulty with this law is that it is difficult to enforce and is not observed. In a few states the operator is

required to bring his car to a full stop before proceeding over the crossing. In other states a hummock or other defect is made in the roadway near the crossing so that automobiles for the comfort of the occupants and safety of its springs must slow down. This last method would seem objectionable in that it is creating a defect in the highway to the annoyance and inconvenience of everyone. It has not been adopted generally.

### Severe Punishment Needed to Stop Reckless Driving

The law prescribing the speed of vehicles over railroad crossings and the precautions to be exercised by travelers should be enforced as far as possible in order to make them effective. A few stiff fines, short imprisonments and loss of licenses to operate a motor car will go a long way towards putting a stop to reckless automobile driving over railroad crossings.

While doubtless the last word has not been spoken upon protection at grade crossings, apparently the means and devices now in use if judiciously employed by installing at each crossing the type best adapted to protect that particular crossing seems to be about all that can be desired for the purpose for which they are intended.

But it has been demonstrated that, regardless of the kind or degree of protection, accidents will happen at grade crossings. This is well known and needs no argument to prove it. Some one may say that no one is under an obligation to protect a man from death or injury due to his own carelessness. Human life, however, is so precious that it is desirable to protect a man from death due to his own negligence and vastly more desirable to protect the lives of those who would be killed by his negligence.

## State and Federal Legislation

The Committee on State and Federal Legislation reported that there had been no material change in the situation since the last meeting of the association. The report continued:

The last convention by resolution endorsed the bills then pending in both houses of Congress, to amend the Valuation Act, so as to relieve the Interstate Commerce Commission of the obligation in its valuation of railroad properties the estimated "present cost of condemnation and damages or of purchase of lands in excess of original cost or present value." Strenuous efforts were made to secure this amendment, but without results.

At this session new bills have been introduced in the House by Congressman Sweet, and in the Senate by Senator Cummins, and a favorable report has been made by the sub-committee of the Senate to the full committee.

At least a dozen state legislatures have passed resolutions demanding that congress amend the Esch-Cummins Act, so as to preserve to the states the regulation of their internal affairs. The American Farm Bureau Federation together with a number of other farm organizations and dozens of business associations have passed resolutions of the same nature. There is a popular feeling that this has been done quickly in order to eliminate all litigation and prevent misunderstandings between the state and federal commissions.

The Interstate Commerce Commission has held that its jurisdiction extends to every rate charged by an interstate carrier,

which after hearing it may find adversely affects interstate commerce, using the term "commerce" in a sense which covers "the entire field of transportation, the traffic itself and all the instrumentalities and means of carrying it on."

If these decisions are valid, then the Esch-Cummins Act, contrary to the declared intent of its authors, has extended federal control of intrastate rates to the point of destruction of state power of regulation, and has placed such control exclusively in the hands of a single overworked bureau in Washington, ill-informed as to local conditions, far from shippers, and available for relief only at such expense of time and money as practically to place it beyond the reach of complainants of ordinary means.

Bills have been introduced in the House by Congressman Sweet, of Iowa, H. R. 6861, and in the Senate by Senator Capper, of Kansas, S. 1150, which will clarify the situation.

We have had several meetings and conferences and have done everything possible to secure this amendment. The previous legislative committee was not satisfied with the provisions as to the power of the states in this act but was unable to secure any further concessions, and was told repeatedly, and has been assured since the enactment of the Esch-Cummins Act, that it was not the intention of congress to deprive the states of any of their prerogatives. Notwithstanding all this, we are obliged to establish our rights by the slow process of litigation, placing on the authorities of the state the burden of great expense, in order to preserve to themselves the right of state regulation.

Congress should immediately pass an amendment that will rectify the condition and will read so plainly that there will be no necessity for continued litigation and misunderstanding between state and federal authorities.

The report is signed by CHAS. WEBSTER, (Iowa), Chairman; J. W. RAISH, (S. D.); T. A. BROWNE, (Neb.); ALEXANDER FORWARD, (Va.); ERNEST D. LEWIS, (W. Va.); FRED W. PUTNAM, (Minn.); OLIVER C. SEMPLER, (N. Y. P. S. C.).

## Litigation

The report of the Committee on Litigation included a detailed analysis of the several intrastate rate cases. It gave an outline of the efforts the committee and the association's general solicitor, John E. Burton, had made and were making in opposition to the Interstate Commerce Commission's decisions bringing intrastate rates up to the level of the interstate rates. "The year has been prolific," the report said, "of litigation begun to set aside intrastate rates. . . . To the extent that they have acted in such cases, the lower federal courts have without exception sustained the federal commission's orders. In most states the carriers have procured from such courts temporary injunctions restraining the state commissions and other state officials from taking any action to interfere with the putting into effect of advanced rates ordered by the federal commission. In every state the rates so ordered have taken effect. In no state, however, so far as we have knowledge, has a final order of a court sustaining the federal commission been entered."

The report follows in part:

The Committee on Litigation was created by a vote passed at a special meeting of commissioners held in Chicago on September 11, 1920, to consider what collective action the state commissions would take in the proceedings which had just before been instituted under the Transportation Act before the Interstate Commerce Commission to procure orders advancing intrastate rates in New York, Illinois, Wisconsin, and other states. The committee was authorized, by the vote creating it, to follow all litigation in which carriers might attempt to secure an interpretation of the Transportation Act diminishing the powers of the states to control intrastate rates and regulation of carriers, and to represent state commissions, granting authority therefor, in such proceedings.

The convention continued the existence of the committee by a vote as follows:

"That the president of this association be directed to appoint a committee of seven, to be known as the Committee on Litigation, said committee to act in all matters for the association wherein are involved the powers and rights of the several states to control the rates and regulations applicable to intrastate commerce; this committee to work with our general solicitor in representing the states in all such cases arising in the courts or before the Interstate Commerce Commission."

### Effect of Federal Commission's Orders

The effect of the decisions of the Interstate Commerce Commission in the several intrastate rate cases, may be summarily stated as follows:

"The prohibition against 'undue, unreasonable, or unjust discrimination against interstate or foreign commerce' is not limited to particular persons or facilities, but is applicable to such discrimination against interstate or foreign commerce in their broad definitions. (Illinois Passenger Fare Case, 59 I. C. C., 363.)

"The term 'commerce' covers the entire field of transportation—the traffic itself and all the instrumentalities and means of carrying it on. The language used is certainly broad enough to cover every discrimination growing out of the relation between intrastate and interstate commerce which injuriously affects the latter." (Illinois Passenger Fare Case, 59 I. C. C., 361.)

"If, without good reason, the fares within a state are lower than those authorized and established for interstate application, intrastate passenger traffic will not contribute its just share to the passenger revenues of the carriers, and the carriers may not earn the statutory return without further increases in the transportation charges on other traffic, including interstate commerce, thus unjustly discriminating against such commerce." (In the Matter of Intrastate Rates within the State of Illinois, 59 I. C. C., 365.)

"Whenever a carrier believes that an intrastate rate is too low, from a revenue standpoint, it may apply in the first instance to the Federal Commission for an order advancing the same, disregarding any state agency having jurisdiction over the rate under state laws. (Arkansas Rates and Fares, 59 I. C. C., 473; Nevada Rates, Fares and Charges, 60 I. C. C., 637; Arizona Rates, Fares and Charges, 61 I. C. C., 573.)

"It is no defense in such a proceeding that the intrastate rates yield a fair return on the value of property devoted to intrastate transportation. The law does not contemplate any segregation of such property and consideration of earnings thereon. (On the Matter of Intrastate Rates within the State of Illinois, 59 I. C. C., 364.)

"It is no defense that the intrastate and intrastate business taken together, in the state involved, yield the aggregate return contemplated by the Trans-

portation Act upon the aggregate value of railroad property within such State. Section 15a, in its provision for group rates and aggregate returns, contemplates the disregard of state lines. (Nebraska Rates, Fares and Charges, 60 I. C. C., 312; and in the Matter of Intrastate Rates Within the State of Texas, 60 I. C. C., 426.)

"In order that the commission may act quickly, when it deems carriers' need of increased revenue urgent, it may increase specified classes of rates by straight percentage increases, without examination of particular rates, leaving persons aggrieved to secure modification of the commission's order after it has become effective. (In the Matter of Rates, Fares and Charges of the New York Central Railroad Company and other Railroad Companies in the State of New York, 59 I. C. C., 294.)

"In order that the Federal Commission may exercise jurisdiction to advance intrastate rates on any commodity, as discriminatory against interstate commerce, it is not necessary that there be any interstate commerce in such commodity. In such case the Federal jurisdiction rests upon the loss in revenue suffered by the interstate carrier. (Louisiana decision on sugar cane rates, 60 I. C. C., 476.)

"The question whether a rate or practice sought to be changed is 'unjustly discriminatory against interstate commerce' does not depend upon the amount of revenue involved," and the commission may accordingly advance intrastate rates prescribed by state authority, even when it is found that the advance will have "no very substantial effect upon the revenues of any one carrier," as in the case of the increase of minimum passenger fares in South Carolina. (60 I. C. C., 298.)

"Furthermore, the commission has jurisdiction to impose charges with respect to intrastate traffic, in contravention of state law, which charges are not designed for direct revenue purposes, such as the conductor's cash penalty charge imposed in South Carolina. (60 I. C. C., 298.)

Paragraph (4) of section 13 of the Interstate Commerce Act, as amended by the Transportation Act, provides that any rate or practice ordered by the commission "shall be observed while in effect by the carriers parties to such proceedings affected thereby, the law of any state or the order of any state authority to the contrary notwithstanding." All orders of the commission thus far made, prescribing state rates, have provided that the same shall "remain in force until the further order of the commission."

### Proceedings Have Related to Large Bodies of Rates

From the first the commission has proceeded under the Transportation Act, not upon investigation of particular rates, but with respect to large bodies of rates. In several instances the commission has advanced all of the freight rates within a state, and in other instances all of the passenger fares (with inconspicuous exceptions, such as commutation rates, too unimportant to mention) and that in some instances all rates within a state, both passenger and freight, have been advanced. This it has done, without examination of the rates increased, by the application of the same percentages of increase which were applied to interstate rates under the authority of the commission's decision in *Ex Parte* 74. The result has been that many situations were created where intrastate rates were so glaringly in excess of interstate rates that the carriers themselves desired to make adjustments. This they could not do without first securing a modification of the applicable order of the federal commission.

To remedy these situations, the federal commission designed a provision which, by amendment or by original inclusion, has been a part of each order of the commission advancing intrastate rates, the same being as follows:

"It is further ordered that nothing in this order shall be construed as requiring any common carrier to establish, put in force or maintain any rate, fare or charge for the transportation of passengers or property in intrastate commerce which is greater than its corresponding rate, fare or charge applicable to the transportation of passengers or property in interstate commerce from, to or at the same points in effect on (the date of the order) or greater than its corresponding rate, fare or charge contemporaneously in effect and applicable to the transportation of passengers or property in interstate commerce."

"Whatever may be the meaning of the peculiar language 'from, to or at the same points in effect \* \* \* or greater than its corresponding rate, fare or charge contemporaneously in effect and applicable to the transportation of passengers or property in interstate commerce,' it is treated as permitting carriers to reduce the percentage of their intrastate advances when they desire to do so, to avoid or remove maladjustments which would otherwise result from an order.

Reference has been made to this device as a necessary preliminary to a statement of the extreme length to which the federal commission has gone in its orders aimed to exempt carriers from the obligation to conform to state rates prescribed by state laws.

### The Kansas Case

In the Kansas case it was shown affirmatively, upon the hearing before the federal commission, that without increases the Kansas freight rates were already, in large part, as high as interstate rates. Nevertheless, the *Ex Parte 74* percentage advance was ordered, with the proviso in the order just quoted, under which it was said "difficulties of the kind referred to can be avoided." (Kansas Rates, Fares and Charges, 62 I. C. C., 448, 450.)

The effect of this order is that the federal commission, as to the entire body of Kansas intrastate freight rates, said to the carrier: "We find that these rates are in part lower than corresponding interstate rates. You may accordingly determine what rates are in fact lower than corresponding interstate rates, and may advance those rates such percentage as you may determine to be necessary to bring them to a parity with corresponding interstate rates, not, however, exceeding the percentage advanced, authorized as to interstate rates in *Ex Parte 74*."

In other words, the commission in effect authorized the Kansas carriers to determine what intrastate rates in Kansas were discriminatory, and to advance the same by such a percentage as such carriers determined to be necessary to remove the discrimination.

It is difficult to conceive of the more complete destruction of state power of regulation than is represented by these several orders of the commission to which we have referred, if those orders are valid.

It should be noted that from these orders (with the exception of the Chicago, North Shore & Milwaukee case) Commissioner Eastman has dissented. In the Kansas case the newly appointed commissioners, Campbell and Lewis, also dissented, the first upon the ground that the federal commission has no jurisdiction under the Transportation Act to review the reasonableness of State rates, and the latter upon the ground that the fact of discrimination must be found by the commission itself before it can properly make an order advancing an intrastate rate.

### Appearances Before Federal Commission

Acting under the authority of the vote of the last convention, heretofore set out in this report, this committee directed the appearance of the general solicitor in cases pending before the federal commission "involving the power and rights of the several states to control the rates and regulations applicable to intrastate commerce." He accordingly appeared in the several cases mentioned, and from time to time made arguments, as new questions, not before passed upon by the commission, were presented in any case.

The validity of the several orders mentioned is being contested in most if not in all of the States affected. In New York, Ohio, Nebraska, Michigan, Montana and Utah attempts were made in the State courts to enjoin the carriers from putting into effect rates in excess of those authorized by State laws, but the State courts appealed to refused to exercise jurisdiction. In some cases temporary injunctions were obtained, but these were without exception later dissolved. The States were accordingly left to protect their rights in the federal courts.

The State of North Dakota instituted an original action in the United States Supreme Court. The Wisconsin, New York, Minnesota and Illinois cases have already reached that court. All other cases are still pending in the lower federal courts.

### Appearances in Court

It obviously was impracticable for your committee to attempt to provide intervention on behalf of the state commissions in these several suits in the lower federal courts. In the first and only case thus far argued in the United States Supreme Court the committee did instruct the general solicitor to appear on behalf of all state commissions desiring appearance to be made on their behalf. A brief was filed, which has been distributed to all the commissions.

This brief was a revision and extension of the brief which was filed before the Interstate Commerce Commission in the New York and Illinois cases, involving the same questions as are involved in the Wisconsin case, covering which report was made by this committee at the last convention.

In the brief in the Wisconsin case in the United States Supreme Court the general solicitor joined 42 state commissions. In filing the same he was also joined by the attorneys general, or rate counsel, of all the states but one affected by the advanced rate orders of the federal commission made prior to the date of the filing of said brief. In all 43 states were thus represented on the brief.

The states that thus appeared necessarily did so *amici curiae*. Under an established practice of the United States Supreme Court, *amici curiae* are not permitted to be heard in oral argument. In only a very few instances in the history of the court has the rule been relaxed. Upon a motion filed by the general

solicitor, however, setting forth the interest of the forty-three states represented, leave was granted for the appearance of a single counsel to represent said States upon the argument. Two hours' time was allowed for the purpose. The argument was made by the general solicitor.

This case was argued on March 11, resumed on the 14th and concluded on the 15th, and is yet undecided.

A very important and interesting case now pending in the United States Supreme Court is that of the State of Texas against the Interstate Commerce Commission and the Labor Board, which is an original action brought to test the validity of various provisions of the Transportation Act. The New York, Illinois and Minnesota cases, as has been stated, are also pending in the same court, and it is probable that several other cases of like nature will reach that court and be argued during the coming year.

It is not to be expected that the decision in the Wisconsin case will determine all questions involving the rights of states as to regulation of intrastate commerce under the Transportation Act. While it will not be practicable, and probably will not be desirable, that appearance be made on behalf of state commissions generally in all such cases, it doubtless will be desirable to have such appearance made in some of them. New cases involving state power of regulation will also undoubtedly arise before the federal commission, in which the state commissions should be represented.

### Conclusion

It is accordingly the recommendation of this committee that the same be continued for another year, the membership to be appointed by the president, with the same responsibility and authority as was provided in the vote passed at the last convention.

The principal assistance given to our general solicitor has been through commerce counsels of the various commissions and attorney generals of the various states. The real work of this committee has been carried on by our general solicitor. The committee believes that this work should be continued and that a committee should be appointed by the president for the ensuing year to give such assistance to our general solicitor as is possible.

The report is signed by FRED W. PUTNAM, (Minn.) chairman; DWIGHT N. LEWIS, (Iowa); W. D. B. AINEY, (Pa.); ALLISON MAYFIELD, (Tex.); JOHN F. O'RYAN, (N. Y.); JNO. A. KURTY, (Mo.); R. HUDSON BURR, (Fla.).

The following officers were elected by the association for the ensuing year: President, Carl D. Jackson, of the Wisconsin; first vice-president, Dwight N. Lewis, of Iowa; second vice-president, Alexander Forward, of Virginia; secretary, Leroy S. Boyd, of New York.

## Why Are American Bridges Heavier Than European?\*

By Dr. P. H. Chen

Engineer of Construction, Tientsin-Pukow Line, Chinese Government Railways, Tientsin, China

I HAVE BEEN GREATLY interested in studying the specifications and standards of different countries. The more I study the worse becomes the puzzle. The principal points of perplexity are those which affect the strength and rigidity of railroad structures.

The allowable unit stress in continental Europe seems to be high. Many people think that Europeans do not take impact into consideration while others believe that impact is already covered by the allowable unit stresses. I take live load, dead load and impact into consideration in analyzing the European allowable unit stresses and find the difference in short spans about 40 per cent to 60 per cent higher than in American practice. The low unit stress used by Europeans, therefore, is not enough to cover American impact formula, especially in short spans.

Some people think Europeans use steels of better quality

\*Abstract of paper and subsequent discussion presented before the annual meeting of the Association of Chinese and American Engineers, Peking, China, April 6, 1921.

They specify higher minimum ultimate stress for structural steel. It appears to me that it largely depends upon the value of impact. If the American impact formula is right, naturally softer steel is preferable. Otherwise, high carbon steel may be used to advantage. Americans also use high carbon steel for long span bridges where impact is small.

I am greatly surprised at the difference in top chord bracings. For comparison I have chosen two bridges, actually in service, with the same span length and designed for almost the same live loads. The European bridge seems to be weak and to lack rigidity. It is braced on top with only one 3-in. by 3-in. by  $\frac{3}{8}$ -in. angle without cross struts, while the American bridge is braced with two heavy struts, web system and corner brackets. The American bridge has greater truss depth, and both on top and at the bottom there are rigid connections. The European bridge seems weak and slender while the American bridge looks stiff and rigid. Undoubtedly Americans use a great deal more metal for bridges of the same span length with identical live loads.

The reasons for such a wide difference in standards and specifications should be thoroughly investigated. The American impact formula is certainly correct, as it is obtained by stress measurements and the result has been carefully checked by a great number of well known engineers. The allowable unit stresses in European practice must also be correct, because Europeans also have measured the actual stresses in bridge members. I wish to bring out three questions for discussion:

- (1) If American practice is correct, how can European bridges stand long service without signs of failure?
- (2) If European practice is correct, why should Americans waste so much money in building heavy structures?
- (3) If different conditions require different standards and specifications, what should ours be in order to secure economical and reliable structures?

#### Comments by Dr. J. A. L. Waddell

Whether "the allowable unit stress in Continental Europe" is high or low, it is impossible to cover the effects of impact "by the said allowable unit stress." Impact is a real stress, varying mainly with the span-length but also somewhat with other conditions, such as character of superstructure, type of substructure, kind of rolling stock, and velocity of train; and its greatest probable amounts must be provided for in scientific bridge designing. This cannot be done by changing the intensities of the working stresses for various span-lengths and different bridge-members, but the matter must be treated by considering impact stresses as increments to the live-load stresses, as is now the custom in America.

Dr. Chen has shown that, when impact is duly considered, the intensities of working stresses employed in Europe are higher than those used in America. In the old days, "the boot was on the other leg," American bridges being much lighter than those designed by European (especially English) engineers. While the science of bridge design has been developing in America, the bridges there have been increasing in weight even more rapidly than the moving loads have augmented; for it has required a liberal use of metal to correct the old faulty details and to provide adequate rigidity for the checking of all unnecessary and avoidable vibration.

Dr. Chen may well be surprised at "the difference in top-chord bracings," for the European bracing he describes is almost unbelievable in its crudeness and inefficiency. The function of such bracing is to hold the top chords to place and line and to permit the legitimate assumption of the panel length as  $l$  in the ratio of  $l$  over  $r$  in strut formulae. The lateral bracing serves an exceedingly important function in bridge designing; and any attempt to reduce its effectiveness by cutting down its weight is reprehensible.

Dr. Chen admits that the American impact formula is correct—it certainly is; for some of the best brains in the

engineering profession have been devoted to its establishment, and the methods employed thereon have been practical—not theoretical. Dr. Chen says "The allowable unit stresses in European practice must also be correct, because Europeans also have measured the actual stresses in bridge members." To this I cannot agree, for when results differ so materially, one side only can be right—and it is acknowledged that the European impact—experiments have been quite meagre as compared with those made in America.

Dr. Chen asks three pertinent questions; and I shall answer them to the best of my ability.

(1) "If American practice is correct, how can European bridges stand long service without signs of failure?" Do they so stand it? Take, for instance, the bridges of European design on the Chinese railroads, built not so very long ago. I am told that they are nearly all so fundamentally weak that their immediate removal and replacement are a necessity. It is true that, the world over, bridges of inferior design can often be used without disaster for long periods. This is because of the so-called "factor of safety" employed in their designing; but that is no reason for building any more structures like them. There have been many badly designed bridges built and operated in America, but they are rapidly being removed, and either discarded *in toto* or employed on branch lines where the rolling stock is light.

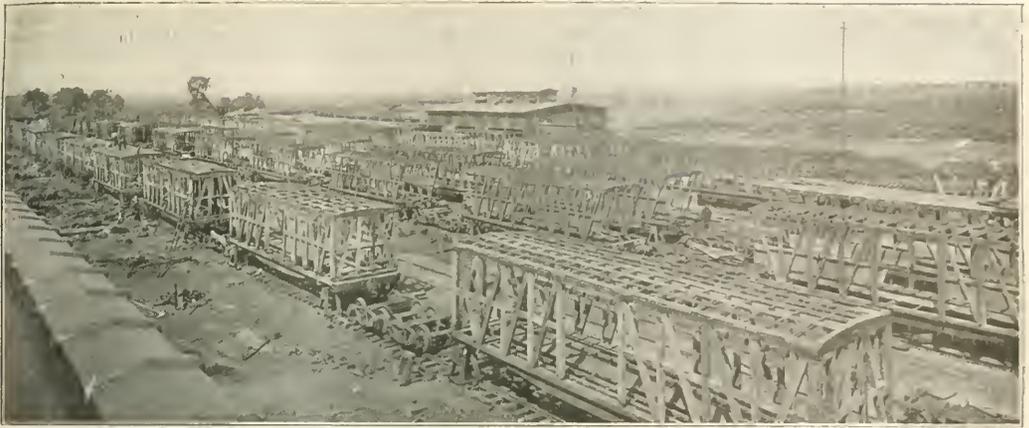
(2) "If European practice is correct, why should Americans waste so much money in building heavy structures?" Without stating whether European practice is right or wrong, I beg to maintain most positively that American bridge designers rarely waste money by making their structures unnecessarily heavy. Experience has taught them what the traffic truly requires; and they provide enough metal to meet the demand—but no more.

(3) "If different conditions require different standards and different specifications, what should ours be in order to secure economical and reliable structures?" I would suggest that the true science of bridge design has been developed mainly in America; that there the old practice of building light, flimsy, and vibratory structures has slowly and gradually been changed to constructing stiffer and still stiffer ones; and that the modern American bridge if properly cared for, will last for centuries, unless excessively overloaded. Such being the case, what better can Chinese engineers do than to study American bridge practice, adopt standard American bridge specifications, and employ live loads so large that, in all probability, they will not be exceeded for at least a quarter of a century?



Photo by Underwood & Underwood, N. Y.

Unloading American Supplies at Riga, Russia



## The Cost of Contract vs. Railway Shop Repairs

Total Cost to the Railroad Was 28 Per Cent Greater in Its Own Shop Than in a Contract Shop

By J. W. Roberts

President, Roberts-Pettijohn-Wood Corporation, Chicago

[Following the computation of the total cost of repairing 50 box cars in a railroad shop arrived at in the preceding article, the author in this, the concluding article, develops the cost to the roads of similar repairs made in a contract shop, and compares the cost under the two sets of conditions.—Editor.]

**T**HE TOTAL COST of the work performed in the outside shop is in four subdivisions:

1—Direct costs as billed by the contractor, covering materials supplied by him, or purchased from the railroad at agreed prices and rebilled at the same prices, including labor, overhead, and profit, in accordance with the terms of the contract.

2—So-called "free" materials, supplied by the railroad at its own expense, and not covered by the contractor's bill.

3—Expenses incident to having the work done in an outside shop, which were borne by the carrier.

4—The credit for the salvage value of usable materials and scrap recovered from the cars repaired by the contractor, inclusive of the expense incident to concentrating the same for reclamation, or disposal, according to the practice with regard to the scrap recovered in the carrier's own shop.

These items are considered in the order named.

### Direct Costs as Billed by the Contractor

The contractor was required to render a detailed bill of charges for each car repaired. The gross amount of the bills rendered on the fifty cars selected at random, which were audited and paid by the carrier, was \$47,885.69.

As a matter of interest, and not because it has any direct bearing on the matter of cost to the carrier of outside work as herein developed, it might be said that the carrier operates a line of railway which is so situated as to compete, and doubtless with marked success, for tonnage moving from raw material markets to the contractor's plant. To the extent, therefore, that materials furnished by the contractor and billed against the carrier may have moved over

its own rails, there was presumably an element of profit in the rates charged for transporting such materials.

### Free Materials Supplied by the Carrier

Under the terms of the contract certain materials to be used by the contractor in the car repairs were to be furnished without charge by the carrier, delivered at the contractor's works. This material consisted of car roofs, draft arms, door fixtures, draft gear and steel car ends. The cost of such materials applied to the 50 cars, delivered to the carrier's own rails, was ascertained from the purchase records as \$18,017.00. The cost of hauling it over the carrier's own line to delivery at the car plant, computed at 7 mills per net ton mile, amounted to \$387.00, making the total cost to the carrier for "free" materials \$18,404.00.

Except for isolated cases where car-load lots of these materials were moved via the general storehouse to accommodate the immediate needs of the carrier shops, and of other contractors repairing the same class of cars elsewhere, the free material moved direct in car-load lots, and was not subject to storehouse handling. The cost of purchasing and accounting for it is included in general expense apportioned to the contract cars the same as company repaired cars.

### Incidental Expenses Borne by the Carrier

The charges absorbed by the carrier for switching cars to and from the plant of the contractor amount to \$7.00 a car, or a total of \$350.00.

The cars repaired at the contractor's plant which is located at an intermediate point on the carrier's system of railroad, were not apparently given any special movement to make them available for repairs. It was said that the cars were selected from those moving through or made empty at the terminal at which the repair plant is located, and the only expense involved was the switching to and from the

plant. The cars repaired in the carrier's shops were made available in the same way and no extra haulage to bring the cars to the shop seems to have been incurred in either instance. In both cases, also, the points at which the cars were repaired are tonnage-producing stations, and it is claimed that when the cars were repaired and released they were simply contributed to the local supply of cars ready for loading and that special movements to loading points were unnecessary.

In this connection it is proper to remark that the contract costs have apparently been burdened with all the switching expense incident thereto. The railroad shop costs have been burdened with switching expense only to the extent that switching was performed by the shop yard engine. In addition to this, however, it appears that shop fuel was switched to the railroad shop by regular yard engines, as were also the materials used in repairs, which were drawn from the general storehouse stock. It was not practicable to identify such expense, of course, and rather than estimate it, it has been omitted.

The carrier stationed car inspectors and accountants at the contract shops to pass on the quality of work and to verify the charges of the contractor. This expense reached its peak during the inception of the work, when the plan of procedure had to be worked out and the preparatory work done. It tapered off as the work progressed. The work under the contract not having been wholly finished when this examination was made it was necessary to estimate the additional amount necessary to be spent in connection with the cars unfinished. The average cost per car of inspection and accounting at the contract plant was thus found to be \$16.00 per car, or equivalent to \$800.00 for the fifty test cars. This sum of \$800.00 is not properly to be considered as an addition to the other costs enumerated, however, because the expense was charged to overhead accounts, which have of necessity been apportioned in total, and the test cars are elsewhere assigned with their pro rata share of the total expense. Because similar expenses of which no record was available had been coincidentally incurred in connection with other repair contracts, and the overhead accounts carried still other elements of indirect expense which could not be specially assigned, it was necessary as a matter of equity to treat with the total of such accounts in an arbitrary way. To have assigned the \$16.00 per car to the contract cars, deducting the sum from the overhead expense and apportioning the remainder would have charged the test cars with one hundred per cent of their own expenses and a part of expense attributable to other enterprises, which would have been unfair and misleading.

To the same extent as though the expense had been incurred in the carrier's own shop, it is considered that railroad general expenses representing administrative and supervisory expense, purchasing, accounting and similar items of a general character are applicable to the costs attaching to the outside contract. To the accumulated direct and incidental costs there has been applied, therefore, the same percentage (3.473 per cent) applied to the carrier's shop costs, resulting in the sum of \$2,314.60.

#### Salvage Credit for Materials and Scrap Recovered

The contract covered the bases on which scrap and usable materials recovered were to be accounted for. Averaged to a per car basis for the 50 test cars, the current price new of recovered material was \$108.40 per car; taken at 75 per cent, of the cost new this equals \$81.30. There was recovered an average of 892 lbs. of miscellaneous scrap per car, at \$15.00 per ton, or \$6.69. From the total salvage per car of \$87.99 is deductible the cost of handling as charged under the contract, plus 10 per cent. for profit, or \$2.20 per car, leaving the net salvage credit as \$85.79 per car. The net weight of the usable material and scrap was used as the basis for computing the cost of hauling by the carrier at 7 mills per

net ton mile from the contract plant to the usual point of scrap concentration, in the sum of \$128.70. On this basis the net credit for salvage amounts to \$4,160.80 for the 50 cars.

The cost of unloading the concentrated scrap and usable materials is included in the carrier's storehouse expense, in which the materials handled for both jobs have been caused to participate on an equitable basis.

#### Relation of Carrier's Own Fixed

#### Charges to Outside Work

It has been previously shown that the ratio of fixed charges to the carrier's expenditures for operating expenses and additions and betterments for the year 1920 was slightly over 20 cents per dollar of expenditure. It has been shown, also, that insofar as it could be traced no idle investment resulted and no non-productive time was spent by reason of letting certain work to outside shops. A fair proportion of general expense has already been apportioned to the outside work, and that expense is foreign to this topic. It is not clear to what extent, if any, the costs attendant upon contract work should be increased because of interest, taxes, operating losses, etc., which are pertinent to the carrier's operations. The ratio of such outgo to operating expenses does not exclude, because of lack of information, the total sums paid for work done in outside shops. But the aggregate of such expense, if known, would doubtless be of such small moment as compared with the total expenditure as not to affect the percentage.

It seems best to leave this question to the judgment of the reader, with the statement that by using the same factor of 20.0809 per cent the amount of fixed charges assessable against the accumulated costs of the contract work would be \$13,846.64. While it might not be wholly fair to say that no portion of this amount should be reckoned as a part of the costs in question, it is quite obvious that under the circumstances it would be unfair to say that the entire amount should be considered as a part of such costs. If this were done the comparison would be on the basis, substantially, that the railroad shops were in disuse.

#### Summary and Conclusions

While it is most difficult to obtain a true comparison in an instance of this kind, it is felt that the one hereinafter made is eminently fair to the railroad costs. A greater refinement in distribution and a recognition of elements which could not be computed would doubtless have increased them appreciably.

A comparison of total cost follows:

	Contract costs	Railroad costs	Ratio of railroad to contract costs, Per cent
Applied materials, etc.	\$41,462.58	\$42,240.89	102
Direct labor	7,786.19	13,353.91	171
Contract overhead and profit	13,230.12		98
Railroad overhead		12,914.89	83*
Railroad general expense on contracts	2,314.60		
Total	\$64,793.49	\$68,509.69	106
Interest, taxes and other fixed charges		14,640.82	..
Total	\$64,793.49	\$83,150.51	128

\*Railroad overhead is 93 per cent of the total of contract overhead and profit plus railroad general expense on contract.

The 28 per cent increase of railroad costs over the contract costs in this particular case, which is found as the result of comparing totals, partakes of none of the uncertainties which obtain when an attempt is made to compare overhead ratios to direct labor, etc., which introduces the dissimilarities found in the bases of direct labor, and of overhead, in the different cases. It has not been possible to analyze the contractor's costs and harmonize these factors in order to afford a true comparison with respect to them. Statements of the elemental costs in the two cases, however, are shown in the two accompanying tables, based on the findings in the railroad's case and classifying accordingly the information

shown upon the bills in the case of the contract. The ratio of different classes of expense to direct labor is given in each case, but in considering them comparatively it must be recognized that if the bases are different a comparison of the ratios is of no avail.

ANALYSIS OF THE COST OF THE CONTRACT WORK

		Relation to direct labor Per cent
<b>Applied materials:</b>		
Applied materials as billed.....	\$27,219.38	
"Free" materials, at cost to carrier.....	18,017.00	
Haulage over carrier's rails.....	387.00	
Less net value of salvage recovered....Cr.	4,160.80	
	<u>\$41,462.58</u>	
<b>Direct labor:</b>		
Piece work labor, on equated base.....	\$6,590.34	
Blacksmith labor.....	428.21	
Milling lumber.....	767.64	
	<u>\$7,786.19</u>	
<b>Overhead expense and contractor's profit:</b>		
Labor delivering materials as billed*.....	\$300.00	
Overhead surcharge as billed.....	\$8,086.19	
Contractor's profit as billed.....	\$4,493.93	
Cost of switching, borne by carrier.....	350.00	
Total.....	\$13,230.12	169.91
Add proportion of carrier's general expense	2,314.60	29.73
Total overhead expense.....	<u>\$15,544.72</u>	199.64
Total cost to carrier, exclusive of any proportion of its fixed charges.....	\$64,793.49	
Apportionment of fixed charges on same basis applied to carrier's costs of work done in its own shops.....	13,846.64	177.84

ANALYSIS OF THE COST OF WORK IN CARRIER'S OWN SHOPS

		Relation to direct labor Per cent
<b>Applied materials:</b>		
All applied materials, prime cost.....	\$45,158.96	
Haulage over the carrier's rails.....	1,481.43	
Less net value of salvage recovered....Cr.	4,399.50	
	<u>\$42,240.89</u>	
<b>Direct labor:</b>		
All classes of direct labor.....	\$13,353.91	

<b>Overhead expenses:</b>		
Indirect labor, current.....	\$4,395.31	
Shop expense, current.....	2,383.31	
Insurance on buildings and machinery.....	13.23	
Maintenance of machinery and tools, direct charges.....	1,317.07	
Maintenance of buildings and tracks, direct charges.....	235.89	
Proportion of maintenance of buildings common to this and other shops.....	57.91	
Proportion of divisional overhead expense on maintenance of way and structure..	6.27	
Proportion of "entire line" overhead expense on maintenance of way and structures.....	14.79	
Proportion of maintenance of equipment overhead expense.....	1,720.22	
Proportion of cost of maintenance of general office and storehouse buildings...	2.36	
Proportion of "system" general expense...	2,436.20	
Accrued depreciation on shop buildings and depreciable machinery and tools.....	332.33	
Total operating overhead.....	\$12,914.89	96.71
Proportion of fixed charges for interest, taxes, etc.....	14,640.82	109.64
Total of all overhead expense.....	<u>\$27,555.71</u>	206.35
Total cost to the carrier.....	<u>\$83,150.51</u>	

\*This item has been included in the overhead charges in order that the total may be comparable with the total operating overhead charged against the work done in the railroad shop.

The average cost per car repaired in the carrier's shops is \$1,663.01; the aggregate cost in the outside shop is \$1,295.87, including no part of the carrier's fixed charges, and \$1,572.80 if fixed charges be included in the same proportion as in the case of the carrier's work. The carrier's work, therefore, cost, in the first instance, \$367.14 per car, and in the latter instance \$90.21 per car, more than the work done in the contract shop.

In conclusion, attention should be drawn to the fact that of the costs pertaining to the work done by the carrier's shop, only direct labor, shop expense and applied material costs to the extent of \$64,873.31 were identified in connection with the work in the carrier's accounts. The remainder, \$18,277.20, was charged to other accounts, or not accounted for at all. In other words, of the total costs to the carrier as herein developed, 78 per cent could be identified and recognized if the accounts were analyzed, while 22 per cent was either omitted from the accounts entirely or so disguised as to appear unrelated to the expense of repairing cars.



Photo by Keystone

A Mixed Train Pulling into Jerusalem

# General News Department

Repeal of all transportation taxes at the end of the present calendar year has been agreed upon by Senate leaders as part of a compromise plan for tax legislation.

A fire which swept the Chicago, Rock Island & Pacific shops at Pratt, Kan., on October 7, destroyed the repair tracks, car sheds, carpenter shops and 25 box cars; estimated damage \$200,000.

The freight traffic department of the Atlantic Coast Line has in its service 72 men who have been with the road an aggregate of 1,440 years. This was brought out at a recent conference of the freight representatives at Savannah. The 72 men each stated the length of his service, and the average was 20 years.

The disastrous collision at Paris, France, reported last week, resulted in about 40 deaths, not all of the bodies being recovered. Edouard Lozabic, the signalman at the outgoing end of the tunnel, was formally charged with homicide through imprudence. It was testified that he telephoned that the track was clear, although the leading train was still in the tunnel.

S. M. Williams, chairman of the Federal Highway Council has recently resigned that office because of the press of his own personal affairs. The Washington office of the Federal Highway Council has as a result been closed and the work suspended for the present, except perhaps that which the various committees of the association have found means for continuing.

The monthly meeting of the St. Louis Railway Club will be held at the Hotel Statler, St. Louis, Mo., on October 14, and the principal address of the evening will be delivered by Edwin J. White, vice-president and general solicitor of the Missouri Pacific. Mr. White's subject will be "Something of the History of the Railroads of Missouri and Some Side-lights on the 1920 Transportation Act."

Albert Stone, who was 86 years old on October 8, has worked for the New York Central and its predecessor, the New York & Harlem, *seventy-one years*, and is still at it. He is a clerk in the office of the auditor of passenger accounts, in New York City. When the New York Central began its pension system in 1910, Mr. Stone, being 75 years old, was pensioned and retired. He played around a little while and took a trip here and there, but soon wanted his job back. He got it and has been working ever since. On his birthday he found his desk laden with gifts. He recalls the day, in 1864, when Commodore Vanderbilt became active in the affairs of the road. He was then a clerk in the office and is the sole survivor of a group of clerks who worked for Commodore Vanderbilt. Mr. Stone was born and reared on Manhattan Island. When he was 12 he was run over by one of the horse cars operated by the old Harlem Railroad. The accident, which caused the loss of his left leg, led to his employment by the railroad company. Robert Schuyler, then president of the road, arranged that he go to school two years, after which he went to work for the road.

## A Conference on Railroad Cross Ties

In accordance with requests received by the American Engineering Standards Committee, a conference has been called to discuss the subject of railroad cross ties and switch ties. The meeting will be held on Tuesday, October 25, 1921 in Room 206 of the Atlantic Building, Washington, D. C. The purpose of the conference is to decide: (1) Whether the unification of specifications for railroad cross ties and switch

ties shall be undertaken; (2) If so, what the scope of the work shall be; and (3) How the work shall be organized.

## Passenger Traffic Officers

The American Association of Passenger Traffic Officers will hold its 65th annual convention at French Lick Springs, Indiana, on November 14 and 15, instead of Pinehurst, N. C., November 21 and 22 as previously announced.

## Telegraph and Telephone Section

The committee of Direction of the Telegraph and Telephone section of the American Railway Association, has decided that the March meeting of this section shall be held at Richmond, Va., on March 21, 22 and 23. It was also decided to hold the next annual meeting at Colorado Springs, Colo., on September 20, 21 and 22, 1922.

## Settle Railroad Tax Dispute

Attorneys for the Southern Railway, the Atlantic Coast Line and the Atlantic & Yadkin, the three railroad companies resisting the assessment levied by the North Carolina State Tax Commission on their property, and attorneys representing the state have reported an agreement to the three district judges hearing the case. The railroad companies will pay taxes on the valuation that they admit, while the question of additional taxes on the state's assessment will be litigated in the courts.

## Operating Statistics for July and Seven Months

The Interstate Commerce Commission's monthly report of operating statistics of Class I roads for July and the first seven months of 1921 shows a reduction in the number of freight cars owned from 2,371,599 to 2,343,090. The average miles per car per day in 1921 was 21.5 as compared with 23.5 in 1920. The net ton miles per car day averaged 375 as compared with 473, and the tons per car 27.9 as compared with 28.6. The average train load was 643 as compared with 700, but the train speed in 1921 was 11.5 miles per car as compared with 10.4 in 1920. The traffic density, net ton miles per mile of road per day, for 1921 averaged 3,883 as compared with 5,072. The average locomotive miles per day was 48.6 as compared with 61.1. For the month of July the average train load was 660 tons as compared with 745 last year. The average train speed was 11.9 miles per car as compared with 10.5.

## Checking Careless Drivers

At a crossing near Fort Loudon, Pa., on the South Penn Branch of the Cumberland Valley Division of the Pennsylvania Railroad, where the view for drivers of automobiles is obstructed until they are almost on the tracks, a Safety First observer of the railroad company recently checked motor vehicles which approached the crossing at excessive speed. In about two hours (between 12:50 and 3:10 p. m.), 34 out of 99 cars were carelessly driven. The average speed of the 34 cars was 25 miles an hour and three were traveling at 30 miles. The driver of a motorcycle, when within 25 feet of the crossing, was observed to turn his head to converse with the passenger riding in the side-car. Post-cards have been mailed through the State Highway Commissioner's office to those owners of the 34 vehicles who live in Pennsylvania. A supply of "Safety First" cards has been distributed to division superintendents for use by crossing observers.

**Extension of Time on Interchange Rule Three**

The mechanical division of the American Railway Association, in circular No. V-216, announces the extension of the effective date of section f of Rule 3 of the interchange rules, to January 1, 1922. As it now stands this section of the rule requires that after October 1, 1921, no cars carrying products which require the use of salt with ice, and equipped with brine tanks, shall be accepted in interchange unless provided with a suitable device for retaining the brine between icing stations. The extension of time has been made in accordance with the recommendation of the Committee on Car Construction, in view of the fact that not all refrigerator cars with brine tanks have yet been equipped to meet the requirements of the rule.

**Union Pacific Offers University Scholarships**

The Union Pacific has inaugurated the plan of awarding scholarships in the University of Nebraska to the boy ranking highest in the farm clubs in each of 39 counties in that state. This plan offers to the boy between 16 and 21 years of age ranking highest in the boys' and girls' club work for 1922, in corn, potatoes or wheat projects, a \$75 scholarship in the college of agriculture, or the short winter course of the school of agriculture in the University. In addition to the scholarship, the Union Pacific will reimburse the student for the expense of railroad transportation from his home to the school and return. The winners will be chosen by a committee of three, consisting of the county superintendent, one person appointed by the director of extension in the University, and the third person to be chosen by these two members.

The railroad company has offered the same prizes for 1921 as outlined above for 1922, except that the competition is to be on activities now in effect, such as calf clubs, pig clubs, potato and corn clubs, etc.

**Wire Banding of Packages for Protection**

The freight claim division of the American Railway Association recently carried on an investigation among shippers in an effort to learn what progress was being made towards the elimination of "package troubles." It was found that firms using steel and wire banding for the securing of their packages have greatly reduced the shortages which had formerly occurred. One large Chicago firm reported that its package troubles were reduced 85 per cent by banding its packages; and another firm reported that the use of steel banding straps has reduced their losses 75 per cent.

The steel tape banding with the company's name or trade mark printed along the tape, and the ends sealed, has proved the most satisfactory. In this case, if the seals are broken, or if any part of the banding straps is missing or cut, and a piece of banding tape is substituted, it is a certainty that the package has been pilfered en route, and the shipper may file his claim accordingly. Many firms have found that banding packages in this manner has tended to keep dishonest employees in railroad service from looting the contents of their shipments.

**Railway Fire Protection Association**

The Railway Fire Protection Association will hold its eighth annual meeting at the Sherman Hotel, Chicago, on October 18, 19 and 20, with two sessions scheduled for Tuesday, two for Wednesday and one on Thursday.

The principal committee reports, with names of the chairmen, are as follows: Statistics, George R. Hurd; Protection of shop plants, J. R. Peters; Handbook on merchandise in transit, W. S. Topping; Coaling plants, W. E. Cathcart; Locomotive hazards, E. N. Floyd; Gasoline and electric motor trucks in freight depots and terminals, E. W. Reilly.

On Wednesday morning there will be a paper on fire protection on foreign railroads by Loring F. Wilcox, and one on fire prevention in tunnels, by Harry Pollard. On Wednesday afternoon there will be a paper on standardization of fire hose coupling, by E. R. Townsend, and a question box will be opened by J. L. Walsh.

The president of the Association is W. S. Hickey (N. Y., N. H. & H.), and the secretary is R. R. Hackett (B. & O.), Baltimore, Md. The chairman of the committee of arrangements at Chicago is G. R. Hurd (I. C.).

**Imprisonment for Falsification of Car-Repair Bills**

Theodore W. Krein, general manager of the Muscatine, Burlington & Southern, pleaded guilty to an indictment charging him with falsification of car repair records and accounts in violation of the Interstate Commerce Act, in the United States District Court at Davenport, Iowa, on October 6 and was sentenced to one year and a day in the federal penitentiary, and fined \$3,000. The railroad company and Krein were charged with falsifying the company's records to show that the railroad had made repairs to cars of other railroads when no such repairs were actually made. Fraudulent bills based upon these records were rendered against other railroads and in this manner approximately \$30,000 was collected from other carriers during the year 1919 for car repairs which were not made. Nearly all of this amount was collected from railroads operating under federal control and therefore was a fraud upon the government; the Muscatine, Burlington & Southern was not under federal control during that period. The prosecution followed an investigation by the Interstate Commerce Commission.

This road is 54 miles long, extending from Muscatine, Ia., south to Burlington. It has six locomotives and 22 freight and passenger cars.

**C. S. Gaskill Joins Russian Mission of American Relief Administration**

Charles S. Gaskill, formerly master mechanic of the Pennsylvania at Baltimore, sailed on October 4 to join the staff of Colonel W. N. Haskell, director of the American Relief Administration's Mission to Russia.

Mr. Gaskill will have charge of the transportation of the food-stuffs with which the Administration proposes to supply the Russians. Mr. Gaskill was born at Mount Holly, N. J., on October 11, 1877. He was graduated from Princeton in 1898 and entered the employ of the mechanical department of the Pennsylvania at its Altoona shops. In 1917 he left his position as master mechanic at Baltimore to join the Railway engineers of the A. E. F. He was commissioned major and, later, lieutenant colonel.

Following his discharge from the army, Mr. Gaskill became technical adviser to the Polish Ministry of Railways and held that position until quite recently when, having returned to this country to take up railway work again, he received his appointment to serve under Colonel Haskell.



C. S. Gaskill

**The Pennsylvania's Committees on Loss and Damage**

For the prevention of loss and damage to freight on the Northwestern Region of the Pennsylvania a complete reorganization of this work has been devised by which special divisional committees, each of which will have the assistance of six sub-committees, will supervise the handling of freight in their respective territories. The divisional committee will consist of the superintendent, supervising agent, trainmaster, division engineer, master mechanic, division operator, road foreman of engines, and captain of police, and this committee will provide whatever corrective methods are necessary to prevent freight loss and damage. These committees have been created for the Chicago Terminal, Fort Wayne, Logansport, Toledo, Grand Rapids, and Mackinaw divisions. The sub-committees will be headed by the members of the divisional committee, who will check and supervise the various stages of the freight movement which fall within their own particular line of work. This is the sixth sub-committee, of which the captain of police is chairman, will look after the sealing of cars that are found unsealed or

improperly sealed and the protection of freight in transit and at stations and transfers. In addition to the detailed work assigned to each of these committees, all employees are being urged to keep a constant watch for conditions needing correction and to report them promptly to the division safety agents who will be responsible for forwarding them to the proper committee for action.

### Freight Loss and Damage Fifty-five Millions

The total of freight loss and damage expenditures for six months ending June 30, 1921, as totaled from the reports of 227 carriers, representing 90.4 per cent of the railroad mileage in this country, was \$55,707,753. Of this sum, \$33,054,508 was chargeable to full carload shipments. Clothing (dry goods), fruit, vegetables and grain, furnished 28.8 per cent of the total amount of claims.

The freight claim division of the American Railway Association has recently issued a circular to division superintendents giving a statistical summary of the five main causes responsible for the loss and damage claims, which has been prepared from the May statements. "Unlocated damage" heads the list of principal causes with 14.8 per cent of the total. "Rough handling" follows with 13.7 per cent of the total claims. "Loss of entire packages" also amounted to 13.7 per cent of the total claims. "Defective equipment," such as leaky car roofs, loose floorings, etc., caused 10.9 per cent of the claims, with 9.3 per cent of this amount due to full carload shipments. "Delay" was the cause of 10.5 per cent of all claims, and 89.1 per cent of the delay claims were on full carload shipments.

### Loss and Damage Agitation

The Pennsylvania Railroad has been having a campaign to prevent loss and damage to freight in transit, aiming to awaken employees to the seriousness of the situation and to impress the urgent necessity for their wholehearted co-operation in uncovering and correcting wasteful practices. In 1920 payments on account of loss or damage to freight cost the railroads of the country more than \$100,000,000, largely because of the general backsliding and loss of morale following upon the war period. F. W. B. Humes, superintendent of stations and transfers and chairman of the Eastern regional committee, has congratulated the employees on the enthusiasm displayed in the drive. He commends the intensive supervision of operations at stations and transfers, in yards and on the road by division officers; the frequent meetings with employees of various classes and the daily bulletins; also the publicity through local newspapers. The marked success of this campaign has convinced the committee that another drive on similar lines is desirable in the near future.

From January, 1920, to June, 1920, the number of claims presented decreased 15 per cent, while from January, 1921, to June, 1921, the decrease was 38.9 per cent. June, 1921, compared with June, 1920, shows a decrease of 48.6 per cent. The decrease in number of claims filed is greater than the decrease in traffic. There is, however, urgent necessity for further improvement. Amounts paid for theft continue to stand out prominently. Actual results of the campaign show that in the Eastern Region in one month the number of irregularities in handling I. c. 1. freight was 51.8 per cent less than the same month last year.

### Eye Accidents and Faulty Vision

#### Cause Waste in Industries

Eye accidents are revealed as an important source of avoidable national waste in a special report of the Committee on Elimination of Waste in Industry of American Engineering Council, just made public. The report embodies the results of an investigation conducted in many states in connection with the assay of waste in basic industries started by Herbert Hoover.

The total number of industrial blind in the United States is given as 15,000, or 13.5 per cent of the total blind population, this type of injury being the leading causative factor of blindness, according to the report which was prepared by Earle B. Fowler. The eye, it was found, is involved in 10.6 per cent of all permanently disabling accidents.

Present protective methods as applied in large plants have effected a great reduction in injuries. The use of goggles is one of the chief protective devices. In the plants of the American Car & Foundry Company there has been a reduction of more than 75 per cent through the use of goggles and the percentage of reduction would be much higher if the men would wear goggles more conscientiously, according to the management. Not a single case of injury to the eyes from broken glass has been recorded since goggles were introduced into the shops of the New York Central. All employees of the Union Pacific are now required to wear goggles on eye-dangerous work. Striking reductions in eye accidents are also shown by the American Locomotive Company and the American Steel Foundries, eye accidents in the plant of the latter company having been reduced 85 per cent.

The report also states that industrial waste is chargeable to sub-normal vision and faulty lighting. The correction of sub-standard vision produces an increase in return that will pay for its cost in the opinion of the management in plants where several years of trial has provided a basis for judgment. The report states that it has been shown improved lighting systems increase output 2 per cent in steel plants and as much as 10 per cent in shoe factories where work is more exacting. The cost of providing adequate illumination for the entire industry of the country would amount to  $\frac{1}{2}$  per cent to 1 per cent of wages. One estimate placed the loss due to faulty conditions in this country as above the entire cost of illumination. Of the 466 plants investigated, only 8.7 per cent were found to have lighting conditions that could be rated as excellent.

### J. H. Young Discusses the Railroad Situation

Speaking at a meeting of the Denver Rotary club, on September 29, Joseph H. Young, president of the Denver & Rio Grande Western, expressed his opinion on several issues pertaining to the railroads which are of paramount interest to the public at large. Of the railroad rate situation, President Young said in part:

"Railroad rates are out of kilter and some of the rates are too high, there is no doubt. Present-day rates, and, in particular, present-day freight rates, are the result of years and years of work and study by experts up to the time the war started, and of a horizontal rise of first 5 per cent, then 30 per cent, and then 25 to 40 per cent. They were thus thrown out of adjustment. Rates must not be reduced horizontally, but must be worked out on a common-sense basis. There are many ways this can be done."

Wages, President Young declared, are not entirely out of proportion, except as they affect common laborers, such as car oilers, who, he said, are classed as skilled labor, whereas, he asserted, "any man with common sense can be taught the work in one operation." Speaking of the proposed grouping of the railroads as advocated by the Interstate Commerce Commission, President Young declared the belief that the government is without the power to force the stockholders of the stronger lines to accept stock in the weaker ones at a figure that would be satisfactory to those who own them.

"Grouping of the railroads as proposed by the Interstate Commerce Commission is part of a plan to take care of the weaker railroads," President Young said. "Development of the stronger lines has tended to weaken the less powerful, which are, in themselves, a menace to the country's finance and detrimental to the country in which they operate."

"Strong lines that work together at their terminals with other lines may, by turning their freight business over to one particular line, force other lines that compete with that line into a tight place and strangle them. We should have an arrangement whereby there would be a just distribution of freight between competing lines at terminal points, general time of hauling and method of handling being practically the same. A shipper has no right to determine the routing of the material he ships, beyond naming the receiving road and the delivering road. It is really of little consequence to the shipper who handles the goods as long as the service is as quick and as good."

"Service of an acceptable standard can only be accomplished by allowing the weaker lines to earn money for their maintenance; to earn interest on their bonded indebtedness, and to earn enough to meet the requirements of additions and expansion."

## Traffic News

The executive committee of the National Industrial Traffic League has decided to hold the annual meeting of the league at the Hotel Sherman, Chicago, on November 9 and 10, with the annual dinner coming on the evening of the ninth.

Railroads operating in Ohio have been ordered by the Public Utilities Commission of that state to reduce freight rates on sand, gravel and crushed stone, approximately 28.5 per cent. On paving brick, in addition to the percentage reduction, a reduction of 10 cents a ton is ordered.

Hearings will soon be held by the department of justice on the request of western fruit growers for the modification of the "packers' consent decree" by which it is hoped that it will be possible for the fruit growers to ship their products in the meat men's refrigerator cars. The attorney-general has asked the Department of Commerce and the Department of Agriculture to send representatives to the hearings. No definite date for the hearings has as yet been announced, and the whole question will be held in abeyance.

Hearings on five new transcontinental applications and one old application asking to disregard the long and short haul statute on traffic moving up and down the Pacific coast and a like request on traffic moving east and west will begin in Chicago on November 7, with Attorney-Examiner W. A. Disque conducting the hearing on the latter petition and Special Examiner Pitt on the first named. After concluding at Chicago, hearings will be held at: Denver, Colo., November 21; Helena, Mont., November 23; Salt Lake City, Utah, November 25; Boise, Idaho, November 28; Spokane, Wash., December 1; Portland, Ore., December 5; San Francisco, Cal., December 8; Phoenix, Ariz., December 17; Atlanta, Ga., January 9; and New Orleans, La., January 11.

### Coal Production

For four weeks in succession the production of soft coal has advanced steadily upward. The total output during the week of October 1, according to the weekly bulletin of the Geological Survey, is estimated at 8,876,000 net tons. The week's production was the largest since last January and represents an increase over the preceding week of 4 per cent.

### Little Progress in New England Divisions

The Boston & Maine on October 6 reported to the Interstate Commerce Commission that little progress had been made in the direction of readjustment of freight rate divisions between the New England lines and the lines west of the Hudson river within the 90 days which the commission in its recent decision in the New England case had allowed for a report. In conformity with the commission's recommendation, representatives were appointed to confer with the lines west of the Hudson and the first meeting was held in New York on August 18. The trunk lines and Central Freight Association roads had no suggestions to offer and said that they would expect the New England carriers to submit proposals. The Boston & Maine says that it began promptly to study its divisions for the purpose of permanently revising them, but it became evident that nothing definite could be formulated within the 90 day period.

At a second meeting, on September 21, the New England carriers called attention to their serious financial condition and the impossibility of making a revision within 90 days and each proposed to trunk line representatives that pending such a revision the carriers west of the Hudson should shrink their divisions by 15 per cent on all traffic except coal, this amount to be added to the divisions accruing to the New England lines. No reply has been received to this proposal. As soon as substantial progress has been made in developing a basis for a revision of its divisions the Boston & Maine will submit the results to the committees of the defendants,

but if favorable action is not secured in conference it is the intention to bring the matter to the attention of the commission, with a view to a prompt submission of the issues involved.

### Toll's Exemption Bill Passed

The bill introduced by Senator Borah to exempt American coastwise vessels from the payment of tolls for passage through the Panama Canal was passed by the Senate on October 10 by a vote of 47 to 37, after five hours of lively debate devoted mainly to the international aspects of the question, in view of the treaty with Great Britain, rather than to the domestic economic phases of the canal tolls controversy. Although President Harding had previously on several occasions declared himself in favor of the passage of such a bill, he has not recently been urging it and the vote on the bill was interpreted as a defeat for the administration. Thirty-five Republicans and 12 Democrats voted for the bill and 20 Democrats and 17 Republicans against it. Senator Lodge, the Republican floor leader, opposed the bill, while Senator Underwood, the Democratic leader, supported it. Without a roll call, the Senate voted down amendments proposed by Senator King to authorize the President to seek arbitration of the tolls question with Great Britain and to appropriate \$2,000,000 as a subsidy for American vessels using the canal. Some of the Senators who voted for free tolls in 1914 on this occasion voted against the bill, while others who had formerly been for the bill reversed themselves. The bill now goes to the House, and it is predicted that it is likely to remain there in committee for some time, possibly until after the disarmament conference has been held, because the differences with Great Britain with regard to the interpretation of the canal treaties are regarded as embarrassing to the administration at this time.

### Hearing on Lumber Rates

Hearings on the complaint of the Southern Hardwood Traffic Association, asking for a reduction in the rates on hardwood to those prevailing before August 26, 1920, were begun before Commissioner Cox and Chief Examiner Quirk of the Interstate Commerce Commission at Washington on October 4 and were so expedited that they were concluded on October 10, oral argument being held immediately following the taking of the testimony. Representatives of the complainants asked that the case be treated as an emergency matter on the ground that the condition of the hardwood lumber industry is now as critical as was that of the railroads when Ex Parte 74 was argued. It was declared that because of the disruption of rate relationships created by the percentage advance the southern hardwood shippers are now doing very little business and no logging operations are being carried on. This has greatly decreased the tonnage of the Southern roads although it appeared that some of the northern and eastern lines have profited by that fact to some extent by the increase in shipments of lumber from other sections.

Reductions in the rates were opposed by railroad witnesses representing the southern roads, as well as those north of the Ohio river, on the ground that the railroads could not afford the reduction in their revenues and that the shippers had exaggerated the effect that would result to them from the proposed reduction in the rates. E. P. Bates, freight traffic manager of the Pennsylvania, presented exhibits in contradiction of contentions of the shippers that existing rates have caused a reduction in shipments of lumber. Other witnesses who opposed the reduction represented the Southern, Louisville & Nashville, Nashville, Chattanooga & St. Louis, Illinois Central, Missouri Pacific and Chicago, Rock Island & Pacific. L. E. Wetzling, manager of the statistical bureau of the western lines, presented general exhibits regarding the financial condition of the railroads to show that they were in no condition to stand any considerable reductions in rates. Among other things, he testified that what showing the railroads have made has been largely at the expense of maintenance, saying that during the first six months of 1921 the railroads expended for maintenance purposes \$290,000,000 less than in the corresponding period of 1920, which, if it had been spent, would have more than absorbed all of the net operating income.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended, until February 7, the operation of proposed increased rates on brick, clay and clay articles from Central Freight Association Territory to Sault Ste. Marie, Ont.

The commission has suspended, until February 7, the operation of schedules contained in a Minneapolis, St. Paul & Sault Ste. Marie tariff which proposes reductions in proportional rates on grain from Minneapolis, St. Paul and Minnesota Transfer, Minn., to Gladstone, Mich., when to go east by lake.

The commission has suspended from October 17 until February 14, 1922, the operation of schedules published in Agent F. A. Leland's tariff, which propose increased commodity rates on domestic fruits, melons and vegetables from Texas producing points to interstate points.

The commission has suspended until February 7, the operation of schedules published in a New Orleans, Texas & Mexico tariff proposing reductions in the rates on salt from Jefferson Island, La., to Chicago, St. Louis, and points on the Illinois Central and Yazoo & Mississippi Valley directly intermediate thereto, north of the Mississippi-Louisiana state line.

The commission has suspended from October 5 until February 2, 1922, the operation of an item in a Chicago Great Western tariff proposing the cancellation of through rates on corn, oats, rye and barley from stations in Iowa, Minnesota and Missouri on the Chicago Great Western Railroad to Texarkana, Ark.-Tex., leaving applicable instead combination rates based on either Des Moines, Iowa, or Kansas City, Mo.

The commission has announced a series of hearings before Examiner Barclay at New York, in the rooms of the Merchants' Association, 233 Broadway, on the charges made by the Machinists' union as to the alleged excessive cost of car and locomotive repairs at outside shops. The case of the Philadelphia & Reading will be heard on October 24, the Erie on October 26 and Central of New Jersey on October 28.

The commission has suspended from November 15 until March 15, 1922, the operation of an exception to transcontinental west bound joint tariffs which provide for the non-application of Group J rates from and to points on the D. & R. G. W. east and south of Grand Junction, Colo., leaving applicable instead combination rates, which results in increases to the extent of the local rates to the boundary of the restricted territory.

### State Commissions

The Wisconsin Railroad Commission, on October 6, denied the application of the Chicago & North Western for authority to reduce train service on its line between Madison, Wis., and Montfort.

The federal court has ruled that the Interstate Commerce Commission has power to order the discontinuance of service on the Eastern Railway of Texas, 30 miles long, between Lufkin and Crockett. The Railroad Commission of the State has refused permission for the scrapping of the line. The State has now appealed the case to the United States Supreme Court.

The Public Service Commission of Louisiana, in order No. 10, has denied the application of Morgan's Louisiana & Texas Railroad & Steamship Company for authority to advance the freight rates on sugar cane. The commissioners think that the period of depression is passing; that the sugar

business is depressed as well as the railroad business and that if the railroads make an advance in rates and thus burden the sugar planters, they will cause a general depression in business from which the carriers also will suffer.

The Railroad Commission of the State of California on September 23 gave permission to the California Southern to lease its road to the Atchison, Topeka & Santa Fe. Application for the lease of the California Southern was originally made to the Interstate Commerce Commission, but consideration of it by that body was protested by the California Commission as the California Southern lies wholly within the State. Now that the matter has been passed upon in California the state commission's objection to the Interstate Commerce Commission giving its approval to the transaction has been withdrawn.

### Court News

#### Mechanism in Constant Use Without Injury Held Safe

The New York Court of Appeals holds that, when it comes to a question of proper condition and safety under the Boiler Inspection Act, mechanism which has been in constant use for years without causing injury must be considered proper and safe until some notice or occasion indicates its danger and insufficiency.—*Ford v. McAdoo* (N. Y.) 131 N. E. 874.

#### Provision in Transportation Act as to Limitation of Actions Not Applicable to Employers' Liability

The New Jersey Court of Errors and Appeals holds that the federal act of February 28, 1920, enacting that the period of federal control shall not be computed as a part of the periods of limitation in actions against carriers, is inapplicable to actions under the Federal Employer's Liability Act.—*Jones v. Delaware, L. & W.* (N. J.) 114 Atl. 331.

#### Amount of Damages for Injuries to

##### Automobiles in Transit

The South Carolina Supreme Court holds that where an automobile company shipped cars to itself, the title not passing to the purchasers until the shipment arrived and the draft was paid, the purchaser's rights as to injuries in transit were no greater than those of the automobile company, and it could recover no more than the automobile company could have recovered if it had sued, namely, the price the purchaser had agreed to pay, less the value of the injured cars.—*M. C. Johnson Motor Co. v. Payne* (S. Car.) 107 S. E. 252.

#### Trainmen May Assume Automobilist Will See and Avoid Train on Crossing at Night

In an action for damages resulting from a collision between the plaintiff's automobile and a freight car standing on the tracks of the Philadelphia & Reading at a street intersection in Chester, the Delaware Supreme Court holds that the men in charge of a train lawfully obstructing a crossing at night have a right to assume that a reasonably careful automobilist would adopt such lights and rate of speed that he could stop his car within the distance that he could see the train and avoid running into it, and were not negligent in failing to warn by lights or otherwise of the presence of the train on the highway.—*P. & R. v. Dillon* (Del.) 114 Atl. 62.

### United States Supreme Court

The United States Supreme Court on Monday refused to grant an application of the state of North Dakota for an interlocutory injunction to restrain the collection by the railroads of intrastate rates increased by the Interstate Commerce Commission by the amount of the interstate rate increases made last year. The broad question of the right of the commission to advance state rates under the new law is pending before the court in the Wisconsin case.

## Foreign Railway News

### Westinghouse Receives Additional Order From Chile

The Chilean State Railways have ordered six express passenger electric locomotives from the Westinghouse Electric International Company. This equipment is in addition to the 33 electric locomotives and other electrical material the contract for which the Westinghouse Company received several weeks ago (*Railway Age*, October 1, page 645). This equipment will be used in electrifying the Chilean State Railways from Valparaiso to Santiago and Los Andes, a total line mileage of 144 miles.

### Denies Russian Railways Are in Bad Way

Statements to the effect that the railways of Russia are utterly disorganized are untrue, according to a press dispatch from Paris, quoting C. R. Crane, former American minister to China. "As regards the trans-Siberian Railway, the longest line in the world, I found not only that everything is in a state of complete repair, but that the Soviets have successfully electrified portions of the line, something which had never been attempted under the Czarist regime. I traveled the entire length in a private car. I never suffered at any time from hunger, and the personnel is apparently well fed."

### August Exports of Car Wheels and Axles

Exports of car wheels and axles in August were valued at \$255,752—a total greater than that of any month since April. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Dollars	Countries	Dollars
England	1,071	Colombia	5,241
Canada	29,967	Ecuador	720
Guatemala	2,442	Peru	7,214
Mexico	55,063	Venezuela	186
Jamaica	524	Dutch East Indies	74,921
Other British West Indies	222	Japan	39,176
Cuba	3,378	Australia	1,734
Dominican Republic	450	Philippine Islands	676
Argentina	12,764	British South Africa	225
Brazil	19,029		
Chile	749	Total	255,752

### Exports of Locomotives in August

Exports of steam locomotives in August rose to 66, valued at \$2,334,737, showing an increase of 33 over the July figure of 30, valued at \$876,840. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Number	Dollars
Canada	1	2,400
Honduras	4	40,400
Mexico	21	780,200
Brazil	7	238,500
Peru	1	5,138
China	25	1,105,409
Japan	7	162,690
Total	66	2,334,737

### Proposed Wage Cut on Scottish Railways

C. T. Cramp, industrial secretary of the National Union of Railwaymen, addressing railway employees at Edinburgh, said that the Scottish railways have proposed the abolition of the increases in wages granted by the National Wages Board in June (averaging \$1.25 per week), and of the special payment for night duty; also that minors shall not receive the pay of adults until they reach the age of 21, according to the Times (London). There are also proposals to abolish the eight-hour day, and substitute 10 hours in many classes, with a "spread" in some grades of 12 hours.

The companies have agreed, he continued, on condition that the employees give up the National Board's award on wages, that they will withdraw their other proposals, and in the event of this offer being rejected, they will go, first to the Central, and afterwards, in the event of disagreement, to

the National Wages Board, with the whole of their original proposals. There could be no strike until one month after the National Wages Board has issued its award.

The meeting passed a resolution, expressing the opinion that the proposals were entirely unacceptable, and recording dissatisfaction at the financial statement made by the companies as the reason for proposed changes. The meeting asked for information regarding the allocation of the \$25,000,000 set aside by the government for the relief of companies having a deficit because of the conditions of the national settlement, and urged on the union executive the desirability of preserving the principle of national negotiations.

### New Railway in South West Africa

The administrator of Britain's South-West Africa Protectorate, G. R. Hofmeyr, has approved the construction by the South African Railways and Harbors Board of a new railway to run from Windhuk, the capital, in an easterly direction to Gobabis, a distance of about 132 miles according to the Times (London). It is to be built on the standard South African gage (3 ft. 6 in.), and the cost is estimated at \$3,600,000. Gobabis is one of the chief settlements in the eastern portion of the Protectorate, and, having numerous fresh water springs in its vicinity, it is the centre of one of the few districts where agriculture is feasible. Maize is the principal crop.

### Argentina Buys Freight Cars

According to Commerce Reports, word has been received from Commercial Attaché Edward F. Feely, of Buenos Aires, reporting that the lowest bids offered by each of the following nationalities, as covering railway cars, under tender at Buenos Aires, were as follows:

	Gold pesos per car*
Lowest German bid	3,484
Lowest American bid	4,580
Lowest Belgian bid	5,000
Lowest British bid	5,900

\*Gold peso = \$.96 at par.

Further word has been received which indicates that the authorities of Buenos Aires have decided to increase the number of cars which they intend to purchase at this time. The original bids covered 70 of the above cars, but at the time of placing the order it was decided to increase the quantity to 100 cars, and the business has been awarded to a firm in Breslau, Germany, under the name of Linke Hoeman, the price being 3,200 Argentine gold pesos each.

This transaction is peculiarly interesting as showing the position of American manufacturers compared with Belgian and British makers who are obviously not in a favorable position with regard to such equipment, although the design of the cars used on the railways of Argentina resembles European practice more closely than the American designs.

This incident also raises the question as to whether the German manufacturers will be able to make prompt delivery of materials of satisfactory quality. Recent experience in other foreign markets suggests that serious difficulty in this connection may result.

### The Spanish Railway Problem

The railway problem in Spain is somewhat similar to that in this and other countries, according to Commerce Reports. Operating costs have risen to the point where freight and passenger rates must be increased or some corresponding form of relief discovered if the roads are to continue to operate and escape bankruptcy. The public is not in favor of an increase in rates.

Nor are the railways giving satisfactory service. They are built on three different gages, approximately 5 ft. 6 in., 4 ft. 8½ in., and 3 ft. 4 in., respectively, and as they all radiate from Madrid, they do not always meet the economic needs of the country.

Among other efforts the government is making to meet the present situation, they have decided to encourage the construction of locomotives and cars in Spain, and have ar-

ranged that when bids are called, the business shall be awarded to manufacturers in Spain, provided their price does not exceed foreign offers by more than 10 per cent. In addition to this preference they have increased the duty on imported locomotives and cars, and Commercial Attaché Cunningham, of Madrid, reports that further increases are to be expected. Moreover, Spanish industrial plants, on complying with certain formalities, are allowed a reduction in the import duties charged on foreign manufactured materials needed in the construction of locomotives and railway cars.

As a result of the government's activities, the production in Spain of railway equipment of the class mentioned has been stimulated, and Commercial Attaché Cunningham reports that in the first six months of this year orders have been placed for the construction of 5,000 European pattern railway, freight, passenger, and baggage cars with 16 different Spanish plants in different parts of the country.

Correspondingly, the Maquinista Terrestre y Maritima has received an order for 50 locomotives, of which five have been delivered, and as these are larger and more powerful than other engines previously in operation, the better service resulting is adding to the prestige of these builders and to the disadvantage of the German, Belgian, French, Italian and British manufacturers who have previously supplied most of the locomotives operated in Spain.

Other companies plan to build locomotives in Spain, and, in addition to the inducement mentioned, there are other ways to show them preference. The Sociedad Espanola de Construcciones Babcock and Wilcox has been extended an exemption from the payment of imports and stamp taxes covering an issue of 39,200 shares of 500 pesetas (1 peseta = \$.193 at par) each, and also a 60 per cent reduction during five years from the amounts that would ordinarily be due under the utilities tax. These special benefits are understood to have been accorded to assist this company in the production of locomotives and parts and similar products. Recently the Spanish government established an industrial bank with a capital of 150,000,000 pesetas, which is reserved for loans to purely Spanish enterprises.

### Exports of Track Materials in August

Exports of track spikes and steel rails fell sharply in August from the July totals. August exports of steel rails were valued at \$274,864 as against \$1,018,859 in July. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Railroad spikes, Pounds	Rails of steel, Tons	Switches, Structural frogs, splices, iron bars, etc., and steel	
			Dollars	Tons
Belgium	.....	.....	1,405	.....
France	.....	.....	550	.....
Netherlands	.....	.....	23	.....
Norway	.....	.....	240	.....
Portugal	.....	.....	152	.....
Scotland	.....	.....	5,475	.....
British Honduras	400	.....	.....	.....
Canada	34,970	1,323	51,616	4,094
Costa Rica	12,606	15	21	.....
Guatemala	24,434	.....	285	.....
Honduras	55,140	1,413	6,283	20
Nicaragua	10,900	.....	21	.....
Panama	.....	20	.....	.....
Mexico	21,581	62	8,743	888
Newfoundland and Labrador	.....	.....	23	12
Jamaica	.....	.....	.....	10
Trinidad and Tobago	273	.....	.....	3
Cuba	79,000	4	10,634	549
Dominican Republic	14,400	12	.....	2
Argentina	.....	.....	445	121
Brazil	.....	.....	103,334	155
Chile	3,320	800	.....	.....
Colombia	80,700	.....	6,749	23
Dutch Guiana	.....	.....	.....	15
Peru	66,000	.....	268	85
Uruguay	.....	.....	.....	9
Venezuela	5,600	97	2,737	71
China	.....	40	73,119	104
British India	.....	.....	.....	1,608
Dutch East Indies	.....	90	218	.....
Japan	33,026	423	2,950	1,687
Australia	.....	36	10,239	190
New Zealand	.....	.....	4,689	.....
French Oceania	.....	.....	.....	.....
Philippine Islands	2,000	.....	295	.....
British South Africa	.....	.....	3,980	.....
Portuguese Africa	.....	.....	.....	19
EXPORT	.....	.....	150	.....
Total Quantity	439,444	4,782	.....	9,667
Total value, dollars	14,982	274,864	294,311	726,825

## Equipment and Supplies

### Locomotives

THE DELAWARE & HUDSON is inquiring for from 1 to 10 Mikado type locomotives.

THE CENTRAL OF PERU is inquiring through the locomotive builders for some Mikado type locomotives.

THE MISSISSIPPI CENTRAL has ordered 1 Mikado type locomotive from the American Locomotive Company.

THE J. J. NEWMAN LUMBER COMPANY, Hattiesburg, Miss., has ordered 1 Mikado type locomotive from the American Locomotive Company.

THE EAST BRAZIL FEDERAL RAILWAYS have ordered 3 Pacific type and 4 Consolidation type locomotives, from the Baldwin Locomotive Works.

THE CHICAGO, ROCK ISLAND & PACIFIC, reported in the *Railway Age* of August 27, as inquiring for 10 Mikado type locomotives has ordered 14 Mikado type locomotives from the American Locomotive Company.

THE HUTCHINSON LUMBER COMPANY, Huntingdon, W. Va., has ordered 1 Shay type locomotive from the Lima Locomotive Works, Inc. This locomotive will have a weight of 80 tons in working order and will be equipped with superheater.

THE PEKING-SUIYUAN (China), reported in the *Railway Age* of June 24 as contemplating asking for bids through the Universal Steel Export Corporation, 26 Cortlandt street, New York City, for 7 Mallet type, 25 Mikado type and 5 Pacific type locomotives is now asking for bids on this equipment.

### Freight Cars

THE ATLANTIC COAST LINE is inquiring for 30 steel underframes for caboose cars.

THE BLAW-KNOX COMPANY, Pittsburgh, Pa., is inquiring for three 50-ton gondola cars.

THE UNION RAILWAY EQUIPMENT COMPANY, Chicago, is asking for prices on 25 30-ton refrigerator cars.

THE UNITED FRUIT COMPANY, New York, is inquiring for a number of cane cars of 60,000 lb. capacity.

THE NATIONAL RAILWAYS OF MEXICO are inquiring through the car builders for prices on 2,000 box cars.

J. B. FLETCHER & COMPANY, Fort Worth, Texas, are inquiring for 100 tank cars, of from 10,000 to 12,000 gal. capacity.

THE WATERBURY GAS LIGHT COMPANY, Waterbury, Conn., has ordered one 50-ton coal car from the General American Car Company.

THE STAUFFER CHEMICAL COMPANY, Chauncey, N. Y., has ordered 1 tank car of 8,000 gal. capacity from the General American Tank Car Corporation.

THE CHESAPEAKE & OHIO, reported in the *Railway Age* of June 17, as asking for prices for rebuilding about 2,500 cars, is now asking for prices on the repair of 500 to 1,000 composite gondola cars and 1,500 to 2,000 steel coal cars.

THE TOLEDO & OHIO CENTRAL is asking for prices on the repair of from 200 to 250 steel underframe box cars, and prices are also wanted for the repair of from 350 to 400 open top steel cars, for this road and the Kanawha & Michigan.

THE CENTRAL OF BRAZIL is asking for prices on 250 20-ton box cars, standard gage, also for 150 20-ton box cars, meter gage, 25 20-ton cattle cars, standard gage and 20 20-ton cattle cars of meter gage, all to be of wood construction. Information

may be obtained from Mr. Snowden, representing Bordeaux & Company, Rio de Janeiro, at the office of Monsen & Company, 2 Rector street, New York City.

THE PEKING-SUIYUAN (China), reported in the *Railway Age* of June 24, as contemplating asking for bids through the Universal Steel Export Corporation, 26 Cortland street, New York City, on 400 high side steel freight cars, is now asking for prices on this equipment.

## Passenger Cars

THE BALTIMORE & OHIO has ordered 2 dining cars from the Pullman Company.

THE NEW YORK CENTRAL is inquiring for prices on from 25 to 50 motor trucks.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 2 combination baggage and mail cars, from the American Car & Foundry Company.

## Iron and Steel

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 1,354 tons of steel for reinforcing underframes of coal cars from A. M. Castle & Company, Chicago.

## Machinery and Tools

THE NEW YORK CENTRAL has ordered 1—6 ft. radial drill and a 400-ton car wheel press from the Niles-Bement-Pond Company, New York. The railroad has ordered also a 48 in. planer and roundhouse equipment including some small lathes, grinders and bolt cutters.

## Railway Construction

ATHLSON, TOPEKA & SANTA FE.—This company will construct a warehouse and the necessary trackage leading to it, on its water-front property at Stockton, Cal., the work to cost \$99,000. The same company will install a 55,000 gal. oil tank with necessary facilities for fueling oil burning locomotives at Clovis, N. M., to cost about \$40,000. Trackage will be constructed by the Santa Fe at a cost of \$32,000, to a large coal mine at Radley, Kan.

CANADIAN PACIFIC.—This company has awarded a contract to Angus and Taylor, North Bay, Ontario, for the construction of a 68-mile extension from Kipawa, Quebec, to Desquinze, and eight miles into Villa Marie on Lake Temiskaming, the work to cost about \$3,500,000.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the Link Belt Company, Chicago, for a 400-ton coaling station to be erected at Centralia, Ill.

CHICAGO UNION STATION.—A contract has been awarded to A. S. Schulman, Chicago, by the Chicago Union Station Company which includes the installation of all of the wiring and switchboard equipment for a substation which will supply power to the new Railway Mail Terminal building, Chicago.

CHICAGO, ROCK ISLAND & PACIFIC.—Authorized to Issue Bonds.—The Interstate Commerce Commission has granted the joint application of this company and the Burlington, Cedar Rapids & Northern, authorizing the latter to sell \$1,905,000 of consolidated first mortgage bonds at par and accrued interest to the Chicago, Rock Island & Pacific, and also authorizing the Chicago, Rock Island & Pacific to procure authentication and delivery to its treasurer of a like amount of first and refunding mortgage bonds to be pledged from time to time as collateral for short term notes.

LOS ANGELES & SALT LAKE.—This company plans extensions to its lines from Whittier to Santa Ana, a distance of 14 miles, and from Whittier to Tustin, a distance of 22 miles, both in Orange County, Cal. The work, as estimated, will cost between \$1,500,000 and \$2,000,000.

## Supply Trade News

The Superior Supply Company, Chicago, has been appointed the exclusive railway distributor of the Rex concrete mixers, manufactured by the Chain Belt Company, Milwaukee, Wis.

C. A. Dunn has resigned as general superintendent of the Detroit Seamless Steel Tubes Company, Detroit, Mich., to take a position in the sales department of the Prime Manufacturing Company, Milwaukee, Wis.

The Toronto, Ontario, office of the Independent Pneumatic Tool Company, Chicago, has been removed from 32 Front street West, to larger quarters at 163 Dufferin street, Toronto. This office will remain in charge of William McCrae.

C. J. Burkholder, who has been serving the Franklin Railway Supply Company, New York, as special engineer in the western territory, is now supervising service for the same company on all railroads. A sketch of Mr. Burkholder's career was published in the *Railway Age* of July 2, 1921, on page 41.

George L. Sawyer, formerly sales manager of material handling machinery for the Barber-Greene Company, Aurora, Ill., has been appointed sales representative for The Universal Crane Company, of Elyria, Ohio, in charge of the New York territory, with headquarters at the Allied Machinery Center, New York City, N. Y.

W. E. Kelly, western representative of the Central Railway Signal Company, Pittsburgh, Pa., has been appointed also representative of the Handlan-Buck Manufacturing Company, St. Louis, Mo., for Chicago and adjacent territory, with headquarters at room 624 McCormick building, 332 South Michigan avenue, Chicago.

H. O. Davidson has been appointed to take entire charge of the Prudential Sectional Building Department of the Blaw-Knox Company, with headquarters at Baltimore, Md., where he will also serve as general manager of the C. D. Pruden plant, of the Blaw-Knox Company. At the time of his appointment Mr. Davidson was general manager of the Hydraulic Steelcraft Company.

O. B. Frink, assistant principal engineer of the Hall Switch & Signal Company, Garwood, N. J., has been appointed representative of the Waterbury Battery Company, Waterbury, Conn., with office at 30 Church street, New York City, and S. J. Hough, field service engineer at New York, of the Waterbury Battery Company, has been appointed western representative with office at 1361 Peoples Gas building, Chicago, Ill.

J. H. Redhead, assistant manager of sales of the National Malleable Castings Company, has resigned to become manager of the Reliance Company, Cleveland, Ohio, which firm has recently been organized by the Reliance Trust Company in conjunction with its affiliated companies, the Reliance Savings and Loan Company and the Reliance Securities Company. These companies are engaged in various banking and investment activities. Mr. Redhead was born in Cleveland in 1880 and was graduated from Central High School of that city in 1899. He began his career as an office boy with the National Malleable Castings Company and worked through various branches of the accounting department until 15 years ago when he entered the sales department. He was lately appointed assistant manager of that department. For several years Mr. Redhead has been in charge of the advertising carried on by the American Malleable Castings Association.

THE PENNSYLVANIA reports the movement of fruits and vegetables out of Chicago on its lines as 30 per cent greater than last season. The largest increase is in apples.

# Railway Financial News

ANN ARBOR.—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Standard return (January and February, 1920; year 1919).....	\$85,580	\$528,000
Guaranty, March 1 to August 31.....	354,343	.....
Railway operating revenues.....	4,718,662	.....
Railway operating expenses.....	4,121,212	.....
Net from railway operations.....	937,373	.....
Railway tax accruals.....	186,100	.....
Railway operating income.....	751,265	.....
Total non-operating income.....	23,367	.....
Gross income.....	774,632	534,907
Interest on funded debt.....	358,080	320,835
Total deductions from gross income.....	701,123	483,794
Net income.....	73,508	51,154
Estimated amount in addition to standard return due from the government account guaranty period—deficit.....	232,742	.....
Balance of income.....	306,251	51,154

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES		
	1920	1919
Freight.....	\$4,344,190	\$3,579,846
Passenger.....	718,564	718,714
Total operating revenue.....	\$5,385,992	\$4,534,015

OPERATING EXPENSES		
	1920	1919
Maintenance of way and structures.....	\$848,041	\$619,181
Maintenance of equipment.....	1,089,672	743,511
Maintenance of equipment—depreciation.....	99,714	72,824
Traffic.....	92,876	57,626
Transportation.....	2,644,236	2,184,341
General.....	178,731	152,459
Total operating expenses.....	\$4,953,662	\$3,749,977
Net operating revenue.....	432,330	784,038
Railway tax accruals.....	250,027	193,200
Railway operating income.....	181,966	590,338
Gross income.....	245,923	653,483
Total deductions from gross income.....	772,417	483,865
Net income.....	\$526,494	\$169,168

PASSENGER TRAFFIC		
	1920	1919
Number of revenue passengers carried.....	729,014	777,714
Number of passengers carried one mile.....	24,651,334	25,782,729
Average distance each passenger carried (miles).....	33.81	33.15
Average revenue per passenger per mile.....	\$0.2915	\$0.2788

FREIGHT TRAFFIC		
	1920	1919
Number of revenue tons carried.....	3,016,913	2,788,068
Number of tons carried one mile.....	422,427,877	383,524,581
Average distance haul of one ton—miles.....	140.28	137.56
Average receipts per ton per mile.....	\$0.0893	\$0.0812

LEHIGH VALLEY.—*Segregation Plan Filed.*—See article on another page of this issue.

NATIONAL RAILWAYS OF MEXICO.—*New Directors.*—Carlos R. Felix and Gumaro Villalobos have been elected directors on the New York local board.

PITTSBURGH & LAKE ERIE.—*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation (January and February).....	\$1,496,703	.....
Additional compensation account completed additions and betterments.....	25,060	.....
U. S. Government guaranty, March 1 to August 31.....	4,537,398	.....
Net railway operating income, September 1 to December 31.....	3,668,456	.....
Total (compared with compensation accrued in 1919).....	9,727,618	\$9,218,313
Total other income.....	937,079	953,287
Gross income.....	10,664,697	10,171,600
Interest on funded debt.....	493,926	327,614
Income transferred to other companies.....	1,024,337	1,143,041
Total deductions from gross income.....	3,355,945	4,298,915
Add revenues and expenses applicable prior to January 1, 1918, settled by U. S. R. A.....	933,175	175,984
Net corporate income, U. S. R. A.....	8,241,927	6,048,669
Dividends declared (10 per cent each year).....	3,598,560	3,598,560
Surplus for year.....	4,643,367	2,450,109

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES		
	1920	1919
Freight.....	\$29,345,511	\$23,158,642
Passenger.....	3,343,099	2,669,148
Total operating revenues.....	\$35,740,951	\$28,034,188

OPERATING EXPENSES		
Maintenance of way and structures.....	6,593,910	4,290,032
Maintenance of equipment.....	12,663,889	8,840,756
Traffic.....	265,704	180,686
Transportation.....	13,704,117	10,078,328
General.....	787,820	663,024
Total operating expenses.....	\$34,086,017	\$24,057,266

Net revenue from railway operation.....	\$1,654,934	\$3,976,922
Railway tax accruals.....	2,324,988	825,326

\*Adjusted for purposes of comparison.

PASSENGER TRAFFIC		
Number of revenue passengers carried.....	6,782,863	6,029,053
Number of revenue passengers carried one mile.....	141,311,211	121,384,938
Average distance each passenger carried (miles).....	20.33	20.13
Average revenue per passenger per mile (cents).....	2.366	2.199

FREIGHT TRAFFIC		
Number of revenue tons carried.....	41,431,699	38,702,145
Tons of revenue freight carried one mile.....	2,435,656,891	2,187,691,000
Average distance haul of one ton of freight (miles).....	63.26	60.74
Average revenue per ton per mile (cents).....	1.205	1.059

RUTLAND.—*Annual Report.*—The income account for the year ended December 31, 1920, compared with 1919 as follows:

	1920	1919
Compensation (January and February).....	\$167,522	.....
Additional compensation account completed additions and betterments.....	15,158	.....
U. S. Government guaranty, March 1 to August 31.....	510,139	.....
Net railway operating income, September 1 to December 31.....	207,160	.....
Total (compared with compensation accrued in 1919).....	\$899,978	\$1,051,350
Total other income.....	98,236	91,743
Gross income.....	998,213	1,143,093
Interest on funded debt.....	450,573	452,173
Total deductions from gross income.....	600,622	578,359
Less revenues and expenses applicable prior to January 1, 1918, settled by U. S. R. A.....	15,180	27,095
Surplus for the year.....	382,411	537,639

The operating statistics for 1920 and 1919 are:

OPERATING REVENUES		
	1920	1919
Freight.....	\$3,308,490	\$2,610,620
Passenger.....	1,642,466	1,395,875
Total operating revenues.....	\$5,979,621	\$4,838,534

OPERATING EXPENSES		
Maintenance of way and structures.....	\$1,133,784	\$812,377
Maintenance of equipment.....	1,634,232	1,179,712
Traffic.....	78,815	75,996
Transportation.....	3,113,299	2,263,692
General.....	183,522	153,199
Total operating expenses.....	\$6,165,583	\$4,497,058
Net revenue from railway operations.....	\$185,962	\$341,476

\*Adjusted for purposes of comparison.

PASSENGER TRAFFIC		
Number of revenue passengers carried.....	1,458,525	1,405,420
Number of revenue passengers carried one mile.....	50,476,486	47,822,133
Average distance each passenger carried (miles).....	34.61	34.03
Average revenue per passenger per mile (cents).....	3.25	2.92

FREIGHT TRAFFIC		
Number of revenue tons carried.....	2,585,735	2,319,934
Tons of revenue freight carried one mile.....	264,148,202	216,622,169
Average distance haul of one ton of freight.....	101.16	93.37
Average revenue per ton per mile (cents).....	1.253	1.205

## Railroad Administration

The Railroad Administration reports the following settlement settlements, and has paid out to the roads the following amounts:

Union Pacific and subsidiaries.....	\$8,000,000.00
St. Joseph & Grand Island.....	1,000,000.00
St. Louis San Francisco and subsidiaries.....	580,000.00
Susquehanna & New York.....	42,000.00
Arkansas & Memphis Railway Bridge & Terminal.....	90,000.00
St. Paul Bridge & Terminal.....	34,000.00
Ontonagon.....	11,936.84
Short Line Railroads:	
Lufkin, Hemphill & Gulf.....	8,700.00
Deering Southwestern.....	9,000.00
Bullfrog Goldfield.....	12,000.00

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

## Dividends Declared

Bancor & Arosteek.—Common, 2 per cent; preferred 3½ per cent, semi-annually; both payable October 1 to holders of record September 29.

Belt Railroad and Stock Yards (Indianapolis).—Common, 2 per cent, quarterly; preferred, 1½ per cent, quarterly; both payable October 1.

Georgia Railroad & Banking Company.—3 per cent, quarterly, payable October 15 to holders of record October 2.

Meadville, Lonscut Lake & Linesville.—2 per cent, payable October 1 to holders of record September 15.

Norwich & Worcester.—Preferred, 2 per cent, quarterly, payable October 1 to holders of record September 14.

Pere Marquette.—Preferred, 1½ per cent, quarterly, payable November 1 to holders of record October 15.



stock and of increasing fruit and truck production in localities where there is promise of success in those directions. Especial attention is being given to dairy development, not through establishments devoted exclusively or principally to dairying so much as encouraging the keeping of a few good dairy cows on each farm and securing the establishment of creameries so located that the farmer may have a market for sour cream, retaining the skimmed milk on the farm to be fed to hogs or poultry. In addition to furnishing a constant source of revenue directly to the railway, this method, through the periodical distribution of cream checks among the farmers, contributes substantially to the general prosperity of farming communities. An illustration of this is afforded by a dairy which is now a source of substantial revenue to the railway, as well as to the farmers for milk and cream purchased from them. When this creamery was started, there were few dairy cows in the community. The number has increased that a second creamery has been established at Selma, and the elder concern has gone into the making of cheese as well as butter, affording the farmers a market for whole milk as well as cream.

Southern sweet potatoes are coming to the front as a large scale profitable crop. Caring them in specially constructed storage houses has made possible their marketing during the entire year. We are encouraging the building of these storage houses and co-operating with growers to secure broader markets throughout the United States. The area of land devoted to strawberries was increased somewhat during the past year, especially in east Tennessee, and there are indications of a further substantial growth in that territory as well as in Alabama and other States. The growing of dewberries for market has been started on the line between Macon and Brunswick. A small quantity of such berries was marketed this year at profitable prices. There will be some increase in the acreage of Satsuma oranges in the southern part of Alabama. Encouragement is being given to the cultivation of blueberries in southern Georgia and northern Florida. Vinifera grapes are being introduced at points in the southern part of the territory.

INDUSTRIAL.

The slackening national demand for commodities of all kinds was severely felt in the South, and there was a consequent let up in the provision of additional manufacturing capacity. There was not, however, a total cessation of construction of new industrial plants. Far-sighted men, making ready for the return of improved business, have been preparing accordingly, in some cases by building entirely new plants and in others by making additions to existing plants.

There is reason to believe that within the next few months there will be under construction at points served by Southern Railway System at least two new large cement plants, an important porcelain industry, a glass plant, and a paint and pigment industry.

In at least one important industry the South has suffered relatively less than other parts of the country during the painful pilgrimage to "normalcy." The figures of the United States Census Bureau for the twelve months ended Dec. 31, 1921, show that the consumption of cotton by mills in the cotton growing States amounted to 2,997,675 bales, compared with 3,582,919 bales in the preceding twelve months, a decrease of 585,244 bales or 16.3%. In the same period mills in all other States consumed 1,890,218 bales, compared with 1,838,115 bales in the preceding twelve months, a decrease of 946,597 bales or 33.4 per cent.

RELATIONS WITH EMPLOYEES

The thanks of the Board of Directors are tendered to the officers and employees for the faithful performance of their duties. Especially, the management records with pleasure its sense of appreciation of the loyal and self-sacrificing co-operation of those employees who, through their able representatives, have joined with the officers in harmonious conference in the effort to accomplish the disagreeable but necessary task of readjustment of wage and working conditions.

Respectfully submitted by order of the Board.  
FAIRFAX HARRISON, President.

Table 1.—INCOME STATEMENT.

	1920	1919
OPERATING REVENUES—10 Months, March-December, 1920:		
Freight .....	\$83,330,291.61	
Passenger .....	32,070,594.85	
Miscellaneous Passenger-Train .....	1,000,555.56	
Mail .....	2,587,234.88	
Express .....	2,663,463.27	
Other Transportation .....	1,216,280.62	
Incidental .....	2,658,676.72	
Joint Facility .....	804,352.05	
Total Operating Revenues .....	\$126,339,238.56	
OPERATING EXPENSES—10 Months, March-December, 1920:		
Maintenance of Way and Structures .....	\$17,995,948.14	
Maintenance of Equipment .....	25,028,276.45	
Traffic .....	1,818,388.15	
Transportation .....	58,430,342.81	
Miscellaneous Operations .....	1,224,222.82	
General .....	3,470,328.40	
Transportation for Investment—Credit .....	1,636.46	
Total Operating Expenses .....	\$107,965,810.31	
Net Revenue from Operations—10 Months, March-December, 1920 .....	\$18,373,428.25	
Taxes .....	\$3,853,447.80	
Uncollected Revenues .....	39,789.02	
Hire of Equipment .....	1,407,352.08	
Joint Facility Rents .....	726,887.25	
Total Other Expenses—10 Months, March-December, 1920 .....	\$6,027,476.15	
Operating Income—10 Months, March-December, 1920 .....	\$12,345,952.10	
Certified Standard Return Under Federal Control Act, January-February, 1920 .....	3,108,982.18	
Operating Income, 10 Months, Standard Return 2 Months, 1920 .....	\$15,454,934.28	
Standard Return—12 Months, 1919 .....	\$18,653,893.15	

Property operated by United States Railroad Administration.

NON-OPERATING INCOME:

	1920	1919
Income from Lease of Road .....	\$38,405.98	\$59,676.90
Miscellaneous Rent Income .....	248,308.57	233,091.68
Income from Rail Leased .....	82,629.78	53,787.87
Dividend Income .....	1,268,692.48	1,035,492.67
Income from Funded Securities .....	904,361.02	684,548.35
Income from Unfunded Securities and Accounts .....	286,597.66	158,804.44
Miscellaneous Income .....	27,542.79	4,688.91
Total Non-Operating Income .....	\$2,850,538.28	\$2,230,126.82
Total Gross Income .....	\$18,305,472.56	\$20,884,019.97

DEDUCTIONS FROM TOTAL GROSS INCOME:

	1920	1919
Rent for Leased Roads .....	\$2,827,172.41	\$2,400,254.73
Miscellaneous Rents .....	45,058.29	38,414.73
Separately Operated Properties .....	548,734.18	6,980.24
Interest on Unfunded Debt .....	492,405.61	668,985.12
Corporate Expenses .....	66,860.93	381,351.37
War Taxes .....	68,000.00	426,343.91
Miscellaneous Income Charges .....	123,387.99	94,249.47
Total Deductions of This Class .....	\$4,171,619.41	\$4,016,579.57
Total Available Income .....	\$14,133,853.15	\$16,867,440.40

	1920	1919
Interest on Funded Debt .....	\$11,144,830.00	\$10,901,408.88
Interest on Equipment Obligations .....	1,046,866.26	596,456.24
Dividend on Southern Railway—Mobile and Ohio Stock Trust Certificates .....	226,008.00	226,008.00
Total Deductions of This Class .....	\$12,417,704.26	\$11,725,873.12

	1920	1919
Balance of Income Over Charges .....	\$1,716,148.89	\$5,141,567.28
Dividend of 2½% on Preferred Stock Paid December 31, 1920, Charged Against Income for the Year 1920 (the Dividend of 2½% Paid June 30, 1920, Having been Reserved Out of Income for the Year 1919) .....	\$1,500,000.00	\$3,000,000.00
Additions and Betterments Charged to Income .....	88,904.20	4,307.63
Miscellaneous Appropriations of Income .....	14,340.81	

BALANCE CARRIED TO CREDIT OF PROFIT AND LOSS.

	1920	1919
Balance of Income Over Charges .....	\$1,716,148.89	\$2,137,259.65
Table 2.—PROFIT AND LOSS.		
Credit Balance December 31, 1919 .....		\$45,888,377.46
Add:		
Credit Balance of Income for the year .....	\$113,713.88	
Net Profit from Sale of Securities .....	131,069.59	
Net Miscellaneous Credits .....	924,782.45	
		\$47,057,943.38

Deduct:		
Adjustment of Revenues and Expenses Prior to January 1, 1918 .....		83,569.14
Credit Balance December 31, 1920 .....		\$46,974,374.24

Table 3.—GENERAL BALANCE SHEET.

	December 31, 1920	December 31, 1917*
ASSETS.		
Investments:		
Investment in Road .....	\$340,683,046.27	\$342,018,146.28
Investment in Equipment .....	86,960,333.51	75,392,465.35
Total Investment in Road and Equipment .....	\$427,643,379.78	\$417,410,611.63
Cash Deposited in Lieu of Mortgaged Property Sold .....	\$9,822.50	\$5,000.00
Miscellaneous Physical Property—Rails and Fixtures leased to others .....	918,982.98	708,385.28
Investments in Affiliated Companies:		
Stocks .....	35,329,105.90	33,971,354.90
Bonds .....	28,307,963.38	28,300,459.04
Notes .....	4,936,368.04	1,989,004.59
Advances .....	4,222,017.69	2,503,518.32
Miscellaneous (Matured interest coupons) .....		18,225.00
Total Investments in Affiliated Companies .....	\$72,795,460.01	\$66,783,161.85
Other Investments:		
Stocks .....	\$94,007.00	\$298,222.00
Bonds .....	5,158,913.45	5,273,913.45
Notes .....	418,680.00	499,380.11
Advances for Purchase of Additional Equipment .....		2,184,476.04
Total Other Investments .....	\$5,671,600.62	\$8,255,991.60
Total Investments .....	\$507,039,245.89	\$493,163,150.36
Current Assets:		
Cash .....	\$7,969,141.67	\$7,445,217.08
Time Deposits .....	3,062,487.10	1,530,789.15
Special Deposits .....	3,062,487.10	2,951,472.95
Loans and Bills Receivable .....	532,810.19	1,515,665.99
Traffic and Car Service Balances Receivable .....	2,522,554.16	3,250,905.69
Balance due from Agents and Conductors .....	1,250,792.01	1,220,422.07
Miscellaneous Accounts Receivable .....	11,023,190.39	7,192,708.43
Material and Supplies (Table 2) .....	17,635,896.18	10,250,687.63
Interest and Dividends Receivable .....	768,220.39	597,145.46
Other Current Assets .....	1,788,645.36	2,499,421.41
Total Current Assets .....	\$46,553,737.45	\$38,454,435.86

Deferred Assets:	1920	1919
Working Fund Advances.....	\$40,547.06	\$146,590.65
Liberty Bonds—Subscribed for Employees	1,252,975.32	195,900.00
Cash and Securities in Insurance Fund.	175,000.00	1,022,891.45
Cash and Securities Deposited under		
North Carolina Railroad Lease.....	442,910.46	178,600.00
Other Deferred Assets.....		119,873.74
<b>Total Deferred Assets.....</b>	<b>\$1,911,432.84</b>	<b>\$1,663,855.84</b>

Unadjusted Debits:		
Insurance Premiums and Rents paid in		
Advance.....	\$67,189.23	\$133,234.80
Unextinguished Discount on Funded		
Debt.....		182,434.60
Additions and Betterments, Expendi-		
tures, Freight Claims: Foreign Mileage		
and Sundry Items in Suspense.....	4,755,661.91	3,314,306.45
<b>Total Unadjusted Debits.....</b>	<b>\$4,822,851.14</b>	<b>\$3,629,975.85</b>

Claim Against United States Government.	\$35,142,487.60	
Expenditure by United States Government		
Trusted.....	13,957,615.61	
Securities of the Company held by it:		
1920		1917
Unpledged \$7,452,200.00	\$5,095,200.00	
Pledged 38,495,000.00	44,250,000.00	
<b>Totals..</b>	<b>\$65,947,200.00</b>	<b>\$49,345,200.00</b>
<b>Grand Totals.....</b>	<b>\$609,427,370.53</b>	<b>\$536,911,417.91</b>

\*By reason of the Federal operating period, December 31, 1917, is the latest truly comparable date.

	LIABILITIES	
	1920	1917*
Capital Stock:	December 31,	December 31,
Common.....	\$120,000,000.00	\$120,000,000.00
Preferred.....	60,000,000.00	60,000,000.00
<b>Total Southern Railway Company</b>	<b>\$180,000,000.00</b>	<b>\$180,000,000.00</b>
Stock.....		
Southern Ry.-Mobile & Ohio Stock Trust		
Certificates.....	5,650,200.00	5,650,200.00
<b>Total Stock.....</b>	<b>\$185,650,200.00</b>	<b>\$185,650,200.00</b>
Long Term Debt:		
Funded Debt (Table 4).....	\$234,212,500.00	\$235,429,500.00
Equipment Trust Obligations (Table 5).....	18,721,000.00	17,846,000.00
<b>Total Long Term Debt.....</b>	<b>\$252,933,500.00</b>	<b>\$253,275,500.00</b>
<b>Total Capital Liabilities.....</b>	<b>\$438,583,700.00</b>	<b>\$438,925,700.00</b>
Governmental Grants:		
Grants since July 1, 1914, in aid of		
Construction.....	\$84,078.58	\$73,220.09
Current Liabilities:		
Loans and Bills Payable.....	\$7,880,270.00	\$455,000.00
Tax and War Service Balances Payable.....	3,963,909.37	1,982,322.00
Audited Accounts and Wages Payable.....	21,126,810.15	12,521,524.91
Miscellaneous Accounts Payable.....	2,975,592.00	1,734,504.14
Interest Matured, including interest due		
January 1st.....	2,898,169.30	2,932,649.15
Dividends Matured Unpaid.....	2,000.00	7,545.00
Funded Debt Matured Unpaid.....	16,127,227.80	10,673.80
Unmatured Dividends Accrued.....	56,502.00	56,502.00
Unmatured Interest Accrued.....	1,930,730.60	1,669,852.96
Unmatured Rents Accrued.....	356,108.55	289,322.57
Expenses Accrued not vouchered.....	1,420,563.03	993,665.56
Other Current Liabilities.....	1,854,530.99	2,460,196.04
<b>Total Current Liabilities.....</b>	<b>\$44,627,113.79</b>	<b>\$25,113,758.13</b>
Deferred Liabilities:		
Deferred Payments Account Reconstruc-		
tion Roanokeville Branch: Contractors'		
Per Cents Retained and Sundry Items	\$1,624,081.29	\$1,758,614.42
Unadjusted Credits:		
Taxes.....	\$675,180.43	\$976,848.49
Insurance Reserve.....	1,252,975.32	1,022,891.45
Operating Reserves.....	2,762,394.84	3,632,223.58
Depreciation accrued on:		
Rail Leased to Other Companies.....	139,899.47	95,114.27
Equipment Owned.....	22,508,413.47	16,941,357.50
Equipment Leased from Other Com-		
panies.....	563,122.71	349,676.11
Sundry Items.....	3,985,425.90	1,926,440.28
<b>Total Unadjusted Credits.....</b>	<b>\$31,887,412.14</b>	<b>\$24,944,551.68</b>
Corporate Surplus:		
Additions to Property, since June 30,		
1907, through Income and Surplus.....	\$1,661,187.48	\$1,306,906.94
Reserve for 2 1/2% Dividend on Preferred		
Stock.....		1,500,000.00
Miscellaneous.....	14,340.81	504.28
<b>Total Appropriated Surplus.....</b>	<b>\$1,675,528.29</b>	<b>\$2,807,411.22</b>
Profit and Loss—Balance.....	\$46,974,374.24	\$43,288,162.37
Unadjusted Items (Net) Subject to Settle-		
ment of Claim with United States		
Government.....	\$43,971,082.20	
<b>Grand Totals.....</b>	<b>\$609,427,370.53</b>	<b>\$536,911,417.91</b>

\*By reason of the Federal operating period, December 31, 1917, is the latest truly comparable date.

[Advertisement]

# Railway Officers

## Financial, Legal and Accounting

W. H. Whitehead has been appointed auditor of the Lehigh & New England with headquarters at Bethlehem, Pa., succeeding E. M. Kuntz, resigned.

## Operating

V. S. Burnham, trainmaster on the Los Angeles division of the Southern Pacific, with headquarters at Indio, Cal., has been transferred to Los Angeles, in a similar capacity succeeding C. M. Murphy, promoted. H. R. Hughes will succeed Mr. Burnham as trainmaster on the Los Angeles division, with headquarters at Indio.

J. S. de Echagaray has been appointed superintendent of the Monterey and Gulf division of the National Railways of Mexico with headquarters at Monterey, succeeding J. C. Garcia, transferred. R. P. Micitri has been appointed superintendent of the Guadalajara division with headquarters at Guadalajara, succeeding M. Acosta, transferred. V. E. Palacios, superintendent of the Isthmian division with headquarters at Tierra Blanca, has been transferred to a similar position on the Aguas Calientes division with headquarters at Aguas Calientes, succeeding P. R. Rivera, transferred. A. Fuhrken, superintendent of the Durango division with headquarters at Durango, has been transferred in a similar capacity to the Hidalgo division with headquarters at Mexico City, succeeding O. M. Palma, transferred.

C. M. Murphy has been appointed assistant superintendent of the Los Angeles division of the Southern Pacific, with headquarters at Los Angeles, Cal., succeeding C. J. Donnatin, who has been promoted to division superintendent of the San Joaquin division, with headquarters at Bakersfield, Cal. Mr. Donnatin succeeds F. M. Worthington, who has been transferred to the Coast division, with headquarters at San Francisco, Cal., succeeding T. Ahern, who has been transferred to the Sacramento division, with headquarters at Sacramento, Cal., succeeding J. O. Brennan, deceased. A. J. Hancock has been appointed supervisor of transportation, with headquarters at San Francisco, Cal., succeeding L. R. Smith, who has been appointed assistant superintendent of the Stockton division, with headquarters at Stockton, Cal. Mr. Smith succeeds W. M. Stillman, who has been transferred to the Sacramento division, with headquarters at Sacramento, Cal., succeeding W. L. Hack, who has been promoted to superintendent of the Salt Lake division, with headquarters at Ogden, Utah. Mr. Hack succeeds E. L. King, who has been transferred to the Portland division, with headquarters at Portland, Ore., succeeding A. T. Mercier, who has resigned to accept service with another company.

## Traffic

A. S. Gimble, general agent of the Gulf Coast Lines with headquarters at Monterey, Mex., has been transferred to Brownsville, Tex.

T. L. Southwell has been appointed commercial agent of the Seaboard Air Line with headquarters at Orlando, Fla., effective October 1.

G. L. Oliver, general freight and passenger agent of the Fort Smith & Western, with headquarters at Fort Smith, Ark., has been promoted to traffic manager with the same headquarters.

J. E. Sneed has been appointed traffic agent in charge of the newly established Cleveland-Detroit freight and passenger offices of the Chicago & Eastern Illinois, with headquarters at Detroit, Mich.

J. J. Morton has been appointed foreign freight agent of the Canadian Pacific with headquarters at New York, succeeding F. G. Frieser, resigned.

L. J. Anderson, traveling passenger and freight agent of the Denver & Rio Grande Western, has been promoted to general agent, with headquarters at Fort Worth, Tex.

A. R. Mulkins, has been appointed commercial agent of the Atlantic Coast Line with headquarters at Philadelphia, and C. J. Carty has been appointed commercial agent with headquarters at New York, effective October 1.

E. W. Clapp, whose appointment as assistant freight traffic manager of the Southern Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of September 17 (page 556), was born at Memphis, Tenn., on February 25, 1874, and was educated in both public and private schools in Memphis and Bell Buckle, Tenn. He entered railroad service on October 4, 1893, and served as a stenographer, and as a clerk, in the superintendent's office of the Southern Pacific at Tucson, Ariz., until 1895. From November, 1895, to July, 1896, he was employed in train service. He became ticket clerk at Lordsburg, New Mexico, in July, 1896, and remained at that position until January, 1897, when he was appointed chief clerk and cashier. From July, 1897, to November, 1905, he served as an agent and assistant trainmaster. In November, 1905, he was appointed traveling freight and passenger agent, with headquarters at San Francisco, Cal., which position he held until August, 1906, when he was promoted to district freight and passenger agent, with headquarters at Reno, Nev. In November, 1909, he was transferred to Fresno, Cal. From August to November, 1910, he was chief clerk in the general freight office at San Francisco. In November, 1910, he left the railroad to become general agent for the Atlantic Steamship Lines. In January, 1911, he was appointed assistant general freight and passenger agent, with headquarters at Tucson, Ariz., also serving at the same time as general freight and passenger agent for the Arizona Eastern, a subsidiary of the Southern Pacific, with the same headquarters. In April, 1915, he was appointed general freight agent of the Southern Pacific, with headquarters at Los Angeles, Cal., where he remained until March, 1919, when he was transferred to San Francisco, which position he was holding at the time of his recent appointment.



E. W. Clapp

L. C. Zimmerman, whose appointment as assistant general freight agent of the Southern Pacific, with headquarters at Los Angeles, Cal., was announced in the *Railway Age* of September 17 (page 556), was born at Williamsport, Pa. He entered railroad service about 26 years ago in a local freight office of the Atchison, Topeka & Santa Fe. Some time later he left this road to become chief rate clerk in the general freight office of the Colorado & Southern, with headquarters at Denver, Colo., on which road he was later promoted to contracting agent and then commercial agent. He entered the service of the Southern Pacific as general agent, with headquarters at Denver, Colo., which position he held until federal control, when the off-line offices were closed. During government control he was with the Southern Pacific in Texas, later being transferred to San Francisco. He left San Francisco to become industrial agent, with headquarters at Los Angeles, and was promoted to district freight agent, with his same headquarters which position he held at the time of his recent promotion.

## Mechanical

J. E. Carr has been appointed assistant general road foreman of engines of the United Railways of Havana with headquarters at Cruces, Cuba.

## Engineering, Maintenance of Way and Signaling

C. P. Richardson, assistant engineer of the Dakota division of the Chicago, Rock Island & Pacific, has been transferred to the general offices in Chicago, where he will be in charge of special work in the engineering department.

E. F. Kulchar has been appointed district engineer, maintenance of way, of the Illinois district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill. A. Craine has been appointed district engineer, maintenance of way, of the Missouri district, with headquarters at St. Louis, Mo., and D. Cameron has been appointed district engineer, maintenance of way, of the Iowa district, with headquarters at Burlington, Iowa.

## Purchasing and Stores

A. J. Mello has been appointed superintendent of commissary stores of the Southern Pacific, with headquarters at San Francisco, Cal.

J. D. McCarthy, whose appointment as purchasing agent of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., was announced in the *Railway Age* of September 17 (page 556), was born at Chicago, Ill., on August 26, 1881. He entered railroad service in 1889 with the Chicago Great Western, and served successively until 1904, as roadmaster's clerk, chief clerk to the division engineer and division storekeeper. From 1904 to 1906 he served in the accounting department of the Chicago, Rock Island & Pacific. In 1906 Mr. McCarthy entered the service of the Chicago & North Western and through various promotions became assistant purchasing agent of that company. He was serving in this capacity at the time of his recent appointment.



J. D. McCarthy

## Obituary

M. Burke, formerly roadmaster of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, Ill., and president of the Roadmasters and Maintenance of Way Association in 1917, died suddenly while at work in the Western Avenue Yard of that road on October 11.

F. F. Busted, formerly general superintendent of the Canadian Pacific, died suddenly from heart disease at his home in Vancouver, B. C., on October 2. Mr. Busted was born at Battery Point, Que., in 1858. He entered the service of the Canadian Pacific in 1879, and through various promotions became assistant chief engineer in June, 1904. In 1907 he was promoted to general superintendent of the British Columbia division and, in 1911, was transferred to the Manitoba division. He re-entered the engineering department the same year in charge of double tracking and grade revision from Calgary to the coast, which included the construction of the Connaught tunnel through the Selkirk mountains. Mr. Busted retired in 1918.

# Railway Age

Vol. 71      October 22, 1921      No. 17



July 4—Fighting the Snow in the Andes Mountains

## Contents

Another Crisis on the Railroads.....	Page 745
Editorial Comment on the Threatened Railway Strike.	
A Labor Message from Europe.....	747
A Radiogram from Robert E. Thayer, European Editor of the Railway Age.	
Labor Leaders Call Strike for October 30 .....	755
In Addition to This Article and the Editorials Above Mentioned Several Articles on the Strike Situation Appear in this Issue, Beginning on Page 755.	

### EDITORIALS

Another Crisis on the Railroads .....	745
A Labor Message from Europe .....	747
The Railroad Bill as a Relief for Unemployment .....	747
Freight Traffic Increasing .....	749

### LETTERS TO THE EDITOR

In Defense of Railway Executives .....	749
A Locomotive Engineer on the Wage Question.....	749
Are the Railways Most Guilty of All?.....	750

### GENERAL ARTICLES

New Haven Freight Transfer Facilities at Cedar Hill.....	751
Labor Leaders Call Strike for October 30 .....	755
I. C. C. and Public Group of Labor Board Meet.....	759
Strike Directed Against Labor Board Say Eastern Executives.....	761
Railroads Have Already Made Extensive Decreases in Rates.....	762

### GENERAL ARTICLES—Continued

Public Prepares for Strike .....	762
Administration Takes Strike Threat Calmly.....	763
Wage Differential Important Factor, Says Cunningham.....	764
President of U. S. Chamber of Commerce Criticises Strike Call.....	765
Implement Men Vote in Favor of Abolishing Labor Board .....	766
Farm Bureau Federation Enters Controversy .....	766
New Locomotives for the Northern Pacific .....	767
Changes in Railway Mail Service .....	769
President's Conference on Unemployment .....	771
Meeting of Public Utility Commissioners at Atlanta .....	777
Freight Car Loading .....	780
Bridge and Building Men Meet in New York .....	781
Labor Board Lifts Piece Work Ban .....	788
Senate Committee Railroad Hearings Resumed .....	789

### GENERAL NEWS DEPARTMENT .....

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON: England: 84, Victoria St., Westminster, S. W. 1.  
Cable address: URASIMEC, London  
NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. F. LAME  
R. E. THAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STURRING  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEBLER  
F. W. KRÄGER  
HOLCOMBE PARKES  
O. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LYNE  
I. H. DUNN  
D. A. STEEL  
K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excluding daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 8,800 copies were printed; that of these 8,800 copies, 7,115 were mailed to regular subscribers, 54 were provided for counter and news company sales, 336 were mailed to advertisers, 65 were mailed to employees and correspondents and 440 were provided for new subscriptions, samples, copies lost in the mail and office use, that the total copies printed this year to date were 4,00,300, an average of 9,768 copies a week.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)



Records for perfect welds come naturally in a Ryerson-equipped flue shop

## Can You Cut Your Flue Costs?

It is not often you can cut the time on a job in half.

Particularly a job like flue repairs that goes on day after day.

But that is exactly what Ryerson Standardized flue repair machinery is doing for one railroad.

Would you like to know the name of the road and something more about this remarkable performance? We shall be pleased to give you all the facts.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

## Another Crisis on the Railroads

THE HISTORY of the railways of the United States for some years has been largely a series of important crises, some due to labor conditions, some to operating conditions, and some to financial conditions.

Within the last week there has developed a crisis which probably is as important as, and may prove to be more serious than, any which the railways have passed through in the last ten years.

The executives of the railways met in Chicago on October 14 and decided to ask the Railroad Labor Board for a further reduction of wages, announcing that the benefit of any further reduction in wages would immediately be given to the public through reductions of rates. Almost at exactly the same time the heads of the five train service brotherhoods issued an order for general strikes against the reduction in wages put into effect by the railways last July. The heads of the other railway labor organizations are considering whether they shall issue orders for strikes by their members.

There has been much talk by railway labor leaders about strikes for some months. This was not taken seriously until the meeting of the railway executives last week, because apparently the labor leaders were not threatening strikes with any real expectation of getting the wage reduction of last July rescinded, but in the hope of preventing steps for any further wage reduction being taken.

### Pressure to Which Railways Have Been Subjected

For some months the railways have been subjected to powerful pressure from two opposite directions, the continuance of which was bound to result in the very kind of crisis which has come. They have been subjected to a practically universal and daily intensifying demand for reductions of freight rates. This demand was first given expression by the agricultural and some of the industrial interests. It was taken up by members of Congress, especially the new but very potent "agricultural bloc," and a little later by President Harding, his cabinet, and members of the Interstate Commerce Commission. The railways have been told repeatedly by those who voiced this demand, including officials of very high position in Washington, that they must find a way to reduce their rates, and have even been threatened with the passage by Congress of a bill for a general reduction in rates unless it was brought about by some other means.

The railway executives, since the recent great declines of prices, especially those of agricultural products, have never contended that the present rates should be maintained beyond the time when the operating expenses of the railways made their continuance necessary. In order to rescue the railways from threatened general bankruptcy, and also prepare the way for reductions of rates, they have struggled for months

to secure substantial reductions of their operating costs, and especially of their labor costs.

In spite, however, of all the efforts the railways have made to secure the abrogation of the costly National Agreements made by the Railroad Administration, most of the rules in them, owing to the action or inaction of the Railroad Labor Board, are still in effect. In spite of all the efforts that have been made to secure substantial reductions of wages, the wages still being paid are only 12 per cent lower, as a result of the decision of the Railroad Labor Board in the last wage case, than the highest wages ever fixed. Every attempt of the railways to secure a reasonable liquidation of their labor costs has been met with the most unyielding resistance and constant threats of strikes by the labor unions.

The last general advance in passenger and freight rates went into effect on August 26, 1920. These rates and the wages awarded by the Railroad Labor Board on July 20, 1920, were together in effect during the ten months ended on June 30, 1921. Even when the railways a year ago were handling a heavy business the rates were found insufficient, with the operating costs then prevailing, to enable them to earn the 6 per cent return which had been expected. Owing to these high operating expenses and the heavy decline in traffic the net return earned by the railways during the ten months when the advanced rates and the wages awarded by the Railroad Labor Board on July 20, 1920, were both in effect was only 2½ per cent. This was not sufficient for the railways as a whole to pay the interest on their bonds, and many railways did not even earn their operating expenses.

When the railways appealed to the Railroad Labor Board last spring for a reduction of wages they emphasized the fact that it was needed to save a large part of the companies from insolvency. Since the wage reduction on July 1 there has been a substantial increase in the net return earned. But the largest monthly net returns earned have not been equal in any month to the net return which it was expected the railways would earn every month under the present rates.

It became evident, however, that the railways must heed the constantly increasing public demand for a general reduction of rates. Therefore they decided upon the plan announced on Friday, namely, of asking for a further reduction of wages, and of giving a definite pledge that the benefit of any reduction of wages obtained would be given to the public in reductions of rates.

### Strike Would Be Defiance of Labor Board

This did not afford the labor unions any ground for ordering a strike. In fact, the strike vote of the brotherhoods already had been taken and the strike order prepared be-

cause of the reduction of wages awarded by the Railroad Labor Board and put into effect by the railways on July 1. The strike now ordered, if it comes, will be a strike against the decision of the Labor Board acting under the provisions of the Transportation Act and the action of the railways in accepting the award made in that decision.

The labor provisions of the Transportation Act were passed and the Labor Board was created to establish a permanent means and a permanent tribunal for settling railway labor controversies that might cause an interruption of transportation. The proposed strike would be in direct disregard of these provisions of law and in direct defiance of the Railroad Labor Board and of its decision. The action of the railway executives at their meeting on October 14 merely contemplates a strict compliance with the provisions of the Transportation Act in the form of an appeal to the Labor Board for authorization for a further reduction in wages. It gave no ground for any apprehension that the railways would make any reduction in wages not authorized by the Labor Board and therefore, as already indicated, afforded the labor brotherhoods no ground whatever for calling a strike.

However, it is doubtless true that it is the announcement of the railway executives that they will ask for a further reduction of wages which has made the issuance of the order for a strike a matter of serious moment. It would be worse than foolish for the railways, public officials or public to act on the assumption that there is not now any serious danger of a strike. Neither the labor leaders nor the railroads are "bluffing," whatever may have been the case a short time ago, and if a strike is averted this will be due to the mediation or pressure of others besides the railways and the labor unions.

#### Remarkable Suggestion of Public Members of Labor Board

The crisis already has caused some suggestions to be made regarding means which should be adopted to relieve it. One of these has come from the three public members of the Labor Board. This suggestion is that the railways shall at once make a reduction of rates equal to the reduction of wages made on July 1, that they shall postpone applying for a further reduction of wages, and that the labor brotherhoods shall withdraw their order for a strike.

This suggestion, coming from the source that it does, is greatly to be regretted. It discloses an attitude and a want of understanding of the present railroad situation on the part of the public members of the Labor Board which are difficult to comprehend. Nobody who is familiar with the facts regarding the earnings and expenses of the railways prior to July 1 can doubt that a very large part of them were then headed for ruin. The adoption of the suggestion of the public members of the Labor Board would put the railways back financially almost where they were then.

The railways during the first twelve months the present rates were in effect earned only one-half as much net return as they earned five years ago and less than one-half of the net return they are entitled to earn in a year under the provisions of the Transportation Act. They have been suffering along with the farmers and other business concerns from the terrific liquidation and business depression of the last year.

On the other hand, the wages of railway employees are still more than twice as high as they were five years ago. Upon what rational ground can it be suggested that the railways should make a reduction in rates which would cause them to continue to earn only one-half as much net return as they earned five years ago, and as the Transportation Act says they should earn, in order that they may continue to pay their employees wages more than twice as high as they paid them prior to government control?

The result of adoption of the suggestion of the public members of the Railroad Labor Board would be that the railways would be rendered unable to rehabilitate their properties, much less to prepare to render the increased service which later will be demanded of them, in order that they might continue to pay their employees an average wage per hour at least 135 per cent higher than that of 1914, when the average cost of living, according to the reports of the Industrial Conference Board, is only 65 per cent greater than it was in 1914.

#### Would Ruin of Railways Help Business?

The whole argument for early reductions in railway rates is based on the proposition that it is needed to relieve industry of a heavy burden and help promote a revival of general business. The railways, however, are one of the most important industries in the country. A general reduction of rates without a corresponding reduction of wages would postpone indefinitely the time when they could begin to rehabilitate their properties and increase their purchases from other industries. If the reduction in rates were substantial it would financially ruin many railway companies. Would the indefinite postponement of an increase in purchases by the railways, and the financial ruin of many companies, promote a revival of business? On the contrary, nothing could be better adapted to protracting the business depression.

Congress has under consideration the passage of legislation which would cause the railways to be paid at an early date about a half billion dollars which the government owes them. Many believe that the passage of this legislation would restore the purchasing power of the railways. If, however, the passage of this legislation were accompanied by a general reduction of rates, without a corresponding reduction of labor costs, the effect of the legislation would be much more than offset by the effect of the reduction of rates, the railways would in consequence be disabled from increasing their purchases and the whole purpose of the proposed legislation by Congress would be defeated.

The railways are sure to be severely criticised in many quarters for refusing voluntarily to reduce their rates without a corresponding reduction of wages. Their position is, however, entirely defensible, not only from the standpoint of the rights of their owners, but also from the standpoint of the welfare of the public. There are intimations given that unless, regardless of whether there is a further reduction of wages they soon make a voluntary reduction of rates, measures will be adapted to force them to reduce their rates. This means that the railways are invited to commit suicide, and told that if they do not do so they will be murdered. The presentation of such an alternative leaves the railways but one choice, and that is to refuse to commit suicide and find out whether, because of their refusal, they really will

be murdered. If they must be ruined, it is not the function of their managers to ruin them. Their managers should let others do it, and then let those who do it assume the responsibility for the consequences.

### A Singular Hallucination Regarding Railways

For years there has been prevalent in the country a very singular hallucination. This is that the railways should be subjected by the government and the public to a kind of treatment which no other large industry is given, and that then the managers of the railways, and not the government and the public, should find and apply the remedy for the results of this treatment. The public, through Congress, the Railroad Administration, the Railroad Labor Board and other bodies, has created most of the conditions which have made, and are still making, the operating costs of the railways so excessive. Having created these conditions, some government officers and a large part of the public come to the railways and say that, regardless of the consequences to the railways themselves and regardless of the effect which would be produced on the service they could render the public, they should reduce their rates relatively as much as the prices of commodities have declined, and make them even lower compared with pre-war standards than are the prices of many commodities even at the present time.

These demands are utterly unreasonable and unjust. It is the duty of the government and the public, which are chiefly responsible for the present high operating costs of the railways, to remove the causes of these high costs before they ask the railways to make general reductions of the rates which these high costs make necessary. When the government and the public have removed the conditions which necessitate the present rates, then, and only then, should general reductions of the rates be made.

This, in substance, is the position the railways have taken and they should not retreat from it. It may be said that if

they maintain it they will arouse a very hostile public sentiment. We hope this will not be the case. If, however, the railways cannot secure the support of the government and the public by taking and maintaining a position which is fair and defensible on the basis of actual facts and reason, then all hope for the solution of the railroad problem under the policy of private ownership and public regulation is futile.

Our present system of government regulation is now being subjected to the severest test to which it has ever been put. We shall soon know how it will stand the test. If it does not stand it, the owners of the railways undoubtedly will suffer severely, but, in the long run, the public will suffer most.

## The Railroad Bill as a Relief for Unemployment

THE VALUE of the series of constructive recommendations for the relief of unemployment and the recuperation of business generally which were made by the President's Conference on Unemployment will depend on the activity which is displayed by those to whom the recommendations appeal in putting them into practical effect. To comply with some of them involves the solution of problems almost as complicated as the broad subject of unemployment itself. Others are comparatively simple.

Two of the subjects which received the most attention among members of the conference pertain to the railroad situation, involving a general demand for a reduction of freight rates and nearly as general a demand for the passage of something like the railroad bill now pending in the Senate to authorize the War Finance Corporation to purchase railroad securities from the Railroad Administration in order to provide it with possibly \$500,000,000 with which to settle its indebtedness to the railroads for the period of federal control.

The rate question represents one of the most difficult of problems. The railroad officers themselves have recognized

## A LABOR MESSAGE FROM EUROPE

From Robert E. Thayer, European Editor of the Railway Age

London, October 18. (By Radio.)

American business men in Europe view with alarm the threatened railway strike as reported by press cables. It seems inconceivable that American labor is so utterly ignorant of the world's economic conditions as to even think of fighting the present wage reduction to say nothing of striking. Can it be that labor reads the world's news and cannot see the handwriting on the wall?

Does labor not realize the great life and death struggle for economic existence going on all over the world? It is a bitter struggle and not without famine and death. The nation that is the quickest to adjust itself to existing conditions is the nation to win. The nation's success is the workman's success and today the difference between success and failure is food and famine. Has labor not profited by the experience of others?

Did labor ever hear of the English coal strike which not only failed but resulted in untold unemployment and was all but a death blow to Britain's trade? English labor learned a bitter lesson and the railwaymen are judiciously accepting their wage reductions.

Have our men at home grown to believe themselves so omnipotent that they still can demand cream—which is but to fatten them for the slaughter? Let them watch their step! They are no longer citizens of Pennsylvania, Illinois or California; they are citizens of the world. Their problems are no longer home problems, but world problems.

They are not bucking the railways; they are bucking the world, the economic condition of which they seem to know but little about.

the necessity for action and are working to make it possible, and the President and the Interstate Commerce Commission are also working on it. The passage of the so-called railroad "funding" bill, while the subject is surrounded with an unusual amount of misunderstanding, misinformation and misrepresentation, represents a comparatively easy problem, although the opposition to it has been sufficient to result in much delay in its consideration.

Its importance as a means of relieving unemployment is emphasized by the fact that it was advocated in one form or another in the general program of recommendations adopted by the conference itself and in the reports of the committees on transportation, manufactures and mining, as well as in the advance suggestions made by the Economic Advisory Committee. The conference itself did not specifically recommend the passage of the Senate bill, but in accordance with its policy of adopting only general principles on which there was complete agreement it urged "settlement of the financial relationships between the government and the railways having in mind the immediate necessity for increased maintenance and betterments, making effective increased railway employment and stimulation of general employment, in order that the railways may be prepared for enlarged business when it comes." The Senate bill proposes the only plan for a settlement of the financial relationships between the government and the railways which is now actually under consideration.

A majority of the committee on manufactures recommended the "prompt passage of the measure funding the obligation of the railroads," while the committee on mining, without referring to the bill, went to the heart of the question by recommending that the conference "memorialize Congress to the effect that the railroads be paid all monies now owing them by the federal government."

The only objection to the bill that was in any way expressed at the conference was that of the labor members that it now contains no provision to insure that the money to be received by the roads will be actually expended in directions that will relieve unemployment among railroad men. The transportation committee recognized this point in recommending the immediate passage of "a bill such as Senate Bill 2337 as a very obvious and direct means for the reduction of unemployment in railroad service," by suggesting that it would not be inconsistent to make such funding conditional, in proper cases, upon the expenditure of the funds in such channels as will increase employment.

"Such a condition had also been suggested by the Economic Advisory Committee, but it was not sufficient for W. S. Carter, president of the firemen's brotherhood—which has just shown its desire to relieve unemployment by taking a strike vote—nor for the other labor members. Mr. Carter not only insisted that practically the entire sum be devoted to "the purchase of labor and material for maintenance," (if Mr. Gompers should object to the language used as treating labor as a commodity, we must remind him that the quotation is from Mr. Carter), but that the maintenance of equipment be performed in railroad shops. He apparently was not concerned with the unemployment problem in other shops.

The bill has been strongly advocated not only by the President but by Secretary Hoover, Managing Director Meyer of the War Finance Corporation, and Director General Davis, on the specific ground that it would result in the employment of thousands of men, not only on the railroads, but in the industries from which the roads buy. Yet some of the strongest opposition to the plan, which has helped to delay it since it was urged upon Congress by the President nearly four months ago, has come from the side of labor, and the misinformation that has been circulated by their publications on the subject has been so flagrant that it is difficult to see any purpose behind it other than a determination to do everything possible to embarrass the railroads in a hope that in

some way the Plumb plan or some form of government ownership may result.

Mr. Carter's argument, presented to the conference in support of his amendment to the transportation report, while containing some undeniable facts, on the whole represents one of the worst examples of perverted logic and garbled facts that has ever come to our attention. One of his principal arguments was that the money involved covers only additions and betterments chargeable to capital account and that the roads, therefore, will not use it for current expenditures.

If Mr. Carter had ever read S. 2337 instead of getting his information from Mr. Plumb's paper which persists in referring to a \$500,000,000 gift to the railroads, he would know that all of the money that it covers would go first to the Railroad Administration and that while the Railroad Administration would then take the railroads' ten-year notes for their indebtedness to it on capital account instead of demanding cash, the money which the Railroad Administration would turn over to the roads in settlement would be largely that which under their contracts was payable quarterly during 1918 and 1919, plus some allowance for the money which should have been spent for maintenance during those years and other items, including in some instances cash taken over by Mr. McAdoo in 1918. Therefore it represents current funds instead of capital and would give the roads the money for current purposes instead of requiring them to use needed current funds for permanent capital purposes.

It is undoubtedly true that some roads have used and others might use money received from the Railroad Administration to pay deferred dividends. That is one of the purposes for which the roads were allowed a guaranty. But in most instances the most pressing need of the railroads is for cash with which to pay some \$250,000,000 to \$300,000,000 of unpaid bills, for coal and other supplies, and the payment of which would give them new credit or release other cash for the purchase of more coal and supplies and more labor.

It is true, as Mr. Carter says, and as the transportation committee says in its report, that the payment of the money owed to the railroads by the government will not result directly in increased work for the classes of employees whose number depends on the volume of business being done by the railroads, such as trainmen. Possibly the only effect on this kind of employment would be the indirect stimulus to business generally resulting from increased expenditures by the railroads. However, as the committee pointed out, there is also a very large amount of deferred maintenance work which "is actually there and waiting to be done," some of which ought to have been done long ago and would have been done if the roads had had the money, and some of which, as in the case of coal car repairs, is so urgent that any further delay in it may be the cause of serious difficulty this winter. Mr. Plumb is already boasting in his paper that the railroads will not have sufficient cars in repair to haul enough coal this winter to keep the people from freezing, although he gleefully arrives at this conclusion by figuring on the basis of last year's demand for coal.

Without an understanding of some of the difficulties which the unemployment conference faced in its efforts to avoid an out-and-out break between capital and labor, it might be hard to see why the settlement between the railroads and the government should have been included among the permanent measures suggested instead of in the emergency program. The payment to the railroads of any part of \$500,000,000 in cash would doubtless be useful to them at any time in the near future, but for the purpose of relieving unemployment every day of delay detracts from the value of the plan.

The bill was originally proposed as a measure to assist the railroads in putting their equipment in shape for the crop-moving season. By staving off most of the demands for reductions in rates the roads were able to fix up enough cars to handle an unprecedented grain crop without a car shortage,

and recently, as traffic has been increasing, they have been able to provide funds with which to make some reduction in the number of bad-order coal cars. If business continues to improve rapidly enough to relieve the unemployment problem the railroads will be blamed because they have not kept their cars in shape to handle the business and the lack of funds which the bill would provide will be the responsible cause. If business continues to be so dull that the car repairs and other work are not needed until next year the importance of enabling the roads to pay to have the work begun now instead of postponing it longer will have been increased.

## Freight Traffic Increasing

A REMARKABLE increase in the volume of railroad freight traffic during recent weeks is shown by the weekly car loading reports issued by the Car Service Division of the American Railway Association. A gradual increase during the summer and fall months is of course seasonal and is of no particular significance, but the fact that the loading for the week ending October 1—a total of 901,078 cars, as compared with 992,283 in the corresponding week of 1920 and 957,596 in 1919—was 90.8 per cent of the loading during the peak week of the record year 1920 is highly gratifying when it is recalled that during the first six months of 1921 freight traffic was 23 per cent less than it was in the first half of 1920. The peak week of 1920 was that ending October 23, when the total car loading was 1,010,961 cars. Moreover, the loading during the week of October 1 was 90.5 per cent of the total for the peak week of 1919, that ending September 25, and it was a still greater percentage of the loading during the week of 1920 corresponding to that of October 1, 1921.

The percentage of difference between this year and last might be slightly larger if measured in tons instead of in cars, because the average load per car this year has been less than it was last year, but the tonnage statistics will not be available for some time and when it is considered that a large percentage of the traffic recently has been grain, which loads heavily, the difference can hardly be very great.

The movement of grain and grain products has been especially remarkable during the past two or three months. For the week of October 1 it was 130.8 per cent of that during the peak week of 1920 and 126.4 per cent of that for the peak week of 1919. It is said that the farmers in August and September marketed an unusual percentage of the year's crops and that they have been letting go of their grain much earlier than usual in order to realize some cash as quickly as possible—incidentally, it is pointed out, one of the reasons why the prices they are receiving are so low as they are—but the increases in the total car loading are not attributable solely to the grain movement. Of special significance is the fact that the loading of l.c.l. merchandise and miscellaneous freight, which includes the manufactured products, for the week was 551,656 cars, which exceeds the loading of these classes of freight for the peak weeks of either the years 1920 or 1919.

The coke and ore loading figures have been especially low as compared with previous years, but the coal loading, which has been low all year, has recently begun to pick up and for the week of October 1 was 84.8 per cent of that for the week of 1920 referred to and 81.4 per cent of that for 1919. The grain traffic is already falling off as compared with earlier weeks, but as the coal is coming to take its place it is reasonable to expect that the total car loading figures may reach still higher figures, although there was a reduction during the week of October 8 to 895,740. The number of serviceable surplus freight cars continues to shrink rapidly and for the week of October 1 was only 172,420, while for the following week it was 142,970.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### In Defence of Railway Executives

"SOMEWHERE ON THE JOB."

TO THE EDITOR:

In fairness to a great majority of our railroad executives I think some answer should be made to the article in your issue of September 24 by one of "The Official Goats." While it is true that the position of a secretary often requires long and uncertain hours, and the work is of an exacting nature, it has been my experience as a secretary to various railroad officials for the past 12 years that they are as fine a set of men as any other employers. While some officials become impatient at times, and often with good reason, I have never found one that was not agreeable if he had a man who tried to anticipate his wants and was really on the job.

The official for whom I work is not only reasonable at all times, but really goes beyond what a man of his position should in order to make my work agreeable, and I have many pleasant recollections of the kindness he has shown in my work with him. With his broad knowledge of railroading and many other subjects, his courteous manner, and with the opportunity offered to get a practical education in the railroad field, I consider it a privilege to work for him, and I feel that, generally speaking, my experience is not much different from a host of other men.

A SECRETARY.

### A Locomotive Engineer On the Wage Question

CHICAGO.

TO THE EDITOR:

Pages in your publication seem to be overburdened recently with propaganda favoring most everything but death for railway employees and I am wondering if you have room for the opinion of a locomotive engineer. The *Railway Age* appears each week at nearly all R.R.Y.M.C.A.'s, and usually after a man in train or engine service reads it, he throws it across the room and starts a flow of cuss-words that would do credit to any deep-sea captain. However, I'll speak for myself only and tell you how I feel about the present situation.

Right now we have the spectacle of a group of employers and employees each calling the other a lot of robbers, thieves and crooks. Could anything possibly do more to destroy the teamwork and co-operation which is so necessary to success in any operation? The president of the road I work for recently appeared before a gathering of business men to make the stereotyped plea for their support in cutting our pay. In effect, it was as though he said to me, "I'm compelled to pay that bird a whole lot more than he is worth, and if I could I would cut his pay at once." And he would not hesitate a moment to do it either, if it was not for the protection of the much maligned brotherhoods.

The division I am on is slightly under 100 miles in length. At present, I am holding a regular "pool job" and working every day. Our tonnage is 5,300—average train from 75 to 95 loads. I cover the division on an average in seven hours—have not made an hour of overtime in 17 days. For hauling

this train I get \$7.20. I am sitting on \$60,000 worth of machinery and pulling the value of more than that. If I stay on the alert and everything goes all right I deliver the train O. K. If I have a little hard luck, or overlook a bet, I've lost a job that it took me 18 years to get. Considering the responsibility, am I overpaid? I—certainly am not.

This railroad has shown a nice report of net earnings the past few months and the stock cry that it was done at the expense of maintenance cannot be made, for I can never remember a time when they had on as many section men putting in new ties or relaying steel. Also, the locomotive shop is going at a good rate. One might say, given a heavy tonnage to move, they could make all kinds of money, but there is the rub. They want to reduce our pay before heavy tonnage movement commences again, for they know they cannot get us over the road then without heaps of overtime. Last fall and winter I made 14 to 16 hours each trip and was heartily sick of such hours and hope I will never have to repeat them. We have heard a heap about the inefficiency of labor, but darn little about the inefficiency of management until the organizations mentioned it, for our American managers, both railroad and industrial, are a great little tribe of "buck-passers." I have always, as long as I have been rail-roading, had an obsession to "get over the road"—to complete my trip in the least possible time—but I could not make any headway last fall. If called for a certain time I would leave the dock on time with the engine and upon arrival at the yard find the train not yet made up. Was my inefficiency to blame for that? After a wait of anywhere from a half hour to four hours, I would finally get out of town. Then I would do everything possible, use every trick of the trade I know, take chances, "n everything," but before long I would drive up behind some local train and there I would lay and lay and lay, repeating this several times before I got in.

I have gone over the division times without number when we had absolutely no work to do, "not a pin to pull," not overloaded, engine in good shape and steaming well, but still we had to be relieved for the 16-hour law before we got in, simply because we were blockaded all the way. And there were hundreds of times when the poorest brakeman on the road could have cleared up the situation better and have gotten trains moving better than the dispatchers did. But of course, I was pulling the train, and as it was 16 hours getting over the division, thus having a heavy penalty cost in overtime, my "inefficiency" was to blame.

I could cite cases of this kind until I was blue in the face, but what is the use. I have no great kick to make over the recent cut we were given by the Labor Board, and have always been a quiet, reasoning, conservative man, but another cut puts me on the warpath, and I guess the present hysterical propaganda of chambers of commerce, railroad presidents and bankers will bring it, so I may as well be putting in my spare time getting the war paint ready. I never used to put much stock in the socialistic tales of how capital was organized to beat the workingman, but they appear to be mighty finely organized in this desire to reduce my pay; or at least they have temporarily buried the hatchet, believing they must all hang together or the terrible brotherhoods will hang them singly.

So what is the use of me trying to be a good loyal workman? My superior officers go around telling the country that I am inefficient, overpaid and generally a menace to the nation. Have they any real right to expect loyalty and co-operation from me when they give me that kind of a public reputation? There is one old saying: "having the name, I may as well have the game." This continual agitation against me simply because I know that I am worth all that I am being paid and decline to have my wages cut, is getting me and thousands of others to where we are disgusted with our bosses. It is darn poor business to go around shouting that your employees are no good, for after a while they will be-

lieve it themselves, and those that are some good will join the sabotage gang. And, oh boy, once a bunch of railroad men start sabotage, they can "gyp" a railroad "more ways than a farmer can come to town" and never get caught at it.

Chickens come home to roost and railway companies are now sowing something which is going to be hard to reap.

LOCOMOTIVE ENGINEER.

## Are the Railways Most Guilty of All?

TO THE EDITOR:

INDIANAPOLIS.

The editorial in your issue of October 1 entitled "The Coal Situation" was intensely interesting to me. We do not know whether it was intended to be facetious with a view to stirring up railway officials to correct their own deficiencies or not. The pitiful picture you have painted as to the shortcomings of the poor public in general certainly arouses the sympathy of the most hard-hearted.

We agree perfectly that the public should store a portion of its winter's coal in the summer for reasons innumerable. All consumers, large and small, should get ready for winter in order to relieve the strain on the mines and the railroads, principally the railroads.

If this is true of the general public, how much more is it true of the railroads themselves as coal consumers. Here we have the spectacle of an industry limited in capacity in times of stress; first by the capacity of the carriers. This same limiting factor happens to be far and away the largest consumer of coal. The railway's entire success in handling and transporting the coal supply of the United States depends upon spreading the shipments more or less equally over the entire year—in other words storing in summer for use in winter. Do you not think the very first and elementary rule of consistency would demand that they themselves set a good example to the smaller consumers by storing their own coal?

They will immediately alibi by saying they have or had no money to store coal. That need not worry them. They were not paying for current supplies for months after it was due, so why worry about a large overdue account for storage coal?

We think you will find the householders, the public utility plants and many manufacturing plants, if not all of them, have been infinitely more forehanded in preparing for winter than the railroads themselves. Many large systems of railroads have no storage coal whatever, in fact, have not even contracted for their coal for the winter, but are buying from day to day at the lowest price they can possibly extract from the urgent necessities of the operator.

While the "coal operators, the coal dealers and the dear public all join in one wild howl when the railways cannot supply cars in which to load all the coal" this winter the railway executives themselves "will join in one wild howl" to the Interstate Commerce Commission asking for their pet hobby "the assigned car" and painting the most doleful pictures of the terrible plight of the railways due to the greedy operators and the terrible strain on the railway machine brought about by the failure of the dear public to buy its coal in the summer time.

"People in glass houses should not throw stones" and there is some place else a saying to the effect that before starting out to clean up the neighborhood one's own back yard should be clean.

Inasmuch as the railways are the biggest consumers of coal and the worst offenders of all in delayed purchases one cannot find very much room to sympathize with them when they finally reap the whirlwind of their own short-sightedness. "It's a great little world and many of the people in it are so fair and consistent—not."

H. A. GLOVER,

Sales Manager, W. H. Howe Coal Company.



A View of One of the Three Lift Bridges

## New Haven Freight Transfer Facilities at Cedar Hill

Tractors and Trailers Constitute the Basis of Operation in This Modern Station

**T**WO IMPORTANT transfer stations, having a combined capacity for handling approximately 25,000 tons of merchandise freight monthly, have been closed permanently by the New York, New Haven & Hartford, and freight houses at eight originating points on its western lines have been relieved, in a large degree, of the necessity of carrying on transfer work as a result of opening for business new freight transfer facilities at Cedar Hill, New Haven, Conn.

In addition to the important economies effected in the entire freight transfer business on the west end of the

of merchandise freight a month. Because of the diversity of destinations, and the lack of sufficient tonnage to warrant direct cars to destination, a large amount of freight handled there received a secondary transfer, east. The gang and hand truck system was also followed at Maybrook. Less freight was received at that point than at Westchester and it was not practical to make up the direct-to-destination cars which good service demands.

By centralizing the cars received through both gateways at Cedar Hill, a direct-to-destination classification was made possible for approximately 75 per cent of the freight handled



Layout of Cedar Hill Transfer

New Haven, through the concentration of eastbound merchandise cars at one point, made possible by the new facilities at Cedar Hill, the new transfer is of particular interest because of the modern practices followed in its operation.

### Concentration of Cars Made Possible

Before the opening of the Cedar Hill transfer eastbound merchandise cars received by the New Haven via the Harlem river gateway were handled at the Westchester, N. Y., transfer as far as the limited facilities at that point would permit. Cars received in excess of that plant's capacity were sent further east, either to the Bridgeport, Conn., or the New Haven transfer. Similarly eastbound cars received via the Maybrook, N. Y., gateway were handled at Maybrook transfer.

Westchester transfer was operated under the gang and hand truck system and handled from 15,000 to 20,000 tons

there, thus insuring better service from the standpoint of time, and reducing the number of cars required for the service as well as the loss and damage resulting from a transfer of freight en route.

In addition to the Westchester and Maybrook plants, the road operated transfer plants at Bridgeport, Conn., and New Haven. These transfers accommodated approximately 100 cars each. Smaller transfers were operated at Danbury, Waterbury, Hartford and Putman, Conn.; Springfield, Mass., and Poughkeepsie, N. Y. Because of the small tonnage handled at these points only a limited number of classifications could be made and, in many instances, a second transfer was required before freight could be delivered at destination or to a connecting line.

All of the transfers mentioned, except Westchester and Maybrook, were in cities originating a considerable local tonnage and the local and the transfer plants were con-

bined. As a result, delays to either the local freight or freight in transit were frequent.

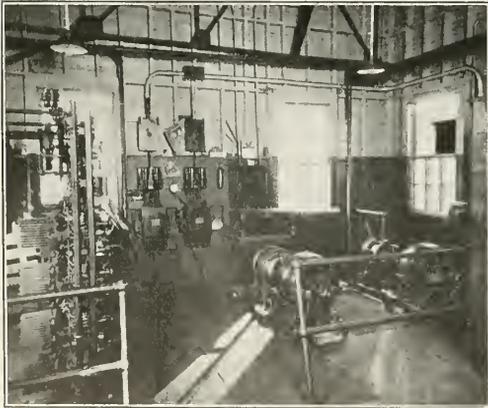
Cedar Hill transfer was opened in July, 1920. One hundred and thirty-one distinct classifications are made daily and as many as 305 cars have been worked in one day, a normal daily performance being between 260 and 285 cars. The ability of the transfer to work this number of cars, with tractors and trailers, has resulted in the closing of the transfers at Westchester and Maybrook permanently. Furthermore, approximately 80 per cent of the transfers at Bridgeport and Hartford and 50 per cent of the transfers at Waterbury, Danbury and Poughkeepsie, have been eliminated through the concentration of the transfer business on the west end of the line. In addition, the Cedar Hill plant handles business diverted from all of the other transfers mentioned.

### Platforms and Supporting Tracks

Cedar Hill transfer and its supporting tracks are located approximately in the center of the Cedar Hill yard, between the humps serving the westbound and the north and eastbound classification yards, in a location convenient for the receipt of cars from the various New Haven lines converging at Cedar Hill and for the delivery of northbound cars to the various points from which trains depart. The transfer facilities are a part of the Cedar Hill yard proper which was described in the *Railway Age*, May 10, 1918, page 1166.

The layout includes 11 tracks and 3 platforms. Beginning at the east, platform No. 1, which is 20 ft. wide, separates the four outside tracks, which are numbered consecutively, A, B, 1 and 2, from tracks 3 and 4. Platform No. 2 is also 20 ft. wide and is located between tracks 3 and 4 and tracks 5, 6 and 7. Platform No. 3 is 30 ft. wide and separates tracks 8 and 9 from tracks 5, 6 and 7.

Each platform is 1,200 ft. long. Platform No. 1 is of wood construction and is covered with an umbrella shed



Motor-Generator Sets, Compensators and Control Switchboard for Charging Tractor Batteries

roof with the posts located in the center of the platform. Platform No. 2 is also of wood construction and is covered with a hip roof with the posts placed on the edges of the platform. Platform No. 3 is of concrete and steel construction.

Three lift bridges, 20 ft. wide, are provided between the platforms; the first bridge is located 200 ft. from the north end of the platform, the second 600 ft. from the north end and the third 200 ft. from the south end. The bridges serve as the main line route between platforms for loaded trailers and trucks while the door-to-door method of spotting cars

provides for disposing of trailers after they are made empty without interference with oncoming loads.

An extension of 40 ft., on the platform level, at the north end of platform No. 3 provides space for a charging station and a repair shop for the tractors as well as for toilets and washrooms for the laborers. Individual lockers, benches and tables for the laborers are in the basement of the extension. This space is also used for a rest-room during lunch hour.

With the exception of the outside tracks 8 and 9, where space is available for 29 cars, each track accommodates 27



A General View of the Transfer

cars. Taken together, the supporting tracks provide capacity for the total of 300 cars which constitutes the daily set-up.

### The Car Set-Up

Empty cars are placed on tracks 3, 4, 5 and 6 and all other tracks are used for loaded cars. By referring to the plan showing the transfer layout it will be seen that, by this arrangement, the center platform becomes what might be termed a loading platform with two tracks for empty cars on each side. This permits the freight to be trucked from the loaded cars over the lift bridges and the center platform to the proper destination car and allows a quick return of the empty trailers to the working platforms Nos. 1 and 2; the trailers, after the unloading is done, are pushed out of the cars onto the outside platforms by the stevedores.

Six of the tracks, 3, 4, 5, 6, 7 and 8 as well as 17 cars on track 2, are devoted to standard classification daily. The set-up on these tracks is arranged in station and train order so far as the length of the tracks permit. As previously mentioned, tracks 2, 7 and 8 are set-up daily with loaded merchandise cars. Therefore it is evident that 17 cars on track 2 and all the cars on tracks 7 and 8 must be made empty and reloaded daily in following the standard classification. In addition to the cars of the standard set-up, direct-to-destination cars and overflow cars are loaded on the working tracks A, B, 1 and 9 as conditions require; or, in other words, in taking care, each day, of merchandise from the cars which are released.

The standard classification provides for merchandise cars to be made daily for 131 different points. In several instances, however, more than one car for a destination is required. These are, of course, loaded in series on the same track, preserving the station and train order so that at the close of each day's work they can be moved forward without delay. For instance, the daily tonnage for Boston and for Providence is sufficient to warrant a regular assignment of 10 cars for each of these cities. More than 131 cars are, therefore, required daily to fulfill the car requirements of the standard classification. Actually, the number of cars required for this purpose is usually in excess of 200 cars.

Including the overflow cars and the direct-to-destination cars, the total number of merchandise cars forwarded daily is approximately 225.

### Rapid Handling and Low Costs

The platform equipment used at the transfer includes 13 Elwell-Parker electric storage battery tractors and one Mercury tractor; 485 four-wheel trailers of various types, a majority of which are equipped with Hyatt roller bearings or ball bearings; 132 two-wheel hand trucks and 6 dolly or machinery trucks. With the exception of short haul shipments, liquids in barrels and single package shipments too



A General View of the 30-ft. Concrete Platform

heavy to be loaded economically on flat trucks, all transferring is done with tractors and trailers. To secure the full value of the tractors, three-wheel "tip-up" trailer trucks have been ordered. When they are received the heavy packages and liquids in barrels will also be moved by the tractors and trailers.

During the month of August, 1921, based on an 8-hr. day, the transfer was operated with 306 employees per day as follows: 1 general foreman; 3 foremen; 10 office men; 3 inspectors; 43 tallymen; 93 loaders and stevedores; 146 truckmen; 1 cooper; 1 car cleaner; 1 car sealer; 1 watchman; 2 battery chargers, and 1 messenger; a total of 306 men. Twenty-eight of the truckmen work on the tractors, either as operators or helpers.

Including all money paid to all the employees listed, and excluding the "no credit" tonnage which is not considered in arriving at the cost of handling, the average cost per ton of freight handled during the month was \$0.669.

With this force a total of 5,745 merchandise cars were forwarded out of the transfer during August, a daily average of 221 cars. During the same month 6,408 loaded cars were received and unloaded, an average of 246 cars per day. The average daily tonnage handled was 1,849 tons; in addition, 1,334 tons of "no credit" tonnage moved out of the terminal in the original cars during the month.

### Operation and Organization

The merchandise cars destined for the transfer arrive at both the east and westbound hump yards continuously throughout a 24-hr. period. On arrival, the cars are switched to classification tracks where they are arranged according to the route to be followed when forwarded from the transfer, and are so placed on the transfer tracks.

The "block" numbering system for cars at the house is simple and easily understood by the men. The last figure in the number indicates the number of the track and the preceding figures the relative position of the cars on a track. For example, the northerly car on track No. 1 receives the

number 11; the corresponding car on track No. 2 receives the number 12. The second car from the north end of track No. 1 receives the block number 21 and so on up to block No. 201 indicating car 26 on track 1, numbered from the north. Block numbers are posted conspicuously on each platform.

The house organization is headed by a general foreman who reports to the agent and consists of a day and night force. The night force is limited to office help only.

Messenger service is maintained between the two hump offices and the transfer office for carrying waybill pouches. A book record of each pouch, arranged according to the last two figures of the car numbers, is kept. It includes the date of receipt of bills and the point of origin. The record is completed later with the addition of the location or block number of the cars as placed at the platform and the date of handling. This is done so that tracing work, when necessary, may be expedited.

One of the illustrations shows the suspense rack in which waybills are placed after the stamp of the transfer, showing the date of receipt, is added. The boxes in the rack are numbered to correspond with the book record in order that the pulling of pouches, as cars are received on the transfer tracks, may be expedited.

The daily layout sheet of the transfer is made up by the night force as the tracks are filled. The block numbers showing the location of cars to which the merchandise is to be transferred is noted on the waybills, by the route clerks. This number serves as a guide to the tallymen and check clerks when the actual handling of the merchandise is begun. These men are also expected to check the waybills and detect any errors made by the route clerks.

Waybill pouches are assigned to tallymen by the foreman in charge of the platform where the cars covered by the bills are located. The tallymen are required to check the original waybill as the freight is handled and to note, on the original, any exceptions as to condition or shortage. The tallymen



Tractors with Trains and One Running Light

also make a combined memorandum astray waybill and check-over slip for any freight in the car not covered by a revenue waybill.

With each direct-to-car truck or trailer load, the tallymen furnish a veri-check showing the block number to which the truck is to be run, the destination of the load, and the number of packages it contains, and the number by which the tallyman is known. In addition thereto, on trailer loads, the tallyman places with blue chalk, in a conspicuous spot on the load, the block number to which the trailer is destined.

The contents of cars are loaded on trailer trucks, the trailers being held until the entire lading of a car has been handled. When the unloading of a car has been completed the

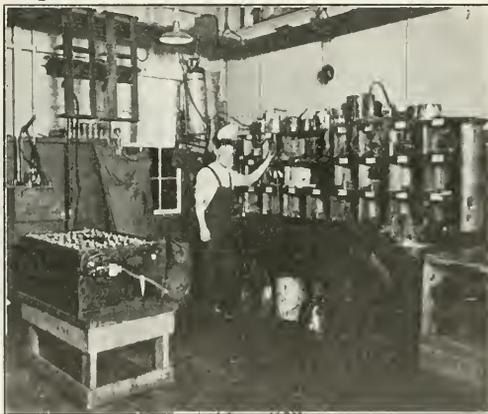
trailers are made up into trains of six to eight placed in location order—with the longest haul next to the tractor—and hauled to destination. Trailers are dropped from the train on the platform opposite the proper car and are taken into the car and unloaded by stevedores. The stevedores then push the empty trailers out of the cars, to the platforms, where they are picked up by the tractors. The stevedores are assigned to the same car each day and become familiar with the destinations of freight that belongs in their cars. They are required to examine marking as to destination and report for correction any freight trucked to them in error.

As an additional check on destination three qualified tallymen act as inspectors. These men make the rounds of the cars and inspect veri-checks to determine if the freight is properly loaded. This can be done readily from the destination marking appearing on the veri-check.

Explosives, inflammables and acid shipments are handled specially, one man being assigned to this work. He is held responsible for the proper placarding of the cars.

As the cars are worked pouches, containing the waybills, are picked up by messengers and returned to the office where the tonnage by gangs is computed. At the end of the day the tonnage is totaled, the totals showing the tonnage actually transferred, tonnage traveling without revenue billing, tonnage left in cars, and the amount checking short according to waybills. The latter two items are called "no-credit" tonnage and are not considered in arriving at the cost of handling.

The bills then pass on to exception clerks and any exceptions made by the tallymen are recorded. The bills are then racked, by the pouching clerks, and at the close of business are examined by the rack clerks before being pouched. Each



All Truck Repair Facilities Are Located in One Corner of the Charging Room

rack clerk is required to note the block numbers of cars he verifies thus making it easy to place the responsibility for improper pouching.

At the close of business switching requests are made on a standard form showing the track number, date, the initials and numbers of the cars as they stand on the tracks, the destinations, route, etc. Platform foremen are required to check the switching requests against their records and the rack men are required to check the pouches against the copy of the switching request which is retained in the office. The forms, after these checks are made, are passed on to the yard department.

The results of the tractor and trailer system of operation have been gratifying. Much more tonnage per man is han-

dled at Cedar Hill than at the transfers operated under the gang and hand-truck system which it has largely superseded. The increase in tonnage handled per man has resulted in a decrease in the cost of handling.

Comparative figures between the operation of Westchester transfer—a two-wheel hand-power truck-operated transfer entirely—for the last month of its operation, June, 1920, and Cedar Hill for the month of May, 1921, disclose the fact that 7,542 tons per man per 8-hr. day were moved at Cedar Hill as compared with 4,454 tons at Westchester, an increase of 69 per cent.

### Auxiliary Facilities

Tractor maintenance, including the charging of the tractor batteries, is a comparatively simple matter, requiring the



The Waybill Rack

services of only two men and one room about 30 ft. wide and 20 ft. long at one end of the 30-foot platform. About one-third of this room is occupied by two small motor-generator sets and the necessary switching apparatus, and the remainder is used for tractors and repair facilities.

One of the maintainers goes on duty at four o'clock in the afternoon, just after work on the platforms has stopped. Eight of the tractors are run into the charging and repair room and placed on charge. Each truck is equipped with a battery consisting of 30 Edison cells and they are charged at the 8-hr. rate which insures their being fully charged before midnight. Charging is discontinued when the no-load voltage reading is 52 volts. The second maintainer relieves the first at midnight and has the remaining six tractor batteries charged before work is again started in the morning.

Two motor-generator sets supply all of the charging current. The two are identical and each set consists of a 75-volt, 240-ampere direct current generator driven by a three-phase, 440-volt, 30-hp. induction motor running at 1,800 r.p.m. There are two charging panels in the switchboard and each one is equipped with a circuit breaker having an overload trip and no-voltage release, a grid charging resistance, an ammeter switch and a voltmeter button. With this equipment the operator can control the rate of charge on each tractor separately and can determine the current and load or no-load voltage of any battery with one ammeter and one voltmeter. Occasionally some of the batteries are given a boosting charge at noon, but this is not often necessary.

The transfer is located on the New Haven division, E. E. Regan, superintendent, and is operated under the direct charge of J. B. O'Brien, agent, and under the general supervision of George Mark, assistant to the general manager.

# Labor Leaders Call Strike for October 30

While Unions and Roads Prepare for Finish Fight, President Considers Plans to Avert Walkout

THE past week has brought many unexpected and critical developments in the railroad labor problem. Interest has been centered in Chicago where the leaders of the railroad labor organizations were gathered to formulate plans for future policies in light of the developments which have already been described in previous issues of the *Railway Age* and where executives of all of the larger roads were gathered to discuss the present problem of wages and rates. As a result of these two meetings plans for a nation-wide strike of railroad employees to begin at 6 a. m. on October 30 have been definitely announced by the employees and a definitely announced proposal to reduce rates commensurate with whatever reductions in wages will be allowed by the Railroad Labor Board has been made by the carriers.

For some time the officers and general chairmen of the various train service brotherhoods and the Railway Employees' Department of the American Federation of Labor have been in Chicago counting the ballots of their respective membership on acceptance or rejection of the recent wage cut of approximately 12 per cent and discussing strike measures and future policies. An overwhelming majority of the men voted in favor of a strike according to the announcements of responsible officers, but at the same time it has been freely admitted by many of the labor leaders that the heavy strike vote was returned by the men merely to place more power in the hands of their officers to fight any further wage reductions. In other words, the vote was not in protest against those wage cuts which have already been made but against those which might be requested as part of the carriers' efforts to bring operating costs down to a point where rates could be reduced. It is evident now, however, that extensive plans for a general walkout were being arranged; plans to be utilized only in case of absolute necessity.

## Executives Propose Wage and Rate Reductions

This was the situation when the Association of Railway Executives met in Chicago on October 14. The action taken by the executives at this meeting is summarized in the following statement issued after the meeting by T. DeWitt Cuyler, chairman of the association.

At the meeting it was determined to seek to bring about a reduction in rates, and as a means to that end seek a reduction in present railway wages which have compelled maintenance of the present rates.

An application will be made immediately to the Railroad Labor Board for a reduction in wages of train service, employees sufficient to remove the remainder of the increase made by the Labor Board's decision of July 20, 1920, (which would involve a further reduction of approximately 10 per cent) and for a reduction in the wages of all other classes of railroad labor to the going rate for such labor in the several territories where the carriers operate.

## Proposed Reduction in Wages to Be

Followed by Reduction in Rates

The foregoing action is upon the understanding that concurrently with such reduction in wages, the benefit of the reduction thus obtained shall, with the concurrence of the Interstate Commerce Commission, be passed on to the public in the reduction of existing railroad rates, except insofar as such reductions shall have been made in the meantime.

The railroads have decided upon this course in view of their realization of the fact that the wheels of industrial activity have been slowed down to a point which brings depression and distress to the entire public and that something must be done to start them again in operation.

The situation which confronts the railroads is extremely

critical. The railroads in 1920 realized a net railway operating income of about \$62,000,000 upon a property investment of over \$19,000,000,000 and even this amount of \$62,000,000 included back mail pay for prior years received from the government of approximately \$64,000,000, thus showing when the operations of that year alone are considered an actual deficit before making any allowance for either interest or dividend.

The year ended in a serious depression in all branches of industry, and in marked reduction of the market demand for and the prices of basic commodities, resulting in a very serious falling off in the volume of traffic.

In this situation, a policy of the most rigid economy and of postponing and cutting to the bone the upkeep of the properties was adopted by the railroads.

This was at the price of neglecting and for the time deferring work which must hereafter and in the near future be done and paid for. This is illustrated by the fact that, as of September 15, 1921, over 16 per cent, or 374,431 in number of the freight cars of the carriers were in bad order and needing repairs, as against a normal of bad order cars of not more than 160,000 and is further illustrated by the deferred and inadequate maintenance of other equipment and of roadway and structures.

## Eight Months Earnings Only 2.6 Per Cent

Even under those conditions and with this large bill charged up against the future—which must soon be provided for and paid if the carriers are to perform successfully their transportation duties—the result of operations for the first eight months of this year, the latest available figures, has been at a rate of net railway operating income before providing for interest or dividends, amounting to only 2.6 per cent per annum, on the valuation of the carrier properties made by the Interstate Commerce Commission in the recent rate cast an amount not sufficient to pay the interest on their outstanding bonds.

It is manifest, from this showing, that the rate of return of 5½ or 6 per cent for the first two years after March 1, 1920, fixed by the Transportation Act as a minimum reasonable return upon railroad investment, has not been even approximated—much less reached; and that the present high rates accordingly are not due to any statutory guarantee of earnings, for there is no such guarantee.

In analyzing the expenses which have largely brought about this situation it becomes evident that by far the largest contributing cause is the labor cost.

## Labor Receives 60 Cents of Railroad Dollar

Today the railroads pay out to labor approximately 60 cents of the dollar they receive for transportation service, whereas in 1916, 40 cents of the dollar went to labor.

On the 1st day of January, 1917, when the government took charge of wages through the Adamson Act, the labor costs of the railroads had not exceeded the sum of about \$1,468,000,000 annually. In 1920, when governmental authority made the last increase, the labor costs of the railroads were about \$3,698,000,000 annually, or if continued throughout the year instead of for the eight months during which the wage increases were in effect, the labor cost, on an annual basis, would have been largely in excess of \$3,900,000,000—an increase since the government took charge of railroad wages in the Adamson Act of approximately \$2,450,000,000 annually. In the light of these figures it is manifest that the recent reduction of wages authorized by the Labor Board, estimated from 10 to 12 per cent, in no sense meets or solves the problem of labor costs and in no way makes it possible for the railroads to afford a reduction in their revenues.

## 4,000 to 5,000 Individual Rate Reductions in Year

Indeed, during the past year there have been between four and five thousand individual reductions in freight rates. On some railroads the reduction in rates have amounted to more than the reduction in wages so far made and on many other railroads the reduction in wages allowed no net return on operation, but merely provided against a further accumulation of a deficit.

The point is often made that agriculture and other industries are also suffering the same immediate difficulty as the railroads. Why, therefore, do not the railroads take their medicine like anybody else? The answer lies in several facts.

1. The railroads were not permitted as were other industries

to make charges during the years of prosperity making possible the accumulation of a surplus to tide them over the present extreme adversity. According to the reports of the I. C. C., the rate of return on property investment of the railroads of the United States for the past several years has been as follows:

	Per cent		Per cent
1912.....	4.84	1915 calendar year.....	6.16
1913.....	5.15	1917 calendar year.....	5.26
1914.....	4.17	1918.....	3.51
1915.....	4.20	1919.....	2.46
1916 fiscal year.....	5.90	1920.....	0.32

## Railroads Not Allowed to Accumulate

### Surplus in Boom Years

It will thus be noted that during the years when other industries were making very large profits, when the prices of farm products and the wages of labor were soaring to unheard of heights, the earnings upon railroad investments of the United States were held with very narrow limits, and that they have during the past four years progressively declined.

2. The railroads are responsible to the public for providing adequate transportation. Their charges are limited by public authority and they are in very large respects (notably for labor) compelled to spend money on a basis fixed by public authority. The margin within which they are permitted to earn a return upon their investments, or to offer inducements to attract new capital for extensions and betterments is extremely limited. However much the railroads might desire, therefore, to reduce their charges in times of depression, it will be perceived that the limitations surrounding their actions do not permit them to give effect to broad and elastic policies which might very properly govern other minds of business not thus restricted.

It has been urged upon the railroads that a reduction in rates will stimulate traffic, and that increased traffic will protect the carriers from the loss incident to a reduction in rates. The railroad managements cannot disguise from themselves the fact that this suggestion is merely conjectural and that an adverse result of the experiment would be disastrous, not only to the railroads but to the public whose supreme need is adequate transportation. Consequently the railroad managements cannot feel justified in placing these instrumentalities so essential to the public welfare at the hazard of such an experiment based solely upon such a conjecture.

## Rates Disproportionate to Some Commodity Prices

It is evident, however, that existing transportation charges bear in many cases a disproportionate relationship to the prices at which some commodities can be sold in the market, and that existing labor and other costs of transportation impose upon industry and agriculture generally a burden greater than they should bear. This is especially true of agriculture which is suffering to a greater extent than any other industry in the reduced prices of its products, and for which some relief must be found to escape an entire readjustment and a serious relocation of agricultural production.

The railroad managements are keenly sensitive to and sympathetic with this distressing situation and desire to do everything to assist in relieving it that is compatible with their duty to furnish the transportation which the public must have.

At the moment, railroads in many cases are paying 40 cents an hour for unskilled labor when similar labor is working alongside the railroads and can easily be obtained by them at 20 cents an hour. The railroads of the country paid in 1920 a total of considerably over \$1,300,000,000 to unskilled labor alone. However desirable it may be to pay this or that schedule of wages it is obvious that it cannot be paid out of railroad earnings unless the industries which use the railroads are capable of meeting such charges.

## General Reduction of Rates

### Promised With Wage Reductions

The railroads, and through them the people generally, are also hampered in their efforts to economize by a schedule of working rules and conditions now in force as a heritage from the period of federal control and upheld by the Railroad Labor Board. These conditions are expensive, uneconomic and unnecessary from the point of view of railroad operation and extremely burdensome upon the public which pays the bill. This schedule of wages and working conditions prevents the railroads from dealing equitably with labor costs in accordance with rapidly changing conditions and the great variety of local considerations which ought to control wages in different parts of the country. The railroads are seeking to have those rules and working conditions abrogated.

The railroads will seek the reduction in wages now proposed by first requesting the sanction of the Railroad Labor Board. The railroads will proceed with all possible dispatch and as soon as the Railroad Labor Board shall have given its assent to the reduction of wages the general reduction of rates will be put into effect.

## Representatives of Brotherhoods and Carriers Confer

During the progress of the Association's meeting a delegation representing the train service organizations requested and was granted a conference with a committee representing the carriers and composed of W. W. Atterbury, vice-president of the Pennsylvania; J. E. Gorman, president of the Chicago, Rock Island & Pacific; Carl R. Gray, president of the Union Pacific; C. H. Markham, president of the Illinois Central, and Ralph Budd, president of the Great Northern.

The employees were represented by Warren S. Stone, chief of the Brotherhood of Locomotive Engineers; W. S. Carter, president of the Brotherhood of Locomotive Enginemen and Firemen; L. E. Sheppard, president of the Order of Railway Conductors; W. G. Lee, president of the Brotherhood of Railroad Trainmen, and T. C. Cashen, president of the Switchmen's Union of North America.

The union men asked the same assurances that were formally denied them in July by the railway executives—that the wage reduction of July 1 be cancelled, that no further wage decreases be asked, and that no effort be made to change time and one-half pay for overtime work.

The carriers' committee again denied these assurances requested and outlined, as representing their position at the present time, the resolutions which had just been adopted by the Association and which are outlined in Chairman Cuyler's statement.

## Train Service Organizations Announce Strike

Brotherhood leaders accepted this move on the part of the railroads as a direct challenge and immediately announced their plans for a general railroad strike to begin at 6 a. m. on October 30 and extend throughout the country by November 5. W. G. Lee, president of the Brotherhood of Railroad Trainmen, expressed the consensus of opinion of the labor leaders as expressed in interviews by saying, "We're going out on the greatest railroad strike the country has ever known; nothing in the world can now avert it."

## The Strike Call

The call for the strike of train service men said in part:

1. No man in road service involved in the strike will perform any service after hour set to strike, unless he has already begun a trip and has actually left the terminal. If the train has left the terminal, he will complete the trip and deliver the train at the end of run, or tieup point if tied up under the law, after which he will perform no further service until the close of the strike. Men in other than road service will leave the service at the appointed time.

So far as your legal right to strike is concerned, there is no difference between a mail train and freight train. You have identically the same right to refuse to perform service on a mail train as you have to refuse to perform service on a freight train.

2. All men on strike will keep away from the company's property, except such men as are designated certain duties to be performed by authority of the organizations.

3. Every man should understand that the laws of the organizations involved must be obeyed. Acts of violence of any nature will not be tolerated by the organizations.

4. The local representatives will arrange for a hall for meeting purposes at all terminals, using one of their own lodge rooms if available. Immediately after the strike becomes effective all men will assemble at the hall secured for the meeting purposes. When thus assembled, an organization will be perfected by the election of a chairman, vice chairman, and secretary.

No person will be permitted to be present in the meeting halls other than those who are on strike, except by permission of the assemblage.

5. The secretary will arrange a roll call (alphabetically), with each organization on a separate sheet. Roll will be called twice daily, morning and afternoon. The names of the non-members

will be kept separate on the roll from the names of those who are members of the organizations. All strikers will be required to answer the roll call and also to be in the halls, where halls are provided, during the day at all times, unless excused by committee action or by chairman of the meeting.

The secretary will also keep a record of the proceedings from day to day.

6. In the conduct of every strike there are numerous irresponsible persons, not members of the organizations, who take occasion to engage in acts of violence and disorderly conduct, and such actions are usually attributed to members of the organizations, and great care should be taken by every member of the organizations to avoid associating with such persons and such conduct should be discouraged so as not to cast reproach upon the cause.

7. Some railroad officials may endeavor to coerce or mislead the men by asserting that men at other points have not quit, or that they have returned to work. Such information should be discounted and all strikers should apply to their officers and committeemen for information, and be governed accordingly, and no member or nonunion man will return to work until the strike is officially declared off, when all will return at the same time, without prejudice and with all former rights.

8. The local chairmen of each organization on each division of railroad will jointly supervise the prosecution of the strike on the territory over which they have jurisdiction.

9. Local chairmen are expected to keep in close touch with the situation and will report daily, preferably by night telegram letter, to their representative general chairmen as to the condition of affairs.

**Roads Grouped for Four Successive Walkouts**

The arrangements for the strike provide for walkouts on successive days by groups of roads. The groups are four in number, the employees in the first group are to quit at 6 a. m. on October 30, and those in the other groups at intervals of 48 hours. The names of the roads in the four groups were made public at Cleveland Monday night by Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers.

The four groups are as follows:

GROUP 1.	GROUP 2.	GROUP 3.
Strike 6 a. m., Oct. 30. Kansas City Southern. Missouri Pacific. St. Louis Southwestern. International & Great Northern, Texas & Pacific. Southern Pacific System. San Diego & Arizona. Chicago & Northwestern. Chicago, Milwaukee & St. Paul (except Chicago, Terre Haute & Southeastern). Northern Pacific. Southern Railway. Seaboard Air Line. Virginian Railroad. Chicago Great Western. Chicago, Rock Island & Pacific.	Strike 6 a. m., Nov. 1. New York, New Haven & Hartford. Delaware & Hudson. Chicago & Eastern Illinois. St. Louis & San Francisco (entire system). Louisville & Nashville. Nickel Plate. Erie System. Atchison, Topeka & Santa Fe (entire system). Atlantic Coast Line. Louisville & Pittsburgh. Delaware, Lackawanna & Western. Lehigh Valley. Nashville, Chattanooga & St. Louis.	Strike 6 a. m., Nov. 3. Minneapolis & St. Louis. Burlington System. Chesapeake & Ohio. New York Central lines (East and West). Boston & Albany. Baltimore & Ohio. Western Pacific. Denver & Rio Grande. Chicago & Alton. Illinois Central. Yazoo & Mississippi Valley. Soo Line. Great Northern. Lake Erie & Western. Cleveland, Cincinnati, Chicago & St. Louis.

Group 4, on which the men will walk out at 6 a. m., Nov. 5, comprises all other railroads of the country, and includes specifically the entire Pennsylvania Railroad System, the Boston & Maine and its subsidiaries and the Rutland Railroad.

The wording of the circular covering railroads in Group 4 is as follows:

The membership on all other roads to which Decision No. 147 applied, and upon which railroads two or more of the organizations have received the necessary majority for a strike vote; the organizations which did not receive the necessary vote are not included herein.

Explanation was made that some organizations on lines included in Group 4 did not register a majority in favor of the strike, consequently members of those organizations voting against the strike are not included in the strike authorization. However, the organization chiefs expect that there will be practically a general walkout of those organizations when the other organizations which voted in favor of

the strike leave the service of those lines at the designated time.

**Break Appears in Ranks of Labor Organizations**

It was noticeable during the progress of these developments that representatives of the labor organizations other than the train service brotherhoods have had little to say. The reason for this was explained on October 17, when a prominent union officer charged that the leaders of the train service organizations had "double-crossed" the other railroad organizations. The break between the five train service brotherhoods and the other eleven organizations is based on the assertion that the brotherhood leaders have refused to enter into an agreement with the other organizations to carry on this strike as a concerted movement, the leaders of the brotherhoods maintaining that their strike, if called, would last no longer than necessary to gain the concessions the brotherhoods want from the railroads. This indicates the disintegration of the so-called "associated standard recognized railroad labor organizations," of which B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor, has been spokesman. It is recalled in this connection that only in crises have these two factions worked in entire harmony, and therefore the break is not unexpected or unusual.

"If we go on a strike, we haven't a chance to win," said the president of one of the eleven unions it is predicted will refuse to join the train service men in a recent interview. "I am going to spend this week driving the truth home to our men. Once they realize we have been 'double-crossed' there won't be any danger of dragging them into this stampede."

The union leader quoted recited events in the history of the association between the brotherhoods and other organizations.

"There never has been a real tie binding us," he said.

"The brotherhood leaders are relying upon the belief they have worked our men to such a pitch that we can't keep them from joining in the movement.

"We're going by your stations so fast it will sweep you off the platform," they told us in shop talk.

"Maybe they will—I don't believe they will. I believe the 320,000 train service men will find themselves all alone. If the other 1,680,000 men are told what the 'game' is they will stick to their jobs. Winter is just coming on; they haven't forgotten that.

"If there was a general strike, the transportation brotherhoods would be out on one issue and we on another. All they want is assurance that the working agreements they have had with the railroads shall remain in force one more year. They won't whimper about the 12 per cent wage reduction of July 1, and they will submit to the additional cut of 10 per cent the railway executives have said they are going to ask for.

"But, with the possible exception of the shop crafts, the

other unions would be holding against another pay cut. And they would be fighting alone. The shop crafts object to the working rules prescribed by the labor board. These cut their overtime pay and affect working conditions. But the shop crafts would not declare a strike on this, or any other issue, if they had not been led into it on false assurance of support."

This development however does not materially change the aspect of the approaching crisis for the leaders of the eleven organizations freely admit that they cannot influence their men to change their position in the short time remaining before October 30.

These charges were met with counter charges by the brotherhoods that the shop crafts were committed to a policy equally independent.

The shop crafts leaders have made it known that, while they will go out with the brotherhoods they are not pledged to stay out after their own grievances have been satisfactorily adjusted.

Leaders of the "Big Four" brotherhoods and of the switchmen's organization returned to Cleveland on October 16. Their arrival there was followed by reports of secession among the eleven associated unions, leaders of some of whom, it was said, were unwilling to order their men out under existing circumstances.

Whether the opposition of these leaders will result in an open break between the two groups will not be fully settled until a meeting of the general chairman of the eleven unions at Chicago when issuance of a formal strike call will be voted on formally. Several railroad labor leaders said, however, that they believed the majority would rule, and that it would be a case of "majority strike, all strike." They professed to see little chance of a break.

Following the announcement of the break between the brotherhoods and the other organizations, leaders of the brotherhoods repaired to Cleveland, where conferences were held to complete plans for the walkout or for meeting governmental or railroad peace moves. At the same time leaders of the other organizations gathered in Chicago to formulate their plans in view of the dissension in the ranks of the "association standard recognized railroad labor organizations." The extent of the threatened strike will be determined at the latter conference. Leaders of eleven groups of railway employees not affiliated with the train service brotherhoods point out that they have as yet issued no definite strike orders, although all have voted to strike.

One of the 11 groups, the blacksmiths, has announced its intention of going with the five brotherhoods.

Chiefs and some general chairmen of each of the remaining 10 unions which have taken no strike action began meeting at Chicago on October 19. They probably will attend a joint conference October 23.

From Cleveland Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, issued a statement on October 17 stating that either the government or railway officials can avert the threatened transportation struggle.

"The government," he asserted, "can prevent a strike by taking over the railroads, which it will do some day, and the railroads can prevent by withdrawing requests for further wage reductions and elimination of working rules favorable to us."

Other than reiterations of the brotherhood's position in this controversy, nothing of great importance has so far come from the Cleveland conference.

#### Western Presidents Issue Statement

After a meeting on October 17, the presidents of the railways entering Chicago issued a statement through Samuel M. Felton, president of the Chicago Great Western, outlining their views of the situation. This statement said in part:

It is most important that the public should clearly understand

the reason for, and the significance of, the order for strikes on the railroads which has been issued by the railway labor brotherhoods. The thing it is proposed to strike against is the decision of the Railroad Labor Board authorizing the reduction of 12 per cent in wages which the railways put into effect on July 1, 1921. There is at present no other possible ground for a strike by the railway labor brotherhoods.

The wage reduction put in effect on July 1 was authorized by the Railroad Labor Board under the provisions of the Transportation Act. Therefore, the strike which has been ordered will be, if it occurs, a strike against decision made by a government body acting in accordance with a federal law.

The situation presented is, in important respects, more serious than that created by the issuance of a strike order by the same labor organizations in 1916, which precipitated the passage of the Adamson Act. At that time, while the railways had asked for arbitration, there had not been any arbitration because the labor unions had refused it. Therefore, the labor unions were then within the law. The present case is entirely different. There is now a law which requires the railways and their employees to submit to the Railroad Labor Board disputes which may interrupt transportation.

While the railways complied with the decision in 1920 for an advance in wages, the labor brotherhoods propose now to defy the law, and strike, rather than accept a much smaller reduction in wages. The course of the labor unions in ordering a strike in violation of the decision of the Railroad Labor Board, and in disregard of plain provisions of law, is clearly adapted to nullify these provisions of the law.

"The railway executives at the meeting on October 14 decided to ask the Labor Board for a further reduction in wages and to give the public in the form of reductions in rates all the benefit of any further reductions in wages that were granted. This, however, afforded the labor brotherhoods no reason for ordering a strike. As a matter of fact, the strike vote was taken on the question of accepting the wage reduction authorized by the Labor Board last July and the strike order had been prepared before the meeting of the railway executives in Chicago was held. The railway executives at their meeting did not make any reduction in wages, but merely decided, in accordance with the provisions of the Transportation Act, to ask the Labor Board to authorize them to make a further reduction in wages. The further reduction in wages contemplated by them would not be made until after full hearings before, and a decision by, the Labor Board.

In asking for a further reduction in wages in order that they may be able to grant the public reductions in rates, the railways are acting only in accordance with the law and in obedience to an insistent public demand that they shall create conditions which will enable them to reduce their rates. The suggestion has been made in a statement issued by the public members of the Labor Board that the railways to prevent a strike shall make a reduction in rates equal to the reduction in wages made on July 1 and shall postpone asking for a further reduction in wages. A general reduction of rates without a further reduction in wages would be ruinous to many railroads. Thus far in the year 1921, the railways have earned a net return of only 2.6 per cent, and, although the net earnings have increased recently, owing largely to the recent reduction of wages, a general reduction of rates without a further reduction in wages would put the railways back in a very precarious position financially.

#### Labor Board Summons Brotherhood Officers

An attempt to avert the threatened strike of the train service employees was launched on October 18 by the public members of the Railroad Labor Board who had been in Washington. This attempt was announced by telegrams to the leaders of the "big four" brotherhoods and the Switchmen's Union of North America who were assembled at Cleveland, Ohio, summoning them to a conference with the Board on October 20. The executives of the train service organizations were the only ones summoned.

"We are on the job and prepared for any eventuality." This was how one New York railroad officer sized up the situation. The railroads in New York territory are advertising for men in the daily newspapers. The general managers' committee at New York, of which E. M. Rine, vice-president and general manager of the Delaware, Lackawanna & Western, is chairman, decided on Thursday to take a poll of their employees requesting them to signify whether they intend to strike or remain in their positions if the strike order is put into effect.

# I. C. C. and Public Group of Labor Board Meet

## President Summons Messrs. Barton, Hanger and Hooper to Discuss Wage and Rate Reductions

WASHINGTON, D. C.

THE NEWS from Chicago of the developments in the strike threat situation did not deter President Harding from proceeding with his plans for trying to bring about reductions in both railroad wages and freight rates, in which he has been interesting himself ever since his message to Congress last April when he said that railway rates and the cost of railway operation must come down as part of his program for a "return to normalcy." In the face of the news dispatches predicting a strike order, the President summoned the members of the public group of the Railroad Labor Board to Washington. After a conference with them on Saturday morning at the White House he went personally with them to the offices of the Interstate Commerce Commission for a continuation and expansion of the conference, the purpose of which, according to a statement issued from the White House, was "a broad consideration of the possibility of an early adjustment of railroad wages and rates, in the expectation that it would contribute to the industrial revival."

The President's plans had been somewhat crystallized, it is understood, as a result of his conference with the executive committee of the Association of Railway Executives on October 8, at which the possibility of further rate and wage reductions was discussed, although the railroad executives at the Chicago meeting did not go so far as to accept the proposals made to them by government authorities and the executive committee that the roads make a voluntary reduction in rates first.

### Labor Board Members Not Called

#### To Discuss Strike Order

The President's invitation to Messrs. R. M. Barton, G. W. W. Hanger and Ben W. Hooper to come to Washington was extended after a conference with Chairman McChord at the White House on Wednesday. They had left Chicago before either the conclusion of the railroad executives' meeting in Chicago on Friday or the definite announcement of the issuance of the strike order on Saturday. The fact that they arrived at the White House at about the time of the receipt of the definite announcement of the strike plans led to the writing of many hasty newspaper stories to the effect that the President had called the members of the Labor Board and the Interstate Commerce Commission together to discuss the strike situation. The White House statement, however, did not mention the strike, but referred entirely to the adjustment of rates and wages and the desirability of getting together "these two highly potential bodies" that are charged with responsibility for rates and wages and reaching something like a definite understanding between them. The statement was somewhat obscured in many of the newspapers by the volume of "copy" regarding the strike order, but it was taken in Washington as indicating that the strike threat had not caused the President to waver from his purpose. The statement follows:

#### Statement from White House

By invitation of the President, Messrs. R. M. Barton, Chairman, G. Wallace W. Hanger and Ben W. Hooper, constituting the public group of the United States Railroad Labor Board, came to the White House today for a conference with the President. Later, the President went personally with them to the offices of the Interstate Commerce Commission, for a continuation and expansion of the conference.

The purpose of the meeting was a broad consideration of the possibility of an early adjustment of railroad rates and wages,

in the expectation that it would contribute to the industrial revival.

The Railway Labor Board, created by the Cummins-Esch Act, comprises nine members in three groups of three each. The public group are named by the President; the labor group are named from a list nominated by the railway labor organizations; and the managing group, from a list of nominees named by the railway executives. The board is authorized generally to deal with the labor, wage and working conditions that concern the employes of the railways, and is given, in some directions, rather broad powers.

In asking the members of the public group to meet him the President was moved by the desire to accomplish what he hopes may be important results as early as possible. Recognizing that the labor group and also the managing group are in the nature of things partisans of the respective elements which they represent, the President felt that it was unnecessary to invite these two groups because their attitudes would necessarily be partisan in any consideration of wage questions. The labor group could be expected to advocate maintenance of the highest possible wages, while the managing group could equally be expected to insist that wages ought to be reduced. It was, therefore, the President's opinion that the most prompt and effective results might be secured by simply calling in the public group, which is concerned equally with the interest of labor, of management, of shippers, and of the general community.

The President has been impressed that a somewhat anomalous situation surrounds the relations of the Interstate Commerce Commission and the Railroad Labor Board. The Interstate Commerce Commission has very large powers, through its control of rates, to determine what the revenue of the railways shall be; while the Railroad Labor Board, through its authority in the matter of wage determinations, has a very large power in determining the largest item of railway expenditures. The President was, therefore, impressed with the desirability of getting these two highly potential bodies together and reaching something like a definite understanding between them. It is a fact not entirely without interest, that these two bodies have never officially met together.

For a long time the President has been giving much attention to the problem of the railroads in its broadest relations. He has been persistently assured on one side that business could not make a general and lasting improvement until railroad rates should come down; and on the other side, he has been told that it was impossible for rates to come down unless the wage charge should be lowered. He, therefore, determined to get together the two public bodies which have to deal with wages and rates, and give them every possible encouragement to take a strong lead in the effort at an adjustment.

The President remained with the Labor Board members and the commission for only a few minutes. The commissioners had been hearing argument in the Memphis-Southwestern rate case but they remained in conference for an hour or so after the President left. After luncheon the joint conference was resumed with Commissioners McChord, Esch, Eastman, Lewis and Potter present, while the other commissioners returned to the rate hearing. Nothing was given out as to the deliberations and the joint conference was resumed on Monday.

#### Statement by Public Group of Labor Board

On Sunday the public group of the Labor Board made public a statement urging that the railroads immediately reduce rates to the extent of the wage cut that was made effective on July 1. The Interstate Commerce Commission refrained from giving out in the same way its views of the wage questions under the jurisdiction of the Labor Board. The Labor Board statement, which had been shown to the President but was given out with no expression as to whether he approved it, follows:

Up until Friday there was but little, if any, danger of a railroad strike. This fact is well known to every man in close touch with the real situation. The railway workers would have brought down upon their heads universal condemnation for resisting by

force a wage cut so manifestly just and reasonable as that made in July. It may likewise be said that it remains to be seen whether the issuance of a strike order merely because a petition for a wage reduction is about to be filed will be sustained by public opinion.

The Railroad Labor Board has functioned for more than 18 months, settling hundreds of controversies between carriers and their employees, and its decisions, with but few exceptions, have been respected by both sides. There would have been a strike long ago if the two parties had undertaken to settle without intervention or supervision the manifold disputes they inherited from the war period. There is absolutely nothing in existing conditions that justifies the carriers and their employees in inflicting the ruinous results of a strike on themselves and on the public. There is no amount of propaganda that can convince the people that either side is entirely blameless.

On the first day of July the Railroad Labor Board made effective a decision which reduced the wages of railway employees 12 per cent, aggregating about \$400,000,000 per annum, basing the estimate on the normal number of employees. Since then, by a revision of only a part of the working rules of only one class of employees, the carriers have received further benefits, amounting to many millions of dollars.

Friday the carriers notified the employees they would ask the Labor Board for a further wage cut of 10 per cent, at the same time assuring the public that the shippers and the people should have the benefit of this wage reduction in the form of reduced freight rates.

To this proposition the employees reply that no general reduction of freight rates followed the \$400,000,000 wage reduction of July 1, that the cost of living has not been sufficiently lowered since July 1 to justify another wage reduction, and that they will strike without even awaiting a decision of the Labor Board as to whether another wage reduction is just and reasonable.

This is the stage which the controversy has now reached.

### General Atterbury's Plan

There is at least one feasible plan by which it can be settled and a strike averted. That plan is predicated upon an excellent suggestion made by Gen. Atterbury, of the Pennsylvania railroad, in his speech before the convention of vehicle and implement manufacturers at Chicago last Friday. His suggestion is quoted as follows:

"Nevertheless it is a fact that the carriers, though they are not earning what they should earn to entitle them to be called prosperous, nor what the law intends they should earn, can not rest under such protection, while other business struggles for its life. It would be a wise policy for the carriers publicly to avow that view, and voluntarily reduce rates where they now work hardship, even though such rates may be reasonable in a transportation sense, and even though to reduce them means a loss of revenue to the carriers. The carriers can do this of their own volition, where it would be improper for the Interstate Commerce Commission to do so. The result would be a temporary check in the rising fortunes of the carriers, and that they can ill afford, but it would be a step in the restoration of sound business conditions, and the public should give to the carriers a real appreciation of their act."

If the railroads will immediately, in good faith, adopt this suggestion of Gen. Atterbury, the situation can be cleared up, freight rates reduced to shippers, the cost of living reduced to the consumers, and a stimulating effect exerted upon all business.

We would suggest that the wage cut of July 1 be translated at once into a reduction of freight rates. This would be much more tangible and satisfactory to the public than to promise that future wage reductions will be passed on to the people in the form of reduced freight rates. The public undoubtedly expected this result when the July wage reduction was made, and its consummation now, though somewhat delayed, would be highly gratifying. That direct benefits would promptly follow and that the psychological effect would be instantly beneficial can not be doubted.

Such reduction in the cost of living as might result from this and other causes would inure to the benefit of the railway employees and would constitute one of the statutory grounds for a further reduction in wages. At the same time, it would have a tendency to reduce the cost of material supplies to the carriers, and it would not then be necessary for the carriers to rely solely upon wage cuts for a reduction of their operating expenses.

Deflation should be general and, as far as possible, uniform. Up to this time the farmer is the only man that has deflated, and he came to the earth with a thud. This was because he did not possess the parachute of organization to break his fall.

Another catastrophe of that sort should be avoided if possible. Wages and freight rates should come to a just and reasonable level uniformly or by alternating stages.

Of course, nothing in these observations should be construed to indicate what the action of the Labor Board will be on any wage dispute that may be brought before it. Such disputes will

continue to be adjusted by the board in accordance with the evidence submitted and the requirements of the transportation act. When reductions are justifiable they will be given.

It must be understood that there is no intention to indicate, in any sense, the duty of the Interstate Commerce Commission in the premises.

### Wages and Rates Should Come Down

#### Uniformly or Alternately

In this connection it may be informative to the public to know what factors the Transportation Act requires the Labor Board to consider in fixing wages. They are as follows:

(1) The scale of wages paid for similar kinds of work in other industries; (2) the relation between wages and the cost of living; (3) the hazards of the employment; (4) the training and skill required; (5) the degree of responsibility; (6) the character and regularity of employment; (7) inequalities of increases in wages or of treatment, the result of previous wage orders or adjustments. "Other relevant circumstances" are also to be considered.

It is obvious that the first two factors above-named are subject to frequent change, and that, during a post-war period of readjustment, the changes may be rapid and radical, necessitating a more frequent revision of wage schedules than would ordinarily be necessary.

Condensing the foregoing suggestion into definite propositions, they stand as follows:

#### Some Definite Suggestions

1. Let the carriers immediately give a general rate reduction measured by the July wage reduction and the benefits derived from the new rules, and devised under the supervision of the Interstate Commerce Commission, to afford the greatest degree of relief to the public.

2. Let the request for further wage reductions be withdrawn, until the rate reductions have been completed.

3. At such time as the carriers deem advisable, let them present to the Railroad Labor Board their petition for a further reduction in wages, based upon conditions then existing.

4. Pending the working out of the rate reduction and the action of the Labor Board on such petition for a further wage reduction as the carriers may subsequently submit, let the strike order be withdrawn.

This method of procedure has the merit of affording "cooling time" to everybody concerned, and requires of the carrier only one thing, namely, that they give to the public, in reduced freight rates the benefit of the July wage cut, just as they are proposing to do in case of further wage reductions. It also involves the withdrawal or suspension of the strike order upon the part of the employees.

The course suggested does not involve any sacrifice of pride or prestige, either to the carriers or to the employees.

The view of the enormous destruction of property values, the deadly blow to slowly reviving business and the appalling human privation, suffering and death that will follow in the wake of a tie-up of the country's transportation system, the people should bring to bear upon both parties the pressure of an impartial public sentiment.

The joint conference was concluded late Monday afternoon and Chairmen McChord and Barton at once went to the White House to report. They were with the President nearly an hour, but no statement of the results was given out. Mr. McChord said that the members of the two bodies had had an opportunity to get better acquainted with each other, had fully discussed the situation in all its phases, and believed the conference had been most helpful. The members of the Labor Board then returned to Chicago. It was later intimated to newspaper men that there might be some news worth watching for in a few days on the subject of rate reductions, but it is believed this refers to decisions of the Commission in the grain and other formal cases.

THE COMMISSION has suspended until February 12 the operation of schedules published in Chicago, Rock Island & Pacific and St. Louis-San Francisco tariffs which propose to cancel rules providing for the absorption of switching charges assessed by the Kansas City Street Railways.

JEWELS valued at \$40,000, supposed to have been stolen from a passenger on the Missouri Pacific, near St. Louis, Mo., on October 1, were recovered the same day in a thicket near the track.

## Strike Directed Against Labor Board Say Eastern Executives

"IF THE employees of the carriers leave the service of their respective lines in response to a strike order, it seems to me," says Daniel Willard, president of the Baltimore & Ohio, "that it will be in violation of the decision of the Labor Board which has acted in accordance with provisions of the Transportation Act."

"The reduction in wages on which the strike vote was taken, was ordered by the Railroad Board," Mr. Willard, in a statement issued Monday, continued: "A full hearing was given and both the railroads and the employees affected by the reduction were given every opportunity to be heard. After this hearing the Labor Board ordered a reduction of 12½ per cent, effective as of July 1 last. In putting the reduction into effect the Baltimore & Ohio, as well as other carriers, was merely doing what it was ordered to do by a body created by an Act of Congress and acting in due process of law.

"I understand that the unions have endeavored in some way to link up the questions of time and half for overtime and other possible reductions in wages. I do not say that the Baltimore & Ohio may not at some time in the future consider such questions, as no doubt other roads will, but I want to make plain that any such step in this decision will be taken in accordance with the Transportation Act, that is to say, the matter will be submitted to the Labor Board and the decision of that body will determine just what is to be done. If the Railroad Labor Board rules that no further reduction in wages are justified, personally these reductions will not be made.

"I have always contended that the reduction of wages of railroad employees should follow a reduction in the cost of living. The wages of such employees were the last to be advanced and are among the last to come down. In my opinion the reduction, as ordered by the Labor Board, was justified by existing conditions at that time, and it may be that present conditions warrant a still further reduction. But this is for the Labor Board to determine."

### Statement by F. D. Underwood

"The present strike is different from any other strike," maintains F. D. Underwood, president of the Erie, "in that it is not directed against railroads but against the verdict of a body constituted by Congress who, after a hearing, fixed wages, not at the instance of the interested parties, but founded on conditions developed by evidence.

"The situation is that of striking on the 'umpire'—the United States Railroad Labor Board," Mr. Underwood said.

"The real purpose is not appreciated by some of us. It is to bring about government control—the desire of all labor bodies, some part of the public, some members of Congress.

### Employees Want Government Control

"Railroad labor has the idea that under government control they are better off; naturally they are for it. A leader of the railway conductors, when asked why his men favored Federal control, said, 'Because the conditions are better and the discipline not sharp.'

"This is an interesting thing for the public—the users of the railroads, whose money pays the railroad employee. Their safety depends largely on the discipline, which is not a thing to be trifled with. We are back at the old junction. Are a minority to starve and inconvenience their paymasters, the public, for the reason that a board of umpires, on which they (the men) were represented, failed to suit their views?"

"It is really a government affair, inasmuch as both rates and conditions were inaugurated by a tribunal entirely apart and distinct from railroads."

## Strike Aimed Directly at People

William G. Besler, president of the Central & New Jersey, expressed the opinion that "it could not be too strongly emphasized that this threatened strike is aimed directly at the people of this country, that it is in defiance of the law of the land, and that the people, as evidenced through the columns of the papers, are thoroughly aroused and that, if the leaders attempt to carry through their alleged program, there can be but one end to the strike.

"All of the machinery," he continued, "all of the direction in connection with the so-called 'strike vote,' all of the instruction and advice and direction, even to the counting of the ballots and instruction in minute detail for the conduct of the strike, has emanated from the top. Of course, as is the case in every organization or society, there are a few radical members who sanction and, to the extent that they are able, instigate trouble, but in this instance it is a fact beyond peradventure that the great mass of employees do not desire to strike and will not, unless coerced, leave their places.

"I believe that generally the people of the country are fully aware of the situation and that this action on the part of the organization leaders places upon them individually the responsibility for what is threatened. I believe that it was Roosevelt who said that 'guilt is personal.'"

### Railroad Officers Preparing to Meet Threatened Conditions

President E. E. Loomis of the Lehigh Valley in a statement issued also on Monday said:

"First—The train service employees have been given increases of approximately 95 per cent since the Adamson Act became effective January 1, 1917. As of July 1, 1921, after full hearing, the United States Railroad Labor Board ordered a reduction in wages averaging 12 per cent. Acceptance of this reduction, ordered by a government tribunal, is the real issue on which the labor leaders have taken a strike vote and propose to paralyze the transportation industry of this country.

"Second—Although the railroads have, since July 1, given shippers the benefit of practically all of the 12 per cent wage reduction through the big reductions in freight rates already made on grain, flour, iron and steel, iron ore and many other commodities, continued pressure for further reduced rates led the railroad executives at their Chicago meeting to agree to ask the United States Railroad Labor Board to order another wage reduction of approximately 10 per cent, to be followed by a corresponding freight rate reduction. This was the only way to meet the shippers' demands. Any attempt to make further rate reductions without an additional wage cut could only result in placing the railroads in a more precarious condition than the shippers, so dependent upon them for efficient service.

"Third—As to employees other than those in train service, such as mechanics, unskilled labor, etc., the same classes of labor are employed by other industries. The fact that railroad employees have been getting a higher wage than those working for others has caused great dissatisfaction to many large employers, who are also shippers, because they have had to pay the big freight rates this differential made necessary. Certainly there is no hardship in placing such employees on a basis similar to that of men of their own trades working for others in the same locality, and at the Chicago meeting it was decided also to ask the United States Railroad Labor Board to do this, the shippers to be given the benefit of the reduction.

"Fourth—So far as the strike situation is concerned, I prefer to make no prophesies. The public is entitled to the facts and protection, and railroad officials are preparing to meet threatened conditions."

## Railroads Have Already Made Extensive Decreases in Rates

SINCE THE general increase in rates put into effect under authority of the Interstate Commerce Commission, September 1, 1920, there have been, in fact, extensive reductions, most of them voluntary, in railroad rates, bringing about a large diminution of the earnings of the railroads. The reduction of wages made on July 1 was put into effect only after many freight reductions had previously been made. Since the reduction in wages of July 1, a large additional number of reductions in rates have been made.

These points were brought out in a statement issued in New York on Monday by T. DeWitt Cuyler, chairman of the Association of Railway Executives. The statement, besides giving these details, also purported to be an answer to the suggestion made by the public group members of the Labor Board.

Mr. Cuyler's statement follows in part:

### Mr. Cuyler's Statement

"The proposition of the public members of the United States Labor Board, as published in the papers of today, has not been brought formally to the attention of the Association of Railway Executives. Its only information concerning it has been derived from the newspapers, and the executives have held no meeting at which the matter could have been discussed.

"The proposition, as stated in the newspapers, is that the railroads should withdraw their plan to seek a concurrent reduction in present railroad rates and wages. The intimation of the public members of the Railroad Labor Board is that the public has had no benefit from the 12 per cent reduction in wages authorized in July, and it is suggested that the railroads make further reductions in rates without further reductions in wages.

"In order that the public may be able to judge the merits of this proposition the following is submitted:

"Since the reduction in wages of July 1 a large additional number of reductions in rates have been made. For example, there was a reduction on cargo coal from points in Ohio, Western Pennsylvania and West Virginia to Lake Erie ports, affecting, from August 1 to October 7, some 14,700,000 tons, on which the actual loss in revenue to the railroads amounted to \$4,116,000.

### Successive Reductions in Grain Rates

"Successive reductions have been made on grain and grain products, beginning during the summer and continuing until now, ranging from \$1.40 to \$2.10 per ton, and the export rates from Chicago to the Atlantic seaboard are actually lower than when the Interstate Commerce Commission approved the increases in August, 1920.

### Road-Making Materials

"Reductions have been made in rates on road-making materials—i.e., crushed stone, sand, gravel—in New England, New Jersey, Pennsylvania, West Virginia, Indiana, Maryland and Delaware. The rates on these commodities were not raised in New York State. This involves reduced revenues on many millions of tons, the benefit of which goes directly to the taxpayer.

"There was a reduction in rates on export iron and steel articles, effective September 6, 1921. In 1920 the tonnage of this business amounted to 4,701,169 tons. The reduction in rates on this traffic averaged \$1.66 per ton.

"A reduction of 58.8 cents per ton on imported iron ore is just becoming effective. In 1920 this business amounted to 1,231,094 tons. The average railroad rate from port to furnace was \$2.10.

"Rates on ex lake ore are being reduced a representative reduction amounting to 36.5 cents a ton. Last year 33,992,292

tons of ore were shipped by rail from lake ports to eastern iron furnaces.

### 3,871,286 Rate Reductions on

#### Pennsylvania, East of Pittsburgh

"A compilation by the Pennsylvania Railroad shows that on that system east of Pittsburgh there have been since September, 1920, a total of 3,871,286 rate reductions. These reductions were in part due to exempting certain articles from the higher class rates and making for them a lower rate. The exceptions on these articles apply from 1,225 stations on the Pennsylvania and 1,763 stations on lateral lines, making a total number of points of origin of 2,988. The number of destination stations to which such rates were effective was 34,561.

"By tariffs filed by the Central Freight Association Agency, freight rates have been reduced on about 662 commodities, covering approximately 4,500 origin points and 10,000 destinations.

"Similar figures could be given for the railroads throughout the country. There has been a constant tendency toward readjustment and reduction of rates ever since the general rate advance of August, 1920, was authorized.

"On some railroads the reductions in rates have amounted to more than the reductions in wages so far made, and on many other railroads the reductions in wages allowed no net return on operations, but merely provided against the further accumulation of a deficit."

## Public Prepares for Strike

THROUGHOUT THE COUNTRY, industries, industrial organizations and bodies representative of the public are taking steps to provide for the transportation of food-stuffs, coal and other necessities by truck and boat should a nation-wide strike materialize. Press reports from the larger cities indicate that no great fear is being shown over the prospect of a general cessation of work on the part of the railway employees. This calmness is engendered by the repeated statements of railway officers in close touch with the present developments, practically all of whom maintain that the threatened strike will probably not materialize and even if it does that a number of employees sufficient to man the carriers for skeleton service will remain loyal to the roads.

Officers of the National Conference of State Manufacturers' Associations are urging industrial centers of 11 states to form temporary organizations for service in the threatened railway strike. A telegram urging the 11 associations belonging to the National Conference to create temporary organizations to furnish supplies and to use their influence to see that public officials enforce the laws was sent out on October 17.

The telegram was signed by William Butterworth, president, and John M. Glenn, secretary, of the National Conference of State Manufacturers' Association, and read as follows:

"It is unfair to ask manufacturers to operate their plants on a scale of wages lower than is paid for similar service in railroad shops. Manufacturers cannot afford to pay these high wages and hope to get a manufacturing cost that will start buying. It therefore behooves the members of every industrial organization to sustain the railroads in their proposed reduction of wages. In order to do this manufacturers' associations should see to it that industrial centers are prepared to meet the emergency of a general strike on the part of railroad employees by creating temporary organizations to furnish supplies and should use their influence to urge public officials to see that laws are enforced. Please advise President Harding as to effect present high railroad wages are having on industry in your state."

# Administration Takes Strike Threat Calmly

Attitude of Skepticism Evident—Inference that Washington  
Regards Board Decisions as Binding

A MARKED SPIRIT of skepticism regarding the possibility of a general railroad strike appears to pervade the government authorities. There were no indications of either panic or hysteria among the officials at Washington and no evidence was manifested of any desire to rush in and try to effect a compromise.

For one reason, the opinion is held in many official quarters that the chief purpose of the labor leaders is to do anything possible to embarrass the railroads in a way to make government intervention necessary, and also that they are doing more or less bluffing in the hope of inducing the President to step in and save them from probable consequences of extreme action. As a first step the administration intends to ascertain definitely whether the creation of the Railroad Labor Board represented the establishment of a futile agency whose function is to express its opinions on various disputes, to be accepted or not at the pleasure of the parties involved, or whether its decisions are to be respected by both sides. The inference to be drawn from unofficial and confidential statements made to the press representatives in Washington is that the administration regards the decisions of the board as binding, and that it will proceed on that understanding until or unless it is clearly demonstrated that legislation to strengthen the power of the board or to create some tribunal whose decisions must be respected is necessary. In other words the action of the labor organizations in taking strike votes in protest against the order of the board reducing wages on July 1 and in ordering a strike in advance of even the formal presentation of new requests for further wage cuts to the board is regarded as placing them in an illegal and anomalous position of defiance of the government which cannot be tolerated. It is clearly recognized that the strike situation grows out of the efforts of the railroads to meet the public demand for rate reductions and that the strike has been inspired by the labor leaders on the ground of the railroads' announcement of their intention to ask further wage cuts, although as yet the requests have not been filed and of course it cannot be known what the decision of the board would be.

## Labor Board Represents Uncle Sam

The calling of the brotherhood leaders to Chicago by the labor board was not for the purpose of offering Mr. Stone "peace with honor" unless the labor leaders indicate a willingness to abide by the decisions of the tribunal set up by law to decide just the kind of questions that the brotherhoods are proposing to settle for themselves, nor is it intended to develop the "miracle" that W. G. Lee has said alone can prevent a strike. As indicated in Washington the purpose was rather to determine whether formal citations shall be made by the board and to disclose to the labor leaders informally the fact that the Labor Board represents Uncle Sam. No conference between the President and the brotherhood chiefs was said to be in immediate prospect.

The labor provisions of the transportation act were formulated and adopted with the idea of creating an impartial tribunal which should be able to substitute a finding based on justice and the merits of the case for the method of settling labor disputes by a trial of strength. The board was given no power to enforce its orders on the theory that its findings would be supported by public opinion and because of their appeal to a sense of justice among the contending parties. It was believed to be futile, or at least unnecessary, to endow the board with powers that would enable it to enforce a decision that could not be so accepted. Therefore any thought of

WASHINGTON, D. C.

amending the law is regarded as premature until there has been a definite demonstration as to whether the present plan cannot be made to work as intended. While there were reports of numerous conferences among the heads of various government departments, particularly the Department of Justice, the Post Office Department and the War Department, to discuss ways and means for meeting any situation that might arise, the only suggestion for a settlement, other than that proposed by the public members of the Railroad Labor Board, was a statement from Secretary of Labor Davis that he had several ways of settling it to offer if he were called upon. There was little activity at the White House on the subject, and the President left Washington Tuesday evening to be away for two days.

## Confident of Ability

The regular Cabinet meeting was held on Tuesday, but it was stated at the White House on the highest authority that neither the strike nor any other phase of the railroad situation was discussed and the view was expressed that the strike had already been "over-discussed" in a speculative way in the newspapers.

President Harding held his usual conference with the press correspondents, who went away impressed with the idea that he felt confident of ability to deal with the situation and that he had as yet seen no reason to alter the plan of campaign on which he has been working for several months. No announcement was made of the character of the report made to the President Monday evening by Chairman McChord of the Interstate Commerce Commission and Chairman Barton of the Railroad Labor Board, but one of the results of the conferences held between the President and the members of the public group of the board and members of the commission was seen in the announcement that the Labor Board had summoned the brotherhood executives to a conference at Chicago on Thursday. It was learned that the President heartily approved of this action as a wise step, on the ground that the board should promptly call to account any one who has ignored the orders of the board. In this connection it was recalled that the board had already cited the Pennsylvania for declining to obey one of its orders.

## Lack of Co-ordination Between I.C.C. and Board

The most important development since the issuance of the strike order is expected to result from the President's action in bringing together the public members of the Labor Board and the Interstate Commerce Commission. There has been the most widespread dissatisfaction because of the lack of co-ordination between the two bodies and it is believed that both may have felt less free to act because of uncertainty as to what action in the premises might be taken by the other. For example, when the Labor Board last spring was considering the requests of the roads for wage reductions it had no assurance as to the extent to which payroll reductions would be translated into rate reductions, and the Interstate Commerce Commission, which is believed to have been rather anxious of late to bring about further rate reductions, has had no way of knowing whether the Labor Board would do anything to make a considerable rate reduction safe for the roads. The joint conference undoubtedly gave the two bodies an opportunity to reach a common understanding. For example, the members of the commission might have informed the board members that the railroads have already made rate reductions which would eat up a large proportion of the amount of the

12 per cent wage cut made on July 1, as well as the fact that several important rate reduction cases are now before it for decision. Technically the public group could hardly speak for the entire board, but it holds the balance of power and if convinced by the Interstate Commerce Commission that a wage reduction either is or is not necessary as a condition precedent to a rate reduction that would be sufficient to satisfy the persistent demand of the public, it could very readily bring about the result desired by uniting with either the railroad or the labor group.

President Harding's desire for rates to come down is well known but he has never gone so far as to insist that the rates should be revised downward any more precipitately than the financial condition of the carriers would permit, and if the joint conference is to result in early rate reductions, as is strongly intimated, the inference is that a wage cut is to accompany it or follow it shortly. In the recent conferences between the President, Mr. McChord, Mr. Hoover and the railroad executives reductions in the rates on primary commodities, particularly agricultural products, have been discussed rather than a flat general reduction, on the ground that the prices of agricultural products have already been deflated more than others. It is believed that an early decision by the Interstate Commerce Commission in the grain, hay and lumber cases, based on formal complaints asking rate reductions, is contemplated, and that, after having demonstrated to the public that all of the wage reductions thus far made have been used to reduce rates, further steps will be taken toward another wage cut.

#### "The Mails Will Be Moved"

Post office officials held conferences for the purpose of preparing plans for moving the mails and for preventing any interference, and Postmaster General Hays issued a brief statement saying: "I am sure the parties to the controversy will not permit developments which will interfere with the government service. This is no time for statements from this department. A time may come for action. I sincerely trust that it will not. If it does there will be action. The mails will be moved."

The Attorney General's office was also said to be devoting some attention to the legal aspects and precedents but Mr. Daugherty said there would probably be no statement from the department unless there were further developments.

The War Department had already prepared detailed plans for such use of troops as might become necessary in an emergency.

The strike was not discussed in the open sessions of Congress on Monday or Tuesday, except that Representative Blanton of Texas asked unanimous consent on Monday to speak for five minutes on "the recent declaration of war against the people of the United States which is to begin on October 30." An objection was made but he made his speech on Tuesday and Representative Burke answered him.

#### Senate Hearings Temporarily Suspended

The hearing before the Senate committee on interstate commerce in its general railroad inquiry, at which representatives of the brotherhoods were to testify, was suspended temporarily and a meeting of the committee called for Tuesday to consider the railroad bill was not held. One reason given was that the committee did not desire to open a debate on the strike question. At the White House it was said that the strike situation would not change the policy of the administration on the funding bill. It had previously been stated that the President intended, after the pending tax bill is disposed of in the Senate, to reiterate his desire and the necessity for the passage of the funding bill by the Senate.

The members of the Railroad Labor Board called on Senator Cummins on Monday to discuss the situation. They also went to the Department of Justice, but it was stated this

was for the purpose of looking up something in connection with the suit brought by the state of Texas in the Supreme Court which attacks the jurisdiction of the board.

The President has received a telegram from Alfred Reeves, general manager of the National Automobile Chamber of Commerce, saying that the 9,200,000 automobiles and trucks in the country can protect the country in the event of a rail strike and offering the services of the automotive industry in the mobilization of motor transportation if needed. Mr. Reeves said that 990,000 trucks in 1920 hauled 1,200,000 tons of freight.

Shipping Board officials said they were in a position to put 250 small steel ships into use in the coastwise trade and on inland waterways in the event of a strike.

Sydney Anderson, chairman of the joint commission on agricultural inquiry, issued a statement saying that "One of the greatest problems before the American people today is the establishment of a more economic system of distribution, and one of the greatest factors in the cost of distribution is transportation, and it appears that the greatest factor in transportation costs is represented in wages.

"We are now passing through a period of readjustment of prices of commodities and wage levels incident to the activities of production and distribution, he said. "The unwillingness of any group which is an element in costs of production or distribution to do their full share toward effecting a proper readjustment of costs and wages, necessarily retards a return to normal. The interests of all groups and classes of people in this readjustment are so interwoven that no group or class can properly avoid the concessions necessary to a re-establishment of normal activities.

"Freight rates are today at their peak. It is recognized by every one that the transportation charges incident to the movement of essential commodities must be placed upon the level which will permit of the free movement of these essentials to consumers at a cost that can be supported on the basis of normal prices."

#### Wage Differential Important Factor, Says Cunningham

**D**IFFERENTIALS in rates between train service employees and shop employees are one important factor in the present critical railroad situation that is seldom discussed, according to Professor W. J. Cunningham of Harvard University, writing in the New York Evening Post of Tuesday. He points out that the average earnings of car repairmen, for example, were, in 1920, 145 per cent greater than in 1916, while the earnings of freight enginemen and conductors advanced but 85 per cent and of passenger enginemen and conductors but 57 per cent during the same period. The present critical railroad situation presents a three-sided problem, says Professor Cunningham; on the one side, he says, are the railway executives, on the second side the shippers and on the third the unions.

On the subject of the differential in wages, Professor Cunningham says:

"One important factor in the present situation is seldom discussed; that is, the differentials between wage rates for different classes of workers. An outstanding feature of the wage advances during federal control was the success of the shop crafts and office clerks in securing increases which relatively were much greater than those secured by the 'Big Four' brotherhoods. As a consequence the spread between the train service employees and the shopmen, car inspectors and clerks was noticeably narrowed. Comparing average earnings in 1920 with those of 1916, car repairmen enjoyed an increase of 145 per cent and the increase for car inspectors was 138 per cent. These may be contrasted with an in-

crease of 85 per cent for freight enginemen and conductors, and 57 per cent for passenger enginemen and conductors. These are the official figures for all railroads.

### Train Service Men vs. Shopmen

"On one railroad the figures indicate that while in 1916 the average earnings of all train service men were 85 per cent greater than the average for all shopmen, this excess earned by the train service men in 1920 had dwindled to 15 per cent. The train service brotherhoods have publicly said little about this change in the relation of their wages to those of the other more fortunate organizations, but they have been greatly disturbed by the narrowing of the differential. Among themselves they are much dissatisfied because the shop crafts have been able to get away with the larger share of the increases. They also feel keenly the adverse public comment on the national agreements.

"The train service men are not in any way affected by these national agreements with the shop crafts and clerks, yet the unfavorable reaction of the general public, caused in greater part by the unreasonableness of certain rules and wage rates applying only to shopmen, clerks and others included in the agreements, applies to railroad labor as a whole, including the train service men. As a matter of fact, there is substantial basis for the argument of the engineers, conductors, firemen and brakemen that, considering the degree of skill and the experience required for their work, they are not overpaid on the present wage scale. They are charged with a degree of responsibility not required of shopmen. While on the road they work with but little supervision, and in many ways the train service requires a higher order of skill and more dependable men than are needed in the shops. An evaluation of these differences comes closer to the former differential of 85 per cent than it does to the present 15 per cent.

### Roads Forced Hands of Unions

"Up to last Friday, when the railroad executives announced their determination to seek a further horizontal wage cut, applying to all employees alike, the taking of the strike vote and all of the talk of striking against the acceptance of the July 1 wage reduction may be regarded as pure bluff. The tactics of the train service organizations were probably intended to restrain the railroads from seeking further decreases, at least in train service. Now that the machinery for the additional wage cuts has been set in motion the bluff has been called and the union leaders have acted. Apparently they are serious in their strike orders, and the men will respond unless the strike call is withdrawn as a result of compromise of governmental action looking toward mediation in a form acceptable to the labor leaders.

### Unions Working Together

"The opportunity has probably passed for discrimination as between classes of employees. The entire sixteen organization are now working together as a unit to a common end. It is to be regretted, however, in the interests of all three interests in the controversy, that the proposed procedure did not contemplate differentiation between those classes of labor which were given the greatest increases and those which received the least, so that the dislocation of long established differentials might have been corrected in part. A program of that nature would have been less objectionable to the train service brotherhoods and might have kept them neutral in a controversy between the railroads and other classes of employees. Without the active support of the train service men the shopmen would have hesitated before striking.

### Life of Unions May Be at Stake

"One additional factor has had the effect of solidifying resistance without regard to class of employee. On a few

roads the men believe with more or less reason, that the management has set out deliberately to 'smash the unions.' On the very great majority of the roads there is absolutely no ground whatever for that belief, but there is just enough real basis on the very few roads to give the union leaders the opportunity to put the thought in the minds of the men, so that they will regard this as life or death struggle for the continued existence of unions. Regardless of inter-union jealousies, no one organization desires to see the destruction of another organization. They reason that if one is destroyed the destruction of the others will follow. The fear, even though groundless, that the real issue is not wage reductions but union disintegration gives the leaders a lever which they will without doubt use effectively in stiffening the resistance of the men to anything short of a favorable compromise which the leaders are prepared to accept."

## President of U. S. Chamber of Commerce Criticises Strike Call

JOSEPH H. DEFREES, president of the Chamber of Commerce of the United States, declared that commercial organizations throughout the country will, in the event of a railroad strike, take the lead in their communities in maintaining the national life. Mr. Defrees was replying to a statement by Warren S. Stone, who, in reply to an earlier statement by Mr. Defrees, declared that the national chamber is taking an unfair position in the situation. Mr. Defrees' statement follows:

Warren S. Stone, president of the Brotherhood of Locomotive Engineers, one of the organizations threatening to tie up the rail transportation system of the country, in a signed statement appearing in the press Wednesday morning attempts to begot the issue. Mr. Stone substitutes vituperation and slander for fact and logic. The propriety of such a course I leave, without comment, for the judgment of all citizens. Mr. Stone mentions the valor of the railway workers in the late war. It is not questioned. Right conduct at one time is not a sufficient basis for wrong conduct at another. No amount of valor can confer license for lawlessness upon a later occasion. No war record can justify any individual, group, or class of American citizens in taking the country by the throat and coercing it. That is lawlessness and brutality, and will be so characterized by every thoughtful and patriotic American, including the rank and file of Mr. Stone's own organization.

No justification can be found by Mr. Stone in conduct of railroads toward the Railroad Labor Board. No railroad has threatened willfully to cease operation, and when the board advanced wages of railway workers and the Interstate Commerce Commission increased rates accordingly, the public paid and did not boycott railroad transportation. If the railroads or anyone else take any action comparable to the action of the leaders of the railroad workers in calling their strike, they will be stigmatized as unmistakably as the persons responsible for the present threat of national calamity.

It should be clearly understood that I am not voicing an individual opinion. I am expressing in effect the position which has been taken repeatedly by hundreds of organizations in the membership of this chamber. Against such a threat as has been made, and against any such strike as it contemplates, these organizations can be depended upon to assume leadership in their communities in maintaining the national life.

As I said in my previous statement, the merits of the controversy between the railways and the railway workers are comparatively of no consequence. The real issue is whether this government can sustain its institutions if one section of the community can by force impose its will upon the public and precipitate conduct which, if persisted in, will inevitably lead to public disaster.

The quicker every element of the community, whether worker or employer, comes to know and bases its action upon the proposition that if a project is not for the common good, the general public interest—it is not good for the element proposing it the quicker will we return to the type of democracy contemplated by our forefathers when they founded this government—the quicker will we return to that vigor and volume of business and industry which will give work, comfort, peace and prosperity for all

## Implement Men Vote to Abolish Labor Board

**A**BOLITION of the United States Railroad Labor Board and all other existing national labor adjustment boards was urged in resolutions adopted by the 28th annual convention of the National Implement and Vehicle Association at the Congress Hotel, Chicago.

The resolution recommended:

That the national government facilitate settlements with the railroads of the amount due as rentals during government operation.

Passage of the present bill pending in Congress, permitting the railroads to fund their indebtedness to the federal government.

Early repeal of the Adamson act.

An immediate reduction in freight rates and to accomplish this in full measure the amendment of the Esch-Cummins law and the passage of such other legislation as is necessary to abolish the Railroad Labor Board and all other existing national labor adjustment boards, leaving the railroads free to negotiate wage and employment agreements direct with their own employees, unhampered by legislative regulations, to the end that the expense of railroad operation, particularly that involved in the labor cost of transportation can be reduced to a proper relative basis with that of other industry.

Elimination of such state legislative enactments as the full-crew bill, which have continuously added to the expense of railroading and influenced higher freight rates.

That the American Farm Bureau Federation, the National Grange and other farmers' organizations be appealed to to join in the effort to secure these legislative reforms so necessary to the re-establishment of the normal purchasing power of the American farmer's dollar.

### General Atterbury Addresses Implement Men

Railroad wages and freight rates must come down, General W. W. Atterbury, vice-president of the Pennsylvania, said in a recent address before the closing session of the National Implement and Vehicle Association's convention at Chicago.

General Atterbury said:

My judgment is that.

*First:* That the railroads of this country, in order to show their good faith, should make an adjustment in rates. This adjustment should go to the agricultural interests, inasmuch as they are by far the largest and most important element of our population, and have already themselves borne the brunt of the greatest deflation.

*Second:* That there should be an immediate application on the part of the railroads to the U. S. Railroad Labor Board for a reduction in wages commensurate with the change in wages in other industries.

*Third:* That the public should enter heartily into, and assist the carriers in the request for a reduction in railroad wages.

*Fourth:* That the railroads should immediately pass on to the public in reduced rates, whatever saving may hereafter be accomplished through reduced wages, except insofar as rate reductions already shall have been made.

*Fifth:* That the public should stand solidly behind the railroads in a program of laws and regulations which, while sound economically, shall yet not impair the initiative of railroad management.

By the reduction in rates, the reduction in wages, and the release from regulation, by co-operation between the public and the public's railroads, the railroads will have been brought into harmony with the readjustment so essential to the return of prosperity."

### Traffic Club of Chicago Urges Abolition

The Traffic Club of Chicago recently passed the following resolution urging abolition of the United States Railroad Labor Board by a vote of 340 to 3:

After careful deliberation, it is the judgment of the Traffic Club of Chicago that the return to business normalcy and prosperity is being

materially prevented by the failure of transportation lines to make such reductions in their costs of operation as would be possible if the United States Railroad Labor Board, which exercises jurisdiction over railroad wages and working agreements, had not failed to act expeditiously and with due realization of the necessity for readjustments of rates of pay and working conditions to the end that they may be comparable with those existing in private industries; therefore,

Be it resolved, That the Traffic Club of Chicago deplores the situation and recommends the repeal of that part of the transportation act providing for the United States Railroad Labor Board.

## Farm Bureau Federation Enters Controversy

**T**HE AMERICAN FARM BUREAU FEDERATION entered the strike controversy, Tuesday, with a statement by J. R. Howard, president. The statement reviews the activities of the Federation in regard to the requests for rate reductions as outlined by the stand taken by President Howard at the conference of representatives of the railroad, manufacturing, shipping and agricultural interests in New York, September 21. "After long discussion," Mr. Howard said, "in which the railroad executives strenuously contended that under present conditions any rate reduction would mean bankruptcy and conference appeared to be futile, a small committee was appointed to proceed further." Mr. Howard and the manufacturing representatives on this committee argued that "the least the railroads could do would be to announce an immediate reduction in rates on basic commodities which would include agricultural products, building material, coal and ores and that all subsequent economies in operating expenses should be reflected in decreased freight rates on these commodities until the 40 per cent advance of August, 1920, is eliminated."

"The railroad executives," Mr. Howard continued, "finally agreed to submit a proposition to the executive committee of the railroad executives with a recommendation for approval. The proposals made at New York were presented to the executive committee of the railroad executives October 9 and approved by them with a 10 per cent reduction to become effective immediately. At the meeting October 14 of all the executives, however, an immediate reduction was not approved, but a very strong resolution passed which stated that all decreases in operating costs from whatever source were to be given at once to the public in the form of rate reductions.

"The refusal to make immediate reductions was very disappointing to the representatives of the American Farm Bureau Federation, and it is only fair to say that many of the outstanding railroad executives regret deeply the majority action of the executives."

Directly discussing the strike, Mr. Howard said, "This strike is a problem as between employer and employee and is not an issue in which the American Farm Bureau Federation functions except as part of the American public. We are selfishly interested in labor having a wage schedule which will enable it to maintain a good standard of living. We believe that that wage schedule is best which will stimulate that degree of employment of labor which will result in the payment of the largest aggregate wage for the largest consistent production. The wage system which maintains so high a standard as to force general unemployment is not to the advantage of labor or to the general public. Such working rules as the National Agreements tend to set up standards which in the long run materially decrease production and hence should be done away with. Mr. Howard then outlined the objections of the Federation to the rate making provisions of the Transportation Act; to the lack of co-ordination between the Interstate Commerce Commission and the Labor Board and suggested either the repeal of the Transportation Act or its amendment to "correct these serious defects." Mr. Howard also stated that the Federation favored the repeal of the Adamson Law as being "economically unsound."



*Heavy Pacific Type Handles 12 Passenger Cars or More Over the Rocky Mountains*

## New Locomotives for the Northern Pacific

Pacific Type for Heavy Fast Service—Mikados, Mallets and Switchers Follow Lines of Earlier Designs

THE NORTHERN PACIFIC placed one of the largest orders for locomotives given in 1920. This consisted of 20 eight-wheel switchers (0-8-0 type), 20 Pacific (4-6-2 type), 25 Mikado (2-8-2 type) and 6 Mallets (2-8-8-2 type), all of which were built by the American Locomotive Company at the Brooks plant.

### Pacific Type

The Pacific type locomotives, railroad Class Q-5, are of a new design developed to meet the need for a heavier fast passenger engine to haul the overload trains. They have been assigned to all divisions between Dilworth, Minn., and Missoula, Mont. The profile on these divisions varies from comparatively level to grades of 2.3 per cent, which occur in the Rocky Mountains, with curves up to 16 deg. The average train consists of 12 cars, although in the summer season the number occasionally reaches as high as 17. The majority of these locomotives operate over two divisions or sub-divisions of about 110 miles each, crews being changed at the end of each sub-division. In other cases the locomotives are assigned to the heaviest runs in such a way that they double the sub-division each day, there being in such cases either two crews assigned to each engine or three crews to two engines.

These Pacific type locomotives have a rated tractive effort of 41,900 lb. with 26 in. by 28 in. cylinders, and 73 in. driving wheels and weigh 314,000 lb., of which 181,000 lb. is on the drivers. They have boilers of the conical connection type with wide firebox, combustion chamber 39 in. long, tubes 18 ft. long, brick arch and superheater. The tenders are equipped with coal pushers.

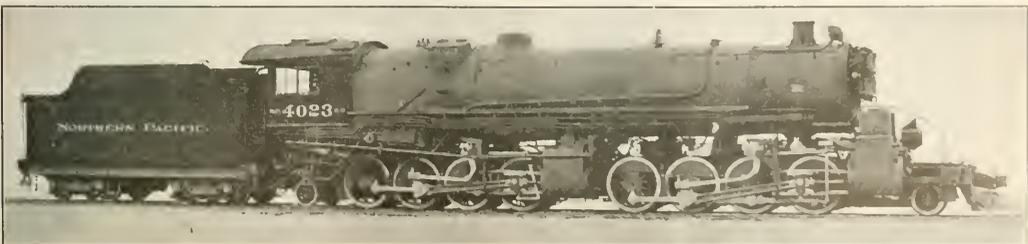
### Mikado Type

The Mikado type locomotives, railroad Class W-3, are similar in design to previous locomotives which have been found to be well suited to general traffic conditions on the Northern Pacific. They are used in main line freight service on several divisions having profiles of different characteristics. On the Pasco division they run 153 miles, 90 miles of which is a 0.4 per cent continuous grade, and handle trains of 3,200 tons. The Yellowstone division profile between Mandan, N. D., and Glendive, Mont., is a series of ascending and descending grades, with ruling grades of 1.2 per cent both eastward and westward. The rating on this division is 1,775 tons in both directions. On the Seattle division between Auburn and Lester, Wash., a fairly uniform 1.0 per cent grade occurs, and the tonnage rating for this portion of the division is 1,600 tons. From Lester to the summit helpers are used and they are also employed on several other divisions in the mountainous sections.

These Mikado type locomotives have a rated tractive effort of 57,100 lb.; 28 in. by 30 in. cylinders and 63 in. driving wheels, and weigh 337,000 lb., of which 247,000 lb. is on the drivers. The boilers are of the conical connection type, provided with brick arches, combustion chambers 36 in. long, tubes 18 ft. long and superheaters.

### Mallet Type

The Mallet type locomotives, railroad Class Z-3, are similar to previous 2-8-8-2 locomotives used on the Northern Pacific. They are employed as helpers in freight service on the Rocky Mountain and Montana divisions where grades are



*Mallet Type Locomotives Used Either as Road Engine or Helper*

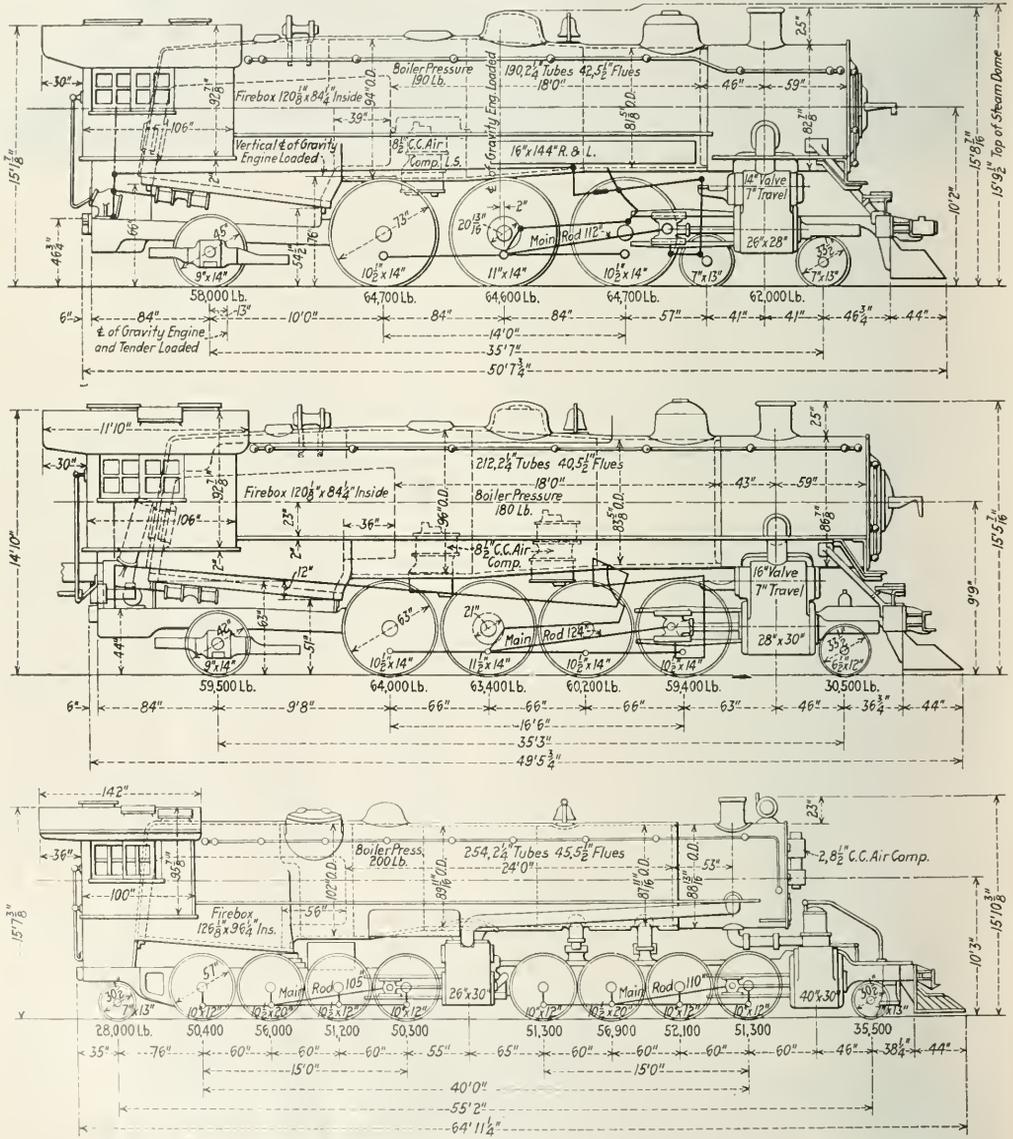
heavy. On the Seattle division they are used as road engines, handling 2,400 tons between Auburn and Lester, the grade being uniformly 1.0 per cent. Helpers are used from Lester to the summit of the Cascade Mountains.

These locomotives have a rated tractive effort of 105,100 lb. operated simple and 87,600 lb. operated compound. They

in. by 96¼ in., with combustion chamber 56 in. long, tubes 24 ft. long, brick arches and superheaters.

**Eight-Wheel Switchers**

These locomotives are of a new design and resemble closely those ordered by the U. S. R. A. Both designs are of the



Side Elevations of Pacific, Mikado and Mallet Types for the Northern Pacific

have a total weight of 483,000 lb. exclusive of the tender, of which 419,500 lb. is on the drivers. The high pressure cylinders are 26 in. by 30 in., the low pressure cylinders 40 in. by 30 in., and the driving wheels are 57 in. in diameter. The boilers are of the conical connection type, firebox 126 3/8

same rated tractive effort, have the same size cylinders, driving wheels and wheel base and the boilers are similar. They have 25 in. by 28 in. cylinders, 51 in. wheels, weigh 217,000 lb., a wheel base of 15 ft. and are designed to operate on 19 deg. curves.

Details and Specialties

Longitudinal boiler seams are welded for a length of 18 in. at front and back except the seams over the combustion chamber which are welded at the front end only on the Pacific and Mikado locomotives and are not welded on the Mallets. The top seam in the smoke box is also welded. The fireboxes of all types have the crown and side sheets made of a single piece. The combustion chamber is also made in one piece, butt welded on the bottom center line and butt welded to the firebox crown. Two 2 in. combustion tubes are used in each side of all fireboxes. Injectors are of the Hancock non-lifting type and feed water enters the boiler through vertical check valves. All boilers are equipped with Butterfly firedoors and brick arches. Duplex type D stokers are used on the Mikado and Mallet locomotives, and coal pushers on the tenders of the switcher and Pacific locomotives.

Driving axles are of hammered open-hearth steel, oil heat treated. Front truck, trailing truck and tender axles are of open-hearth carbon steel, oil heat treated, as are also the crank pins. On the Mallet engines the main crank pins are hollow bored. Bushings in cylinders and steam chests and also packing rings for main and valve pistons are of Hunt-Spiller iron. Extended piston rods are used on the Mikado locomotives and on the low pressure cylinders of the Mallets. Walschaert valve gear is used on all types. Ragonet power reverse gear is applied to the switch engines, while the locomotives of the other types have Mellin reverse gears with oil

pistons. Other specialties used are Pyle National electric head and back-up lights, Franklin grate shakers, pneumatic cylinder cocks and Chicago flange lubricators.

The important dimensions, weights and factors of the four types of locomotives are given in tabular form herewith.

Changes in Railway Mail Service

WASHINGTON, D. C.

THE POST OFFICE Department, through the efforts of E. H. Shaughnessy, second assistant postmaster general, has recently made a number of changes in its regulations, which are of interest to the railroads, some of which are included in three circular letters addressed to the superintendents of the railway mail service. One of the most important of these is the doing away with the system of assessing small fines against the railroad companies for delinquencies in mail handling, which for a number of years has been a source of great contention. The fines have been small, generally from \$1 to \$25, and assessed in a perfunctory way so that they have not acted as a corrective. The entire matter is now being placed in the hands of the railway mail service division superintendents, with the idea of eliminating the mass of perfunctory handling and taking action only where deliberate negligence or failure properly to co-operate is found, in which event the superintendent is to report the

DIMENSIONS, WEIGHTS AND RATIOS OF NEW NORTHERN PACIFIC LOCOMOTIVES

	Switch 0-8-0 51,000 lb.	Pacific 4-6-2 41,900 lb.	Mikado 2-8-2 57,100 lb.	Mallet 2-8-8-0 105,100 simple 87,600 compound
Tractive effort, 85 per cent, m. e. p. ....	51,000 lb.	41,900 lb.	57,100 lb.	105,100 simple 87,600 compound
Speed at estimated maximum horsepower.....	25 in. by 28 in.	46.5 m. p. h. 26 in. by 28 in.	11.8 m. p. h. 28 in. by 30 in.	10.6 m. p. h. H. P., 26 in. by 30 in. I. P., 40 in. by 30 in. H. P., piston, 14 in.
Cylinders, diameter and stroke.....	Piston, 14 in.	Piston, 14 in.	Piston, 16 in.	H. P., 16 in. by 14 in. I. P., 16 in. by 14 in. I. P., 6 in. I. P., 6 in. H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Valves, kind and size.....	6 1/2 in.	7 in.	7 in.	H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Greatest travel.....	1 1/2 in.	1 1/2 in.	1 1/2 in.	H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Lap.....	0	1/4 in.	0	H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Exhaust clearance.....	0	1/4 in.	0	H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Lead in full gear.....	5/8 in.	F. 3/4 in. R. 5/8 in.	1/4 in.	H. P., 14 in. I. P., 14 in. H. P., 14 in. I. P., 14 in.
Weights in working order—				
On drivers.....	217,000 lb.	181,000 lb.	247,000 lb.	410,500 lb.
On front truck.....	69,000 lb.	69,000 lb.	30,500 lb.	35,500 lb.
On trailing truck.....	64,000 lb.	64,000 lb.	59,500 lb.	28,000 lb.
Total engine.....	217,900 lb.	314,000 lb.	337,000 lb.	483,000 lb.
Tender.....	163,000 lb.	198,600 lb.	214,000 lb.	213,000 lb.
Total engine and tender.....	380,900 lb.	512,600 lb.	551,000 lb.	696,000 lb.
Wheel base—				
Driving.....	15 ft. 0 in.	14 ft. 0 in.	16 ft. 6 in.	15 ft. 6 in. and 15 ft. 0 in. 15 ft. 2 in.
Total engine.....	15 ft. 0 in.	35 ft. 7 in.	35 ft. 3 in.	35 ft. 3 in.
Total engine and tender.....	53 ft. 1/2 in.	71 ft. 3 1/2 in.	70 ft. 11 1/2 in.	83 ft. 6 1/2 in.
Wheels and journals—				
Driving wheels, diameter over tires.....	51 in.	73 in.	63 in.	57 in.
Driving journals, diameter and length—				
Main.....	10 in. by 12 in.	11 in. by 14 in.	11 1/2 in. by 14 in.	10 1/2 in. by 20 in.
Others.....	9 in. by 12 in.	10 1/2 in. by 14 in.	10 1/2 in. by 14 in.	10 in. by 12 in.
Front truck wheels.....	33 1/2 in.	33 1/2 in.	33 1/2 in.	30 1/2 in.
Trailing truck wheels.....	45 in.	45 in.	43 in.	30 1/2 in.
Tender wheels.....	33 in.	36 in.	36 in.	36 in.
Boiler, type.....	Strait-top	Conical Conn.	Conical Conn.	Conical Conn.
Steam pressure.....	175 lb.	190 lb.	180 lb.	200 lb.
Fuel.....	Bit. coal	Sub. Bit. Coal	Sub. Bit. Coal	Sub. Bit. Coal
Diameter, first ring, inside.....	78 3/4 in.	80 in.	82 in.	86 in.
Firebox, length and width.....	102 in. by 66 1/2 in.	120 1/8 in. by 84 1/2 in.	120 1/2 in. by 84 1/2 in.	126 1/2 in. by 96 1/2 in.
Combustion chamber, length.....	36 in.	39 in.	36 in.	56 in.
Arch tubes, number and diameter.....	3—3 in.	4—3 1/2 in.	4—3 1/2 in.	4—4 in.
Tubes, number and diameter.....	290—2 in.	190—2 1/4 in.	212—2 1/4 in.	254—2 1/4 in.
Flues, number and diameter.....	36—5/8 in.	42—5/8 in.	40—5/8 in.	45—5/8 in.
Tubes and flues, length.....	15 ft.	18 ft.	18 ft.	24 ft.
Heating surface, firebox.....	185 sq. ft.	300 sq. ft.	288 sq. ft.	332 sq. ft.
Heating surface, arch tubes.....	18 sq. ft.	35 sq. ft.	35 sq. ft.	41.6 sq. ft.
Heating surface, tubes.....	1,785 sq. ft.	2,002 sq. ft.	2,234 sq. ft.	3,275 sq. ft.
Heating surface, flues.....	772 sq. ft.	1,082 sq. ft.	1,030 sq. ft.	1,548 sq. ft.
Heating surface, total.....	2,760 sq. ft.	3,419 sq. ft.	3,587 sq. ft.	5,497 sq. ft.
Superheater surface.....	652 sq. ft.	978 sq. ft.	874 sq. ft.	1,305 sq. ft.
Equivalent heating surface.....	3,738 sq. ft.	4,811 sq. ft.	4,908 sq. ft.	7,454 sq. ft.
Grate area.....	47 sq. ft.	70.3 sq. ft.	70.3 sq. ft.	84.3 sq. ft.
Tender—				
Water capacity.....	8,000 gal.	10,000 gal.	10,000 gal.	10,000 gal.
Fuel capacity.....	12 tons	14 tons	16 tons	16 tons
Ratios—				
Weight on drivers ÷ tractive effort.....	4.25	4.32	4.32	Simple 4.25 Compound 4.25
Tractive effort × diameter drivers ÷ equivalent heating surface.....	696	636	735	Simple 8.4 Compound 8.4
Equivalent heating surface ÷ grate area.....	79.5	68.4	69.7	88.4
Firebox heating surface ÷ equivalent heating surface, per cent.....	5.43	6.98	6.59	4.81
Total weight ÷ equivalent heating surface.....	58.1	65.2	68.7	44.8

incident and recommend what should be done. In the past the field forces have simply reported and action has been handled in the department.

Circular Letter No. 1499, addressed to the superintendents of the railway mail service, gives the following instructions to be observed hereafter in handling failures and delinquencies against railroad companies:

1. Where at any station there is a failure to dispatch a small quantity of mail which is the result of oversight or mishandling on the part of the railroad employee, and such failure is of infrequent occurrence (say not more often than once in a quarter) the papers should be filed; if it occurs at the same station more often a cautionary letter should be addressed to the company, but if it is of frequent occurrence the matter should be reported to this office with a full statement of the facts with proper recommendation for disciplinary action. Care should be taken to present the company's side of the case.

2. Where, as a result of investigation, there is doubt as to responsibility of the employee, the papers should be filed without action, but should be available for action in case same condition should arise again.

3. Where there is failure to handle a considerable quantity of mail (such as to promptly unload, to transfer to train of the same or another company, etc.) immediate investigation should be made by the chief clerk and such instructions given by the railroad company as will prevent a recurrence; if the circumstances indicate willful neglect of mail, the particular attention of proper officials of the company should be directed to that feature of the case, and if prompt steps are taken to remedy the conditions papers may be placed in files for the time being; but if corrective measures are not at once adopted and the same failure occurs again soon, the department should be placed in possession of all the facts, with a recommendation for disciplinary action.

4. Where an outgoing train is not held for the loading of mail that should be dispatched therein, the matter should be handled to a conclusion with the proper company officials. If prompt orders are given by the railroad company to prevent the recurrence and the same does not occur again soon, the papers may be placed in the files for the time being. If, however, the same failure occurs again soon, the papers should be included with succeeding cases and forwarded to the department with recommendations for proper disciplinary action. Care should be taken in cases of this kind that the company actually responsible is dealt with. If in doubt, the chief clerk, if possible, should make a personal investigation.

5. In all cases where mail or equipment is damaged while in the possession of the company, the papers should be forwarded to the department after the matter has been investigated, with report of all the facts and proper recommendation as to whether disciplinary action should be taken. This is in order that the department may be protected in case claim is made by senders or addresses for any loss sustained to insured or registered mails.

6. Where there is a failure to catch a pouch from a crane, where the clerk has made proper effort, the irregularity should be taken up with the company in the usual manner, and if there does not appear to have been any negligence on the part of the company, papers may be filed. If such failure occurs at the same point frequently the company shall be requested to see that the crane is in good order and proper alignment. Cases of this kind need not be reported to this office unless the company manifests indifference in the matter of placing the crane in proper condition.

7. In cases where report is made that the engineer failed to sound signal, resulting in failure to catch, papers should be filed in the office of the chief clerk after the company's attention has been called to the matter.

In circular letter No. 15 notice is given that the department has decided to change its form of lease of terminal

railway post offices, most of which are located on railroad property and generally part of a passenger station building, by eliminating the provision that a lease may be terminated upon the discretion of the postmaster general and substituting that only where the growth of the service makes it necessary to secure more commodious quarters, the lease may be terminated and cancelled upon three months' notice. This assures the railroads that there will be no arbitrary action taken; and a benefit is expected to accrue to the post office department in securing lower rentals than it could obtain with the former cancellation clause.

#### Faulty Side Service

Circular Letter No. 1523 provides that hereafter no deductions will be made from pay of railroad companies for failures to perform side service unless the failures are due to some delinquency on the part of the company. Deductions will not be made for failures due to snow blockades, wash-outs and similar causes. Those failures due to causes over which the company has no control may be omitted from the quarterly certificates. For those failures which are reported on the certificates superintendents are directed to show the cause in their indorsement. They are to continue to specify the offices involved when there is a complete failure for a 24-hour period.

Col. Shaughnessy held a meeting with the Railway Mail Pay Committee at Washington on October 7, at which the question of the consolidation of routes was given further consideration. The Interstate Commerce Commission had refused to grant the petition of the railroads to re-state the routes as they had been prior to the installation of the space system, deciding that this was an administrative matter for the postmaster general to handle. Since the consolidation of routes, the department has been considering practically an entire railroad system as one route. The commission's order provides that the minimum payment on any route over any part of which mail is transported on less than six days a week shall be \$50 per mile per annum and this has since been increased to \$62.50 per annum.

Col. Shaughnessy told the committee that the department would be glad to review any claims presented to it wherein the carrier can show that under the former stating of routes they are entitled to this minimum pay and that it would adjust their claims accordingly, although no action would be made retroactive so as to require back payment. The committee agreed to advise the railroads to submit claims on this basis. There was also a discussion of the recent tests made at the request of the railroads as to the number of sacks found to be the average in a three-foot space.

The railroad committee was not entirely satisfied with the first test and it suggested another, but this was not agreed to by the department, for the test was made at the request of the committee and in accordance with conditions which the committee had proposed.

THE COMMISSION has suspended until February 12 the operation of schedules published in a Kansas, Oklahoma & Gulf tariff which propose the cancellation of the application of an emergency penalty charge of \$10 per car for detention to cars loaded with lumber at points on the Kansas, Oklahoma & Gulf, the Chicago & Alton, the Chicago & Eastern Illinois and other roads.

THE ILLINOIS CENTRAL reports an increase of 338 stockholders during a period of four months, from April to August, of this year. The number of stockholders on April 6, was 14,225 and on August 5, 14,563, an increase of 2.37 per cent. The rate of increase for the preceding seven years, from August 10, 1914, to April 6, 1921, was 30.84 per cent, when the number of stockholders increased from 10,872 to 14,225. More than 98 per cent of the stockholders of this road are said to be American citizens, residing in this country.

# President's Conference on Unemployment

## Reports of Committees Received, but Not Acted Upon Unless Unanimous—Rate Reductions Urged

WASHINGTON, D. C.

THE PRESIDENT'S Conference on Unemployment, after creating a standing committee with authority to convene the full conference at any time and to continue its work through sub-committees during the continuance of the emergency, concluded its sessions at Washington on October 13. The conference adopted a general program of emergency measures outlining means of affording temporary relief during the coming winter and more fundamental methods for reviving business and preventing seasonal unemployment and depression in the future, as well as a number of committee reports in amplification of the general principles expressed.

These two programs, which were published in the *Railway Age* of October 1 and 8, respectively, were, however, practically the only expressions of the conference itself and represented the general principles which had been unanimously recommended by various subcommittees of the conference and then accepted without dissent in open session of the conference. Recommendations which were not concurred in by all of the members of the committees in which they originated were presented to the conference but in most cases were not read. They were received as information, laid upon the table and given out to the press and the public for the weight that may attach to the opinions of those who signed them, but with the understanding that they were not to be considered as in any sense representing the findings of the conference.

### Controversial Points Avoided

By the plan of avoiding controversial points in its own recommendations, the conference was able to preserve complete harmony in its open sessions and to present an unanimous program of proposed measures or principles. The numerous controversies which arose, as to details or other principles were confined within the committees, to be made public merely as the expression of the divergent views of a gathering of men of many minds and varying interests. As a result the conference, which had at times appeared likely to be disrupted by the irreconcilable differences between the representatives of capital and labor, adjourned with promises of co-operation by the representatives of both groups.

The outcome was largely the result of the unusual tact and leadership displayed by Secretary Hoover, the presiding officer, who, with the co-operation of the organization committee, was able to find a common point of contact on which an agreement in principle at least could be reached, as to some of the most vigorously disputed topics that were discussed. The handling of questions pertaining to transportation, which were among the most important in the discussions of several of the committees, represent an excellent illustration of the method pursued by the conference. Both in its own program of recommendations and in several of the committee reports that were adopted, the conference went on record in favor of a reduction or readjustment of freight rates, but in such language that no objection was offered from any source.

On the other hand, recommendations made by majorities of the transportation committee, the committee on manufactures and the committee on mining, advocating in one form or another the passage of the so-called railroad "funding" bill, failed to obtain unanimous approval within the committees because of the opposition of the labor members, but they assented to the conference declaration in favor of "settle-

ment of the financial relationships between the government and the railways."

Neither the railroad bill nor the rate question was debated on the floor of the conference. Similarly the question of wage reductions which for a time threatened to disrupt the conference was kept in the background. Secretary Hoover, who was the guiding spirit of the entire proceedings, expressed complete satisfaction with the accomplishment of the conference, in view of the fact that it was not a legislative body and its influence is to be measured only by the extent of the general acceptance of its recommendations. President Harding also declared himself well pleased with the results.

### Report of Committee on Emergency Measures in Transportation

The transportation committee reported as follows:

As to the facts of unemployment in railroad transportation service, the committee has had before it certain figures furnished to the committee on statistics by the Interstate Commerce Commission and further figures prepared by the Bureau of Railway Economics and certain other figures filed with the committee by representatives of the employees and prepared by the statistical bureau of the United States Railroad Labor Board. The Interstate Commerce Commission figures show, taking the average number of employees of Class I steam roads for the calendar years from 1916 to 1920, inclusive, that there was a steady increase in the number of employees during each of these years over the year preceding. Using only thousands and beginning with 1916, there were 1,647,000 employees; in 1917 the number increased 86,000; in 1918 there was an increase of 105,000; in 1919 an increase of 70,000; and in 1920 another increase of 105,000; making the total number of employees for the year 1920, 2,012,000. During the first six months of 1920 there was unusual steadiness in employment, there being in January 2,000,105 employees and in June, 2,056,381.

During the six months the fluctuations above and below the average for the year did not exceed 50,000 on either side or a variation of only about 2½ per cent above or below the average for the year. The number of employees increased very materially during July, August, September and October, 1920, as during these months transportation was steadily on the increase, as shown by weekly freight car loadings. In November business began to fall off and the decrease was marked in December. During November and December railroad employment began to decline. In January, 1921, there were 125,000 less men on the payroll than in January, 1920, and 250,000 less men than in June, 1920. The reduction of employees continued through February and March, 1921, and reached its peak in April, 1921, there being 128,000 less men on the payroll in February, 1921, than in January of that year; in March 83,000 less than in February; and in April 50,000 less than in March. In 1921 there were 410,000 less men on the payroll than in April, 1920. There was a slight increase in the number of men on the payroll in May and June, 1921, as compared with April, 1921, May showing an increase of 33,000 over April, and June showing an increase of 11,000 over May; but even with these slight increases over April, 1921, June showed 470,000 less men on the payroll than June, 1920.

The figures of the Interstate Commerce Commission give the number of men in totals but not classified, while the figures from the statistical bureau of the Railroad Board

showed the number out of employment by classes. The figures submitted by the Labor Board, however, compare March, 1921, with August, 1920. In considering comparison between these two dates it must be borne in mind that employment in the largest numerical group of railroad employees—that is, maintenance of way and unskilled labor forces—is probably very near the minimum in the month of March and near the maximum in the month of August.

Using these dates, the Railroad Labor Board figures show a little over 600,000 more men on the payrolls of the Class I roads in August, 1920, than in March, 1921. As the result of the months chosen, however, of the total number of men out of employment over one-half are embraced in the single group designated as maintenance of way and unskilled labor forces, there being a little over 307,000 less in March, 1921, than in August, 1920.

In group 4, shop employees, there were over 135,000 more men on the payrolls in August, 1920, than in March, 1921. These two groups alone, therefore, represent over 70 per cent of the total amount of unemployment in railroad service, if March, 1921, and August, 1920, be taken as a basis of comparison. The figures as between these two months further subdivided show that of section men alone there were over 191,000 less employed in March, 1921, than in August, 1920. As these two months would, under normal conditions, show nearly the maximum in the annual seasonal fluctuations of section forces, 600,000 less men on the payrolls on March, 1921, as compared with August, 1920, reflects cumulative effects of unemployment due to the inevitable annual seasonal fluctuation in the number of section men and other unskilled labor forces, together with the further reduction in forces due to the present acute depression. Comparing, however, the same month in 1921 with 1920, the latest figures available, those for the month of June showed very nearly 500,000 men off the payrolls in railroad service, this being nearly 25 per cent of the total number employed in June, 1920.

The figures above discussed are payroll figures and show, as stated, the number of men actually off the payrolls on the date on which the figures were gathered. This, of course, is not the full measure of unemployment. It rather reflects total unemployment with a consequent wiping out of the entire income from wages of those who have been dropped. We have to recognize frankly that there is a further degree of unemployment in railroad service as in other service, due to the fact that many employees are working only part time with a consequent diminution in income. In the railroad service this partial unemployment in the shop crafts is brought about by the entire closing down of the shop for short periods or for certain days in the week while working the full day at other times. In the direct work of transportation carried on by engine and trainmen, this partial unemployment is reflected in a different way, for while the reduction in the volume of traffic would lay off a certain number of these employees, it also spreads the opportunity for employment for those who remain more thinly among them so that all of those who remain in what is known as "pool service," which embraces a large majority of those in direct transportation service, suffer diminished earnings through diminished opportunities for actual employment.

#### CAUSES OF UNEMPLOYMENT

Two very different elements enter into the causes of this present unemployment in railroad service. On the one hand, tens of thousands of engine, train, and yard men, and clerical and station forces are without employment and off the payrolls because the railroads have no work to offer them. By reason of the general stagnation of business, the work is not there to be done; and even if the railroads were fortunate enough to have on hand available funds, this would not create employment for the class of employees just referred to. But in the case of many classes of employees in the

maintenance of way and maintenance of equipment departments, the situation is markedly different; the work is actually there and waiting to be done; and the reason that many of the employees who are now idle and earning nothing are not at work on the jobs that are there, is because of the financial inability of the railroads generally to undertake the work that is waiting.

A very considerable amount of renewal and repair work in both the maintenance of way and the maintenance of equipment departments, that would under normal circumstances have been done currently, has been steadily deferred because of lack of available funds to purchase supplies and to meet the payrolls for such work; and this deferring of work with its direct consequence of unemployment is still going on. The extent of it is indicated by figures prepared by the Bureau of Railway Economics. In June, 1920, the total number of "bad order cars"—that is, cars out of service and awaiting repair or reconstruction—was 170,493. Their number remained practically stationary until the end of 1920, it having risen only to 182,000 in December of that year. As already stated business had fallen off sharply from October to January. In January repair and construction work accordingly began to be deferred, and the number of bad order cars mounted steadily, until in June, 1921, it stood at the enormous number of 341,337. This postponement of repair work has continued until in September the number of bad order cars had mounted up to 374,087, which is nearly three times the proportion normally in bad order.

#### ADVOCATE PASSAGE OF SENATE BILL 2337

It is, therefore, perfectly obvious that there is a large amount of work in railroad service actually ready and waiting to be started; and could be started as a practical and effective unemployment measure the moment funds become available to purchase supplies and re-employ the men now waiting idle and anxious at the gate. This committee, therefore, recommends that this conference urge upon Congress the immediate passage of a bill such as Senate Bill 2337, as a very obvious and direct means for the immediate reduction of unemployment in railroad service. The discretion now vested by law in the President should not be restricted, but inasmuch as the funding provided for in the plan proposed in that bill is here recommended as insuring relief to unemployment, it is suggested that it would not be inconsistent to make such funding conditioned, in proper cases, upon the expenditure of the funds in such channels as will increase employment.

As the committee understands the bill referred to it is not a provision for a gift by the government to the carriers, as appears to be believed by many who are misinformed. Very few railway companies have been able to pay out of current earnings for additions and betterments chargeable to capital account. The compensation that the government agreed to pay for the use of the carriers' properties was measured by their respective net railway operating incomes for the test period. It was, therefore, essentially current earnings. If the expenditures made by the government for additions and betterments chargeable to capital account are deducted from the compensation due to the carriers, the effect is to force payment for such items from current earnings. That necessarily depletes in important measure the funds that should be available for maintenance, and caused deductions in working forces and undesirable deferring of needed maintenance work. This is reflected in the statistics of the bad order cars. If the government now funds the sums of money expended during the federal control for additions and betterments chargeable to capital account under proper security, it will simply do for the carriers in connection with these expenditures made by the government while it had full possession and control of the properties, that which is ordinarily done by the banker and the investor.

For that part of the unemployment amongst railroad employees due to the general business depression, a very different type of remedy must be sought. The degree of employment or unemployment in railroad service is peculiarly sensitive to general business conditions. Depression in any particular line of production or commerce immediately reflects itself in the volume of transportation derived from that source; and when a condition such as the present exists, with depression in most if not all lines of business, the resulting railroad unemployment bears a direct relation to the extent of the general depression. It is obvious, therefore, that any reduction of the unemployment in the railroad service that is due entirely to the lack of demand for transportation can only be brought about to such extent and with such promptness as there is a revival in business either in certain lines or in all lines.

Increases in activity in road building and other forms of public construction work by the nation, states, and municipalities will increase the demand for railroad transportation and to that extent decrease unemployment in railroad service, and we assume that the ways and means to bring about the stimulation of this public construction work will be discussed in the reports of the special committees dealing with these topics. This committee, however, recommends that the conference also urge that all railroads that are in a condition to do so should at once increase their maintenance, repair, construction, and other kinds of work to the very fullest extent possible in order that the railroads themselves may contribute just as far as they can to increasing the opportunity of employment.

#### BUYERS' STRIKE MUST BE BROKEN

This committee, however, fully appreciates that even if all forms of public work should be pushed to the limit, it would still only partially remedy the present unemployment in railroad service. Nothing short of a general revival of business can stimulate the demand for transportation to an extent that would furnish re-employment to the various classes of railroad employees who are now off the payroll and are waiting for the pick-up in transportation to furnish them again the opportunity to earn a livelihood. It seems, therefore, logical and proper for this committee to offer certain suggestions to the conference dealing with the reviving of industry in general. There can be no general resumption of business so long as the "buyers' strike" continues unabated.

So long as the public restricts its purchasing to the minimum in the belief that later it can purchase at lower prices, or because of a vague fear that the future is uncertain and that it must husband its purchasing power against unforeseen developments, just so long will the present distressing depression not only continue but probably grow in volume and intensity. There can be no marked resumption of business and no appreciable start toward a restored prosperity unless and until we all face the future with courage and confidence and deliberately and consciously throw aside our present policy of postponing all except essential purchasing and begin to buy freely and generously. It is inevitable that our domestic conditions will feel the effect of that aftermath of the war which has prostrated Europe and destroyed the market which we had always had there, but the natural doubt and timidity as to the future which these conditions have created in the United States, has brought about a condition of acute distress in our domestic affairs which is now beginning clearly to show itself, with the certainty that it will rapidly spread unless we resolve that by conscious effort we will bring about such resumption of prosperity as we can.

In the face of the present depressed conditions every individual should be willing to make some sacrifices for the general good in the same patriotic spirit as most of our citizens made them under the stimulus of war necessities. A patriotic and civic spirit in each individual is just as necessary for

the common good in time of peace as in time of war; and it should not be cast aside with the cessation of hostilities. We should, further, frankly recognize and assimilate the changed ideals, conditions, and attitudes of mind that were born of the war and that will persist. Our ideals of democracy and of liberty are the object of attack and assault in times of peace from enemies that are as dangerous and more insidious than an armed foe. We must meet such attacks with the same patriotic devotion and sacrifice that we would contribute to the support of our naval and military forces in time of war. It should be further frankly recognized that any long continuance of the present situation is playing directly and very effectively into the hands of these forces of demoralization.

Although, even at the best we can expect, our domestic business conditions will inevitably reflect in some degree the general world prostration, and while we cannot hope by and of ourselves to restore the fullest measure of pre-war prosperity, we could, if each of us individually would regard it as his duty and would determine without delay to "buy till it hurts," create a condition of business which compared with the present would represent a marked degree of prosperity.

The preliminary recommendations of the advisory committee point out that manufacturing for stock and rotation of employees would each tend to alleviate the growing evil of unemployment. Producing for stock, wherever at all possible, would certainly tend to lessen unemployment, but it carries with it hazards and possibilities of loss to the individual producer. Rotation of labor forces would relieve those more acute cases of distress due to entire unemployment, but it merely distributes the burden of the present situation more widely amongst wage earners, increases partial unemployment, and does not appreciably decrease the sum total of unemployment. It is unfair and would, therefore, probably be futile for the conference to appeal to the employing and wage working groups of the public to assume voluntarily the risks or make the sacrifices involved in the remedial measures above referred to, if each of those in the other groups constituting the consuming public has an eye single for his own selfish interests and deliberately postpones, as far as he can, purchases he is in position to make, in the belief, if not in the hope, that by such action he can bring on a period of "bargain days" during which he can "stock up" much to his own advantage.

The committee, therefore, recommends to the general body of the conference that it urge upon the public the policy of immediate general buying as a patriotic duty; that it formulate a program to direct such buying, as far as it may be practicable, into the lines where unemployment is most serious, and that it also formulate, or suggest, a program under which individual communities may create organizations to guard against the possibility of sellers taking advantage of the new activity of purchasers to push up prices or to make undue profits out of a movement involving much of individual sacrifice and growing out of a sense of patriotic duty.

#### FARMERS NEED RELIEF

In discussing the revival of business as it affects transportation service, we cannot lose sight of the fact that farmers represent some 40 per cent of the total population; that because of the reduction in price of what farmers have to sell, as compared with what they have to buy, there is a very large proportion of them who are financially prostrated and whose purchasing power is reduced almost to the vanishing point. The farmer has borne an undue share of the burden of deflation; and until this large and important element of the public finds itself in better financial condition and able to come into the market as buyers, there cannot be a full resumption of business or of transportation activities.

The committee, therefore, recommends and suggests that, if its recommendation for the resumption of buying be adopted

by the conference and a plan devised to direct such buying, special effort be made to direct such buying in a way that will bring relief to the fullest extent possible to the farming interests.

The report was signed by E. E. Clark, former chairman of the Interstate Commerce Commission; Charles H. Markham, president of the Illinois Central; Raymond A. Pearson, president, Iowa State College of Agriculture; Charles P. Neill, manager of the Bureau of Information of the South-eastern Railways.

#### W. S. CARTER ON SENATE BILL 2337

W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen, concurred in the report with the inclusion of the following:

"Inasmuch as this conference has been called by the President for the sole purpose of relieving unemployment, we also recommend that in the disbursement of the funds advanced to the railroads, as provided in Senate Bill 2337, the railroads should be required to devote practically the entire sum so appropriated to the purchase of labor and material for maintenance of way and structures and for maintenance of equipment, and that the maintenance of equipment be performed in the shops of the railroads to their capacity, thus insuring the expenditure of the money so appropriated in the re-employment of railroad labor."

A copy of an argument and brief presented by W. S. Carter in support of his amendment to the report was also made public. Mr. Carter said he found it to be the belief of every other member of the committee that if \$500,000,000 could be immediately advanced to the railroads they would immediately expend it in undertakings that would promptly restore to their former positions a great number of railroad employees now out of employment, but he took the position that the Senate bill "covers only additions and betterments chargeable to capital account," from which he argued that as "it has never been the general policy of railroads to use any money affecting their capital to repair cars and locomotives," they would use very little of it to employ labor but "probably would follow the past practice in the disbursement of money properly chargeable to capital account and would pay deferred interest, deferred dividends and other deferred obligations."

He said that the railroads would not employ additional men except as traffic increases require it and increased earnings warrant increased expenditures for maintenance and, therefore, he doubted whether the passage of the Senate bill would relieve to any noticeable extent the present unemployment unless it was required as a condition. He quoted from a letter from the president of a railroad that had received \$3,000,000 in settlement of its accounts with the Railroad Administration to his stockholders announcing that it had enabled the directors to declare dividends out of the earnings of the years 1918 and 1919 and, Mr. Carter said, \$1,774,360 of the amount was so used. He also quoted from a summary of advance suggestions made by the Economic Advisory Committee to the conference, which said that "a condition should be attached that would make such funds immediately available in greater part only for new construction, repairs and outlays that would increase the demand of the railroads for labor and materials and thus augment general employment and revive industry."

Mr. Carter also insisted that the use of the money should be restricted to give relief to railroad workers, and not expended for work in outside shops. He assumed that if no conditions were attached a large proportion of any expenses incurred by the railroads in renewal of and repairs to track would be devoted to the purchase of rails, spikes and ties and that the proportion that would probably go to the employment of track labor would in most instances be delayed.

#### Report of Manufactures Committee

Seven members of the committee on permanent measures in manufactures presented a report declaring that "whereas transportation is a great factor affecting every community, every condition of life, and every occupation, therefore we respectfully urge immediate consideration and action respecting conditions existing in the operation of the American transportation systems which obstruct the improvement of general business conditions." The committee, therefore, strongly advocated that the conference recommend, as a means of permanently bettering the existing situation:

1. (a) The prompt passage of the measure funding the obligations of the railroads for advances of money by the government for additions and betterments made by it during the period of its operation of the roads. These expenditures were capital charges and would not have been undertaken by the roads without previous provision for the supply of funds, a provision now impossible for them to make in the present market.

(b) The facilitation and expedition of payment of unsettled government obligations to the railroads, grown out of its rental obligations. This rental was a substitute for the income of the railroads and is the source from which they meet their current obligations. These measures are demanded by ordinary business fairness. They would strengthen the credit of the roads and place them in funds; making possible the payment of their supply bills, and their physical rehabilitation; give additional employment to labor and greatly benefit the public.

2. That the functions now performed by the Railroad Labor Board be transferred to the Interstate Commerce Commission in order that the dual control which establishes rates through one body and requires another to regulate the terms of the largest item of expenditure shall end, and opportunity be given for the reduction of operating expense to be immediately reflected in decreased cost of transportation for the public good.

3. That the Adamson act, enacted under circumstances disapproved by the American public, be repealed as an initial step in the reduction of artificial and uneconomic costs imposed upon the shipping public by law.

4. That while we recognize no business can permanently operate at a loss, we believe every employer should join with every employee in the endeavor to eliminate every discoverable waste and inefficiency from production, transportation, and distribution which is practically removable, and every element in our citizenship should frankly set its face against any group, whether in agriculture, business, labor or transportation that selfishly undertakes to resist necessary economic adjustment in any narrow endeavor to protect its personal interests at the expense of the permanent betterment of our national life.

This report was signed by J. A. Campbell, Wm. M. Butler, John E. Edgerton, A. L. Humphrey, W. H. Stackhouse, J. A. Penton, and T. P. Hinman.

#### Minority Report of Manufactures Committee

A minority of the members of the committee on permanent measures by manufacturers dissented from the conclusions and decisions reached by the majority, and submitted for consideration a brief statement of the reasons.

On the recommendation for the repeal of the Adamson law, the report said that wholly apart from, independent of and prior to the decisions of the Supreme Court declaring the Adamson law constitutional and before its provisions were put into operation by railroad managements, a voluntary agreement had been reached between the presidents of the railroad companies and the chief executive officers of the railroad brotherhoods by which the eight-hour day was established in the railroad service, and that the recommendation for the repeal of the Adamson law can only be interpreted

as an effort to break down the principle of the eight-hour workday.

The report continued in part:

The proposal of the committee majority for the abolition of the Railway Labor Board established under the Esch-Cummins law upon which labor has or is supposed to have representation of persons of their own choosing, would remove the only responsible governmental agency to which the workers may present for consideration and action their claims relating to wages and conditions of employment.

While we agree with the declaration that waste in industry and transportation (more than 50 per cent of which has, by competent engineers, been allocated to capital and management) should be eliminated and that co-operation of workers and management is necessary to accomplish this purpose, the attempt of the majority of the committee to place the wage earners of our country, human beings, in the same categorical position as "business" and "transportation" is based upon the assumption that men and women, human beings, are in the same category as commodities or articles of commerce to be weighed, measured, bought and sold in the same manner as commodities or articles of commerce.

The statement by the author of the resolution was that this conference and the citizenship of the country should condemn and denounce any resistance on the part of railroad employees—the men engaged in the railroad service—should they resist wage reductions. From this we most emphatically dissent.

The statement of the committee majority that "every element in our citizenship should frankly set its face against any group whether in agriculture, business, labor, or transportation that selfishly undertakes to resist necessary economic adjustment in any narrow endeavor to protect its personal interests at the expense of the permanent betterment of our national life" is vague and indefinite but evidently is intended to imply that the workers (mistakenly called "labor") are seeking selfishly to promote their interests by narrow endeavor.

We dissent from this point.

Every thinking person, freed from purely selfish gain, understands that reduction of the earning power of the working people is most injurious to the whole people, economically, industrially, commercially and socially.

On sections *a* and *b* of recommendation No. 1 relating to the settlement of the financial relationship between the government and the railroads, we sustain the declaration of the general conference adopted on this subject at its meeting October 11, with the distinct understanding and conditional upon the adoption of the minority report of the transportation committee signed by W. S. Carter.

We further recommend the following addition to the minority report of Mr. Carter: "That any railroad company which fails or refuses to abide by the decisions and regulations of the Railroad Labor Board and the Interstate Commerce Commission shall not participate in the funds provided for in Senate Bill 2337."

This was signed by Samuel Gompers, Sara A. Conboy and Roy Dickinson.

The manufactures committee also recommended a substantial reduction in the operating expenses of the federal government, the prompt enactment by Congress of a law free from ambiguity providing for a substantial downward revision of taxes, and the early passage of a satisfactory and adequate revenue and tariff bill.

#### Other Reports

The committee on agriculture presented a report which was adopted, stating that 50 per cent of the earnings of the railroads are derived from agriculture and declaring that "railroad freight rates on commodities to and from the farms must be substantially reduced without delay." The report

also declared that all prices and wages should be so adjusted that normal relations may be re-established and the purchasing power of the farmers may be restored.

#### CAR SUPPLY AND FUEL

The Committee on Emergency Measures in Mining presented the following recommendations pertaining to car supply:

1. As our bituminous coal deposits are ample and the developed mine capacity is far in excess of the country's bituminous coal requirements, therefore safeguarding the public's coal supply is mainly a question of car supply and transportation.

2. As the preferential car supply was permitted to exercise its evil influence in 1920 with most disastrous results to our people, your committee respectfully recommends that the Esch-Cummins act be hereafter rigidly enforced to the end that there shall be no preferential use or assignment of railroad cars in the coal industry. This practice has been condemned as an evil by the Fuel Administration in 1918, by the Presidential Coal Commission in 1920, and is prohibited by the Esch-Cummins law, all recognizing that it results in reducing coal costs to users of the preferential fuel cars only, and thereby unduly increases the cost of coal to the remainder of the coal consuming public who do not enjoy the use of the preferential car. It has the further baleful effect of increasing both unemployment and irregularity of employment at the mines not enjoying the use of the preferential fuel cars; all resulting in the unnecessary pyramiding of coal costs upon all coal consumers.

3. As an aid to prevent unemployment, as a substitute for the assigned car and to avert the peak load at bituminous coal mines, your committee therefore further recommends that this conference memorialize the committee of railroad executives and ask that they gradually accumulate and maintain along their lines of railway throughout this country a quantity of bituminous coal sufficient to take care of their requirements for a period of at least five months, as that quantity should provide for their requirements over any reasonable emergency that may arise, and permit the remaining fuel consumers to fully employ our transportation facilities.

4. Your committee further recommends that this conference memorialize Congress to the effect that the railroads be paid all monies now owing them by the federal government.

5. Your committee further recommends that the per diem charge made by railroads for cars used off their lines be materially increased and enough so as to insure their prompt return to the owning railroad, thereby materially increasing transportation facilities.

This was a unanimous report of the committee but was not acted upon by the conference, it was stated, because of a dissent within the organization committee on the statement regarding assigned cars. This committee did not recommend reductions in the freight rates on coal.

#### UNEMPLOYMENT STATISTICS

The Committee on Unemployment Statistics recommended among other things:

That the present practice of the Bureau of Labor Statistics of collecting from manufacturing concerns as of the fifteenth of each month data concerning the number of employees on payrolls and the amount of their earnings and of publishing monthly indices of the changes therein be extended to cover transportation, trade and mining and quarrying. That in getting the data concerning the state of employment in mining and quarrying the Bureau of Labor Statistics collaborate with the U. S. Geological Survey. That in getting data concerning the state of employment in railroad transportation, the Bureau of Labor Statistics collaborate with the Interstate Commerce Commission.

The committee also recommended that an inter-departmental committee be constituted to consider means of extending and improving employment and unemployment statistics and of co-ordinating the informational service of local, state and federal agencies.

The report was adopted by the conference.

#### UNEMPLOYMENT AND BUSINESS CYCLES

The committee on public works submitted a report including a general discussion of unemployment and business cycles, stating that the work of the unemployment conference is not complete until it has provided for a thorough study of the problem as to whether we are helpless to prevent the periodical recurrence of periods of business depression, or at least to reduce their intensity and duration. This report pointed out that the business cycle is marked by peak periods of boom between valleys of depression and unemployment and that the most helpful way to check the losses and misery of depression is to check the feverish extremes of "prosperity."

If all branches of our public works and the construction work of our public utilities, including the railways, would systematically put aside financial reserves to be provided in times of prosperity for the deliberate purpose of improvement and expansion in times of depression, the report said, it would not only greatly decrease the depth of depressions, but would at the same time diminish the height of booms. A reserve of but 10 per cent of the average annual construction for this purpose would almost iron out the fluctuations in employment. The committee also reported that the leadership of the federal government in expanding its public works during periods of depression and contracting execution in periods of active industry would accomplish a great deal to stabilize conditions and would require no great change from existing procedure.

The chief remaining step, the report said, is to choose a period of intensive execution to synchronize with major periods of industrial depression. Certain works of the federal government, such as reclamation, flood prevention, river and harbor work, and roads and public buildings were declared to be peculiarly constituted for consideration as large undertakings covering a long period and capable of elasticity of execution to synchronize with cycles of business depression. The committee on public roads urged upon Congress the importance of at once making a liberal appropriation for road building and the states to carry on their share of the work.

#### AN APPEAL TO EMPLOYERS

A statement by employer members of the conference was read, appealing to employers throughout the country to support the immediate program adopted by the conference as a means of practically ameliorating the existing situation. The statement said in part:

We do not think our fellow citizens sufficiently appreciate the value of the insistence of the President and the Secretary of Commerce that neither government relief nor public doles shall be considered as a means of meeting unemployment.

The plans upon which the conference have agreed are practical forward steps. But as employers, conscious of a high social responsibility, impelled alike by considerations of intelligent self-interest and public obligation to restore the employing power of productive enterprise, we do not believe our situation can be permanently improved until some of its chief causes are frankly recognized and squarely faced. Our prime difficulty is a high and unbalanced cost of production which is keeping goods and services beyond the buying power of consumers. That condition cannot be bettered until each of us recognizes it as a fact and does his part, individually and collectively, to restore a free exchange of commodities and services upon such terms that we may reciprocally absorb each others products.

Wages rose more slowly than prices during the war. Since

then wholesale prices have declined more rapidly than wages, and in the great field of foodstuff production farm products have declined more rapidly than the things for which they are exchanged, while fuel, transportation, and some construction costs are still predicated upon wartime costs. Costs in these fields of human activity are more greatly out of line than in any other and the effect is plainly felt in all our inter-dependent social transactions. The drastic economic adjustment through which we must pass in establishing new prices and values for goods and services knows no favorites. Employers and employees, manufacturers, merchants, distributors, transporters, all must meet them. For neither commodity prices nor wage rates can be maintained above the natural economic level.

Following this President Gompers of the American Federation of Labor addressed the conference, saying that he had been gratified at the spirit manifested in the conference, although he regretted that the same spirit was not present in the committee of which he was a member. He said he was sure the work of the conference would be helpful in promoting an early emergence from the acute unemployment situation and that labor is willing to co-operate in carrying its program.

#### A SUCCESSFUL CONSUMMATION

Mr. Hoover made a brief concluding speech, saying the primary purpose had been to get a plan which "without calling on the public purse would carry the country through the next winter and into seas less rough" and expressing gratification that the plan had been so willingly accepted by a large part of the country, as indicated by the many communications already received. The problem, he said, is mainly one for voluntary organization and success depends on the co-operation of industry and civic bodies. He referred to the successful consummation of the conference as "marking a milestone in social progress" and pointed out that it was the first one held in Washington since the war in which extremes in social thought had been brought together and parted in good will after agreeing on every major issue.

The announcement of the members of the standing committee was made on Monday. It includes C. H. Markham, president of the Illinois Central, and E. E. Clark, former chairman of the Interstate Commerce Commission. It is to appoint sub-committees for further report including such committees of service to the present emergency as may be required, a committee on construction development and a committee on investigation of remedial measures for reducing intermittent and seasonal employment.

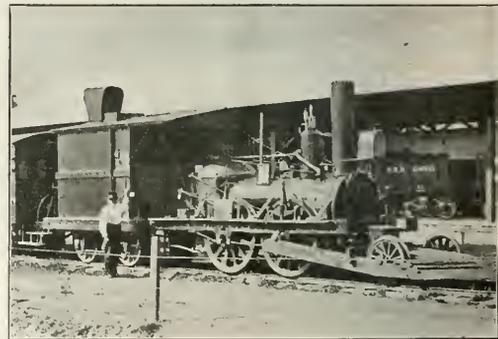


Photo by Etting Galloway

A. Relic of Old Days on the Pennsylvania—the John Bull



Public Utility Commissioners in Convention at Atlanta

## Meeting of Public Utility Commissioners at Atlanta

Will Ask Congress to Define and Limit Power of I. C. C. in Regulation of Intrastate Rates

THE NATIONAL ASSOCIATION of Railway and Utilities Commissioners completed its annual meeting at Atlanta, Ga., Friday, October 14, after having passed resolutions putting the meeting on record as favoring immediate legislation by Congress to define and limit the power of the Interstate Commerce Commission as to intrastate rates. The resolutions further expressed the commissioners' opinion that the group plan of making rates as prescribed in Section 15a of the Interstate Commerce Act was "uneconomic and unsound."

These resolutions were passed after a lively discussion, in which the opinions of those present, as expressed in the resolutions, were brought out in rather unmistakable terms.

### Resolution Asks Congress to Define and Limit I.C.C. Rate Making Powers

The report of the meeting appeared in part in last week's *Railway Age* in the article on page 723 and following pages, entitled, "Debate Federal Versus State Regulatory Powers." The resolutions were formulated by the committee on state and federal legislation, the report of which was given last week. The resolutions were in part as follows:

*Whereas* the Interstate Commerce Commission, under authority claimed to have been conferred upon it by the Transportation Act of 1920, has made orders advancing railroad rates applicable to intrastate transportation in 24 states, in disregard of state laws and orders of state commissions, and has instituted investigations, upon the petition of carriers, which are now in progress, looking towards the advancing of railroad rates and express rates in several other states, and

*Whereas* Section 15-a of the Interstate Commerce Act, as amended by the Transportation Act, provides that the commission, under the group plan of rate-making, contained in said section, shall fix an aggregate value of all lines within each rate group, and shall make rates that will yield an aggregate fixed return on such aggregate value, and

*Whereas*, under such group plan, the worthless roads of the country, ill-considered ventures, duplicated lines, speculative enterprises, and roads that have served their useful purpose and outlived the industries which once justified their construction, are valued with the good, and the good roads are given the right to earn upon their own value and also upon the value attributed to such worthless roads, which cannot earn because they perform no sufficiently useful service in the actual movement of traffic to enable them to earn, and

*Whereas* the group plan, if carried out, will necessarily enable some carriers, in the exact words of said Section 15-a, "to receive a net railway operating income substantially and unreasonably in excess of a fair return upon the value of their railway property," and



*Whereas* the Interstate Commerce Commission has attempted to make rates according to said group plan, and has asserted the power, under said plan, to raise rates within one state to meet deficits in earnings incurred in other states, and

*Whereas* unjust and unreasonable rates have thereby been imposed upon the public, and

*Whereas* the people of the several states, under the Interstate Commerce Act, as amended, as interpreted and administered by the Interstate Commerce Commission, have been deprived of their accustomed powers of self-government.

*Therefore, be it resolved:* That we urge upon Congress immediate legislation, at the present session, which shall so amend the Interstate Commerce Act as clearly to define and limit the power of the Interstate Commerce Commission, so that no intrastate rate may be changed or set aside without proof by competent evidence, and upon findings of fact made, that the same is non-compensatory and injures a person or persons, or a locality or localities, engaged in interstate commerce to such an extent as seriously to diminish the business of such person or persons, or seriously to retard the growth and development of such locality or localities, and

*Resolved further:* That it is the sense of this Association that the group plan of making rates, prescribed by said Section 15-a, is uneconomic and unsound, and that the attempt, under its provisions, to produce returns upon roads that are unable to earn returns themselves, has placed an unjust burden upon the business of the nation, from which it should be relieved by the immediate repeal of said Section 15-a, and

*Resolved further:* That, as an aid in the construction of the Interstate Commerce Act by the commission and the courts, Congress is requested to incorporate in such amendments amendatory legislation, a declaration of the purpose of Congress to recognize the right of the several states to exercise full and final jurisdiction over all rates for intrastate transportation which do not injure persons or localities engaged in interstate commerce, in the manner aforesaid.

#### Resolution Relating to Amendment of Valuation Act

*Whereas* there are now pending in the House and Senate of the National Congress bills introduced by Congressman Sweet and Senator Cummins respectively, each to amend Section 19-a of the Interstate Commerce Act (which section is commonly referred to as the Valuation Act) so that the Interstate Commerce Commission shall not be required to include in its valuations of railroad properties any estimates of hypothetical damages for present cost of condemnation and damage in excess of present value, or original cost, of railroad lands,

*Therefore, be it resolved:* That this Association urges the prompt passage of the proposed amendment as an act of plain justice to the public.

#### Resolution Relating to Car Service

*Whereas* it is impracticable for the Interstate Commerce Commission to attempt to supervise the distribution of cars as between individual shippers throughout the United States, and

*Whereas* there should be some governmental authority within reasonable reach to which appeal can be made to require equitable distribution of cars without regard to whether the same are to be used for shipments interstate or intrastate,

*Therefore, be it resolved:* That Congress be respectfully urged to amend the Interstate Commerce Act in such way that the regulatory authorities of the states may make reasonable orders and regulations, not in conflict with federal law, or with lawful orders of the Interstate Commerce Commission, requiring cars within the respective borders of such states to be equitably distributed to shippers desiring same, without regard to whether they are desired for use in shipments that are interstate, or intrastate.

#### Resolution Relating to Certificates of

##### Convenience and Necessity

*Whereas* by the Transportation Act of 1920, the Interstate Commerce Commission was, in terms, given exclusive authority to grant certificates of convenience and necessity for construction and abandonment, not only of railroad lines which are interstate in character, but of railroad lines lying, or to be constructed, wholly within one state, and

*Whereas* the Federal Government ought not to undertake to authorize state railroads engaged in intrastate transportation, which have often been constructed, in part, by public aid from the State or sub-divisions thereof, to abandon intrastate operation without authority from the State.

*Therefore, be it resolved:* That Congress be respectfully urged to amend the existing law so that certificates of convenience and necessity granted by the Interstate Commerce Commission shall not purport to relieve the carriers obtaining the same from conforming to the laws of the states with respect to construction and operation within the states for intrastate transportation, or with respect to the abandonment of such transportation.

#### Committee Reports

Some of the committee reports presented at the meeting were given in abstract form in last week's *Railway Age*. Other reports of interest to *Railway Age* readers were those of the committees on railway rates, on valuation and on car service.

#### Report of Committee on Railway Rates

The report of the committee on railway rates reviewed briefly the hearings in the Western Grain Rates case, decision of the I. C. C. in which is expected shortly, and the decision in the Live Stock case. Continuing, it referred to the lack of power of the state commissioners over intrastate rates as follows:

The main subject of interest in rate making the last year has been the boundaries of the jurisdiction over intrastate rates as between the Interstate Commerce Commission proceeding under the Transportation Act and the various state commissions. The Interstate Commerce Commission has assumed jurisdiction over so many intrastate rate tariffs that not much authority has been left to the state commissions. As long as this condition continues there is not much room for functioning through the state commissions. That the result is highly unsatisfactory to the state commissions and the shippers, and presumably to the I. C. C. is recognized. Only the carriers seem to be pleased because their campaign of many years to cripple the state commissions and concentrate the authority over all rates, state and interstate, in the hands of the Interstate Commerce Commission where the machinery would be so clogged that readjustment would be practically impossible, appears to have met with some success.

Most of the state commissions are marking time. They are so fettered with orders of the Interstate Commerce Commission and injunctions of the federal courts that until the law is defined by the Supreme Court or Congress acts, their ability to serve the states in the matter of intrastate rates is very limited.

#### NEED FOR UNIFORMITY IN INTRASTATE RATES

The committee also discussed the need for uniformity of intrastate rates in states similarly situated:

One of the principal things that the states, particularly the western and southern states, ought to consider is the need for greater adjustment in the intrastate rate schedules of those states whose business is performed under substantially similar conditions. One of the most telling criticisms made against state regulation, and the hardest criticism to answer, is the disparity in many instances in the rate levels in states where transportation conditions are somewhat similar. It could be pointed out that similar disparity exists in interstate rates but as it is state regulation that is under fire your chairman calls your attention to this subject with his earnest suggestion that it be given most careful thought by the members of this association.

It is realized that in many states statutory rates affect the power of the commissions to adjust inconsistencies but nevertheless it is our judgment that the state commissions will take the longest step toward strengthening themselves if they will work together in an attempt to harmonize conflicting state levels where the transportation conditions are substantially similar. I think that this association could render no greater service than to use its best efforts in this direction and that this convention should give this phase of the subject its most careful consideration.

#### MOTOR TRUCK TRANSPORTATION.

One of the recent developments that must be given earnest consideration by the state commissions is the competition with railroads on l. c. l. short hauls by motor trucks. As the highways of the country improve and the motor truck becomes more and more a permanent part of our economic machinery the tendency is to move merchandise, household goods and other forms of traffic by truck instead of by rail. There will be much work for the state commissions to do in the future along this line. If the movement by traffic by truck is an economic advantage it has doubtless come to stay and will be extended in the future. If, on the other hand, this movement has been induced by freight rates higher than they should be, and particularly under those scales of rates where the short haul rates are abnormally high, then there is an opportunity for the state commissions to function through a readjustment of such rates. There has been a tendency in recent years to apply very high rates to short haul traffic. The application of such scales together with the percentage increases in rates has resulted in bringing about the situation discussed.

The report is signed by C. M. Reed, Kansas Public Utilities Commission, Chairman.

Report of Valuation Committee

The committee on valuation began its report with a tribute to Charles A. Prouty, late director of Valuation of the I. C. C. With reference to the present progress of the valuation work the report quoted a letter from C. F. Staples, acting director of the Bureau of Valuation. This letter said in part:

**Engineering Section:** The field work in all branches has been completed for some time, except in the Eastern district, where we concluded field work during the month of June. This narrows the engineering work down to that of the office, where our energies are now concentrated upon the application of prices and the writing of reports. On June 30th, last, the engineers had submitted to this office reports covering 111,682 miles of main line, representing the properties of some 425 carriers. While many of these are small properties, quite a number of the larger lines are represented. At present we are making special efforts to cover all roads of five hundred miles or more, and will continue to do so until reports are received on all the larger carriers. The work of compiling reports is well organized and good results are expected.

**Land Section:** The field work of this section is practically complete except for terminals, in all except the Eastern district. In that district, owing to the extreme density of the larger lines, the work will continue for some time. Our field forces on July 1 were reduced to 25 per cent of the former personnel. This section is slightly behind the engineers in the submission of land reports, but the work is in the main well abreast of the other.

**Accounting Sections:** The accounting field work will be concluded by December 31, 1921, and the field forces disbanded. The only work then remaining to be done will be the compilation of accounting reports.

**Tentative Valuation Reports:** The work of preparing these reports is proceeding rapidly and many additional tentative valuations have been sent out during the past 60 days. These reports include a final value as well as figures showing the excess cost of acquisition of lands.

In case of the fifty-six tentative valuation reports issued prior to the decision of the Supreme Court in the Kansas City Southern case, the Commission has issued supplemental tentative valuation reports covering a final value and the excess cost figures. Tentative valuation reports have been prepared and served upon 190 of the 1,966 corporations, which includes 151 independent carriers and 39 subsidiaries. The main line mileage for these carriers is 26,553.

The corps of analysts is preparing additional tentative valuation reports as rapidly as conditions permit.

The report of the committee followed with various references and opinions of the Valuation Committee relative to the procedure adopted by the commission in such matters as present cost of condemnation, original cost, appreciation and depreciation, etc. Reference was also made to the efforts of the utility commissioners' association to procure an amendment of the valuation act to relieve the I. C. C. from the obligation to include in its valuations its estimate of the "present cost of condemnation and damages in excess of original cost or present value" of lands.

Committee on Car Service

C. B. Aitchison, of the Interstate Commerce Committee, and chairman of the Committee on Car Service and Demurrage, did not attend the Atlanta meeting. He, however, sent a letter in which, among others, the following points were brought out:

The enforcement of equitable rules for the distribution of inadequate supplies of equipment has become of increasing importance as periods of car shortage have succeeded each other. The margin between the volume of traffic which causes a complete surplus of equipment or an acute car shortage is always relatively small. Seasonal and periodic depressions or expansions of business activity, it is to be expected, will make recurring conditions of car surpluses and car shortages for a considerable time to come. The problems in times of car shortage are to mitigate the effects of the deficiency in equipment, and to insure equal opportunity to all users.

But by what test is equality in opportunity to be measured? The two principal proposals are: (1) past performance and potential productive capacity, and (2) immediate ability to ship. Other tests have been proposed, such as distribution primarily to growers or those who have purchased from growers, but the principal bases suggested are those indicated. Shall distribution be on the basis of the past and future, or on the basis of the present, disregarding the past and future? These questions are pressing toward a determination. In the formulation of such rules, the general good of the service, in the broadest sense of the term, is to be given great weight. This is but another way of expressing the desire for equality of treatment, and recognizes that besides the immediate claimants for cars, other shippers have rights which can be preserved only by the adoption of rules which will result in obtaining the greatest possible amount of movement in the aggregate. The shippers who are affected, aside from the

immediate claimants, may be, and often are, located at far distant points, and even upon other lines.

Car distribution rules, like other rules laid down by law, are often stretched and violated. As an incident to the formulation of any code of distribution rules, it is desirable that the tests proposed shall be such that the basic facts can be readily examined and cases of discrimination and preference may be ascertained and punished with a fair degree of certainty. The basis, therefore, should not be one which is solely or peculiarly within the knowledge or possession of the shipper, impossible of verification by the carriers, commissions or courts. Any system of ratings which is dependent upon reports of facts solely within the knowledge and control of the shippers affords the opportunity to obtain inflated ratings, and puts the honest shipper at a serious disadvantage in comparison with his dishonest competitor.

Another minor consideration of some importance, is that the rating system proposed shall be based on normal operating conditions and traffic, rather than the maximum of achievement or demand. When it is considered that the bituminous coal mine ratings have at times been based on an aggregate of 19,000,000 tons capacity per week, which is taken as 100 per cent in measuring car supply, while the maximum amount ever produced slightly exceeded 13,000,000 tons, it is apparent that the manner of statement of relative ratings may give a wholly misleading idea as to the character of the service in fact afforded.

Mr. Aitchison here referred to the bad order car situation, to the needs of the railroads in general for new equipment, new facilities, etc. Continuing, he said:

An unduly large increase in permanent improvements will mean unnecessarily high costs; so in the interest of conservation, a proper balance must be maintained in order that large sums of capital expenditure will not remain idle longer than sound policy requires. Such effective co-operation between carriers as will insure the maximum service from the available equipment is, therefore, emphatically necessary to economical management, and very properly be demanded.

Other Business

The association voted to meet next year at Detroit, Mich., on September 26. With reference to the list of officers elected for the ensuing year, there was an error in the names as given in last week's *Railway Age*. The secretary's name should have been given as James B. Walker, who is secretary also of the New York Transit Commission. Leroy S. Boyd of Washington, D. C., was elected assistant secretary.



From the Indianapolis News

Some Fellow Can Always Use Something in Discard

### Freight Car Loading

THERE was a reduction of over 5,000 cars in the freight car loading during the week ending October 8 as compared with the previous week, which set a new high record for the year. The total was 895,740, as compared with 1,011,666 in the corresponding week of 1920 and 982,171 in 1919. The decreases were in grain and grain products, of which the loading was 53,964 cars; in forest products, 49,459; ore, 25,702, and merchandise and miscellaneous freight, while there were increases in live stock, 34,073; coal, 180,339, and coke, 6,054. The loading of grain and livestock was, however, greater than for the corresponding week of 1920.

Except for the Allegheny and Southern districts, de-

from October 1 to October 8 averaged 142,970, a decrease of 29,450. Of the total 31,020 were box cars and 82,525 were coal cars. There were also scattering shortages amounting to 5,237.

The Car Service Division of the American Railway Association reports that the loading of fruits and vegetables in September in California, Colorado and the Northwestern states was 60 per cent in excess of last year. Including Michigan and New York, the total was 45,324 cars, an increase of 10,500 cars over last year. This has necessitated special attention to the handling of refrigerator cars and ventilated box cars. The loading in the West for the first week of October averaged 150 per cent in excess of last year and the month's loading will exceed September by a wide margin. All of this must be accomplished with less cars than a year

#### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals, This Year, Last Year, Two Years Ago, for Week Ended Saturday, October 1, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded			Received from connections		
										This Year 1921	Corresponding Year 1920	Corresponding Year 1919	This Year 1921	Corresponding Year 1920	Corresponding Year 1919
Eastern	1921	8,354	3,107	46,340	1,610	4,608	1,651	63,895	85,487	215,052	242,719	233,214	220,411	265,234	257,547
	1920	6,240	2,632	54,987	3,714	7,331	11,444	48,441	107,530	172,319	293,100	202,924	114,733	150,775	145,556
Allegheny	1921	3,128	3,468	49,016	2,587	2,850	5,380	47,328	58,662	72,021	34,549	37,896	38,526	19,424	19,989
	1920	2,533	3,199	61,788	6,696	3,267	14,593	5,726	41,880	126,520	129,677	130,859	69,002	73,520	73,450
Pocahontas	1921	383	312	23,567	184	1,200	97	5,726	41,880	145,038	167,648	151,832	58,840	60,038	90,821
	1920	147	286	24,129	927	1,826	239	32,693	52,644	145,038	167,648	151,832	58,840	60,038	90,821
Southern	1921	4,115	1,982	22,454	391	15,488	296	39,419	42,375	126,520	138,409	136,059	49,845	50,512	53,610
	1920	3,374	2,545	34,788	1,249	19,572	2,980	32,084	44,085	138,409	138,409	136,059	49,845	50,512	53,610
Northwestern	1921	19,252	8,403	9,934	502	12,005	17,363	29,029	41,921	138,409	167,648	151,832	58,840	60,038	90,821
	1920	15,101	9,541	12,113	1,606	15,092	45,023	28,419	40,753	145,038	167,648	151,832	58,840	60,038	90,821
Central Western	1921	17,150	12,596	22,250	211	6,775	719	32,693	52,644	145,038	167,648	151,832	58,840	60,038	90,821
	1920	11,834	12,820	26,005	451	7,126	3,452	32,142	49,616	145,038	167,648	151,832	58,840	60,038	90,821
Southwestern	1921	4,793	3,000	5,444	130	6,540	887	16,237	32,169	69,191	67,797	64,182	58,840	60,038	90,821
	1920	4,403	3,360	6,088	147	7,871	737	17,454	28,747	69,191	67,797	64,182	58,840	60,038	90,821
Total all roads	1921	57,075	32,868	178,005	5,615	49,466	26,393	234,227	317,429	901,078	992,283	957,596	581,252	687,398	711,193
	1920	43,632	33,383	209,898	14,790	62,085	78,458	203,506	346,531	901,078	992,283	957,596	581,252	687,398	711,193
Increase compared	1919	13,443	36,043	214,511	13,438	63,186	46,233	148,287	392,105	30,721	29,102	91,205	106,146	106,146	106,146
Decrease compared	1920	13,443	36,043	214,511	13,438	63,186	46,233	148,287	392,105	30,721	29,102	91,205	106,146	106,146	106,146
Increase compared	1919	13,286	3,175	36,506	7,823	13,720	19,840	232,312	300,757	873,305	1,008,109	995,901	569,626	693,881	684,366
Decrease compared	1920	13,443	36,043	214,511	13,438	63,186	46,233	148,287	392,105	30,721	29,102	91,205	106,146	106,146	106,146
September 24	1921	51,848	32,933	171,474	4,946	48,702	30,333	235,063	287,371	853,762	911,166	894,991	543,585	678,200	692,757
September 17	1921	55,311	30,399	166,058	4,853	46,472	28,215	198,516	253,612	748,118	883,415	946,970	491,512	658,454	672,337
September 10	1921	54,457	25,108	142,049	4,999	42,145	27,632	198,516	253,612	748,118	883,415	946,970	491,512	658,454	672,337
September 3	1921	60,632	27,539	155,816	4,658	45,419	31,112	220,894	284,531	830,601	961,633	904,393	542,989	711,814	659,779

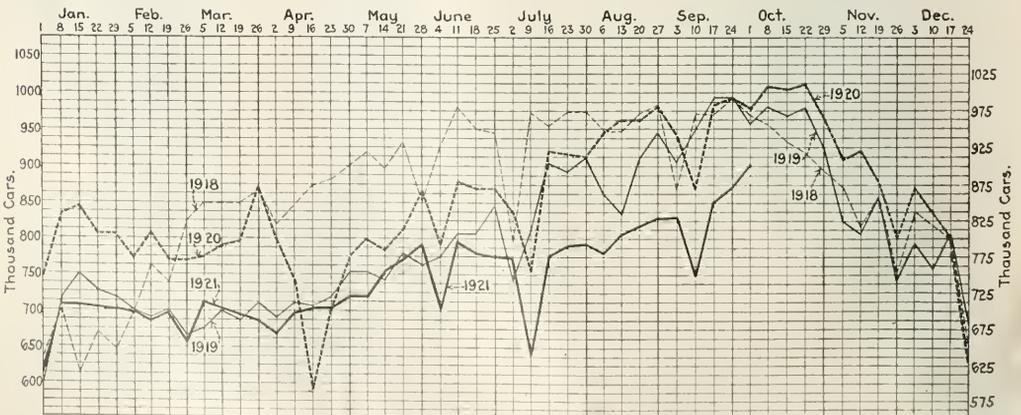
creases were reported compared with the previous week in the loading of all commodities by districts, while compared with the corresponding week last year, all reported decreases except the Central Western which showed an increase.

The summary for the week of October 1 is given in the table above.

The car surplus continued to decline and for the period

ago. The report says it is essential that every available car be used, that bad order cars be repaired, that the movement of empties as well as loaded be expedited, that refrigerators be not used for dead freight and that all terminal delays be reduced to the minimum.

The distribution of cars will be as directed by the refrigerator section.



Revenue Car Loading This Year as Compared with Preceding Years

# Bridge and Building Men Meet in New York

Thirty-First Annual Convention Characterized by Large Attendance and Active Interest

THE American Railway Bridge and Building Association met in its thirty-first annual convention at the McAlpin Hotel, New York, on Tuesday, Wednesday and Thursday of this week. The meeting was one of the most largely attended in the history of the association, the total attendance of members exceeding 250. W. F. Strouse, chief engineer, Maryland Public Service Commission, Baltimore, Md., and president of the association presided.

The convention was called to order promptly at 10 o'clock Tuesday morning. W. G. Besler, president of the Central Railroad of New Jersey, welcomed the association to New York. After referring to his early experiences as a division officer in charge of operation and maintenance, he dwelt on the crisis the railways are now facing. After expressing the opinion that there would be no strike, he stated that railway officers would be blind if they failed to take the action necessary to meet the issue and they were taking this course. He pointed to the fact that while the labor organizations

call their members out they could not call them back. He urged the members of the association to use their influence for conservative action.

In his opening address, W. F. Strouse, president, also referred to the threatened strike. After tracing the developments since the passage of the Adamson law he said that "to the railroad labor unions must be attributed part of the responsibility for the present high freight rates and until there is a reduction in wages and bonuses, the people cannot hope to get cheaper transportation. What the railways need and are entitled to is a dollar's worth of work for every dollar expended and they must have it before normal conditions will return." He closed with an appeal for the members to support their companies loyally.

The report of C. A. Lichty (C. & N. W.), secretary-treasurer, showed over 75 applications for membership with a total of over 900 members and a balance of \$1,600 in the treasury of the association.

## Report on the Construction and Maintenance of Cinder Pits

Cinder pits may be divided into the following types: (A) Depressed track pits where ashes are loaded into cars by hand. (B) Dry pits where ashes are received in cast iron buckets and loaded into cars by means of an overhead crane. (C) Water pits, both shallow and deep, where ashes are removed by clamshells operated by a locomotive or overhead

pit about 3 ft., leaving an air space between the cinders and the concrete. This will prolong the life of the back wall.

Figure 2 shows the pit deepened and both rails supported on cast iron pedestals with a pre-cast slab between the rail and back wall; this design keeps the rail off the concrete wall and leaves the beams and pedestals exposed where they can be replaced in a few minutes if a failure should occur.

Figure 3 shows a dry pit used by the Bangor & Aroostook, and is similar in construction to Fig. 1, the difference being that the bottom of the pit slopes from the back wall to the center of the pit; the beam carrying the track is made of two 70-lb. rails placed upside down to support the track; the pedestals are spaced 6 ft.  $\frac{3}{8}$ -in. between centers and are built

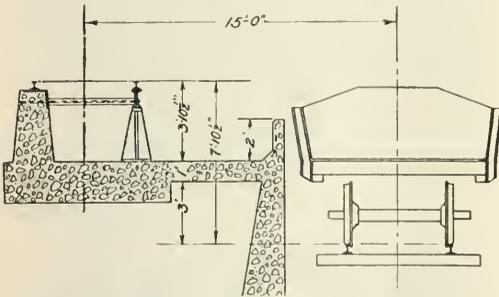


Fig. 1—Standard Cinder Pit of the D. M. & N.

crane and loaded into cars. (D) Miscellaneous pits, where ashes are removed by various mechanical means.

Figure 1 shows a standard pit used by the Duluth, Missabe & Northern at Proctor, Minn., which is typical of the hand-loading pits installed by many of the railroads in this country. The pit is constructed with one rail resting on the back wall of concrete, and the other on two 10-in. channels back to back with cover plate top and bottom, the channels being supported by cast iron pedestals on 7-ft. centers. This pit has failed in one respect: the action of the hot cinders and water on the top and face of the back wall have caused it to crumble and produce an unsafe bearing for the rail. No trouble has been experienced with the cast iron pedestals, and with a reasonable amount of cleaning of the hot cinders away from the steel beams, they do not buckle. The beams require cleaning and painting every spring and fall. The back wall can be protected with old plates  $\frac{1}{4}$ -in. thick hung over the edge of the back wall on the inside of the pit and down the

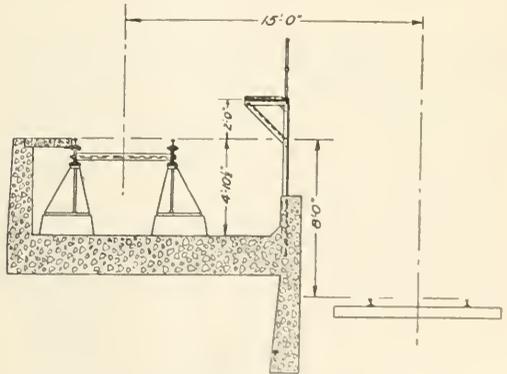


Fig. 2—A Second Design of Type A Pit

of two 70-lb. rails back to back on end and encased in concrete, the concrete being protected by a  $\frac{1}{8}$ -in. steel plate; these vertical rails are supported by two 70-lb. rails running lengthwise in the foundation.

The Buffalo, Rochester & Pittsburgh has built a pit of Type B at Lincoln Park, N. Y., shown in Fig. 4, which seems to be a favorite design for a dry pit in cold climates.

This pit can be built with one track and a loading track, or if the length of the pit is fixed, several tracks can be built side by side. This style of pit is constructed of a series of cast steel buckets placed in shallow pits to receive ashes direct from locomotives. There is enough depth provided under the buckets to allow for drainage. The buckets are handled by means of an overhead crane from the pit directly to the ash cars. The pits are of an unusual shape with sloping sides in the upper part and a narrow rectangular lower portion. old rails being imbedded in the sloping surfaces with their bases projecting  $\frac{1}{2}$ -in. from the surface of the concrete; each parapet wall is capped with a 12-in. channel to which the track rail is bolted. The buckets have a capacity of 2 cu. yd. each, each seated on the projecting rails of the pit walls. When the buckets are filled the traveling crane carries them to the cinder cars where they are dumped automatically. The buckets open at the bottom like a clam shell, the two halves being carried by a pair of scissor levers at the middle.

The Lehigh Valley has two modern water ash pits of Type C, both being built within the last three years. The one at Coxton, Pa., Fig. 5, is a double-track arrangement, 400 ft. long with a water pit between the two tracks. The water pit is 12 ft. wide in the clear by 14 ft. 3 in. deep, the ash tracks having 29-ft. centers. The water in the pit is generally within 1 in. of the bottom of the carrying rails, so that it is impossible to overheat or burn any part of the supporting structure. The outside rail of each ashing track is carried

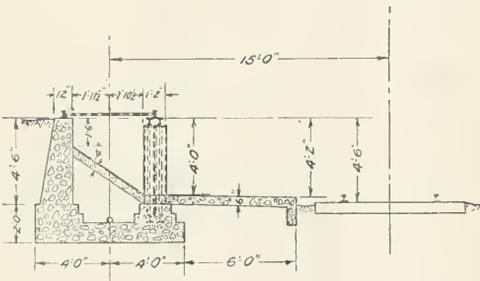


Fig. 3—A Dry Pit Built by the Bangor & Aroostook

on the outside concrete wall of the pit, bearing on a  $\frac{1}{2}$ -in. iron plate. The inside rail of the ashing track is carried by three rail girders supported by heavy cast iron posts with large bases imbedded in the concrete. These carrying girders consist of two 136-lb. rails, side by side, with spacing blocks so designed that the base of the track rail, also of 136-lb. section, rest on and are gripped between these spacing blocks and the heads of the two lower carrying rails, forming, when tightly bolted together, a rigid 3-rail carrying girder.

The walks around the ashing tracks of this pit consist, on the outside, of the natural surface of a cinder fill, while on the inside the walk consists of 80-lb. rail brackets fastened to the cast iron columns. The rail brackets carry the floor of the walk, consisting of old boiler flues laid side by side and spaced by means of iron straps, so that the finer ashes fall through. A suitable railing, also of old flues, amply protects anyone from falling into the water pit.

Crushed slag was used in the concrete for the pit as a precaution against hot cinders coming in contact with the concrete while the pit is without water.

The Pere Marquette installed a mechanically-operated pit in January, 1912, which seems to be a favorite for small terminals and shows a low cost of operation. From recent reports the pit and conveyor are in good shape with very little maintenance. There are two good points in favor of the mechanically-operated pit. It requires less room, due to cinders being loaded continually into cars; and it requires

but one man to operate it, which makes for a low operating cost. The structural steel in these pits should be inspected, cleaned and painted frequently.

The report was signed by G. K. Nuss (D. M. & N.), chairman; C. L. Beeler (N. Y., N. H. & H.), Wm. Cardwell (Wash. Term.), H. A. Gerst (G. N.), W. L. Rohbock (W. & L. E.), F. E. Schall (L. V.), E. R. Wenner (L. V.), J. P. Wood (P. M.), A. E. Kemp (L. V.).

### Discussion

The discussion hinged largely on the efficient use of the ash pits in connection with the equipment and the disposal of

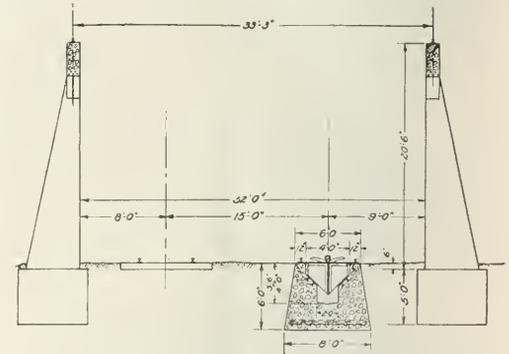


Fig. 4—Type B, Pit Built by the Buffalo, Rochester & Pittsburgh at Lincoln Park, N. Y.

the cinders. It was emphasized by Arthur Ridgeway (D. & R. G. W.) that no car had as yet been developed that would handle hot cinders without resulting in the destruction of the car body by burning or warping. Quenching was necessary though it gave considerable trouble in the winter with the handling of the cinders. It was stated by J. S. Robinson (C. & N. W.) that at the Chicago terminal the cinders are

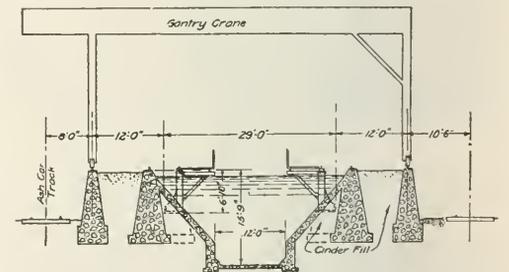


Fig. 5—Type C, Water Pit Built by the Lehigh Valley at Coxton, Pa.

loaded into out-bound empty coal cars, moved to West Chicago, and there unloaded by locomotive cranes and stored. Later they are loaded as needed, and distributed to branch lines for ballast and to other places where they can be used to advantage. Other members stated that their roads make a practice of storing cinders in the winter to obviate the difficulty of handling them when frozen, and that others store them both in the winter and summer. L. D. Hadwin (C. M. & St. P.) stated that one difficulty arose from the fact that the use of locomotive cranes to handle cinders has the disadvantage in that it may be taken away and used out on the line with the result that the cinders pile up in quantity, and in the winter time freeze into an unmanageable mass.

## Report on Lining Tunnels Under Traffic

The reasons for lining a tunnel depend largely on the conditions surrounding it. A timber-lined tunnel, no matter how short, located on a busy trunk line at a point where detouring is prohibitive or badly restricted, presents a hazard which may result in enormous cost, for while the earth formation may be such as to give no trouble from compressed sides or upheavals, there is the ever-present danger from fires, derailments and loads fouling the timbers, any one of which might delay traffic enough to cut into the revenue of the road seriously. Wet tunnels have been another source of annoyance on many lines. This excessive moisture not only causes track trouble but oftentimes creates side pressure and upheavals which endanger the stability of the tunnel and interfere with traffic.

The kind of lining selected differs somewhat on the various roads. Some roads deem it advisable to line with concrete only while others use concrete back walls and brick facing such as are found in many tunnels on the Baltimore & Ohio. The concrete lining has proven the most economical to install, especially with the present day methods—the pneumatic process being the latest development in this line. By this process the work may be carried on successfully with little interruption to traffic and to the work. There are various designs of machines for this work and the methods are divided as to the application of the lining. There is now a machine by which a grout of sand and cement is applied to the rock walls of the tunnel, either with or without reinforcement as the conditions warrant, to the desired thickness. This has proved to be a satisfactory method of lining rock-faced tunnels where there is considerable seepage or where decomposition is setting in, but has not been used to any great extent in railroad tunnels otherwise.

### Lining Tunnels by Hand

Lining tunnels by the so-called hand method has been accomplished under traffic very economically under favorable circumstances. This is done in long tunnels by the use of the jumbo car with the staging high enough to permit of the concrete being shoveled into the form from this elevated platform. The difficulties encountered in this method are generally caused by the interference with the work by traffic, making the work spasmodic and creating an economical loss, which can be overcome only by the strictest supervision and the employment of a small crew of men. Where short tunnels are to be lined the hand method is probably the most practical.

On the Southern Pacific in some instances a 4-ft. by 5-ft. drift has been opened over the top of the tunnel timbers, where the earth formation was favorable, a track laid on the tunnel timbers and the concrete carried into the form in dump cars. In this case the form can be poured to the top with little shoveling. Several short pieces of lining were done by this method, the drift over the top being used only where it could be easily opened, but the work was found to cost more than with the pneumatic method.

### Lining Tunnels by the Pneumatic Method

The Southern Pacific has now practically adopted the pneumatic method for the lining of its tunnels under traffic. The first piece of work of this nature consisted of enlarging to standard size and lining with concrete the tunnels on the Tehachapi Pass and the San Fernando tunnel, all of which are located on the single track main line, between San Francisco and Los Angeles. Of the 18 tunnels on the Tehachapi section, 11 were lined throughout by the pneumatic process.

From one to five tunnel gangs were kept constantly at work repairing and retimbering these tunnels and the maintenance expense mounted to from \$2,000 to \$5,000 per month. It was therefore finally decided to enlarge and line the tunnels

to a standard size with a minimum overhead clearance of 22 ft. and a minimum width of 16 ft. on tangent track and 17 ft. on curves of over 2 deg.

The machine used for placing the concrete lining is simple and long-lived. It consists of a cone-shaped hopper with a trap door at the top and a cast iron elbow at the bottom or apex of the cone. A 6-in. discharge pipe is used for the ¼-yd. batch.

These machines have come into general use on many roads for lining tunnels under traffic and have proved to be very satisfactory, both as regards the quality of concrete produced and the economy of applying the lining, although the economy in this process is governed largely by the extent of the work to be done, for the reason that the initial cost of the plant would be prohibitive if only a small number of short tunnels were to be lined.

The concrete placed by these methods was found to be well mixed and of a good quality when crushed rock of 1 in. to 1½ in. size was used with good, clean sand, but round rock and pebbles did not do as well as they had a tendency to roll into pockets, which sometimes caused considerable trouble.

The cost of these tunnels varied somewhat owing to conditions on the ground, the fluctuation in wages and the uncertainty of delivery of material, during the 57 months that the work was in progress. Costly delays were experienced through labor shortage and lack of material delivery. The cost on a typical tunnel 684 ft. long lined by the pneumatic method was \$31 per lineal foot for labor and \$33 per lineal foot for material.

### Lining Two Tunnels on the Lehigh Valley

Two novel methods were used by the Lehigh Valley in relining short sections of two of its tunnels. One, a double track tunnel, was partly lined with brick when constructed, but as time went on the brick disintegrated and bulged to such an extent as to become dangerous and clearances were reduced. In 1890 a shaft was dug from the top of the ground above the tunnel down to the top of the brick arch and a second arch and side walls were built around the whole of the original tunnel, and then the brick arch was removed and the inner surface of the new concrete arch faced to produce clear and neat surface lines.

The other tunnel was arched completely with brick when constructed about 1886. A few years ago about 115 lineal feet of the arch showed some signs of sagging and bulging. The defective section of the tunnel was lined with cast iron segmental arch sections bolted together at the ends and along the sides through flanges. At the springing line, and for a short distance upward, part of the brick arch was cut away to make room for the cast iron lining. This lining was shaped so as to form a complete but flatter arch under the brick arch, and the space between the cast iron arch and the brick was grouted with a cement gun; this was done for each complete ring separately as it was completed. After all the cast iron lining was in position, steel-crete metal was wrapped about the flanges of the cast ribs and the whole inside surface (including the bolts), covered with a thin layer of gunite, placed with a cement gun, to prevent destruction of the metal by the gases from passing locomotives.

[The report also included detailed accounts of the methods used in lining the San Fernando tunnel on the Southern Pacific, the Connaught tunnel on the Canadian Pacific and the St. Paul Pass tunnel on the Chicago, Milwaukee & St. Paul.]

The report was signed by W. C. Harman (I. F. C.), chairman, M. M. Corrigan (B. & O.), James Gratto (S. P.), Geo. W. Rear (S. P.), A. Ridgway (D. & R. G. W.), H. B. Rivers (C. M. & St. P.).

### Discussion

In the discussion of the report, reference was made to an article entitled *Virginian Builds Double Track to Relieve Congestion*, which appeared on page 487 of the September 10 issue of the *Railway Age*. G. W. Andrews (B. & O.)

also incorporated an article appearing in the August issue of the *Railway Maintenance Engineer* in his discussion, this article describing the form of tunnel organization which the Baltimore & Ohio had developed to handle the maintenance of its tunnels under traffic.

## Report on the Construction and Maintenance of Passenger Platforms

When a new platform is to be built or an old one replaced the first problem is to determine the kind of platform to be used. There are many kinds to choose from, including concrete, brick, asphalt or mastic, asphalt blocks, wood, crushed stone, gravel, cinders, chats, etc. The selection for a particular location depends upon the kind and volume of traffic, climatic conditions, availability and cost of materials, importance of the station for passenger traffic, permanence, probability of future change of grade and whether under cover or exposed to the elements.

### Filled Platforms

For convenience the committee uses the term "filled platforms" to designate those that are made with a top surface of cinders, gravel, stone screenings, shells, chats or other suitable material which is merely compacted by tamping or rolling. These are built both with and without curb. There are some locations, especially at wayside stations, where there is no trucking, at which a filled platform without curb can be used. Something will depend upon the ground surface and the drainage, but usually a platform of this kind, if carefully built to begin with, will give very satisfactory service with very little maintenance expense for many years. Bad spots will develop from time to time, especially in wet weather, but they are easily repaired. As a rule platforms of cinders or stone screenings are objectionable when much trucking is done, especially in the spring of the year when the frost comes out, when they are also objectionable because of the dirt that is tracked into stations and coaches by passengers.

The usual method of constructing these platforms is to excavate to a level grade about a foot below the base of rail, put in a six-inch layer of broken stone or cinders and on this six or eight inches of screenings, shell, chats or other finishing material. This is thoroughly rolled or tamped, making a hard, smooth surface.

### Curbs

Most platforms of this kind are built with a curb of wood, stone or concrete. Sometimes this curb is placed only on the side opposite the track, at other times on the track side, and again on all sides. The curbs used vary considerably in design but in the main are much like those used in connection with brick and concrete platforms.

### Wooden Platforms

The usual types of wooden platforms are three in number. The first consists of plank laid on sleepers resting on the ground and is usually employed in dry localities or for temporary installations. The life of such a platform is rather short, varying from 3 to 5 years, and is usually only warranted to take care of a temporary need. The second type includes plank laid on joists that rest on sleepers embedded in the ground. This platform gives somewhat better service because there is an air space under the floor for ventilation, which keeps the floor and joists comparatively dry. The sleepers in this style of platform rot quickly and it might be worth while to make them of treated timber. The third type contemplates the flooring and joists resting on stringers which in turn are supported on blocking or posts. This form of wood platform gives the best service, lasting from eight to ten years. Instead of wood posts, more permanent supports of brick or stone can be used.

The floor of wood platforms soon shows the wear of trucks and traffic, and it is not long before it becomes uneven. It is rather difficult to keep a wood platform in good appearance. Broken or worn plank replaced by new look bad and are apt to form stumbling blocks for passengers. This is one of the main objections to this type of platform.

### Concrete Platforms

It was rather surprising to the committee that concrete is not used more generally for station platforms. In some cases it is not long before the edges and corners begin to chip and crack and small imperfections start in large surfaces. In colder climates they are liable to injury by frost. Then too platforms adjoin railroad tracks and are subject to marked vibrations from passing trains. There are many instances of concrete platform installations that are giving excellent service, although as a general rule they are more successful in warmer climates. One trouble with the concrete platform is the difficulty of making repairs. For this reason it is apt to be allowed to stay in an unsightly condition for a long time before it is considered bad enough to require renewal. In case of a change of grade a concrete platform cannot be raised or lowered, but must be broken up and a new one put down.

The C. & E. I. finds concrete to be the most satisfactory material for passenger platforms in large terminals and in larger cities where the traffic is heavy. From the standpoint of construction and maintenance this road has found platforms built to the following specifications the most economical.

"Excavate to a depth of 10 or 12 in. and put in a layer of 6 to 8 in. of cinders thoroughly tamped. (Care should be taken to see that the subgrade has proper drainage). On the cinders lay the usual two course sidewalk, the first course of 1:3:6 and the top or finish course of 1:2 concrete. Provide expansion joints of  $\frac{1}{2}$ -in. every 50 feet using an elastic saturated asphaltic felt. Platforms constructed according to the above specifications have been in service from 2 to 20 years without any maintenance expense. All concrete platforms are provided with expansion joints at the curb."

### Brick Platforms

Communications from many members of the association indicate that the brick platform is finding much favor and has many points to commend it. If a brick platform develops bad spots, part of the bricks are easily taken up, the foundation repaired and the brick replaced. If the grade is changed the brick can also be taken up and relaid with no loss of material. If bricks become broken they are easily taken out and replaced with new materials.

### Asphalt Blocks

Asphalt blocks are usually laid in or rather on a stiff half-inch mortar bed which has been struck to a smooth surface over the concrete base. The blocks are very uniform and lay up tight and smooth without buckling, no matter what the temperature may be. The blocks are made for heavy service and the wear is very slight. The blocks produce a clean, comfortable non-slip surface that is dustless and practically noiseless. They are acid, alkali and water proof and the normal dripping of oil incidental to daily usage is beneficial to the asphalt blocks and readily assimilated without making a spotty looking platform.

### Asphalt or Mastic Platforms

Passenger platforms of asphalt or mastic are largely confined to the larger cities and terminals. The asphalt coating is about two inches in thickness and is placed on a concrete foundation. Much experience is necessary in building such a platform to make sure that this top coat will not become too soft in hot weather. As the asphalt coating is hard and smooth it is apt to become slippery in freezing weather. Most asphalt or mastic platforms are built under shelter as for instance in large train sheds which protect them from excessive heat.

Repairs to this form of platform are not made easily. Bad spots develop and gradually increase in size, making it necessary to tear up a portion of the top coating and put in a patch. The best patches are made with heated materials and it is usually necessary to call in the contractor who built the platform to make the repairs. There is also a cold patch process but it does not usually result in as satisfactory a job as the hot process.

The report was signed by F. E. Weise (C. M. & St. P.), chairman; E. K. Barrett (F. E. C.), vice-chairman; E. E. Allard (M. P.), R. W. Beeson (C. & S.), A. O. Cunningham (Wabash), Geo. Dickson (S. P.), F. A. Eskridge (C. & E. I.), J. H. Markley (T. P. & W.), H. Silcox (Penna.).

F. J. Welch (C. M. & St. P.), J. J. Wishart (N. Y. N. H. & H.).

### Discussion

The discussion dealt chiefly with the comparative advantages and disadvantages of concrete and vitrified brick platforms. Some members reported installations of brick that had been very satisfactory, and their statements indicated that the tendency on many roads was toward the adoption of this type. The chief objection cited consisted of settlement and the insecure, or even dangerous, footing it presented in winter, which can be remedied by giving proper consideration to the construction of the base and to thorough cleaning in the winter. Objection was made to concrete on the basis that it chipped and shattered from the vibration of passing trains and the unloading of local freight. T. B. Turnbull (Ann Arbor) stated that this road had been using concrete platforms for about 15 years, and that it had experienced considerable difficulty from shattering. He stated that they had alleviated the trouble by pouring the platform monolithic. J. J. Wishart (N. Y., N. H. & H.) stated that the South Station, Boston, Mass., had had good success with mastic platforms, which had been in service about 29 years, and only during the last 18 months had it been necessary to make any repairs.

## Report on the Recruiting of Bridge and Building Employees

When men are invited to enter the service of the railroad they should be made to feel that it is the intention to treat them fairly, that their grievances, if they have any, will be given careful consideration, and that if it is found that their complaints are justified, remedial action will be taken promptly. The foreman should show a disposition to be fair and impartial, be ready to grant minor privileges consistent with the rules of the railroad company and should not take unfair advantage of technicalities or be guilty of what may be termed "sharp practice." Men in supervisory positions should at all times make the men under them feel that they have an interest in their personal welfare, be kind and considerate, yet fair and firm in their demands, protect the interests of the loyal men and at the same time act with equal fairness and firmness in disciplining the disloyal. The men must be made to realize that they also have obligations and that they are expected to respond to their superior officers in the same spirit of interest and fairness. The most satisfactory workmen are those who live on the division or section on which they are working and of these the most desirable are those who are married and who visit their families weekly. A married man with a family is less likely to be attracted by the seasonal and occasional occupations at higher wages, because he plans for the future and he knows by experience that he cannot afford many periods of idleness.

Replies to inquiries indicate that the shipment of men from large cities by labor agencies is seldom satisfactory for bridge and building service. The men so obtained are "floaters," and do not remain long enough to receive proper training or to become trustworthy and efficient. Fortunately it is not often necessary to hire men in very large numbers for bridge and building work and the supervisor and foreman may do many things that will keep them in touch with available men.

In going over his district a supervisor can make inquiry at the various cities and towns regarding probable recruits. He can ask station agents to be on the lookout for desirable men and urge his foremen to make inquiry at the towns where they live. In this way he will at all times have a list of available and desirable men. It will also be found that section gangs frequently contain bright young men who will develop into good bridge and building men. Their experience and training in section gangs makes them familiar with railroad conditions, a training very desirable for bridge gangs. Some

supervisors have had very good success by following this method.

Having let it become known that you are in need of additional men and that applications are desired, make it a point to acknowledge each application properly, letting the man know that it is receiving consideration, and also make a proper record. One may receive more applications than can be used on a particular occasion but a week or two later he may be in the market again. Every applicant should be investigated carefully, not only as to his qualifications as a workman but as to his habits and temperament. Is he cleanly and companionable? Can he bunk with other men without causing disturbance or friction? One grumbler in a camp can do a lot of harm. Is he honest and trustworthy? Men in camp have clothes and valuables that they must leave in camp while at work and they must feel that they are reasonably safe, especially as far as their fellow workmen are concerned.

Some supervisors make a practice of getting acquainted with applicants, even though they do not need their services at the time, by writing to them or looking them up when in their town. This has been done with good results. They then know just where to go when the need for more men comes.

Occasion may arise when it is necessary to call upon a labor agency in a large city to supply men for bridge and building work. This condition must be faced by placing orders with the most reliable labor agency available and it is better to send a man from one's own forces to interview and select the men. The selection of men in this way is of course at best a matter of personal judgment and it will be necessary, after a few days' service, to weed out the less desirable men.

When men enter a railway company's service there should be a definite understanding of what is required of them and what they will receive in return. The question of wages and occupation are settled in advance, but just as important as these are the new man's relation to his fellow workmen, his assignment of duties, his place at the table and in the bunk car. There should be definite rules of behavior, those retiring and rising, for smoking and talking in the bunk cars, a definite time after which everything must be in sanitary arrangements and numerous other things that are necessary for the conduct of the crew. Sometimes such rule

are printed and posted in the cars or camp, but this is not always necessary. The important thing is that the men understand what the rules are and that they will be enforced. It will be found much easier to maintain discipline if the newcomer understands these matters in advance.

The report was signed by F. W. Hillman (C. & N. W.), chairman, S. C. Tanner (B. & O.), J. E. Buckley (B. & M.), J. K. Davidson (Penna.), Frank Lee (C. P. R.), E. G. Storck (P. & R.).

### Discussion

The discussion hinged largely on the necessity of giving the foreman more instruction in the handling of his men.

## Report on the Detection and Repair of Leaks in Water Mains

The several causes of leaks in underground water mains may be classified in the order of their importance, as follows: (1) Jars and shocks due to vibration, etc.; (2) Joints poorly made; (3) Water hammer; (4) Unequal settlement of pipe; (5) Deterioration through oxidation and electrolysis, and (6) Expansion and contraction of pipe.

The detection of leaks in water mains laid underground is sometimes a very serious problem as such leaks do not always show on the surface, particularly where the mains are laid in a porous formation such as sand, cinders, loose rock, etc., or in proximity to sewers and drains. Leaks in mains laid under these conditions may assume enormous proportions and continue for years before they are discovered. It is needless to say that the losses through such leaks will justify considerable effort and expense to overcome them.

As an example of the losses that may occur in underground water mains from leaks that do not appear on the surface, a survey made at Washington, D. C., showed 93 concealed leaks on underground water mains which were wasting 1,034,000 gal. of water per day. The presence of such leaks is often made apparent only through a greatly increased consumption of water. Even then they are sometimes exceedingly difficult to locate. It is obvious that the problem, so far as determining the presence of leaks is concerned, lies with those that do not show on the surface. With a straight line of pipe or a system of piping where the location of each line as well as the outlets are definitely known the procedure is comparatively simple as it consists merely of closing the various outlets, maintaining a pressure on the line and checking the losses through the decrease in pressure or by the speed of the pump. If the line is metered the meter reading will, of course, show the exact loss and if it is possible to isolate each line the survey may be confined to any particular part of the system.

On extensive and complicated systems of pipe lines such as at shops, yards and terminals the location of lines and outlets is not always known and the valves controlling the various connections may leak, with the result that it is almost impossible to make a pressure test of the pipe lines. A check of the quantity of water pumped against the actual requirements will often indicate a leakage but as a general rule only a leak of considerable proportion may be found through this method. An examination of the sewers and drains will show whether any abnormal waste exists. Other methods may suggest themselves in each case.

After it has been determined definitely that a leak exists, the matter of locating it is a still more difficult problem and no rule may be suggested that will prove infallible. The methods generally followed are the use of an aquaphone or what is generally known as a "leak finder." This instrument is similar to a common telephone transmitter connected to a small rod instead of a wire. The rod is applied to the pipe and under favorable conditions the sound of the leak will be transmitted to the ear; by following the pipe the location of

Several speakers urged that the responsibility for the hiring of men be placed on the foremen in whose gangs they work, subject to general supervision by division officers. Some supervisors refer all applications for employment to the foremen working in the territory in which the applicant lives. Some roads, notably the New York Central and the Chicago & Northwestern, have found it practical and profitable to take men from the section forces for use in bridge and building and water service gangs. Another point discussed was the question of physical examination of each applicant. In respect to this R. H. Reid (N. Y. C.) and G. W. Andrews (B. & O.) stated that their respective roads require that all applicants undergo a rigid physical examination.

The leak may often be determined. The use of the aquaphone on underground pipe lines may, however, entail almost as much excavation as would be necessary to uncover the line. The use of this instrument also requires considerable practice and experience to locate leaks quickly. Another method is to make a comparison of the pressure on the line at various points as a pressure drop will occur on the pipe line beyond the leak in the direction of flow due to the decreased friction.

An instrument known as the pitometer has been used extensively in the larger cities to determine the presence of leaks. The pitometer is a device by means of which the velocity of flow in the main may be determined. While there are, of course, points where the pitometer could be used to advantage in railway water service, its use, as a general thing, is limited.

### Repairing Leaks

No set rules may be laid down for the repair of leaks as the method of repair will depend upon the nature of the break and the materials available for repairs. This is particularly true of emergency cases. The method to be followed in making repairs will depend upon the nature of the leak. The majority of leaks will, of course, result from bad joints in bell and spigot pipe on account of the preponderance of this type of joints.

The majority of underground leaks will occur in lead joints. The advantage of a joint of this kind is that it can usually be repaired by recaulking. Lead wood can frequently be used to advantage for making repairs, especially in wet trenches or on submerged mains where it would be difficult to use hot lead.

The most persistent leaks are those occurring in pipe lines laid under tracks and caused by the vibration and shock of passing trains. This trouble may be corrected by supporting the track so that the weight does not come on the pipe. The method to be followed will depend upon local conditions and may consist of placing the service pipe within a larger pipe, or a concrete box. In extremely soft, marshy ground it may be necessary to provide a trestle similar to a standard ballast deck trestle.

The report was signed by C. R. Knowles (I. C.), chairman, J. H. Grover (A. T. & S. F.), J. Mellgren (C. & N. W.), committee.

### Discussion

The question of making good joints in pipe lines and the methods to be employed in pouring and calking such joints formed the major part of the discussion. It was stated that where joints have been poured hastily or an insufficiently high gate had been used that the gate should not be cut off with a cold chisel but should be worked with a calking tool to close up any blow holes or other results from shrinkage, in recognition of the fact that leaks occurred at the top of the joint in nearly all cases. F. A. Demars (O. S. L.)

and C. R. Knowles (I. C.) stated that any discussion should hinge on the development of leaks in properly made joints and that not all leaks by any means resulted from blow holes on top. It was emphasized that the movement of

trains where pipe is laid in the vicinity of tracks, causes a vibration that results in pounding the lead calking so thin that it fails and causes leaks. Several members stated that they had very poor success with cement joints.

## Other Papers, Reports and Closing Business

L. F. Loree, president of the Delaware & Hudson, spoke at the opening of the session on Wednesday morning. After tracing the development of the steam engine from its infancy to its present high efficiency, and its influence on our civilization, he referred to the retarding influence of trade unionism today. He advocated the secret ballot and an honest count as the relief from the present high-handed control of labor agitators, closing with an appeal for the local supervisory officers' support, as they are in direct contact with the rank and file.

The Committee on Tool Equipment for Pile Drivers presented complete lists of equipment for track and floating pile drivers. An appendix by R. C. Young (L. S. & I.) presented additional information regarding the jetting of piles. In the discussion of this report, G. W. Andrews (B. & O.) traced the development of pile driving equipment during the last 50 years, and emphasized the value of modern tools, stating that 10 blows can now be delivered in the time required for one, a half century ago. Arthur Ridgeway (D. & R. G. W.) and others described the advantages of equipping pile drivers with electric lights, particularly in times of emergency when night work is necessary.

C. M. Taylor (C. of N. J.) gave an illustrated talk Tuesday evening on the use of treated timber by bridge and building forces. He stated that if the best work is to be secured, the timbers must be completely framed in advance, then treated and shipped to the location. Where this is been done, a satisfactory and lasting construction can be secured. The advantages to be derived are numerous, and include such important factors as the lessened chances for decay, the more thorough treatment of the wood, and the general speeding up of the erection. Emphasis was placed on the fact that treated timber must be handled carefully at all times, abstaining from the use of pike poles or other devices which penetrate the treated surface. In answer to a number of questions, it was brought out by Mr. Taylor that the ordering of timber, and particularly piles, was often delayed so long that it was very difficult to secure the best treatment and still make the required delivery. He urged that more consideration be given to this point.

Other features of the convention included the annual dinner held this year at Coney Island on Wednesday evening, with approximately 400 attending, and the tour of inspec-

tion of the Pennsylvania Terminal, the New York Connecting Railway and Hell Gate arch bridge, the electrified line of the New York, New Haven & Hartford to Stamford, Conn., and the Grand Central Terminal by special train, following the conclusion of the convention on Thursday afternoon.

### Closing Business

The following subjects were selected for consideration during the next year: (1) Pile driving records; (2) labor-saving devices in routine bridge and building works; (3) building inspection and records; (4) the relative merits of wooden, steel and concrete tanks; (5) the painting of structural steel; (6) the framing of bridge timbers before treatment; (7) handling and driving concrete piles; (8) the construction and maintenance of sewers and drains.

At the closing session on Thursday morning, the following officers were elected: President, C. R. Knowles, superintendent of water service, Illinois Central, Chicago; first vice-president, Arthur Ridgeway, assistant chief engineer, Denver & Rio Grande Western, Denver, Colo.; second vice-president, J. S. Robinson, division engineer, Chicago & North Western, Chicago; third vice-president, J. P. Wood, supervisor of bridges, Pere Marquette, Saginaw, Mich.; fourth vice-president, C. W. Wright, master carpenter, Long Island Railroad, Jamaica, N. Y.; secretary-treasurer, C. A. Lichty, general inspector, Chicago & North Western, Chicago; directors for two years, F. C. Baluss, engineer bridges and buildings, Duluth, Missabe & Northern, Duluth, Minn.; Maro Johnson, assistant engineer, Illinois Central, Chicago; and O. F. Dalstrom, bridge engineer, Chicago & North Western, Chicago. Cincinnati, Ohio, was selected as the location of the next convention.

At the close of the session on Thursday morning the following resolution was adopted:

**RESOLVED:** That the American Railway Bridge and Building Association in convention assembled deploras the present agitation for a strike of railroad workers, and the individual members hereof reaffirm an unbroken record of loyalty to their respective railroads and pledge anew their support to the management in their efforts to provide uninterrupted, efficient and economical transportation for the American public.

## The Bridge and Building Supply Men's Association

The exhibit of the Bridge and Building Supply Men's Association in connection with the meeting was the equal of that presented in 1920 at Atlanta, Ga., which was the largest as to the number of exhibitors in the history of the organization. The exhibits of the companies consisted in a large measure of literature, photographs and samples although a considerable number showed their devices and equipment either in models or in full size.

The officers of the association for the past year were: President, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; vice-president, Merle J. Trees, Chicago Bridge & Iron Works, Chicago; treasurer, C. R. McVay, Barrett Company, Chicago; secretary, A. J. Filkins, Paul Dickinson Company, Chicago; honorary director, Tom Lehon, the Lehon Company, Chicago; members executive committee W. O. Washburn, American Hoist & Derrick Co.,

St. Paul, Minn.; C. W. Kelly, the Kelly Derby Company, Chicago; D. J. Higgins, American Valve & Meter Company, Chicago; F. M. Condit, Fairbanks, Morse & Co., Chicago; T. W. Snow, The T. W. Snow Construction Company, Chicago, and W. H. Lawrence, The H. W. Johns-Manville Company, New York City.

At the annual business meeting on Thursday morning, the following officers were elected: President, M. J. Trees, Chicago Bridge & Iron Works, Chicago; vice president, G. R. McVay, The Barrett Company, Chicago; treasurer, A. J. Filkins, Paul Dickinson Company, Chicago; secretary, D. J. Higgins, American Valve & Meter Co., Cincinnati, Ohio; honorary director, C. E. Wood, U. S. Wind Engine & Pump Co., Batavia, Ill.; members executive committee M. J. Condit, Fairbanks Morse & Co., Chicago; W. H. Lawrence, Johns-Manville Company, New York; T. W. Snow, T. W.

Snow Construction Company, Chicago; J. E. Nelson, Joseph E. Nelson & Sons, Chicago; William Volkhart, William Volkhart, Inc., New York, and B. J. Wilson, *Railway Age*, Chicago.

The companies exhibiting, with the nature of their displays and the names of their representatives, were as follows:

American Tar Products Company, Chicago; S. H. Fields and P. L. Griffiths.

American Valve & Meter Co., Cincinnati, Ohio; model of drop spout; J. T. McGarry and B. J. Higgins.

American Hoist & Derrick Company, St. Paul, Minn.; literature; F. J. Johnson and H. W. Davis.

American Radiator Company, Chicago; literature; G. J. Meyer.

Barrett Company, New York; samples of paint, roofing, shingles and literature; G. R. McVay, W. S. Babcock, G. H. Hilderbrandt and W. S. Wallace.

Carter Bloxend Floorng Company, Chicago; photographs and samples of flooring; R. G. Stowell.

Chicago Bridge & Iron Works, Chicago; photographs and literature; Merle J. Trees, H. C. Brown and Sedrick B. Smith.

Cleveland Pneumatic Tool Company, Cleveland, Ohio; H. S. Covey and Guy Gregory.

Detroit Steel Products Company, Detroit, Mich.; window sash and literature; R. S. Bishop and W. H. Maxwell.

Detroit Graphite Company, Detroit, Mich.; samples of paint and literature; L. D. Mitchell and J. R. C. Hintz.

Duff Manufacturing Company, Pittsburgh, Pa.; jacks; C. A. Methessel, Fairbanks, Morse & Company, Chicago; literature; A. A. Taylor, F. M. Condit, B. S. Spaulding, J. L. Jones, H. E. Vogel and E. J. Coverdale.

Ferrolineum Manufacturing Company, Jersey City, N. J.; samples of paint pigments; O. C. Wakefield.

Hastings Pavement Company, New York; literature and samples of block flooring and pavement; J. B. Weed and P. L. Thompson.

Highgrade Manufacturing Company, Cleveland, Ohio; literature and samples of roofing cement; S. A. Baber and A. C. Copper.

Johns-Manville Company, Inc., New York; samples of roofing, pipe and boiler installations, packing, flooring and shingles; J. E. Mink, E. L. Colopy, B. J. Jordan, G. A. Nichols and W. H. Lawrence.

Joseph Dixon Crucible Company, Jersey City, N. J.; literature; A. A. Neally and W. W. Chase.

Kelly-Derby Company, Chicago.

Lehon Company, The, Chicago; samples of roofing and shingles; Tom Lehon and John E. Eipper.

Luiweiwer Pumping Engine Company, Rochester, N. Y.; model of deep-well water pump; E. E. Alexander.

Mimwax Company, The, New York; model of bridge deck drain and literature; A. S. Harrison, R. W. Harrison and J. E. Marble.

Massey Concrete Products Corporation, Chicago.

National Lead Company, New York; literature; G. M. Hartley, Jr., and A. H. Sablin.

Norton, A. O., Inc., Boston, Mass.; jacks and jack cover; G. R. Law and Wm. R. Kelly.

Nelson, Jos. E., & Sons, Chicago; literature; J. E. Nelson and W. K. Nelson.

Nichols, Geo. P. & Bro., Chicago; literature.

Pocket List of Railroad Officials, New York; copies of paper; K. A. Brown and J. A. Brown.

Patterson, W. W., & Co., Pittsburgh, Pa.; tackle blocks; W. W. Patterson, Jr.

Patterson & Sargent Company, Cleveland, Ohio.

Paul Dickinson, Inc., Chicago; model of cast-iron camp car jack and ventilators; A. J. Filkins.

Railway Review, Chicago; copies of paper; G. L. Bates, J. E. Gougeon and W. M. Camp.

Robertson Company, H. H., Pittsburgh, Pa.; literature and samples of asbestos protected metal, skylights, ventilators and roofing; Willis F. Haeckelton.

Robertson & Company, Wm., Chicago; model of culvert; R. F. Repasz and T. F. Landergran.

Simmons-Boardman Publishing Company, New York; copies of papers and encyclopedias; E. T. Howson, Milburn Moore, W. S. Lacher, F. C. Koch, B. J. Wilson and H. L. D. Jackson.

Sherwin-Williams Company, Cleveland, Ohio; F. A. Elmquist and John Schintz.

Snow Construction Company, T. W., Chicago; literature; T. W. Snow and B. S. Snow.

U. S. Wind Engine & Pump Company, Batavia, Ill.; literature; C. E. Ward.

Volkhardt Company, Inc., The, New York; model of hydrants and torches; Wm. Volkhardt.

THE COMMISSION has suspended until February 12 the operation of schedules naming increased rates on cotton seed products from points in Missouri, to St. Louis, and East St. Louis, published in Agent F. A. Leland's tariff.

A RESOLUTION introduced in Congress on October 7 by Representative Dowell would order the Interstate Commerce Commission to reduce freight rates on agricultural products by 25 per cent. The resolution also provides that the rates thus reduced should not later be advanced without the consent of Congress.

## Labor Board Lifts Piece Work Ban

THE PRESENT labor crisis has been complicated by a decision of the Labor Board handed down on October 13 and containing drafts of 17 rules considered by the Board as just and reasonable rules for inclusion in all agreements between individual roads and their shop employees. One of these rules removes the present ban on piece work, and of the total of 17 rules, 10 have been so worded as to eliminate inefficient and uneconomical results caused by the application of the counterparts of these rules in the Shop Crafts' National Agreement. Seven rules of the National Agreements, Rules 8, 31, 61, 66, 67, 68 and 78, dealing respectively with Sunday work, seniority in departments, requirements for machinists, definition of "dead work," assignment of "dead work" forces to running repair work, machinists and helpers on wreck trains, and requirements for boilermakers, have been judged as just and reasonable by the Board and are made effective on October 16.

The new rules promulgated by the Board are as follows, the rule number corresponding with the similar rule in the National Agreements and the italic portion indicating the changes made by the Board:

### Rule No. 1

Eight hours shall constitute a day's work. All employees coming under the provisions of this agreement, except as otherwise provided in this schedule of rules, or as may hereafter be legally established between the carrier and the employees, shall be paid on the hourly basis.

*This rule is intended to remove the inhibition against piece work contained in rule 1 of the shop crafts' national agreement and to permit the question to be taken up for negotiation on any individual railroad in the manner prescribed by the Transportation Act.*

### Rule No. 2

(Rule adopted as substitute for Rules 2, 3, 4, 5, of the national agreement.)

There may be one, two, or three shifts employed. *The starting time of any shift shall be arranged by mutual understanding between the local officers and the employees' committee based on actual service requirements.*

*The time and length of the lunch period shall be subject to mutual agreement.*

### Rule No. 18

When new jobs are created or vacancies occur in the respective crafts, the oldest employees in point of service shall, if sufficient ability is shown by trial, be given preference in filling such new jobs or any vacancies that may be desirable to them. All vacancies or new jobs created will be bulletined. Bulletins must be posted live (5) days before vacancies are filled permanently. Employees desiring to avail themselves of this rule will make application to the official in charge and a copy of the application will be given to the local chairman.

*An employee exercising his seniority rights under this rule will do so without expense to the carrier; he will lose his right to the job he left; and if after a fair trial he fails to qualify for the new position, he will have to take whatever position may be open in his craft.*

### Rule No. 46

Applicants for employment may be required to take physical examination at the expense of the carrier to determine the fitness of the applicant to reasonably perform the service required in his craft or class. They will also be required to make a statement showing address of relatives, necessary four years' experience, and name and local address of last employer.

### Rule No. 48

Employees injured while at work will not be required to make accident reports before they are given medical attention, but will make them as soon as practicable thereafter. Proper medical attention will be given at the earliest possible moment and, when able, employees shall be permitted to return to work without signing a release pending final settlement of the case.

At the option of the injured party, personal injury settlements may be handled by the duly authorized representatives of the employee with the duly authorized representatives of the carrier. Where death or permanent disability results from injury, the lawful heirs of the deceased may have the case handled as herein provided.

**Rule No. 50**

Existing conditions in regard to shop trains will be continued unless changed by mutual agreement, or unless, after disagreement between the carrier and employees, the dispute is properly brought before the Labor Board and the Board finds the continuance of existing conditions unjust and unreasonable, and orders same discontinued or modified.

The company will endeavor to keep shop trains on schedule time, properly heated and lighted, and in a safe, clean, and sanitary condition. This not to apply to temporary service provided in case of emergency.

**Rule No. 55**

*Work of scrapping engines, boilers, tanks, and cars or other machinery will be done by crews under the direction of a mechanic.*

**Rule No. 60**

*At the close of each week one minute for each hour actually worked during the week will be allowed employees for checking in and out and making out service cards on their own time.*

**Rule No. 65**

Machinists assigned to running repairs shall not be required to work on dead work at points where dead-work forces are maintained except when there is not sufficient running repairs to keep them busy.

**Rule No. 77**

*At points where there are ordinarily 15 or more engines tested and inspected each month, and machinists are required to swear to federal reports covering such inspection, a machinist will be assigned to handle this work in connection with other machinist's work and will be allowed five cents per hour above the machinist's minimum rate at the point employed.*

*At points or on shifts where no inspector is assigned and machinists are required to inspect engines and swear to federal reports, they will be paid five cents per hour above the machinist's minimum rate at the point employed for the days on which such inspections are made.*

Autogenous welders shall receive five cents per hour above the minimum rate paid mechanics at the point employed.

In each case the italic portion of the new rule is intended to eliminate the objectionable features of the old rule, especially those to which the railroads objected during the hearings on National Agreements.

## Senate Committee Railroad Hearings Resumed

WASHINGTON, D. C.

HEARINGS BEFORE the Senate Committee on Interstate Commerce in connection with its general inquiry into the railroad situation, which were suspended early in July, were resumed at Washington on October 13 but were shortly adjourned on account of the death of Senator Knox and after a session on Saturday, October 15, the hearing was again adjourned.

The few members of the committee who were present were treated to a statistical medley by Frank J. Warne, statistician for the Big Four brotherhoods, the burden of whose argument was that the committee had been completely misled by the witnesses for the railroads in their presentation of statistics of railway revenues, expenses and income for the war period and inferentially by the Interstate Commerce Commission that had published the same statistics minus the emendations and commendations of them which Mr. Warne had made in a series of complicated charts. He said the commission should not have based its decision in the Ex Parte 74 rate case on the abnormal results of the war period, but on the more permanent tendencies as shown by the results prior to that time, during which, he said, the commission had repeatedly held that railway revenues were adequate. To prove it he quoted from several of its rate decisions without reading from the later reports in which the commission after further consideration found occasion to alter its conclusions. He also said that rates should not have been raised during

the period of federal control while the railroads were being guaranteed and he attempted to prove that the advances in rates during that period were made at the instance of the railroads by referring to their unsuccessful efforts later, in 1919, to persuade Director General Hines to advance rates before the roads were returned.

Mr. Warne's principal charges about the railroad witnesses who had previously testified during the hearing were based on the fact that in showing the abnormal relation between earnings and expenses that had come out of the federal control period they had constantly referred to the net railway operating income actually earned for 1918, 1919, and 1920 instead of using the corporate income of the roads including the guaranteed rental, which he placed at \$906,000,000, although a large part of it has not yet been paid.

The omission of the guarantee, Mr. Warne said, had concealed the fact that the roads had earned the largest net operating income in their history. He had some combination of figures to make it appear that \$906,000,000 exceeded the net operating income of 1916 and 1917, although the official figures are larger. In explaining his point, however, Mr. Warne read from the testimony a colloquy between L. E. Wetling and Senator Cummins which showed that it was understood that the figures under discussion were the net operating income which resulted under the earnings and expenses as they were, and that they did not in any way represent the effect of the promised guaranty. He also objected because the railroads had used the net operating income and not the guaranty in calculating a percentage of return on the "inflated" property investment account.

After having presented one series of charts using the guaranty as net operating income Mr. Warne produced another set in which he added the guaranty which the roads were supposed to have received, and some of which is still held up until the Congress passes some kind of a bill to provide the Railroad Administration with funds with which to pay it, to the total operating revenues, in order as he said, to show the proper margin between earnings and expenses. By subtracting the expenses, taxes, etc., he thus arrived at a net operating income which included the guaranty. Mr. Warne said that the fact that the railroad witnesses were able to hide behind accounting technicalities was no excuse for their not telling the truth, which gave Senator Fernald an opportunity to bring up his theory that taxes and bond interest should be added to operating expenses. In this case, however, Mr. Warne preferred to rely on the commission's system of accounting.

Another bit of information which he furnished for the enlightenment of the four senators who represented the committee was that while the railroads in most of the eight months of 1920 during which they were under guaranty showed operating deficits, during the last four months of the year, while they were not guaranteed they had a net of \$226,000,000. It was left to the knowledge or the imagination of the senators to recall that this was during the four months in which a rate advance of about 33 per cent was in effect.

WASHINGTON TO NEW YORK, in 79 minutes, or at about 170 miles an hour, is the speed reported for an airplane trip made on October 10, with one passenger, by Lieut Howard K. Ramey, piloting a De Havilland army airplane. The flight was made at an average height of 3,800 feet.

THE HOUSE COMMITTEE on interstate and foreign commerce held a meeting this week and decided not to take up for consideration at this session of Congress any of the railroad bills which have been referred to it unless some new situation develops. The committee has before it a number of bills intended to amend various parts of the transportation act, particularly with reference to the rate-making provisions

# General News Department

The National Association of Railroad Tie Producers will hold its fourth annual meeting at the Hotel Sherman, Chicago, on January 26 and 27. This meeting will follow immediately after that of the American Wood Preservers' Association which will be held at the same hotel on January 24, 25 and 26.

## "Organized Business and the Railways"

"Organized Business and the Railways" is the title of a leaflet issued to members of the Railway Business Association by President Alba B. Johnson. Its text is a letter to President Joseph H. Defrees of the Chamber of Commerce of the United States. It was authorized by the association's general executive committee at Chicago, Thursday evening, October 6, following a noon luncheon at which the situation was described to members and guests of the association by Frank W. Noxon, secretary, and S. O. Dunn, editor of the *Railway Age*.

## Sixty-Seven Trespassers Apprehended

One hundred and twenty hoboes boarded a Southern Pacific freight train bound for Los Angeles, Cal., from the north, at Mojave, Cal., on September 29, and refused to get off the train when ordered to do so by the train men. The train was met in the outskirts of Los Angeles by Los Angeles police officers and 67 of the trespassers were arrested. On the following day 51 of the men pleaded guilty and were given the alternative of paying a \$20 fine or going to jail for 20 days. Five were given suspended sentences and 11 were released.

## Fraudulent Pay Checks

Three men arrested at Pittsburgh, Pa., and brought into court on October 7, on charges of conspiracy to defraud the Baltimore & Ohio Railroad, were found to have cashed a large number of counterfeit pay checks; and to identify themselves, when making purchases, they used counterfeit railroad passes, written on blanks which they had printed. All three pleaded guilty. One was an employee and another a former employee; and two other men, including a printer, are yet to be caught. In passing checks amounting to \$1,412, the thieves had received more than \$1,000 in change.

## Railway Fire Prevention Association

The eighth annual convention of the Railway Fire Prevention Association opened at Chicago, on October 18. The meeting was opened by President W. F. Hickey in the presence of about 150 members and guests and was addressed by Alfred H. Erickson, assistant corporation counsel of the city of Chicago, who represented the mayor of the city in welcoming the convention. The meeting was also addressed by J. E. McDonald, chief of fire prevention of the city of Chicago, who gave a short account of the history of fire prevention in Chicago and congratulated the railroad association in having taken so prominent an interest in fire prevention.

## Railroad Division of A.S.M.E. to

### Discuss Elimination of Waste

The Railroad Division of the American Society of Mechanical Engineers will discuss the elimination of waste on railroads in connection with the general consideration of that topic at the annual meeting of the society. Three papers will be presented as follows: Avoidable Waste in Locomotives as Affected by Design, by James Partington, American Locomotive Company; Avoidable Waste in Operation of

Locomotives and Cars, by William Elmer, Pennsylvania Railroad; Avoiding Waste in Car Operation—The Container Car, by W. C. Sanders, New York Central. The meeting will be held in the Engineering Societies' building, 29 West Thirty-ninth street, New York, on the morning of December 9.

## Specifications for Cast Iron Car Wheels

The Delaware, Lackawanna & Western has issued a new specification for cast iron wheels (No. 261, dated September 1, 1921). It is very complete, somewhat more rigid than the A. R. A. specification, and is particularly notable in that it contains a specification for the chemical composition which is similar to, but does not allow as wide a range as the chemical specification tentatively adopted at the last convention of the American Society for Testing Materials. The composition specified is as follows:

	Minimum	Maximum
Total carbon.....	3.00	3.65
Combined carbon—not over.....	.....	.85
Manganese.....	.50	.85
Phosphorus—not over.....	.....	.32
Sulphur—not over.....	.....	.16
Silicon.....	.45	.75

## Protests Against Valuation

A large number of protests against the tentative valuation report of the Interstate Commerce Commission on the Chicago, Rock Island & Pacific have been filed with the commission this week.

The Rock Island declared in its protest that the tentative valuation did not represent the value of the property owned and used by it; that the valuation, because of "the erroneous methods, rules and principles applied therein," did not comply with the valuation act, and that "the cost of reproduction now reported in the tentative valuation was determined by the application in some instances of erroneous principles and methods, by the exclusion of costs which should have been included, by the failure to list in the inventory all the owned or used property, by the use of inadequate unit prices, by improper classification, and by other errors of commission and omission, as the result of which the cost of reproduction now of the said properties as reported is much less in amount than should have been allowed."

The road's complaint made no general estimate of the total valuation it would claim, but asked the commission to withdraw its tentative valuation and to give the carrier opportunity for hearings upon it and the presentation of evidence.

In addition protests were filed by the various roads, a part of whose property is jointly used by the Rock Island and also by the Iowa, Nebraska and other state commissions, who objected to the inclusion of certain items.

## The Oldest Illinois Central Locomotive

The Mississippi, the first engine ever used on the Illinois Central system, has been exhibited during the past month at the Indiana State Fair, Indianapolis, Ind.; the Kentucky State Fair, Louisville, Ky., and the Interstate Fair at Sioux City, Iowa. It will also be shown at the National Implement & Vehicle Show at Peoria, Ill., until October 8.

This engine was built at Natchez, Miss., in 1834, the parts having been imported from England to be assembled there. Its cylinders are 9½ in. by 16 in. and it weighs 14,000 pounds. It is said that the entire cost of the engine was less than \$2,000. The newest locomotive bought by the Illinois Central this year weighs 382,000 pounds, has cylinders 30 in. by 32 in., and its cost was \$88,819.

The Mississippi was first used on a line between Natchez and Foster, Miss. (later acquired by the Illinois Central), in 1836,

1837 and 1838. There are no records between 1838 and 1873, but in 1873 and 1874 the Mississippi was in service on a line between Warrenton, Miss., and Vicksburg. In 1874, an engineer, John Rogers, put the Mississippi on a side track to rest for the night, but forgot to close the throttle, with the result that the engine ran into a deep mud bank, where it lay until 1880. From 1880 to 1890, it was used as a switching engine in a gravel pit at Brookhaven, Miss. The engine was given a general overhauling in 1892 and was exhibited in the Transportation Building of the World's Columbian Exposition at Chicago in 1893. It traveled from McComb, Miss., to Chicago under its own power. It was also on exhibition at the St. Louis World's Fair in 1904.

**Railway Returns for August**

The Interstate Commerce Commission's summary of the railway income account for August is as follows:

states that the roads in which he asks to retain his directorship are not competitive with the Union Pacific except that there is competition to some extent between the Illinois Central and the Chicago & Alton for business between Chicago and St. Louis.

**Think of the Train Baggage Man**

The Buffalo, Rochester & Pittsburgh, in a circular entitled "The Human Desire to Serve," counsels with its patrons as follows:

The railroads and the American Railway Express Company are so closely allied that the problems of one are largely the problems of the other. The aims of this railroad company and the express company are identical, to sell transportation, and to promote harmony, efficiency and reduce loss and damage claims. Transportation is and must be a failure

Item No.	Item	August		Eight Months	
		1921	1920	1921	1920
1	Average number of miles operated.....	235,398.39	235,120.00	235,260.10	234,625.18
<b>Returns:</b>					
2	Freight .....	\$53,307,011	\$369,596,250	\$2,537,466,013	\$2,583,585,913
3	Passenger .....	\$109,174,998	132,903,613	\$793,021,501	822,170,330
4	Mail .....	7,449,068	7,823,168	63,850,810	117,709,025
5	Express .....	10,313,274	15,165,514	60,098,598	146,136,724
6	All other transportation.....	14,465,961	14,580,954	106,181,410	96,081,152
7	Incidental .....	10,073,997	14,814,110	79,660,354	97.8 4,797
8	Joint facility—Cr.....	608,803	840,998	5,110,811	5,098,679
9	Joint facility—Dr.....	114,662	185,318	1,110,614	1,538,029
10	Railway operating revenues.....	505,508,274	555,522,389	3,644,288,883	3,825,048,200
<b>Expenses:</b>					
11	Maintenance of way and structures.....	71,940,562	144,543,602	507,837,688	693,788,085
12	Maintenance of equipment.....	103,482,549	187,600,713	843,424,226	1,030,443,877
13	Traffic .....	6,875,585	8,066,234	56,729,579	66,259,532
14	Transportation .....	180,901,570	323,815,483	1,558,622,754	1,849,695,539
15	Miscellaneous operations.....	4,161,647	6,454,891	33,571,042	40,738,802
16	General .....	13,488,535	19,006,460	114,325,615	112,692,757
17	Transportation for investments—Cr.....	521,381	956,185	3,930,164	5,112,097
18	Railway operating expenses.....	382,279,070	682,315,188	3,109,990,740	3,770,449,385
19	Net revenue from railway operations.....	123,229,204	126,790,799	534,998,143	54,509,815
20	Railway tax accruals.....	26,151,760	26,263,402	183,205,302	182,407,235
21	Uncollectible railway revenues.....	138,352	141,876	809,438	755,532
22	Railway operating income.....	96,939,092	153,193,077	350,293,193	128,561,952
23	Equipment rents—Dr. balance.....	5,675,073	3,846,496	35,058,263	20,373,840
24	Joint facility rents—Dr. balance.....	1,022,916	1,537,997	10,503,677	12,187,844
25	Net of items 22, 23, and 24.....	90,241,103	158,592,570	304,320,753	161,125,856
26	Ratio of expenses to revenues (per cent).....	75.62	122.82	85.34	98.57

<sup>1</sup>Includes \$2,919,363, sleeping and parlor car surcharge.  
<sup>2</sup>Includes \$21,751,193, sleeping and parlor car surcharge.

**Common Officers or Directors**

The Interstate Commerce Commission has issued a set of regulations to govern the applications to be filed with the commission under that provision of the transportation act which makes it unlawful after December 31, 1921, for any person to hold the position of officer or director of more than one carrier unless such holding shall have been authorized by the commission. The commission interprets the law as covering "any person authorized by a carrier to perform, temporarily or otherwise, the duties or any of the duties ordinarily performed by a director, president, vice-president, secretary, treasurer, general counsel, general solicitor, general attorney, comptroller, general auditor, general manager, freight traffic manager, passenger traffic manager, chief engineer, general superintendent, general land and tax agent, or chief purchasing agent." The order prescribes in detail the form of application to be filed with the commission.

The Union Pacific and its subsidiaries, and the St. Louis-San Francisco and its subsidiaries have filed with the commission blanket applications for authority for their respective officers and directors to hold similar positions with the various subsidiary companies. The Union Pacific application says that its reason for such application is the identity of ownership throughout the system and the fact that all roads of the system are operated as a unified transportation system. Individual applications have also been filed by R. S. Lovett for authority to be a director of the New York Central and its subsidiaries, the Illinois Central and the Chicago & Alton because of the large investment of the Union Pacific in those companies, and by E. N. Brown to retain his offices and directorships in the St. Louis-San Francisco, the Kansas City, Fort Scott & Memphis, the Kansas City, Memphis & Birmingham and the Pere Marquette. Judge Lovett's application

unless closely coupled with the human desire to serve. The men in the baggage cars are jointly employed by the railroad and the express company. As a body they have given an average, per man, of over 20 years' faithful service. Six of our men combined have served the public for two and a quarter centuries. One man now working every day has been continuously on the job for over 41 years. When your baggage or express shipment is intrusted to such men as these you are reasonably sure that it will arrive at its destination promptly and in good condition. \* \* \*

The campaign "The Right Way Plan" has made a wonderful saving for the shipper and the express company by lessons in packing, handling and marking. Careless employees are looking for other jobs and insecurely packed or wrapped shipments are refused until they are properly prepared for shipment. One district in the East showed a decrease in claims for loss and damage of 79 per cent in July and 82 per cent in August. By teaching the public to pack properly and insisting on their men handling carefully the express company and its patrons have saved much money and annoyance. \* \* \*

A claim paid for damage does not recompense the buyer for his delay and inconvenience, but as long as we are human, accidents will happen and baggage will go astray or become lost. Unless stolen it will come back to you, Mr. Owner, if you will permanently place on the inside thereof your full name and permanent address. Many trunks and suit cases still bear old express labels. Suppose that while traveling as baggage the check becomes torn off; the man in the baggage car cannot remember whether that particular piece was baggage or express, but seeing no check and finding an express label he uses his best judgment and puts the article to address shown on label. Remove the old express labels on baggage.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR, 1921

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger revenues, Maintenance of way and structure, Traffic, Trans-shipment, General, Total, Operating ratio, Net from operations, Operating (for loss), Net after rentals, Net after 1920. Rows include Alabama & Vicksburg, Ann Arbor, Atchafalaya & Santa Fe, Baltimore & Ohio, Baiti, Boston & Maine, Buffalo & Waukegan, Canadian Pacific, Central Vermont, Chesapeake & Ohio, Chicago & Alton, Chicago & Eastern Illinois, Chicago & North Western, Chicago, Burlington & Quincy, Chicago Great Western, Chicago Indianapolis & Louisville, etc.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage during period, Operating revenues (Freight, Passenger, Total), Maintenance of way and structures, Traffic, Trans-shipment, General, Total, Operating ratio, Net from railway, Operating income (for loss), Net after rentals, Net after 1920.

\*Crossed operation August, 1921.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1921--CONTINUED

Table with columns: Name of road, Average freight operated during period, Freight, Passenger, Operating revenues, Maintenance of way and structure, Maintenance of equipment, Traffic, Transportation, General, Total, Operating ratio, Net from railways, Operating income (or loss), Net after repairs, 1920, Net after repairs, 1921.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.	Average mileage operated during period.			Operating revenues.			Maintenance of way and equipment.			Traffic.			Trans- portation.			General.			Total.			Operating ratio.	Net from operations.	Net after 1920.
	Freight.	Passenger.	(inc. misc.)	Total	Operating	Other	Total	Way and equipment	Other	Total	Traffic	Trans- portation	General	Total	Operating	Net from operations	Net after 1920							
Missouri Pacific.....	8 m.	7,309	57,972,377	13,616,674	11,819,456	\$10,591,860	\$1,299,568	\$4,857,528	\$159,473	\$3,670,000	\$2,283,563	\$7,308,430	69.9	\$2,283,417	\$3,896,869	\$3,570,128	\$9,600,987							
8 m.	7,309	57,972,377	13,616,674	11,819,456	10,591,860	1,299,568	4,857,528	159,473	3,670,000	2,283,563	7,308,430	69.9	2,283,417	3,896,869	3,570,128	9,600,987								
Mobile & Ohio.....	8 m.	1,165	10,119,035	1,255,628	1,577,021	1,721,149	3,788,669	376,133	1,594,301	613,875	1,098,627	92.7	878,349	491,946	1,331,552	1,331,552								
8 m.	1,165	10,119,035	1,255,628	1,577,021	1,721,149	3,788,669	376,133	1,594,301	613,875	1,098,627	92.7	878,349	491,946	1,331,552	1,331,552									
Columbus & Greenville.....	8 m.	226	63,046	29,531	101,997	31,427	21,643	1,416	50,577	418,737	111,438	69.1	26,520	48,450	123,662	123,662								
8 m.	226	63,046	29,531	101,997	31,427	21,643	1,416	50,577	418,737	111,438	69.1	26,520	48,450	123,662	123,662									
Monongahela.....	8 m.	106	324,379	334,179	365,215	56,632	52,484	3,148	33,610	6,799	200,750	55.6	162,525	156,075	109,109	276,739								
8 m.	106	324,379	334,179	365,215	56,632	52,484	3,148	33,610	6,799	200,750	55.6	162,525	156,075	109,109	276,739									
Monongahela Connecting.....	8 m.	56	98,619	710	100,756	219,992	48,645	2,838	27,703	7,010	97,344	96.6	3,412	215	180,941	146,689								
8 m.	56	98,619	710	100,756	219,992	48,645	2,838	27,703	7,010	97,344	96.6	3,412	215	180,941	146,689									
Nashville, Chatt. & St. Louis.....	8 m.	1,238	1,343,918	446,061	1,597,919	1,929,572	3,688,116	69,698	722,796	51,305	1,405,914	76.7	5,208,504	362,162	372,397	650,859								
8 m.	1,238	1,343,918	446,061	1,597,919	1,929,572	3,688,116	69,698	722,796	51,305	1,405,914	76.7	5,208,504	362,162	372,397	650,859									
Nevada Northern.....	8 m.	164	168,872	45,793	168,872	3,800	36,754	4,671	104,838	26,789	24,008	143.9	143,900	110,336	89,756	311,338								
8 m.	164	168,872	45,793	168,872	3,800	36,754	4,671	104,838	26,789	24,008	143.9	143,900	110,336	89,756	311,338									
Newburgh & South Shore.....	8 m.	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....								
8 m.	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....								
New Orleans Great Northern.....	8 m.	274	1,771,599	552,118	3,233,339	329,049	54,898	5,437	87,563	10,193	190,769	81.7	42,630	24,142	131,583	81,991								
8 m.	274	1,771,599	552,118	3,233,339	329,049	54,898	5,437	87,563	10,193	190,769	81.7	42,630	24,142	131,583	81,991									
New York Central.....	8 m.	6,078	16,498,194	8,854,984	27,636,014	3,834,426	6,201,181	296,384	9,276,788	770,066	20,940,064	75.9	6,689,950	9,114,114	5,213,071	2,273,456								
8 m.	6,078	16,498,194	8,854,984	27,636,014	3,834,426	6,201,181	296,384	9,276,788	770,066	20,940,064	75.9	6,689,950	9,114,114	5,213,071	2,273,456									
Cincinnati Northern.....	8 m.	245	2,344,752	156,614	2,801,912	360,662	462,609	40,467	882,466	59,943	1,825,231	73.7	651,661	598,400	479,785	127,340								
8 m.	245	2,344,752	156,614	2,801,912	360,662	462,609	40,467	882,466	59,943	1,825,231	73.7	651,661	598,400	479,785	127,340									
Cleveland, Chic. & St. Louis.....	8 m.	2,410	4,956,077	1,174,862	7,091,103	1,331,833	1,131,833	101,476	2,790,838	1,83,989	4,335,309	81.3	1,021,651	986,578	424,836	205,663								
8 m.	2,410	4,956,077	1,174,862	7,091,103	1,331,833	1,131,833	101,476	2,790,838	1,83,989	4,335,309	81.3	1,021,651	986,578	424,836	205,663									
Indiana Harbor Belt.....	8 m.	2415	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....								
8 m.	2415	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....								
Kanawha & Michigan.....	8 m.	176	405,902	62,254	481,093	73,915	124,223	3,85	140,891	10,499	353,442	73.5	127,681	96,116	106,240	11,924								
8 m.	176	405,902	62,254	481,093	73,915	124,223	3,85	140,891	10,499	353,442	73.5	127,681	96,116	106,240	11,924									
Lake Erie & Western.....	8 m.	716	2,357,732	49,235	1,767,003	1,176,003	1,176,003	41,433	1,924,384	88,571	3,006,772	81.4	188,966	88,100	270,345	120,809								
8 m.	716	2,357,732	49,235	1,767,003	1,176,003	1,176,003	41,433	1,924,384	88,571	3,006,772	81.4	188,966	88,100	270,345	120,809									
Michigan Central.....	8 m.	1,866	5,430,628	963,260	7,123,198	1,076,321	1,712,639	85,401	2,339,670	143,372	5,044,663	74.7	1,938,535	4,733,444	4,184,823	407,161								
8 m.	1,866	5,430,628	963,260	7,123,198	1,076,321	1,712,639	85,401	2,339,670	143,372	5,044,663	74.7	1,938,535	4,733,444	4,184,823	407,161									
Pittsburgh & Lake Erie.....	8 m.	224	1,333,648	257,552	1,794,072	356,912	6,222	15,859	55,765	63,377	1,531,437	97.4	42,570	178,897	58,944	111,481								
8 m.	224	1,333,648	257,552	1,794,072	356,912	6,222	15,859	55,765	63,377	1,531,437	97.4	42,570	178,897	58,944	111,481									
Toledo & Ohio Central.....	8 m.	503	925,738	80,099	1,347,400	168,771	249,939	9,300	34,825	25,206	802,035	76.6	245,296	178,676	188,414	136,193								
8 m.	503	925,738	80,099	1,347,400	168,771	249,939	9,300	34,825	25,206	802,035	76.6	245,296	178,676	188,414	136,193									
New York, Chicago & St. Louis.....	8 m.	574	2,827,631	951,849	3,831,588	275,238	580,149	51,320	833,886	296,293	3,163,300	71.2	833,967	464,006	443,079	129,630								
8 m.	574	2,827,631	951,849	3,831,588	275,238	580,149	51,320	833,886	296,293	3,163,300	71.2	833,967	464,006	443,079	129,630									
N. Y., New Haven & Hartford.....	8 m.	1,936	4,858,179	4,673,530	10,331,634	1,044,077	2,338,709	6,0273	4,925,407	327,100	8,817,576	86.2	4,418,048	909,748	5,833,817	2,097,423								
8 m.	1,936	4,858,179	4,673,530	10,331,634	1,044,077	2,338,709	6,0273	4,925,407	327,100	8,817,576	86.2	4,418,048	909,748	5,833,817	2,097,423									
Central New England.....	8 m.	301	624,095	261,188	5,694,638	1,019,980	8,6014	31,436	2,069,348	116,912	629,826	90.5	65,796	61,286	34,799	67,346								
8 m.	301	624,095	261,188	5,694,638	1,019,980	8,6014	31,436	2,069,348	116,912	629,826	90.5	65,796	61,286	34,799	67,346									
New York, Ontario & Western.....	8 m.	569	5,548,765	966,700	7,600,577	1,175,935	1,555,636	65,567	2,536,739	150,929	5,250,704	72.1	1,555,636	1,155,552	3,109,517	1,783,018								
8 m.	569	5,548,765	966,700	7,600,577	1,175,935	1,555,636	65,567	2,536,739	150,929	5,250,704	72.1	1,555,636	1,155,552	3,109,517	1,783,018									
Norfolk & Western.....	8 m.	221	4,375,137	6,843,799	52,283,016	1,833,649	12,886,881	266,800	21,277,324	1,253,246	4,832,300	83.3	8,902,716	5,668,895	3,183,576	38,709								
8 m.	221	4,375,137	6,843,799	52,283,016	1,833,649	12,886,881	266,800	21,277,324	1,253,246	4,832,300	83.3	8,902,716	5,668,895	3,183,576	38,709									
Norfolk Southern.....	8 m.	942	401,923	161,920	610,64	116,719	89,597	3,237	1,132	31,916	5,362,384	86.9	80,202	47,490	801,009	801,009								
8 m.	942	401,923	161,920	610,64	116,719	89,597	3,237	1,132	31,916	5,362,384	86.9	80,202	47,490	801,009	801,009									
Northern Pacific.....	8 m.	6,635	39,677,617	11,270,376	57,535,431	5,644,536	10,616,536	1,046,536	17,914,244	2,567,377	4,586,389	87.9	6,850,062	3,755,400	3,022,142	1,412,142								
8 m.	6,635	39,677,617	11,270,376	57,535,431	5,644,536	10,616,536	1,046,536	17,914,244	2,567,377	4,586,389	87.9	6,850,062	3,755,400	3,022,142	1,412,142									
Northern Pools.....	8 m.	517	559,093	202,964	959,848	118,418	138,418	6,488	302,663	15,533	883,631	69.5	16,217	335,557	105,805	113,973								
8 m.	517	559,093	202,964	959,848	118,418	138,418	6,488	302,663	15,533	883,631	69.5	16,217	335,557	105,805	113,973									
Pennsylvania R. R.....	8 m.	3,233	98,277,167	11,274,900	47,818,588	5,255,739	10,249,279	3,400,439	17,465,513	2,011,866	35,370,875	82.6	4,447,713	5,104,405	4,818,550	2,901,280								
8 m.	3,233	98,277,167	11,274,900	47,818,588	5,255,739	10,249,279	3,400,439	17,465,513	2,011,866	35,370,875	82.6	4,447,713	5,104,405	4,818,550	2,901,280									
Bell, Ches. & Atlantic.....	8 m.	97	7,043,311	343,558	11,313,021	109,856	249,997	1,835	636,343	31,927	10,619,714	95.1	94,856	76,011	78,006	31,983								
8 m.	97	7,043,311	343,558	11,313,021	109,856	249,997	1,835	636,343	31,927	10,619,714	95.1	94,856	76,011	78,006</										

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated, Operating revenues (Total, Freight, Passenger, Inc. misc.), Maintenance of Way and Equip. structure, Traffic, Trans. portation, General, Total, Operating ratio, Net operating ratio, Operating (inc or loss), Net after remain, Net after remain 1920.



## Traffic News

J. A. MacDonald, of Valleyfield, Que., has been chosen president of the Canadian Ticket Agents' Association.

The New York, Chicago & St. Louis will withdraw from the consolidated ticket office at Cleveland, Ohio, on October 31, and will re-open a separate city ticket office at 2010 East Ninth street in the Schofield building.

During the month of September, 1,928 cars of grapes moved in solid trains over the Southern Pacific from Lodi, Cal., to Roseville, where the cars are placed in the fruit block and sent out quickly to the East. The schedule for grape and green fruit trains from Roseville to Chicago has been reduced to 154 hours.

The movement of bituminous coal over the Philadelphia & Reading in August, amounted to 1,290,104 tons, a reduction of 665,461 tons from the quantity carried during the same month last year. The bituminous tonnage for August of this year, however, is the largest since last March, when the total was 1,308,947 tons.

On recommendation of its traffic committee the Alton (Ill.) Chamber of Commerce has adopted a resolution in support of that by the National Industrial Traffic League calling for "immediate action toward a reduction in operating costs (of the railways) and a corresponding horizontal reduction in transportation costs to the public."

Shipments of grain over the Canadian Pacific from points in the Calgary district are now averaging 500,000 bushels a day. The indications are that the present crop will be sent to the head of the lakes in record time. Samples of wheat arriving at the office of the Dominion grain inspector continue to be up to the excellent average set by those of last year.

The executive committee of the Yellow Pine Wholesalers' Association held a meeting at Cincinnati, Ohio, on October 5, and adopted a resolution approving the action taken a week previously by the executive committee of the National Industrial Traffic League in urging the abrogation of the labor agreements, and the reduction of the wages of railway employees, together with the reduction of freight rates.

The Atlanta, Birmingham & Atlantic announces that its night passenger trains, taken off during the strike of last spring, and kept out of service (after daylight service had been resumed) because of malicious tampering with the tracks, are again running. Sleeping cars now leave Atlanta for Waycross at 9:25 p. m.; Waycross for Atlanta at 8:40 p. m.; Atlanta for Thomasville 9:25 p. m.; Thomasville for Atlanta 8:15 p. m.

The Senate committee on interstate commerce has decided to begin hearings on October 24 on the bill introduced by Senator Capper to amend the transportation act to restore some of the powers of state commissions to change intrastate rates which have been interfered with by the construction put on the new law by the Interstate Commerce Commission. The bill also involves an amendment to the general rate-making rule in Section 15-2.

The dates for the Interstate Commerce Commission's hearings on proposed reductions in transcontinental rates which carriers are seeking for the purpose of meeting competition with the Panama Canal route, have been changed by the Commission. The application of the Southwestern railroads to reduce rates via Galveston, Tex., between Pacific coast terminals and New York will be heard at San Francisco, Cal., on December 8, at Phoenix, Ariz., on December 17, and at New Orleans, La., on January 11, 1922.

A bulletin giving the names of the coal mines, operating companies, locations and production figures of the coal properties on its lines has been issued by the Chicago & Eastern Illinois to 6,000 retail coal dealers and industrial consumers in the territory

it serves. The circular anticipates the possible shortage of coal during the winter because of the depression in the present coal market and the failure of consumers to lay in winter supplies and presents subject matter outlining the probable coal situation should this condition continue.

Arguments for freight rate reductions applying to specific commodities have been advanced; but these indicate that even in the minds of the interested shippers, the results of such reductions are purely speculative, not only as to increased volume of traffic, but also as to the time when an increased volume might be expected. The carriers are in no position to enter the field of uncertain experimentation involving their revenues; disappointment in the experiment would result in serious consequences to the public—*B. R. & P. Circular*.

A bill to amend the interstate commerce law to permit railroads to put into effect reduced rates on hay, grain, potatoes, livestock, fruits, vegetables, eggs, milk, cream and other perishable food products, coal and building materials, immediately upon the filing of tariffs, has been introduced in the House by Representative Jefferies of Nebraska. The bill also provides that the rates so promulgated shall not be increased during a specified period of time and that the Interstate Commerce Commission shall have no jurisdiction to fix a minimum rate on the commodities mentioned.

Heavy shipments of grapes to the eastern market and the failure of consignees to return refrigerator cars promptly, have led to a critical situation which is causing a shortage of refrigerator cars to move a record crop of grapes from California. In the 27 days previous to October 6, 10,486 cars of grapes were reported shipped out of California as against 7,248 for the corresponding period of last season. Commissioner H. Stanley Benedict, who is handling the situation for the California State Railroad Commission, while expressing the view that most of the trouble is at the eastern end, urged, on October 6, that shippers and carriers co-operate in loading and moving cars as promptly as possible.

The Pennsylvania Railroad announces that it is to apply to the Interstate Commerce Commission for permission to place in effect a temporary reduction of 28 per cent, in the freight rates on iron ore from both the Great Lakes and the Seaboard to the furnaces in the Pittsburgh and Youngstown districts, the Schuylkill Valley and other districts. The reduction would remain in effect only until Dec. 31, 1921. The purpose of the reduction will be to assist the iron and steel producers in accumulating a supply of ore before winter closes navigation on the Great Lakes or compels the shutdown of the Northern mines; also to try out experimentally whether a materially lower level of rates will stimulate the iron and steel markets.

### Coal Production Increasing

The production of soft coal continued to improve during the first week of October, according to the weekly bulletin of the Geological Survey, and for the first time since January passed the 9,000,000 ton mark. The output for the week is estimated at 9,105,000 net tons, an increase of 2½ per cent when compared with the week preceding. Production is still, however, far below the normal for this season of the year. With industry active and a normal export business, production in October ordinarily runs at least 11,000,000 tons a week.

### Open Saginaw Million Dollar Terminal

Pere Marquette officials and members of the Saginaw Board of Commerce formally opened the new million dollar terminal at Saginaw, Mich., on October 11. The dedication of the new buildings, followed by congratulatory speeches by members of the Saginaw Chamber of Commerce, marked the opening. The new work consists of a thirty-stall engine house, a machine shop, a power house having a 1,000-horsepower capacity, a 100-ft. turntable, a 500-ton coal dock, a cinder conveyor with electrically-operated ash handling equipment, two water tanks, a storehouse, and a general service building.

**To Prevent Ticket Scalping at Legion Convention**

Railroads are taking every precaution to prevent ticket scalping at the national convention of the American Legion, which will be held in Kansas City the latter part of this month. The exceedingly low rates which will be offered to the members of the legion usually attract a large number of railroad ticket scalpers, especially where so large a convention attendance is expected. The Railroad Ticket Protective Bureau, representing all the passenger-carrying railroads in the United States, will be in charge of this work, and has been promised the full co-operation of the convention executive committee in its effort to eliminate any ticket manipulation. Tickets will be issued in signature form, making them worthless if transferred. The same plan for the protection of tickets was carried on successfully at the Grand Army of the Republic convention, in Indianapolis, the first of this month, and it was reported that scalping was entirely checked in that city.

**Salt Rates Discussed at Chicago**

The entire salt rate structure of the country was discussed at a hearing at Chicago on October 12 and 13, when the applications of railroads serving the Louisiana salt mines for reductions in the rates on salt to Chicago from 26½ cents to 21 cents, and to St. Louis, Mo., from 23 to 21 cents came up for hearing before an examiner for the Interstate Commerce Commission. Shippers and carriers from the New York state salt district, the Kansas district and the Detroit (Mich.) district were grouped against those from the south, and opposed the reduction. The packing interests of Chicago sided with the roads which had proposed the lower Louisiana rates. Morris & Company, which owns the Kansas Rock Salt Company, protested, however, and pointed to the fact that it would benefit by the lower Louisiana rates because in spite of the ownership of the Kansas mines, it bought much salt in Louisiana. The Central Freight Association and Trunk Lines opposed the reductions which they alleged would be a case of capturing the salt tonnage were the proposed tariffs allowed to go into effect.

**Anthracite Shipments in September**

Shipments of anthracite for September as reported to the Anthracite Bureau of Information, amounted to 5,519,412 gross tons, against 5,575,115 tons in August. The loss in production due to the shutting down of some mines in the Scranton district that cannot be operated under the provisions of the Kohler act, was something over 200,000 tons, about three-fourths of which loss was made up by increased shipments from other districts. The total shipments for the coal year beginning April 1, have amounted to 34,350,584 tons, as compared with 33,479,753 tons for the corresponding period in 1920, a gain of 870,831 tons. Shipments by the initial carriers were as follows:

	September, 1921	August, 1921
P. & R. ....	1,081,085	1,116,844
L. V. ....	966,600	924,649
C. of N. J. ....	576,875	544,007
D. L. & W. ....	736,571	953,014
D. & H. ....	711,199	756,982
Penna. ....	426,344	360,817
Eric. ....	631,882	638,280
N. Y. O. & W. ....	123,742	98,355
t. & N. E. ....	265,114	192,167
	<hr/>	<hr/>
	5,519,412	5,575,115

**Who Pays?**

The Buffalo, Rochester & Pittsburgh in a recent bulletin appealed to shippers to aid in reducing claims for loss by better packing; and called attention to the enormous total of the amounts paid out in 1920 by class I railroads (\$104,388,930). In its latest bulletin it appeals to its own employees. Following are extracts:

"Who Pays?" Why, you do and I do, for such expense is an economic waste on the country at large, and we all share alike in it.

That the railroads collectively paid this staggering amount interests us only indirectly, but we must be interested individually and directly. Claims of this nature cost the Buffalo, Rochester & Pittsburgh \$112,955. Our station, yard and road men make it a point of pride to give freight prompt handling, to work their classification yard with dispatch, and to get over the road. Which is fine and to be commended; but don't overlook the fact that "rapid handling" may become "careless handling." It is not how far anything drops, or how fast it moves, but how quickly it stops, that causes damage.

Apply this law when handling individual packages and in moving cars; so that through your care they start and stop easily. In the pride of rapid handling do not forget that in unnecessary haste you are creating damage and spending somebody's money. "Who Pays?"

At home you carelessly drop a glass and it is broken. You resolve to be more careful in the future. You know the cause and pay for the damage. In the station, yard or run you seldom see the damage done and never pay the bill, at least not directly; but, who pays? This is a loss that comes home to every one of us.

**Federal Traffic Board**

General Charles G. Dawes, director of the budget bureau, has announced the appointment of a Federal Traffic Board consisting of representatives of the various government departments and bureaus for the purpose of co-ordinating and systematizing the handling of the government's freight shipments. It was announced that R. C. Caples, who has been making a study of the situation for the budget bureau, has estimated that the government transportation bill annually is \$200,000,000, and that many economies could be effected. After the board is formed a committee of railroad men is to be invited to confer with the government's representatives regarding the changes to be made.

The Federal Traffic Board is to make a complete study of the traffic problems confronting the various departments and independent establishments of the government, and in co-operation with representatives of the Interstate Commerce Commission and the carriers, to establish uniform classifications for all commodities shipped by the government. The board will draw up plans for improving and standardizing methods of making shipments, and for the settlement of accounts. These plans will be submitted to the chief co-ordinator, general supply, who will take the necessary action in each case.

"The classification of commodities and the instructions governing shipments and methods of settling transportation accounts that are adopted by the board and approved by the co-ordinator for traffic shall, as far as applicable and in conformity with law, be binding upon and govern all departments, bureaus, agencies and offices of the government in all shipments made by them.

"All questions pertaining to the classification of materials or terminal, switching or freight rates, etc., which require the application of remedial measures will be submitted to the co-ordinator for traffic, either for adjustment with the classification committees representing the carrier or for the presentation of a complaint with the Interstate Commerce Commission.

"In the event of disagreement . . . the case will be submitted to the chief co-ordinator. . . ."

Commander Chester G. Mayo, of the Supply Corps of the U. S. Navy, has been appointed chief co-ordinator for traffic in the budget bureau.

ATTORNEY GENERAL DAUGHERTY has issued a statement to the effect that the government considers it inadvisable to take any steps in carrying out the plan of dissolution of the Reading System under decree entered in the anti-trust suit until the appeal taken to the Supreme Court has been decided. Mr. Daugherty says that the appeal entered by the stockholders of the Reading Company does not constitute a stay of proceedings, but further steps by the department might later cause embarrassment or delay if the plans should be materially modified by the Supreme Court.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended from October 25 and later dates until February 22, 1922, the operation of certain schedules which propose a reduction of 28½ cents per ton on bituminous coal, lump and slack, from mines on the Chicago & Alton, Kansas City Southern, Missouri, Kansas & Texas and St. Louis-San Francisco in Kansas, Missouri, Arkansas and Oklahoma, and on slack, only, from Springfield, Ill., to Kansas City, Kan., Kansas City, Mo., and contiguous points.

### State Commissions

The State Railroad Commission of California, upon application of the Southern Pacific, the Atchison, Topeka & Santa Fe, the Los Angeles & Salt Lake, and the Pacific Electric, has granted a rehearing in the Los Angeles terminal cases. On April 26, of this year, the commission rendered a decision providing for an extensive system of grade crossing elimination and the unification of terminal facilities of all the railroads entering Los Angeles.

### Street Car or "Jitney"

The motor car on the highway is declared to be chiefly responsible for the low earnings of the Pacific Electric Railway, a subsidiary of the Southern Pacific, in a report just completed by the engineering division of the State Railroad Commission of California. This report, consisting of two large volumes, has been introduced as evidence at a hearing on the application of the Pacific Electric for authority to increase transportation rates which opened at Los Angeles before the commission on October 11. As showing the effect of automobile competition, the report calls attention to the fact that while the traction territory has doubled its population and, according to an accepted estimate, travel has quadrupled, the electric lines carried fewer passengers in 1920 than in 1914. The report states that the choice whether the railway or the jitney shall go rests ultimately with the people. Another cause of the company's plight is given as abnormal operating costs traceable to the war. Operating costs increased from 80 to 100 per cent, while increases in rates have averaged less than 40 per cent.

### Court News

#### Shipper Cannot Recover Under Sherman Act Without Showing Damage

Under section 7 of the Sherman anti-trust law those who may sue for threefold damages by virtue of its terms are limited to those "who shall be injured in his business or property," and if a recovery is permitted it must be limited to the damages "by him sustained." The mere fact that a railroad might have been subject to prosecution by the government is otherwise of no avail to a litigant. Therefore a shipper cannot, the Circuit Court of Appeals, Seventh Circuit, holds, recover treble damages from railroads when the only damage alleged was the payment of a higher rate than would have been exacted but for a combination. The rate paid had been held reasonable by the Interstate Commerce Commission, so that in law the railroads were required to collect it and the shipper to pay it.—Keogh v. C. & N. W., 271 Fed., 444.

### United States Supreme Court

The United States Supreme Court on October 19 and 20 heard arguments in the New York intrastate passenger fare case, in which the state authorities are trying to overturn the decision of the Interstate Commerce Commission ordering increases in New York intrastate fares to correspond to those applied to interstate traffic.

## Foreign Railway News

### "Industrial India"

The Tata Publicity Corporation, Ltd., of London and Bombay, has begun the publication of a monthly magazine known as "Industrial India." The purpose of the new journal will be, according to its publishers, "to support and record any movement which seeks to encourage the development of India's resources and industries." Various subjects covered in one of the first numbers include the cotton industry, industrial accidents, manufacturing, coal washing, the manufacture of railway cars, the Indian railway problem, material handling and kindred subjects.

### Argentina Railways Disagree

#### With Government on Rates

Rate increases which were put into effect on the British-owned railways of Argentina have been declared null and void in a decree of President Yrigoyen. These rates, according to press reports, were increased without the sanction of the government. The roads, however, contended that they had the right to raise rates and the government assessed heavy fines against the carriers. Under the president's decree these fines are to be remitted if the rates are lowered to the former level.

### Concessions Granted for Construction

#### of New Railroads in Spain

During the first half of 1921 the following concessions were made for standard gage track in Spain, according to Commerce Reports:

	Miles		Miles
Norte	2,300	Medina to Salamanca	47
Madrid-Zaragoza-Alicante	2,272	West Galicia	43
Andaluces and South of Spain	1,000	Alcantarilla to Lorea	34
Madrid-Caceres and Portugal	480	Sevilla-Alcala and Carmona	26
Central of Aragon	184	Local Railways of Andalucia	22
Medina-Zamora-Orense-Vigo	182	Valencia to Aragon	20
Salamanca to the Portuguese frontier	125	Argamasilla to Torrellosa	11
Zafra to Huelva	111	Bihao to Portugalete	8
Great Southern	104	Railways and Tramways	11
Soria	58	Provincial Deputation of Vizcaya	7

### British Railway Wage Boards

Under the British Railways Bill which has now become a law, the Central Wages Board, which has jurisdiction over wage disputes will have 16 members, eight of whom will represent the carriers, four the National Union of Railwaymen, two the Associated Society of Locomotive Engineers and Firemen and two the Railway Clerks' Association. The National Wages Board (which has final jurisdiction) has been increased to include six representatives of the railway companies, two representatives of the National Union of Railwaymen, two representatives of the Associated Society of Locomotive Engineers and Firemen, two representatives of the Railway Clerks' Association and four representatives of the users of railways, with an independent chairman nominated by the Minister of Labor.

### Signals for Air Brake Inspectors

Luminous fixed signals—letters showing on the front of a box—for use of air brake inspectors, at night, in signaling between the front end and the rear end of a train standing at a station, are in use at Magdeburg, Germany, according to a note in the September number of the Bulletin of the International Railway Association, the data having been taken from a German paper. The letters, composed of dots formed by small electric lights, are energized through a circuit with push buttons (for closing the circuit and illuminating the signal) distributed along the platform in positions convenient for use with trains of different lengths. The letters are only three: F for applying brakes (Festlegen); L for releasing (Losen); E for finished (Erledigt). The arrangement is similar to that used at theatres and other

public places for calling carriages by displaying numbers, different combinations of lights being shown to form different letters.

**Activity of the Krupp Works**

According to press dispatches, W. T. Daugherty, trade commissioner at Berlin, has made the following report concerning the activity of the Krupp Works:

"In June, 1921, the combined Krupp plants had about 99,000 employees, working eight hours a day, while the production had passed from the pre-war mass manufacturing stage to refining production. Today, instead of manufacturing parts for locomotives, for instance, Krupp is manufacturing the locomotive entire.

"It is pertinent to note, in this connection, that among other finished goods of varied description, Krupp's Essen plant is now turning out a locomotive and a train of eight steel 15-ton freight cars for each working day of the year.

"Production is organized vertically, Krupp products being finished refined, from the crude raw materials, while all intermediate stages between the raw material and finished production are combined in this enterprise. A selling organization exists in addition."

**South Manchuria Railway Prospering**

According to press reports, the South Manchuria Railway, which is owned in Japan, enjoyed a thriving business during the fiscal year ended March 31, 1921. Net profits were \$13,500,000 and dividends of 10 per cent were authorized. This company operates from Changchun, Manchuria, where it connects with the Chinese Eastern (the eastern end of the Trans-Siberian), southward to Mukden, where the line branches, one branch going southward to Darien and the other southeastward to Eusan, in Korea. The company also operates steamers between Darien, Shanghai, and Tsingtao.

The company has recently published several booklets in English describing the country and cities served by its lines, the character of the inhabitants, the places of interest, hotel accommodations, industrial opportunities and the equipment and service offered by the carrier. These booklets are well illustrated and provide interesting and instructive reading for the prospective tourist or business man.

**Electrification of Japanese Railways**

LONDON.

The Journal of the Yokohama Chamber of Commerce states that the Japanese railways are to be electrified according to a plan now being worked out by the Department of Railways. First the entire Tokaido line and then a part of the Central line will be fitted up for electrification, the work extending in due course to all other lines. As soon as the department's plan is completed it will be presented through the cabinet to the Diet at its next session.

Traffic on the Tokaido line is increasing greatly each year and adequate accommodation is lacking for the transportation of passengers and freight. To expedite the service, automatic signals have been installed, but it is anticipated, however, that in a short time the traffic capacity of the railways will be found inadequate to meet the needs of the increasing business.

The first lines to be electrified will be the entire Tokaido line from Tokio to Kobe and a part of the Central line between Udamachi station in Tokio and Kofu where many tunnels make transportation slow.

**Railway Education in Britain**

The London School of Economics, in co-operation with the railways radiating from London, offers an interesting array of lecture courses on railway subjects for the benefit of railway employees, according to information published in the Railway Gazette (London). Each course embraces a series of from 10 to 30 lectures which are held in the evening.

Some of the subjects covered by the lectures are Commercial Railway Economics, Railway Operating Economics, General Economics with Special Reference to Transport, Railway Statistics, Principal Factors in Train Operation, the Railway in Relation to the State, Railway Law and Economics of Transport.

At the end of each course of lectures examinations are held to which only those students who have attended regularly and who have done adequate outside study are admitted. Certificates are given to the students who pass the examinations successfully and various medals and prizes are awarded for exceptional performance.

**Powers of British Rates Tribunal**

The British Railways Bill as lately passed by both houses of Parliament gives the Railway Rates Tribunal authority to determine any question brought before it in regard to the following:

- (a) The alteration of the classification of merchandise or of any article or the classification of any article not at the time classified, or any question as to the class in which any article is classified.
- (b) The variation or cancellation of through rates.
- (c) The institution of new, and the continuance, modification, or cancellation of existing group rates.
- (d) The variation of any toll payable by a shipper.
- (e) The amount to be allowed for any terminal services not performed at a station, or for accommodation and services in connection with a private siding not provided or performed at that siding.
- (f) The reasonableness or otherwise of any charge made by a railway company for any services or accommodation for which no authorized charge is applicable.
- (g) The reasonableness or otherwise of any conditions as to packing of articles specially liable to damage in transit or liable to cause damage to other merchandise.
- (h) The articles and things that may be conveyed as passengers' luggage.
- (i) The constitution of local joint committees and their functions and the centres at which they are to be established.

As regards the basis upon which the rates are to be levied, the more general plan as originally defined in the bill has been retained. There is, however, some alteration respecting exceptional (i. e. below the usual) charges. At the time the new schedule of standard charges are put into effect all exceptional rates shall cease to operate with the exception of those rates which are not less than 5 per cent below the standard rates promulgated and which have been continued by agreement between the railway company and the shipper concerned, or until the Rates Tribunal rules otherwise. Permission is given to grant new exceptional rates under the approval of the minister provided that they shall not be less than 5 per cent or more than 40 per cent below the standard rate chargeable.

**English Railway Bill Becomes a Law**

LONDON.

After a discussion extending over some three months, the English Railway Bill was passed by both houses of Parliament and became a law. A resume of this bill was published in the *Railway Age* of May 27, on page 1209. A number of changes were made, however, in the bill before its final adoption.

It will be remembered that six distinct groups were proposed in the original draft of the bill which included two distinct groups for the Scottish railways. The Scottish railways did not at all agree with this plan of the Minister of Transport, primarily on account of the impossibility of applying the same general conditions (wages and rates) to Scottish railways as were applied to English railways on account of the fact that the nature and extent of business in Scotland was in no way comparable with the business and conditions as they exist in England. It was therefore decided to group the Scottish railways on a north and south basis with the English railways. Thus the Northwestern Group was enlarged to include the West Scottish Group, the railways in this particular group being the London & Northwestern, the Midland, the Lancashire & Yorkshire, the North Staffordshire, the Furness, the Caledonian, the Glasgow & South Western and the Highland. Likewise the Northeastern Group was extended to include the East Scottish Group, this group now being made up of the North Eastern, the Great Central, the Great Eastern, the Great Northern, the Hull & Barnsley, the North British and the Great North of Scotland railways.

The final bill extended the time for voluntary amalgamation on the part of the constituent companies in each group till January 1, 1923, after which time the amalgamation tribunal will act if such voluntary amalgamation has not been established. Likewise the time at which every amalgamation scheme is to be put into effect has been extended to July 1, 1923, or such earlier or later date as the amalgamation tribunal may elect.

The requirement that four members of the board of directors should be important shippers in the amalgamated constituent territory which was demanded in the bill as presented was eliminated in the final bill.

## Equipment and Supplies

### Locomotives

The W. T. SMITH LUMBER COMPANY, Chapman, Ala., is inquiring for 1, 60-ton geared locomotive.

THE DAYTON, GOOSE CREEK has ordered 1 Mogul type locomotive from the Baldwin Locomotive Works.

The TENNESSEE STAVE & LUMBER COMPANY, Oneida, Tenn., is inquiring for 1, 17 to 35-ton geared locomotive.

THE YEUH HAN RAILWAY (China), expects to order in the near future, through Mitsui & Co., New York, 2 Mogul type locomotives from the American Locomotive Company.

The LACROSSE & SOUTHEASTERN has ordered 1, 10-wheel type locomotive from the American Locomotive Company. This locomotive will have a total weight of 67-tons in working order.

DELAWARE, LACKAWANNA & WESTERN.—The Elvin Mechanical Stoker Company, New York, has been given an order by the Delaware, Lackawanna & Western for 49 Elvin mechanical stokers for installation on its Mikado type locomotives.

THE ARGENTINE STATE RAILWAYS have ordered 50 Mountain type and 25 Pacific type locomotives from the Baldwin Locomotive Works. These locomotives will all be of meter gage and will be equipped to use either wood or oil for fuel. The Mountain type locomotives are to be used for mixed service and will have 19 by 24 in. cylinders, 50 in. driving wheels and a total weight in working order of 170,000 lb. The Pacific type will be used for passenger service and will have 20 by 28 in. cylinder, 57 in. driving wheels and a total weight in working order of 173,000 lb. A sample Mountain type locomotive was built by the Baldwin Works about two months ago for the same roads.

### Passenger Cars

THE CANADIAN PACIFIC is inquiring for prices on 15 steel postal cars.

THE CENTRAL RAILWAY OF BRAZIL is inquiring through the car builders for 10 first class and 10 second-class passenger coaches.

### Freight Cars

THE MOBILE & OHIO is inquiring for prices on the repair of 1,000 box cars.

THE MAINE CENTRAL is having repairs made to about 800 box cars at the shops of the Laconia Car Company, Laconia, N. H.

THE ERIE has entered into a contract with the Greenville Steel Car Company, Greenville, Pa., for the repair of 1,000 steel coal cars of 50-ton capacity. This is in addition to the repairs on 1,000 cars previously let to the same company.

THE CHILEAN STATE RAILWAYS reported in the *Railway Age* of April 29, as inquiring for 620 cars, have ordered 100 general service gondola cars of 50-ton capacity, from the Pressed Steel Car Company; 200 box cars from the American Car & Foundry Company, and 100 flat cars from Belgian builders.

THE SEABOARD AIR LINE is inquiring for prices on 1,000 ventilated box cars, 700 flat cars and 300 phosphate cars. The company also is inquiring for alternate bids on 500 ventilated box cars, 30 and 40 ton capacity; 500 plain box cars, 40-ton capacity, and 1,000 low side gondola cars, 40-ton capacity.

THE ARGENTINE STATE RAILWAYS, according to a press dispatch from Buenos Aires, dated October 18, have entered into

a contract, subject to the approval of President Yrigoyen, with the Middletown Car Company for the delivery of 2,000 freight cars. Payment for the equipment is to be made in Argentine 6 per cent treasury notes maturing in five years.

### Iron and Steel

THE WABASH is inquiring for 325 tons of steel for a bridge at Attica, Ind.

THE ST. LOUIS SOUTHWESTERN is inquiring for 10,000 tons of rails for 1922 delivery.

THE GREAT NORTHERN has awarded a contract for 500 tons of steel for bridges to the Wisconsin Bridge & Iron Company.

MITSUMI & Co., New York, is inquiring for about 1,700 tons of 75-lb. rail and accessories and is also inquiring for an alternative of 1,400 tons of 60-lb. rail, for the Tokio Electric Railway of Japan.

### Machinery and Tools

THE MISSOURI, KANSAS & TEXAS is inquiring for shop tools to cost about \$100,000.

THE DELAWARE, LACKAWANNA & WESTERN has compiled a list of about 40 machine tools to be purchased as required for its shops; the tools include 2 vertical punch and shears, double end, 18-in. throat; 1, 20-in. vertical drilling machine; 1, 30-in. vertical drilling machine; 2, 500-ton double-end car wheel presses; 1, 48-in. vertical car wheel boring machine; 1, 54-in., 1, 30-in., 1, 26-in., 2, 20-in. and 5, 18-in. engine lathes; 2, 36-in. and 1, 30-in. Morton new type heavy duty draw cut shaper; 1, 24-in. Dill slotter; 1 Gould & Eberhardt heavy duty 32-in. shaper; 1, 60-in. heavy duty radial drill; 1 Sellers vertical special driving box boring machine; 1 horizontal boring and drilling machine, 4½-in. spindle; 2 Bullard 42-in. vertical turret lathes; 1 universal grinder, 12-in. swing; 1 plain horizontal heavy duty milling machine; 2 Bullard 54-in. vertical turret lathes; 1 Morton 60-in. combination cylinder planing and boring machine; 1 McCabe pneumatic cold flanging machine; 2 centering machines, 4-in. capacity, Whiton preferred; 1 power hack saw, motor driven; 1 reverse motor drive for Sellers planer, 48 in. by 48 in.; 2 reverse motor drives for Niles-Bement-Pond planers, 42 in. by 42 in.; 1 reverse motor drive for Sellers planers, 36 in. by 36 in.; 1 gap engine lathe, 25 to 29 in. swing; a No. 1 J. A. Fay & Egan improved variety saw, and electrical equipment for operating the machines, many of which will be motor driven.

### Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, November 4, for its present requirements of manganese frogs; electric arc welding set; and for its requirements until December 31, of black, galvanized and blue annealed sheets; driving and truck tires for freight, switching and passenger service; seamless steel tubes for repairs to locomotive and stationary boilers; axles for car and locomotive repairs; wire nails and staples; steel bars, shapes and plates; steel billets and steel wheels for locomotive, passenger car and tender repairs.

### Signaling

MISSOURI PACIFIC.—This company has awarded a contract to the General Railway Signal Company, Rochester, N. Y., for one 12-lever Saxby & Farmer interlocking machine to be installed at Harvill, Mo.

### Trade Publications

CUTTING THE UNRECKONED COSTS.—A ten-page illustrated booklet has been recently issued by R. D. Skinner & Co., Inc., New York, descriptive of the belting manufactured by that company. The text discusses the various features of the belt such as the special weave, the internal lubrication and the results which have been attained in numerous competitive tests with other types of belting.

## Supply Trade News

The Lakewood Engineering Company, Cleveland, Ohio, has moved its Philadelphia, Pa., office, from the Widener building to the Franklin Trust building.

George A. Barden has been appointed railway sales representative with headquarters at 4631 York road, Philadelphia, Pa., of the Lowe Brothers Company, Dayton, Ohio.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., will establish a branch in charge of W. D. Clark, at 316 Thirteenth street, Huntington, W. Va.

The Superior Supply Company, Chicago, has been appointed the direct factory representative of the Novo Engine Company, Lansing, Mich., and will handle the sale of the Novo line of portable power driven outfits, including pumps, hoists, compressors, saw rigs, etc.

G. R. Watson, formerly electrical supervisor for the Pullman Company at Chicago and later representative of the Crouse-Hines Company at Cincinnati, Ohio, has been appointed general sales manager of the Wadsworth Electric Manufacturing Company, Inc., with headquarters at Covington, Ky.

A. Clarke Moore, formerly assistant to the president of the Globe Seamless Tube Company, has been appointed vice-president of the Chicago Railway Equipment Company, effective October 1, succeeding the late C. Haines Williams, deceased. Mr. Moore has been actively engaged in the railway supply business for the past 22 years. In July, 1899, he entered the service of the Safety Car Heating & Lighting Company, which company he served until November, 1919, with the exception of a year and one-half in 1906 and 1907, when he was with the Western Steel Car & Foundry Company and McCord & Company. During this time he filled various positions, serving for the last six years as vice-president, and for the two years prior to that time as general manager. During the war, Mr. Moore was commissioned a major in the Air Service department, with headquarters at New York, having charge of the production of air craft in the eastern territory. In November, 1919, he became associated with the Globe Seamless Steel Tube Company of Chicago as assistant to the president, from which position he resigned in August, 1921. As vice-president of the Chicago Railway Equipment Company, Mr. Moore will have general supervision of the manufacturing and selling departments.

George L. Sawyer, formerly sales manager of material handling machinery for the Barber-Greene Company, Aurora, Ill., has been appointed representative of the Universal Crane Co., Elyria, Ohio, for the sale of its Universal cranes in the New York field, with office at the Allied Machinery Center, 141 Center street, New York City.

James A. Slater, manager of sales of the National Malleable Castings Company at Chicago, has been appointed assistant sales manager with headquarters at the company's general offices in Cleveland, Ohio, succeeding J. H. Redhead, whose

appointment as manager of the Reliance Company at Cleveland was noted in the *Railway Age* of October 15 (page 739).

T. E. Cocker has been appointed district manager of the Chain Belt Company, in the Buffalo territory, with headquarters at Buffalo, N. Y. Mr. Cocker is a graduate of the Rensselaer Polytechnic Institute, class of 1907, civil engineering. From 1907 to 1917 he served in the engineering department of the New York Central at Buffalo, holding the position of assistant engineer at the time he left the service of that railroad. For the past five years he has been handling elevating and conveying equipment.

W. H. Rastall has been appointed chief of the Industrial Machinery Division of the Bureau of Foreign and Domestic Commerce and in this position will have charge of the government's activities in furthering American foreign trade in railway equipment and supplies. Mr. Rastall was born in 1879. He was educated in the public schools of Chicago, the Hebron Academy (Maine), the University of Maine and Cornell University, from which institution he was graduated in 1904. Before completing his education, Mr. Rastall served as a draftsman for the Latrobe Steel & Coupler Company, Melrose Park, Ill., and for several shipbuilding companies. From 1904 to 1911 he was resident engineer of the American Trading Company at Kobe, Japan. This company was the Japanese agent for various important American concerns engaged in the manufacture of machinery. From 1913 to 1917 he was sales engineer for the Worthington Pump & Machinery Corporation. In the latter year he entered the service of the Bureau of Aircraft Production as an aeronautical mechanical engineer. In October, 1918, he left this position to investigate the markets for American industrial machinery in the Far East in behalf of the Department of Commerce. He was occupied on this mission, which included a visit to almost every port in Asia, until the summer of this year, when he returned to this country to take up his new duties.

## Trade Publications

**METAL SPRAYING.**—The Metals Coating Company of America, Philadelphia, Pa., has issued a 16-page, illustrated booklet descriptive of the metal spraying device manufactured by that company. The process of coating various materials with metals in order to secure non-corrosive surfaces is explained in detail as well as the mechanical construction of the apparatus. In addition, another type of apparatus for the application of a coating at a higher rate for large flat surfaces by the use of metal dust is also described. The illustrations show the different classes of work which can be performed and the construction of the apparatus.

**LONG LIFE FOR WOOD.**—The Barrett Company, New York City has recently issued a 16-page, illustrated booklet descriptive of the various uses for which that company's timber preservatives are adaptable. The text discusses the many classes of timbers which can be treated advantageously, the structures or parts of structures which should be of treated timber and the method of application of the preservative, such as the open tank, the surface, the brush and other methods. The illustrations cover a wide range of subjects from the effects or results of moisture on untreated woods and the decay resulting therefrom, up to a plan for an open-tank process plant.

**INDUSTRIAL TRACTORS.**—The Baker R & I. Company, Cleveland, Ohio, has published a catalogue and several bulletins on its line of electrically operated industrial tractors and trucks. Its new catalogue is a 32-page booklet illustrating and describing the details of manufacture and the operating advantages of the four and three-wheel tractors, its locomotive tractor and the several types of general utility platform trucks. The description of these several devices is accompanied by complete and detailed specifications with respect to dimensions, weights, power, etc. An interesting feature of the catalogue lies in the many illustrations given of the different types of these tractors and trucks and the variety of the material-handling service for which they are adapted. Bulletins No. 12, 13, 14 and 15, are devoted to a description of special types of the Baker trucks and to the electrical equipment for direct and alternating current.



A. C. Moore

## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company contemplates the erection of a hospital at Albuquerque, N. M., to cost approximately \$300,000.

**ATCHISON, TOPEKA & SANTA FE.**—This company will construct additional yard tracks at Chillicothe, Ill., the work to cost about \$51,000. The same company will also construct an interchange track in connection with the Sand Springs Railway, at Tulsa, Okla.

**ATCHISON, TOPEKA & SANTA FE.**—This company will construct several extensions to its machine shops at San Bernardino, Cal., at an estimated cost of \$224,000. It will also install a boiler washing plant in connection with its shops at this place. The same company will construct an industry track at Dallas, Tex., to cost about \$21,000; a blow-off line in the roundhouse at Cleburn, Tex., and a similar one in its roundhouse at Temple, Tex., to cost about \$11,000 each; a dike for protection against floods will be constructed in the rear of its engine house at La Junta, Colo.; estimated to cost about \$17,000; and a similar protection against floods will be constructed at Canadian, Tex., to cost about \$25,000.

**CHESAPEAKE & OHIO.**—This company is asking for bids for the construction of a passenger station at Logan, W. Va. This building will be 30 ft. by 100 ft. of red brick construction, trimmed with terra cotta and with a slate roof. The platforms will be covered. The company will at the same time construct a 30 ft. by 100 ft. frame baggage and express building at Logan. The estimated cost of this work is \$80,000.

**CHESAPEAKE & OHIO.**—This company has awarded a contract to J. J. Craig, Covington, Ky., for the construction of a passenger station, 135 ft. by 38 ft., at Covington. The building will be of red pressed brick with terra cotta trim and tile roof. Platforms with butterfly sheds at both eastbound and westbound main tracks will be erected.

**THE CHICAGO, BURLINGTON & QUINCY.**—This company has awarded a contract for the construction of a ten-stall brick roundhouse and a 100-ft. turntable at Centralia, Ill., to Jos. E. Nelson & Sons, Chicago.

**CHICAGO & NORTH WESTERN.**—This company has awarded a contract to White & Duffy, Milwaukee, Wis., for the construction of a subway at Fourth street, Clinton, Iowa, to cost about \$100,000.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company will replace the storage house at Pratt, Kansas, which was destroyed by fire on October 6 with a total property loss estimated at \$20,000.

**ILLINOIS CENTRAL.**—This company will re-construct its depot at Marissa, Ill., which was recently destroyed by fire. The work will cost about \$10,000.

**ILLINOIS CENTRAL.**—This company has awarded a contract for the construction of a section foreman's house and three section labor housing buildings at Clinton, Ill., to Joseph E. Nelson & Sons, Chicago, to cost approximately \$12,000.

**KANSAS & OKLAHOMA.**—This company has applied to the Interstate Commerce Commission for a certificate authorizing the completion of the construction of a line of 65 miles from Caney, Kan., to Vinita, Okla., of which the first 37 miles was built some time ago.

**KANSAS CITY SOUTHERN.**—This company contemplates the construction of a bridge across the Arkansas river below Ft. Smith, Arkansas.

**MCCLELLANSVILLE & SANTEE.** This company has applied to the Interstate Commerce Commission for certificate authorizing the construction of a line from Jamestown and McClellansville, S. C., 20 miles.

**MISSOURI PACIFIC.**—This company contemplates the construc-

tion of about 25 miles of second main track on its line between St. Louis, Mo., and Jefferson City, at an estimated cost of \$2,000,000. Bids will be requested for either the whole, or part of this work when surveys have been completed. This same company will soon request bids for the construction of two car repair sheds, 46 ft. by 500 ft., at St. Louis, at an estimated cost of \$80,000; one car repair shed at Kansas City, Mo., 120 ft. by 500 ft., to cost \$82,000; and a 70 ft. by 200 ft. addition to its present sheds at Sedalia, Mo., which will cost about \$31,500.

**NEW YORK CENTRAL.**—This company has awarded a contract to the Roberts and Schaefer Company, Chicago, for the installation of an electric cinder conveyor at Wayneport.

**NORTHERN PACIFIC.**—This company has awarded a contract to H. C. Struchen, St. Paul, Minn., for the construction of a steel bridge over Trout creek, about 30 miles west of Missoula, Mont. This bridge is a single track structure, 238 ft. long and 45 ft. high, consisting of a 145-ft. deck pin connected truss with approach spans 40 and 50 ft. long at the ends.

**OREGON-WASHINGTON.**—This company, in conjunction with the city of Seattle, Wash., and other railroads entering that city, contemplates the construction of a permanent bridge across the Seattle freight yards.

**PHILADELPHIA & READING.**—This company has awarded a contract to F. W. Van Loon, Philadelphia, for the construction of a freight house and office building at Coatesville, Pa. The office building will be 22 ft. by 40 ft. and will include an extension 30 ft. by 98 ft. to be built for office use over the freight house. The work will be of brick supported on steel and concrete foundations. The freight house will be 196 ft. long with a platform 10 ft. wide on the track side and an open platform 31 ft. by 38 ft. The freight house will be of steel frame construction and the open platform will have a wooden floor supported on concrete masonry walls and piers. New concrete driveways and approaches will be added later.

**ST. LOUIS-SAN FRANCISCO.**—This company will receive bids until October 17 for the construction of a one story station, 24 ft. by 106 ft., at St. Clair, Mo.

**ST. LOUIS-SAN FRANCISCO.**—This company will receive bids until October 27, for the construction of a coaling station at Newburg, Mo.

**TEMISKAMING & NORTHERN ONTARIO.**—This company will soon commence work on a 70-mile extension, northward from Cochrane to Smoky Falls. The estimated cost of the extension is \$3,500,000.

**UTAHA.**—This company has been given permission by the Interstate Commerce Commission to construct extensions to its lines totaling 25 miles



Photo from International

A Propaganda Train of the Russian Soviet Government

# Railway Financial News

**ATCHISON, TOPEKA & SANTA FE.—Authorized to Lease California Southern.**—The Interstate Commerce Commission has given its authority for the acquisition of control of the California Southern by lease for 10 years.

**CALIFORNIA SOUTHERN.—Acquisition by Lease.**—See Atchison, Topeka & Santa Fe.

**CHICAGO, ROCK ISLAND & PACIFIC.—Authorized to Issue Bonds.**—The Interstate Commerce Commission has granted the joint application of this company and the Burlington, Cedar Rapids & Northern, authorizing the latter to sell \$1,905,000 of consolidated first mortgage bonds at par and accrued interest to the Chicago, Rock Island & Pacific, and also authorizing the Chicago, Rock Island & Pacific to procure authentication and delivery to its treasurer of a like amount of first and refunding mortgage bonds to be pledged from time to time as collateral for short term notes.

**Authorized to Assume Obligation as Guarantor.**—This company has been authorized by the Interstate Commerce Commission to assume obligation or liability as guarantor by endorsement in respect of the payment of the principal and interest of \$619,000 of first mortgage gold bonds of the St. Paul & Kansas City Short Line, and the latter was authorized to issue the bonds and deliver them to the Rock Island in reimbursement of advances for additions and betterments.

**KNOXVILLE, SEVIERVILLE & EASTERN.—Sold.**—This 30-mile road was sold at auction on October 5 to W. B. Townsend, for \$30,000. Mr. Townsend is president of the Little River Railroad with office at Townsend, Tenn. He said he was representing a syndicate that would put the road in good operating condition, if the sale was confirmed.

**LAKE ERIE & WESTERN.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation (January and February).....	\$258,090	.....
Additional compensation account completed, additions and betterments.....	5,842	.....
U. S. Government guaranty, March 1 to August 31.....	787,287	.....
Net railway operating income, September 1 to December 31.....	23,904	.....
Total (compared with compensation accrued in 1919).....	1,075,123	\$1,597,045
Total other income.....	130,621	147,408
Gross income.....	1,205,745	1,689,918
Interest on funded debt.....	672,041	639,594
Total deductions from gross income.....	969,504	977,967
Add: revenues and expenses applicable to January 1, 1918, settled by U. S. R. A.....	153,488	*204,574
Surplus for the year.....	389,729	507,378

\*Debit balance.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	Operating Revenues	
	1920	1919
Freight.....	\$10,463,360	\$8,518,048
Passenger.....	829,045	805,534
Total operating revenues.....	\$11,970,928	\$9,784,826
Operating Expenses		
Maintenance of way and structures.....	\$1,577,545	\$1,738,553
Maintenance of equipment.....	4,112,010	2,731,710
Traffic.....	203,669	147,408
Transportation.....	5,303,376	4,346,856
General.....	341,250	312,653
Total railway operating expenses.....	11,530,804	9,272,661
Net revenue from railway operation.....	440,924	512,165
Passenger Traffic		
Number of revenue passengers carried.....	836,148	857,914
Number of revenue passengers carried one mile.....	29,024,216	28,969,495
Average distance each revenue passenger carried (miles).....	34.71	33.77
Average revenue per passenger per mile (cents).....	2.80	2.78
Freight Traffic		
Number of revenue tons carried.....	7,000,496	6,066,080
Tons of revenue freight carried one mile.....	1,072,868,436	864,137,497
Average distance haul of one ton of revenue freight (miles).....	153.26	142.45
Average revenue per ton per mile (mills).....	9.75	9.86

**TOLEDO & OHIO CENTRAL.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation (January and February).....	\$181,168	.....
Additional compensation account completed, additions and betterments.....	30,347	.....
U. S. Government guaranty, March 1 to August 31.....	60,2179	.....
Net railway operating income, September 1 to December 31.....	1,379,657	.....
Total (compared with compensation accrued in 1919).....	2,193,342	\$1,274,338
Total other income.....	601,809	588,447
Gross income.....	2,794,941	1,862,685
Interest on funded debt.....	1,246,818	1,131,478
Total deductions from gross income.....	1,558,093	1,594,869
Add: revenues and expenses applicable prior to January 1, 1918, settled by U. S. R. A.....	4,145	*86,860
Surplus for the year.....	1,240,933	175,926

\*Debit

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	Operating Revenues	
	1920	1919
Freight.....	\$11,946,963	\$7,771,846
Passenger.....	881,937	817,155
Total operating revenues.....	\$13,548,570	\$9,078,910
Operating Expenses		
Maintenance of way and structures.....	\$1,878,565	\$1,548,196
Maintenance of equipment.....	3,767,651	2,826,399
Traffic.....	129,303	79,467
Transportation.....	6,012,276	3,957,136
General.....	290,300	219,659
Total operating expenses.....	12,109,239	8,663,442
Net revenue from railway operation.....	1,439,331	415,468
Passenger Traffic		
Number of revenue passengers carried.....	960,497	873,901
Number of revenue passengers carried one mile.....	31,134,513	29,623,258
Average distance each revenue passenger carried.....	32.42	33.90
Average revenue per passenger per mile (cents).....	2.833	2.759
Freight Traffic		
Number of revenue tons carried.....	11,541,069	8,838,466
Tons of revenue freight carried one mile.....	1,643,693,530	1,240,327,581
Average distance haul of one ton of revenue freight.....	142.42	140.33
Average revenue per ton per mile (mills).....	7.27	6.27

**WHEELING & LAKE ERIE.—Authorized to Pledge Bonds.**—This company has been authorized by the Interstate Commerce Commission to repledge \$924,000 of refunding mortgage bonds as collateral security for short term notes and to issue \$125,000 of refunding bonds to be pledged with the Secretary of the Treasury as partial security for a loan.

**WESTERN PACIFIC.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$3,000,000 of first mortgage 6 per cent bonds maturing July 1, 1946, and redeemable at any interest date at 102½, the proceeds to be used for the payment of outstanding equipment trust notes.

**WESTERN MARYLAND.—Loan from Revolving Fund.**—The Treasury Department has announced the payment of \$150,000 to this company on certificate of the Interstate Commerce Commission as a loan from the revolving fund.

## Railroad Administration Settlement

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Philadelphia Belt Line Railroad Co.....	\$2,931.05
Savannah Union Station Company.....	1.00
Wilmington Railway Bridge Co.....	No cash payment
Short Line Railroads	
Fourche River Valley & Indian Territory Railway Company.....	\$20,000.00
Dayton, Toledo & Chicago Railway Co.....	20,000.00

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

## Dividends Declared

Central of New Jersey.—\$3 quarterly, payable November 1 to record, October 8.  
 Pullman Company.—Two regular dividends, \$5 per share, respectively, November 15, to holders of record October 31, and February 15, to holders of record January 31.  
 Realine Company.—First referred, 1 cent per share, payable December 8, to holders of record November 22.

## Railway Officers

### Executive

**T. A. Hynes** was on October 12 elected president of the New Jersey, Indiana & Illinois. Mr. Hynes was born at Damascus, Wayne County, Pa., on September 17, 1879, and was graduated from the Union Academy, Damascus, in June, 1899. He entered railroad service with the Erie in 1900 as a telegraph operator and served in various positions with that company until 1913, when he entered the service of the New Jersey, Indiana & Illinois. Prior to his election as president of this company he served consecutively as general freight agent, traffic manager, treasurer and vice-president.

### Financial, Legal and Accounting

**R. P. Crutchfield**, chief clerk to the auditor of the Union Railway, with headquarters at Memphis, Tenn., has been elected treasurer with the same headquarters, succeeding S. S. Billings.

### Operating

**A. W. Thompson** has been appointed car accountant of the Louisville & Nashville, with headquarters at Louisville, Ky., succeeding E. L. Hill, deceased.

**F. M. Donegan**, superintendent of the Algoma Eastern, with headquarters at Sudbury, Ont., has been appointed chief dispatcher, with the same headquarters.

**R. W. Brown**, superintendent of the Ohio division of the Baltimore & Ohio with headquarters at Chillicothe, Ohio, has been transferred in a similar capacity to the Connellsville division, succeeding W. J. Brady, resigned.

**J. Gallagher** has been appointed acting deputy minister of railways and telephones for Alberta, and general manager of the Alberta & Great Waterways, with headquarters at Edmonton, Alta., succeeding H. A. Warner, resigned.

### Traffic

**Gordon L. Oliver**, whose appointment as traffic manager of the Fort Smith & Western, with headquarters at Fort Smith, Ark., was announced in the *Railway Age* of October 15 (page 743), was born at Roxburghshire, Scotland, on May 4, 1886, and was educated at St. Mary's Preparatory School, Melrose, Scotland, and at Loretto College, Edinburgh. He came to America in March, 1905, and entered railroad service at once as an office boy in the traffic department of the Chicago, Rock Island & Pacific. After five years of service with this road, he left to accept a position in the Star Wall Paper Mills, Joliet, Ill. He remained with that company for about one year, and in the spring of 1912, re-entered railroad service in the traffic department of the St. Louis-San Francisco, where he remained until the spring of 1913, when he was appointed chief clerk to the general freight agent of the Fort Smith & Western, with headquarters at Fort Smith. He was promoted to assistant gen-



G. L. Oliver

eral freight agent in 1915, and to general freight agent on September 15, 1917, with the same headquarters, which position he was holding at the time of his recent promotion.

**H. A. Hinshaw**, whose appointment as assistant freight traffic manager of the Southern Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of September 17 (page 556), was born at Winchester, Ind., in 1871. He entered railroad service in 1890 as an agent of the Southern Pacific. He was promoted to traveling freight agent in 1906, which position he held until 1911, when he left to become assistant general manager of the Salem, Falls City & Western. He returned to the service of the Southern Pacific in 1912 as general freight agent, with headquarters at Portland, Oregon, which position he was holding at the time of his recent appointment.



H. A. Hinshaw

### Mechanical

**F. S. Wilcoxon** has been appointed fuel supervisor of the Chicago Great Western, with headquarters at Chicago.

**J. Gibson**, master mechanic of the Canadian Pacific, with headquarters at Moose Jaw, Sask., has been appointed general foreman, with headquarters at Revelstok, B. C. **W. G. McPherson**, master mechanic, with headquarters at Regina, Sask., succeeds Mr. Gibson at Moose Jaw.

### Engineering, Maintenance of Way and Signaling

**E. F. Kultechar**, whose appointment as district engineer, maintenance of way, of the Illinois district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., was announced in the *Railway Age* of October 15 (page 774), was born at Chicago in 1885. He entered railroad service in June, 1903, as a rodman on the Chicago, Burlington & Quincy, alternating for three years between summer work on the Burlington and attendance at the University of Illinois. He permanently entered the service of the Burlington in 1906. The greater part of his service from 1903 to 1916 was in the engineering department and consisted of location and construction work, maintenance inspection and drafting. In March, 1916, he was promoted to roadmaster, and in June, 1917, he was promoted to trainmaster, with headquarters at St. Joseph, Mo., which position he held at the time of his recent promotion.

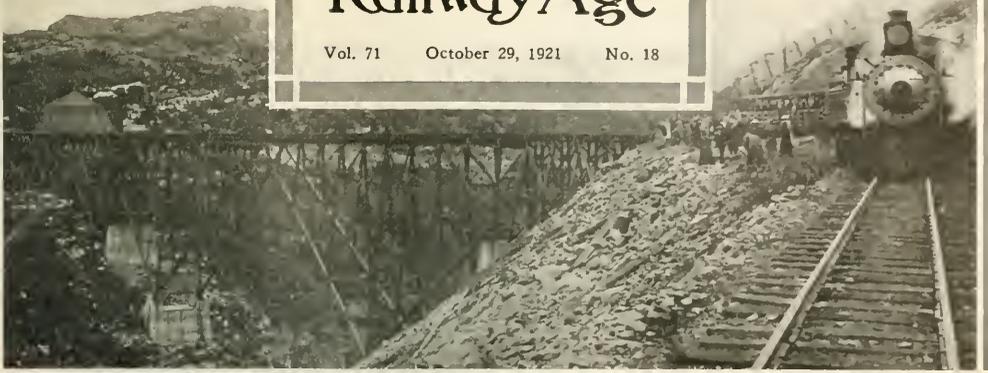
### Obituary

**Harry C. Meloy**, supervisor of electrical appliances, New York Central, lines west of Buffalo, died suddenly on Thursday, October 13, while on business in Chicago.

**J. W. Terry**, auditor of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex., died recently at his home in that city. Mr. Terry began his railroad career in October, 1881, as a clerk in the auditor's office of the Louisville & Nashville, which position he held until July, 1885, when he was promoted to bookkeeper. In August, 1886, he left to become assistant auditor of the Ohio Valley. He was appointed assistant auditor of the Newport News & Mississippi Valley in May, 1891, and remained with that company until December, 1892, when he left to become assistant auditor of the San Antonio & Aransas Pass. He was promoted to auditor in 1892, which position he was holding at the time of his death.

# Railway Age

Vol. 71      October 29, 1921      No. 18



Cantilever Bridge at White Pass, Alaska.—Photo from Underwood & Underwood, N. Y.

## Contents

### Facts About the Threatened Strike.....Page 807

An Editorial Review of the Strike Situation as It Looks in the Light of the Meeting Before the Labor Board at Chicago on Wednesday.

### How Railroad Wages Should Be Readjusted ..... 808

An Editorial. Reductions in Wages Must Give Proper Heed to the Different Conditions of the Various Classes of Railroad Labor. A Plea for a Policy.

### Labor Board Opens Inquiry Into Threatened Strike ..... 819

Giving a Telegraphic Report of the Meeting Called by the Labor Board at Chicago on Wednesday. Other Articles Relating to the Strike Situation Will Be Found on Pages Immediately Following.

#### EDITORIALS

Facts About the Threatened Strike .....	807
How Railroad Wages Should Be Readjusted .....	808
Transportation Taxes to Be Repealed .....	809
Buying Machine Tools .....	809
The Business Situation .....	809
Backing Up the R. F. P. A. ....	809
The Important Grain Rate Decision .....	810
Impact Effects of American and Foreign Locomotives .....	811
Railway Stock More Widely Distributed Than Formerly.....	812
Southern Railway .....	812

#### LETTERS TO THE EDITOR

Unnecessary Transferring of Loaded Cars: F. W. Brazier.....	814
Derrails and the Stop-and-Proceed Rule: C. C. Anthony.....	814
A Chemist in a Freight Car: H. J. Force.....	815
Bad Order Car Situation: John E. Muhlfield.....	815

#### GENERAL ARTICLES

Automatic Train Control Demonstrated on B. R. & P. ....	817
Labor Board Opens Inquiry Into Threatened Strike .....	819
International & Great Northern Trainmen Strike .....	823
Pennsylvania Again Before Labor Board .....	824
Railroads Prepare Against Strike Possibility .....	825
Leo Endoverters to Explain Strike Cause .....	826
Administration Strike Policy More Conciliatory .....	827
State Versus Interstate Rate Regulation .....	830
Railroad Securities Bill Reported by Senate Committee .....	830
Grade Separation Report Takes a Broad Stand.....	831
Commission Reduces Western Grain Rates .....	833
Brooklyn-Richmond Freight and Passenger Tunnel .....	836
Fire Protection Association Meets in Chicago .....	837
Bowen Gasoline Motor Driven Passenger Car.....	841
Freight Car Loading Greatest Since Last November.....	843
High Surtaxes Kill Sale of Equipment Trusts .....	845
Merrison's Flashlight Signal for Highway Crossings .....	846

#### GENERAL NEWS DEPARTMENT ..... 847

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Prs.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON: England: 34, Victoria St., Westminster, S. W. 1.  
Cable address: *Urasiramec, London.*  
NEW ORLEANS: *Maison Blanche Anonx*

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. F. LAKE  
R. E. THAYER  
C. B. PECK  
W. S. LACHER  
J. G. LITTLE

A. F. STEERING  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEHLEL  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
I. E. COLE  
J. G. LYNE  
I. H. DUNN  
D. A. STEEL  
K. H. KOVICH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 8,850 copies were printed, that of these 8,850 copies, 7,928 were mailed to regular subscribers, 56 were provided for counter and news column subscribers, 65 were mailed to advertisers, 65 were mailed to employees and correspondents, and 465 were provided for new subscribers. Single copies lost in the mail and office use that are not counted in this year to date were 469,150, an average of 9,143 copies a week.



With Ryerson Standardized Flue Shop machinery, erecting shop work never waits for flues.

## Flue Costs Cut in Half

Low first cost is only a start. After that comes the cost of maintenance, probably the biggest factor in flue cost.

Railroads buy carefully. They should watch maintenance costs just as carefully.

In better repair work at lower cost lies their best opportunity to reduce the total of their flue bill.

Ryerson Standardized Flue Shop equipment has reduced flue repair costs for every railroad that has an installation.

It will cost nothing to investigate and there is no obligation.

Let us give you the facts.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

## Facts About the Threatened Strike

THE TESTIMONY of the heads of the railway labor brotherhoods before the Railroad Labor Board on Wednesday did not settle the question whether there will be a strike. It did, however, seem to make clear certain points. One of these is that the Railroad Labor Board cannot prevent a strike and that nothing can prevent it except intervention by some other federal government official or authority. Another thing made clear is that if the members of the brotherhoods strike the only tangible ground for their action will be the reduction of wages authorized by the Railroad Labor Board and put into effect by the railways on July 1.

The questioning of the heads of the labor organizations was done mainly by Ben W. Hooper, one of the public members of the Board. Mr. Hooper has been much criticised for the plan for a prevention of the strike which was issued by him in Washington. Whatever may be said about the suggestions he has offered for preventing the strike, it cannot be gainsaid that his conduct of the hearing on Wednesday was a masterly piece of work. It showed that whatever mistakes he may make, the Board has in this new public member a skillful lawyer and an able man. W. G. Lee, president of the Brotherhood of Railroad Trainmen, in his testimony stated unequivocally that the members of his brotherhood were proposing to strike solely because of the wage reduction of July 1. He also left the impression, although he did not say so, that he did not think there was sufficient ground for the strike and was really opposed to it. The heads of the other brotherhoods made statements indicating that the strike had been authorized not only because of the wage reduction July 1, but because of other things the railways had done or proposed to do, such as making a further reduction of wages, but under Mr. Hooper's skillful questioning they were forced to make plain that while other matters had been mentioned in communications sent by them to their members and had influenced the result of the strike vote, the brotherhoods had no tangible ground whatever for striking except the wage reduction authorized by the Labor Board.

The Board having made it plain by the answers it got to its questions that the only question directly involved, or which could by any possibility be settled by a strike, is the wage reduction made effective on July 1, asked the brotherhood leaders another series of questions as to how the strike

could be averted. The brotherhood chiefs all answered these questions to the effect that the strike could not be averted unless a settlement was reached which was satisfactory to them and their executive committees. In response to the Board's inquiries as to whether a strike could be averted by a finding of the Board that it was unfair and unjustifiable and an order by the Board that the strike should not occur, the brotherhood chiefs made answers which either evaded the direct issue raised or explicitly indicated that no such finding and order by the Board would have any effect. One stated that the order would be fruitless; another that the men would not obey the order and two positively stated that such a finding and order by the Board would have no effect. Nothing, they indicated, could prevent a strike except a settlement which was satisfactory, not to the Board, but to the heads of the brotherhoods and their executive committees.

Some other facts were established by the evidence which have a very important bearing on the question of whether if the strike comes it will be successful. It was shown that on a number of railways the members of the Brotherhood of Railroad Trainmen had voted against a strike and that on a still larger number of roads the conductors had voted against it. The number of roads on which the men failed to vote for a strike varied from three or four for the firemen to about 23 for the conductors and the railways on which the conductors voted against a strike include several of the largest systems in the country.

The man who at the time this editorial is written can predict with any confidence whether a strike will actually come has an extraordinary confidence in his own prescience. It is plain, however, that if it does come it will be ineffective on a substantial number of railways. It is also plain that it will be a strike against a decision of the Railroad Labor Board and a strike which the Board has clearly indicated will be unfair and unjustifiable. While the railways will have to bear the brunt of the struggle, and it will be a strike against the public and against a federal tribunal established by a federal law, it will manifestly be the duty of the railways to spare no effort to win it. But in the circumstances—however, it will be even more plainly the duty of the public and of the United States government to adopt and carry out measures which will make its failure certain.

## How Railroad Wages Should Be Readjusted

WHETHER A STRIKE comes or not, the railways should in a short time be before the Railroad Labor Board seeking extensive changes in the wages now paid by them. The policy of the Interstate Commerce Commission, as indicated in its decision ordering general reductions in grain rates, makes this even more necessary than it was before this decision was rendered.

The railways should not, however, ask merely for reductions of wages. They should present to the Railroad Labor Board a definite plan for so readjusting present wage scales that justice will be done as between the different employees, as well as between the railways and the employees. The present payroll is too large. It is not, however, too large because all employees are being overpaid. The real trouble is that many employees are being greatly overpaid, while some are not being much overpaid and some are not being overpaid at all. The managements for months have criticised the maladjustments in wages which have resulted from the advances granted by the Railroad Administration and the Railroad Labor Board. The managements should show their consistency, their fairness and their wisdom by proposing a definite plan for correcting the bad adjustments of which they have complained.

Among the points which ought to be considered in making up such a plan as is needed are the following:

First, for years many supervisory officers have not been paid as much in proportion as a great majority of employees, and as a class they have not received as large advances in proportion as most employees. The railways need loyal and able men in these supervisory positions, and they should show much more willingness than most of them have in the past to pay such men what they are reasonably worth.

Second, the railways should attack with all the force they can the standardization of the wages of each class of employees throughout the country which now prevails. The cost of living in large cities was much higher than in small cities and towns when the wages were standardized. Therefore, it was entirely wrong at that time to fix the same wages for every employee of each class throughout the country. The decline in the cost of living which has occurred within the last year has taken place very irregularly and has been much greater in the small cities and towns than in the large cities. This has greatly increased the inequity of paying a clerk who lives in Chicago, for example, no more than is paid to a clerk doing similar work and living at Topeka, Kan. Why should a man employed in the shops in Macon, Ga., for example, be paid as much per hour as a mechanic working in shops located in Chicago? Why should a conductor whose run requires him to live at Pittsburgh be paid no more than one whose run requires him to live at Herington, Kan.?

The resolution recently adopted by the Association of Railway Executives contemplates a reduction of about 10 per cent in the wages of train service employees and authorization of the payment to other employees of wages corresponding to those paid in other industries in the various communities. Before the Labor Board could literally carry out this plan it would be necessary to investigate the wages paid in other in-

dustries in every community in the United States, which is impracticable. If wages are to continue to be fixed by the Labor Board, and at the same time the present system of standardization is to be broken down, there must be worked out some plan for establishing differentials between the wages of employees doing the same class of work in different communities, these differentials to be based mainly on the differences between the living conditions in large centers of population and smaller places.

Third, full consideration should be given to the fact that the advances in wages which have been received by the employees in train service have been relatively less than the advances which have been given to many other classes of employees. The differences between the wages of train service employees and of many unorganized employees prior to government control were too great, and there should be no attempt to restore most of the old differentials. On the other hand, the fact should be recognized that men directly concerned with the operation of trains, including train dispatchers, are almost the only employees who are distinctively railroad men. If a mechanic does not like the conditions of his work on a railroad he can leave and go into a factory. On the other hand, a conductor or locomotive engineer requires special knowledge and training to fit him for railway service which do not fit him for anything else. The railways need a high grade of men for train service, and since they can hardly get such men from any other industry there must always be paid in train service wages high enough to insure that the railways will get a sufficient number of good men.

Fourth, the changes in wages which have occurred in recent years, and especially those made under government control, have resulted in many cases in unskilled, or practically unskilled, workmen receiving such disproportionately large increases in their pay that they are receiving almost as much as skilled workmen. This is especially true among the shop crafts employees. It is unjust to the men and impairs efficiency. Unless men are paid substantially more for work requiring skill and experience than is paid to the unskilled, the incentive to become really skilled workmen is destroyed.

One of the principal reasons for the continuance of such unsatisfactory labor conditions on the railways has been that the railways have not worked out and advocated any definite, understandable and clearly defensible program for improving the conditions. The result is they have helped the labor leaders in their efforts to convince the employees that all the railways want is to drive down wages regardless of the rights or interests of the employees. While a majority of the railway executives have believed it was desirable for all labor negotiations to be carried on between the individual managements and their own employees, this has not been and is not now any good reason why the railways should not have a definite general program which could be presented to the employees and the public and the reasonableness and fairness of which would appeal to them.

The railways some months ago adopted a program under which each railway was to treat with its own employees regarding wages as well as working conditions. The result was

almost no concert of action between the railways in presenting their case for reductions in wages to the Labor Board and the presentation of their cases in different ways and upon different grounds. The experience of recent months has shown that there is such a thing as individual action by the railways in dealing with labor problems developing into something closely resembling anarchy. It is to be hoped that when the railways appear before the Labor Board again for reductions in wages they will be better prepared than they were in the last wage hearings to tell the Labor Board, their employees and the public exactly what they want and why they want it.

The action of the Senate on October 4 in adopting an amendment to the pending tax bill providing for a repeal of the transportation taxes effective on January 1, which corresponds to a provision in the bill already passed by the House, practically assures the shippers and passengers of the country a reduction

**Transportation  
Taxes to Be  
Repealed**

in the cost of transportation for next year of approximately \$250,000,000. While the amount of the tax, 3 per cent, is comparatively small on freight transportation when compared with the increases in freight rates themselves that have resulted from the effects of the war, it is no inconsiderable item to a large shipper and adds to the grievance felt on account of the rate increases. The taxes on passenger and Pullman accommodation tickets, 8 and 10 per cent, not only represent an appreciable addition to the expense of travel, but as they are added separately to the rates received by the railroads they have constituted a source of much irritation. It is somewhat interesting to railroad men to observe that, although many high officials of the government and particularly members of Congress have long been insisting upon reductions in railroad rates, the government itself has been somewhat slow in acting to sacrifice its revenue for the purpose of reducing transportation costs.

It is true that the labor problem overshadows all others at the present time and yet railroad men are giving considerable attention to shop equipment needs as evidenced by the recent increase in machine tool purchases. Several rather large orders have been placed by eastern railroads and other orders are about to be closed. It is reported that in some cases orders are being held for further price reductions and in this connection, a word of caution may well be uttered. While no manufacturer should be allowed to charge exorbitant prices, it is certainly possible to carry the policy of beating down prices to too great an extreme. In the first place, if a machine is needed in a railroad shop for certain work, every day that the shop is compelled to forego the use of this machine costs the railroad just so much money, which in the end may more than equal the saving due to price reduction. Then again, if manufacturers are forced to sell machinery below prices affording a reasonable profit, the inevitable result will be the production of cheaper, less reliable machines to meet those reduced prices. Inefficient, worn-out machinery in railroad shops should be replaced as fast as possible. A case has come to our attention in which a modern production machine was installed recently in a large locomotive repair shop and readily handled the work formerly performed on four machines. It is evident

**Buying  
Machine  
Tools**

that the resulting large reduction in labor cost and greater speed of producing locomotive parts made the investment in this machine a most profitable one. Progressive railroads are following the example cited and have adopted the sound policy of installing modern labor-saving machinery in shops and enginehouses as fast as the necessary funds can be obtained. It is only in this way that the possibilities of efficiency in shop operation can be realized and made to assist in helping to increase the gap between railroad revenues and expenses.

There are many factors in the present business situation that point to better times ahead. Railroad men who follow the figures on car loadings and earnings know that the position of the railroads is improving. There remains yet, of course, a labor problem and a rate problem to be solved before the carriers can feel that their difficulties are behind them. Other lines of business, where the managers are untrammelled in the conduct of their enterprises along legitimate lines, are looking forward to an early resumption of normal business activity. Capital is available for their undertakings at favorable rates and they are finding it easier to interest the banks in financing their activities. The buying public is once more in the market for commodities which it refused to purchase at higher price levels. Many basic industries reflect the prevailing optimism in their increased production. All the signs point to better times as the present year draws to a close and when the present acute problems of the railways are solved the railroads should, with the co-operation of the public, be in a position to join with other business and other industries in normal activity, normal returns on investment and normal programs for needed additions and betterments.

**The  
Business  
Situation**

The subject of organized labor with its ramifications is the momentary sovereign of railway thought. That is self-evident. However preemptorily ushered in and however little its presence is to be desired, the fact remains that it constitutes an immediate concern in office and shop, originating conjecture, animating discussion, demanding and getting audience. And from its nature and its significance it is well that having precipitated itself upon thought, that thought should be concentrated upon it. But with all that there are subjects incident to the operation of railroads which, though capable of being subordinated momentarily to the predominating concern, should not be allowed to suffer from neglect or even exclusion and the subject of fire prevention is among these. Last week 150 men from 77 roads devoted three days to serious consideration of means for protecting railway property from fire. This week they are back within their several jurisdictions pledged to the work of reducing the enormous, the unnecessary and preventable losses from fire which railroads experience annually. In convention they sounded an appeal for the co-operation of the railway managements and operating officers. They need that support on the part of those who are in actual charge of the management of the railroads in carrying out this important work. Furthermore, they must have it and while many officers find themselves almost submerged by the subjects seemingly of more immediate concern, it is hoped that they will not neglect to contribute their support to a movement and work potential of such salutary results as fire prevention.

**Backing  
up the  
R. F. P. A.**

and shop, originating conjecture, animating discussion, demanding and getting audience. And from its nature and its significance it is well that having precipitated itself upon thought, that thought should be concentrated upon it. But with all that there are subjects incident to the operation of railroads which, though capable of being subordinated momentarily to the predominating concern, should not be allowed to suffer from neglect or even exclusion and the subject of fire prevention is among these. Last week 150 men from 77 roads devoted three days to serious consideration of means for protecting railway property from fire. This week they are back within their several jurisdictions pledged to the work of reducing the enormous, the unnecessary and preventable losses from fire which railroads experience annually. In convention they sounded an appeal for the co-operation of the railway managements and operating officers. They need that support on the part of those who are in actual charge of the management of the railroads in carrying out this important work. Furthermore, they must have it and while many officers find themselves almost submerged by the subjects seemingly of more immediate concern, it is hoped that they will not neglect to contribute their support to a movement and work potential of such salutary results as fire prevention.

## The Important Grain Rate Decision

THE DECISION rendered by the Interstate Commerce Commission last week holding that the rates of the western railroads on hay, grain and grain products should be substantially reduced is epoch making in some important respects. While it is probably justifiable in the circumstances existing, it is based on novel principles and is inconsistent with opinions previously rendered by the commission in important rate cases.

Throughout the history of rate regulation there has been contention between those who have believed that rates should be based mainly on the value to the shipper of the service rendered to him by the carrier, and those who have believed that they should be based mainly on the cost incurred by the railway in rendering that service. The chief measure of the value of the service to the shipper always must be the difference between the cost of his commodity to him and the price he can get for it at the place to which it is shipped. If the freight rate on grain from a point in Iowa to Chicago exceeds the difference between the cost of producing the grain in Iowa and the price that can be got for it in Chicago, then the freight rate exceeds the value to the farmer of the service rendered in transporting the grain to Chicago.

For many years the rates charged by the railways were so much less than the value of the services rendered by them that shippers as a class, and their attorneys for them, attacked and resisted every effort of the railways to base schedules of rates upon the value of the service. The commission in its recent opinion shows that the price of wheat increased from 78.4 cents per bushel in 1913 to \$2 in 1917, or over 105 per cent. The value of the service rendered by the railways in transporting the wheat necessarily increased in much the same proportion, and therefore on this principle it would have been justifiable for the railways to have made large advances in their rates on wheat. Meantime, as the commission points out, railway rates on wheat stood practically still. Similarly the value of most other commodities advanced unprecedentedly while the railway rates on them stood still. Everybody knows that the railways more than once tried to advance their rates during this period. They were prevented because the commission, in conformity with the arguments and insistence of shippers and their attorneys, rigidly applied in the regulation of rates the "cost of service" principle.

On the cost of the service principle as then advocated and applied, railways are entitled to rates which will enable them to earn enough to pay their operating expenses and taxes and a reasonable return on the value of their property. It was argued that while they should not be restricted to any less than this they should not be allowed to have anything more. The result was that while because of great increases in their prices the farmers and other producers in the United States made unprecedentedly large profits the average net return earned by the railways in the three years ended with 1917 was only 5.2 per cent. In the next three years—1918, 1919 and 1920—during most of which time they were under government control, the railways were guaranteed only the same net return as they had earned in the three years before, while the prices and profits in other industries mounted to even greater heights.

Toward the end of 1920 the guarantees to the railways were withdrawn and they were thrown on their own financial responsibility under new legislation which was based almost entirely on the cost of service principle of rate-making. It was naturally assumed that thereafter the value of the service would receive little recognition in the making of entire schedules of rates—that the rates as a whole would be based on the cost incurred by the railways, including a fair return.

Experience speedily showed that economic laws are more powerful than any act of legislation or order of a commis-

sion. An unprecedented slump in traffic rendered it impossible throughout the first year the new rates were in effect for the railways, in spite of the most drastic retrenchments, to earn one-half of the net return authorized by law. The average advance in rates from before the war up to 1920 was hardly one-half as great as the average advance which had taken place in wholesale prices. But within a few months prices in general declined so much that many of them became relatively lower, and some of them much lower, especially those of farm products, than railway rates.

The result was a widespread demand, which was pressed with the utmost force by the farmers and their representatives, for reductions of rates. This demand was based almost entirely on the ground that the rates were higher than the shippers could afford to pay—in other words, exceeded the value of the service rendered to them.

It was extremely difficult to see how, in view of its previous decisions, the provisions of law under which it was acting and the railroad conditions existing, the commission could find a way to hold that the rates on large and important classes of commodities should be reduced. It has, however, ordered hay, grain and grain products rates reduced upon two grounds.

The first, and plainly the controlling, consideration, is that the rates are excessive in proportion to the value of the service rendered to the shipper—in other words, that the prices the farmer gets for his products have declined so much that he cannot afford to pay the rates. This finding is justified by the facts. It must, however, be recalled that in previous cases when the railways introduced or sought to introduce evidence regarding advances in prices which had occurred and large profits which were being made in other industries to show that these other industries could afford to pay higher rates, the commission practically dismissed such considerations upon the ground that the rates which other industries could afford to pay had little or nothing to do with the question of what rates the railways should be allowed to charge. It is unreasonable to hold in one case that the fact that the profits being made in an industry are large should be given no weight in considering whether the rates charged it should be increased, and to hold in another case that the fact that an industry is making little or no profit is a reason why the rates charged it should be reduced.

The second ground upon which the commission holds the rates should be reduced is that the operating costs of the railways are going to be lower in future. It concedes that there cannot be found in the present operating costs or net return any justification for a reduction of rates. The commission derives its powers from a law which requires that until March 1, 1922, it shall allow the railways to charge rates which under efficient and economical management will enable them to earn a return averaging at least 5½ per cent per annum. In the first eight months of this year the railways earned at the rate of only 2.6 per cent, and if not a single rate were reduced the net return earned during the entire year 1921, in spite of the improved showing now being made, would hardly exceed 3 per cent. How could the commission conclude from the facts and the law that it should order a large reduction of rates?

It reached this conclusion by expressly disregarding both the past and the present and looking only to the future. Referring to the rate-making provisions of the Transportation Act, it says "the duty cast upon us by Section 15a is a continuing duty and looks to the future. It does not constitute a guarantee to the carriers, nor is the obligation cumulative. We are not restricted by past or present statistics of operation and earnings. They are serviceable only as they illuminate the future. What is contemplated by the law is that in this exercise of our rate-making power the results shall reflect our best judgment as to the basis which may

reasonably be expected for the future to yield a prescribed return." The provision of the Transportation Act specifying that the railways should be allowed to earn a return of 5½ per cent runs only to March 1, 1922, and it is evident the entire two years which it covers will expire without it ever having been given any real effect.

Furthermore, there is no certainty that the operating costs of the railways will be in future what the commission anticipates, and this for a reason which is made quite plain by Commissioner Potter in his concurring opinion. The majority opinion, which was written by Commissioner Aitchison, while it is predicated largely upon future developments, has very little to say concerning the changes which are essential to causing these future developments. Commissioner Potter goes boldly to the root of the matter. He agrees with his colleagues that the rates are too high and should be reduced. He makes clear, however, not only that the present operating costs of the railroads do not justify any reductions in rates, but that their future operating costs will not justify any substantial reductions of rates unless and until there have been further reductions of wages. He then states a principle which must be recognized and acted upon by the Railroad Labor Board if our present system of government regulation of rates and wages by two different bodies is not completely to break down. He says: "In considering what railway employees should receive, regard should be had for what shippers can afford to pay. The record in this case shows the Labor Board has declined to give consideration to this broad basic question." Commissioner Potter draws the logical conclusion from his proposition, adding, "If the broad economic question as to how much shippers can afford to pay is a question to be determined by us (the Interstate Commerce Commission) when we fix fair and reasonable rates, it will follow that the Labor Board in considering wages would regard our finding as one of the relevant circumstances to be taken into consideration in fixing rates."

The commission holds that the present grain rates are excessive and that the present high operating costs of the railways are no ground for maintaining them in view of the future reductions in operating costs which it expects to occur. This is clearly equivalent to finding that a continuance of the present high operating costs would be unreasonable—a conclusion which is implicit in the opinion of the majority of the commission and is explicitly stated in Commissioner Potter's concurring opinion. But suppose the Labor Board does not permit the reductions in the payroll which are prerequisite to the reductions in operating costs which the commission recognizes as necessary to justify the reductions in rates it has ordered? Obviously, if the commission is to order rates reduced on the ground that they are too high for the shippers to pay, and the Labor Board is to refuse to reduce wages on the ground that they are no higher than labor ought to receive, the railways are not going to earn the net return which the law makes it the duty of the commission, assuming economical and efficient management, to enable the railways to earn. But the law makes it just as much the commission's duty to see that the railways are given a reasonable opportunity to earn a fair return as to protect the shippers from excessive rates.

It seems probable that if the railways should appeal to the courts from this decision they would hold that it disregards both the Transportation Act and the constitutional prohibition of confiscation. Nevertheless, it is difficult seriously to criticize the commission either for its findings of fact or for the decision reached by it. It deserves commendation for the weight it has now given to the principle of the value of the service, although it is rather remarkable that it should have given it such full recognition in this case and so little recognition in previous cases when it would have operated to the advantage of the railways. There can be no just criticism of the commission for having ordered rates

reduced in anticipation of large future reductions in operating costs, if that anticipation is reasonable. Since, however, the law puts upon it the duty, not only of reducing rates which are excessive, but also of seeing that the railways are economically operated and are given opportunity to earn a fair return, does it not now become its plain duty actively to help the railways secure the reductions in operating costs without which they cannot earn a fair return under the reduced rates?

## Impact Effects of American and Foreign Locomotives

IN THE EDITORIAL "Are American Locomotive Harder on Bridges," which appeared in the issue of October 15, a brief reference was made to the effect of the dynamic augment due to the counterbalance on bridge stresses. Inasmuch as European engineers have repeatedly made the statement that American locomotives produce greater impact stresses than the European engines, it may be well to give further attention to this aspect of the subject.

The counterbalance is applied to locomotive driving wheels primarily for two reasons; first, to balance the rotating weights, such as the crank pin and side rod, and, second, to counteract to some extent the longitudinal inertia forces caused by the reciprocating parts at the end of the stroke. The revolving parts can be balanced perfectly for all speeds and for every position of the wheels. The counterbalancing of the reciprocating parts, however, is always a compromise between two conflicting requirements. In order to make the locomotive ride smoothly, it is desirable to counterbalance the entire reciprocating weight at the end of the stroke; on the other hand, if the dynamic augment or impact stresses set up by the locomotive are to be minimized, the reciprocating weights should not be balanced at all. Assuming that the design has been made as light as possible, considering the material and the stresses involved, the percentage of the weight of the reciprocating parts to be balanced is a matter of judgment in deciding between the permissible vibrations of the locomotive and the dynamic augment that can safely be borne by the track.

Engineers in this country have investigated the effect of practice now generally observed is as follows. The weight of the reciprocating parts on one side of the locomotive is various methods of counterbalancing and as a result the limited to 1/160 of the total weight of the engine in working order and from 50 to 66 per cent of the reciprocating weight is balanced. The excess pressure due to the counterbalance is not permitted to exceed 50 per cent of the static wheel load when the speed in miles per hour is equal to the diameter of the drivers in inches.

The practice followed in counterbalancing locomotives in England is similar to that in this country. In the European countries, however, the practice is quite different. In France it is customary to specify the maximum load for a given speed and weights only sufficient to produce this result are added to the counterbalance, irrespective of the effect on the engine. In Germany a government ruling requires that the blow on the rail at the highest speed shall not exceed 15 per cent of the wheel load. The proportion of reciprocating weights balanced to conform to this rule varies from 15 to 60 per cent.

Any method which balances less than 50 per cent of the reciprocating masses for two-cylinder locomotives will inevitably result in a rough riding engine, producing shocks and vibrations especially when much lost motion exists in the bearings of the main axle. Generally speaking, American and English practice favor the locomotive and presuppose fairly good bridges and track while the French

and German practices favor the track. If American locomotives require somewhat heavier and more costly bridges, the fixed charges on the additional investment are no doubt offset by the decrease in maintenance cost of the locomotive itself resulting from the superior balancing of the reciprocating parts.

It is evident from the foregoing that the only reason why locomotives built in this country should produce greater impact than European locomotives is the difference in the method of counterbalancing. There is no question but what the American practice is good for the locomotive though it is not as favorable to light bridges and light track as some of the European rules. If American builders desire to sacrifice riding qualities in order to reduce the stress on track, they can construct locomotives that will produce no more impact than the foreign locomotive.

## Railway Stock More Widely Distributed Than Formerly

THE INTERSTATE COMMERCE COMMISSION has again called attention to the wide distribution of the ownership of railroad securities by including in its preliminary abstract of statistics of common carriers for the calendar year 1920 a statement giving the number of stockholders of Class I roads as 709,795, of which 324,514 held stock in railways of the Eastern district, 67,495 in railways of the Southern district, and 317,786 in railways of the Western district. The average holding was 10,269. A special report on the distribution of railroad security holdings issued by the commission in 1919 gave the number of stockholders of Class I roads and their non-operating subsidiaries as of December 31, 1917, as 627,930. There has, therefore, been an increase in three years of more than the 81,865 difference between the two figures.

While the report contains no comment or analysis, it confirms the indication made by the large increases which have been shown each year recently in the number of stockholders of some of the larger roads that, like the Pennsylvania, regularly publish the number of their stockholders, and under the circumstances it is particularly significant. It is apparent that many of the larger holders of railroad stocks have been selling some of their holdings and that they have been purchased, in smaller average lots, by a larger number of buyers. It is well known that many large investors have transferred their holdings from taxable securities to tax-exempt securities for the purpose of avoiding the heavy sur-tax rates of the income tax law, but it is also very probable that many holders of railroad stocks have preferred to get out of a business in which the possible returns hardly warrant the risks required and that what they have sold has been taken over by smaller investors who have thus distributed the risk over a larger number of persons.

A prominent member of a Congressional committee that has held many hearings during the last five years on various aspects of the railroad problem was in the habit of remark-

ing frequently that in view of the conditions depicted by the railroad witnesses he could not see why the owners of the railroads did not sell out. Of course, if they did, there would be a new set of owners to be considered and the statistics indicate that that is just what has happened. Many of the owners of the railroads have been selling their stock—at a loss—but the lower prices of stocks have attracted more to take their places. These figures, of course, take no account of the holdings of railroad bonds and other securities which are much more widely distributed than stocks.

## Southern Railway

THE SOUTHERN RAILWAY'S income statement for 1920, given in the annual report issued recently, showed a balance of income over charges of \$1,716,149, as compared with \$5,141,567 in 1919. There were charged against the 1920 net, dividends of 2½ per cent, or \$1,500,000, on the preferred stock. The balance carried to the credit of profit and loss was but \$113,714. In 1919, the dividends charged against income totaled \$3,000,000, or 5 per cent on the preferred, and the balance carried to profit and loss was \$2,137,260.

The Southern Railway in 1920 did the largest business in its history. Increased costs of operation, however, prevented it from realizing on the gross income resulting from the business handled. The road, it will be remembered, decided not to accept the guaranty for operations from March 1 to August 31, 1920. The operating results for the six months justified this decision. While it is true that the Southern Railway itself fell \$700,000 short of earning as much as its guaranty would have been, the system as a whole, including the Cincinnati, New Orleans & Texas Pacific, the Alabama Great Southern and the New Orleans & Northwestern, had a net railway operating income about \$600,000 in excess of what the guaranty would have amounted to. The difficulty with the Southern was its small net return in the latter part of the year; during the last four months of 1920 the road had operating ratios of from 88 to 94 per cent. The Southern report gives some interesting comparisons of the costs of operation in 1920 as compared with 1917. A selection of the figures shown gives the following details:

	1920 compared with 1917	
	Per cent increase	Per cent decrease
Gross revenue	68.46	.....
Expenses and taxes	111.44	.....
Operating income	.....	36.09
Tons of revenue freight hauled	15.82	.....
Average receipts per ton per mile	35.79	.....
Average wages paid	85.76	.....
Wages per dollar of revenue	23.75	.....
Average cost of fuel coal per ton	94.18	.....
Average cost of cross ties	137.29	.....

"So long as traffic continued at high tide," the report says, "as it did during the first six months after the end of federal control, these costs could be endured, but they were economically unsound, nevertheless, as was evident the moment the stimulus of traffic was withdrawn. Management, regulated in its every act except that of meeting the payroll, was then

SOUTHERN RAILWAY OPERATING RESULTS, 1912-1920

Year ended	Gross revenues	Operating expenses and revenues	Operating income	Ratio of expenses and taxes to gross revenues	Gross revenue per mile of road	Operating revenue per mile of road	Revenue tons	Revenue ton miles	Revenue train load	Average receipts per ton per mile (cents)
June 30										
1912	\$64,657,583	\$47,151,064	\$17,506,519	72.92	\$9,122	\$2,470	27,214,751	4,206,785,057	250	0.987
1913	69,676,720	51,821,005	17,855,715	74.37	9,903	2,538	29,449,589	4,557,486,801	260	0.982
1914	79,750,957	54,440,039	16,310,958	76.95	10,060	2,319	29,650,456	4,584,338,858	275	0.995
1915	62,199,510	48,779,455	13,400,055	78.46	8,846	1,906	25,896,412	4,205,792,203	305	0.962
1916	69,997,675	48,993,670	21,004,005	69.99	9,967	2,991	30,272,132	5,053,547,966	354	0.930
1917	81,388,325	57,056,872	24,331,453	70.10	11,655	3,484	34,741,523	6,106,582,254	373	0.912
Year ended Dec. 31										
1917	90,716,569	64,286,607	26,429,962	70.87	12,991	3,785	37,063,095	6,516,208,527	388	0.897
1918	126,574,297	95,597,672	30,976,625	75.53	18,176	4,436	40,074,691	7,234,628,988	399	1.053
1919	129,787,812	117,861,214	11,926,598	90.81	18,585	1,708	36,530,244	6,304,441,642	446	1.288
1920	152,817,410	135,927,394	16,890,016	88.95	21,915	2,422	42,928,381	8,236,072,484	461	1.218

deprived of the power to apply the remedies which alone can save a business in such conditions."

The Southern experienced the decline in traffic beginning in November. The recovery in traffic so far in 1921 has been slow; in July the net ton-miles of freight were only 554,415,000 as compared with 807,930,000 in July last year. Since July, however, conditions have gradually begun to show improvement. Because of the drastic economies, the net railway operating income has gradually increased month by month thus far in 1921. Whereas in January and February, 1921, there were deficits, in August the net was \$1,282,276. The net railway operating income for the first eight months of 1921 was \$4,989,231. As an assistance in comparison, it may be stated that the standard return for the property as based on the earnings for the three years ending June 30, 1917, was \$18,653,893. This would seem to make evident the reason for the action of the Southern directors in passing the preferred dividends.

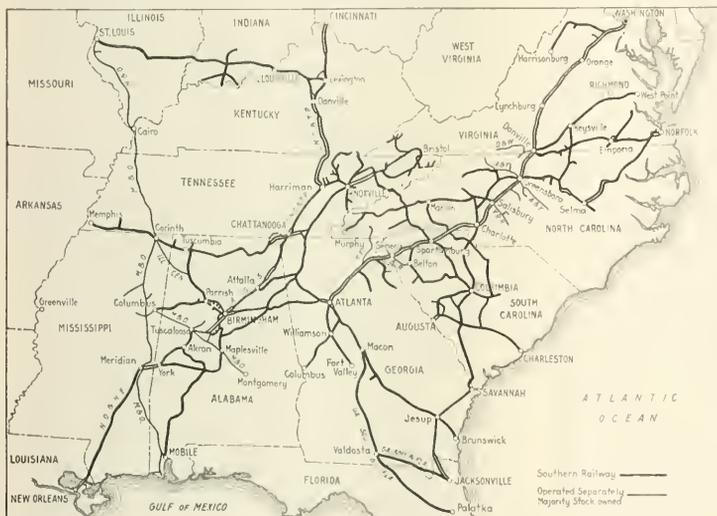
"The Southern Serves the South." Anyone who has traveled over the Southern Railway lines in recent months will appreciate that this motto is more than a phrase for use in

of 1919, the southern farmers produced a crop of 13,270,970 bales of cotton. Only about one-half this crop, however, was sold, the other half being held because of the declining prices and the hope that the high price would be restored. The result of this condition of affairs and its effect on the buying power of the South can easily be imagined.

The 1921 crop of cotton is expected to be about 6,000,000 bales. The hold-over of the 1920 crop, however has gradually been brought to market in recent months. Considering the change in conditions, it is not surprising that business in the South is rather more optimistic than it seems to be in most other parts of the country. Mr. Harrison further points out in his annual report that, "While estimates of the cost of producing the cotton crop of 1920 have ranged from 27 cents to 33 cents a pound, the crop of 1921 probably has been made at the lowest per pound cost in years, notwithstanding the small crop. Little fertilizer has been used and labor has been plentiful and cheap, conditions which afford reasonable assurance of a fair profit at the prevailing prices."

The railroads in the South have been making intensive efforts over a term of years to get the South away from its dependence on cotton. While it is true that the attention paid to cotton in 1920 and the low prices for agricultural products in general in 1921 have acted as a handicap, the progress that has been made, nevertheless, is considerable. The ravages of the boll weevil have proved a most serious factor in southern agriculture. The gradual northward march of the weevil, however, has not been without a certain compensating measure of advantage in that it has pointedly brought to the farmer the undesirability of relying on cotton as his single crop and has induced him to try his hand also at other things.

The Southern Railway now has a double track line from Washington to Atlanta of fairly easy grades, good alignment, etc. The Southern, except insofar as concerns this line, is in a state of transition. It has many branch lines; it still lacks yards and terminals. The improvement in the Southern lines in recent years, however, has been



The Southern Railway System

great. The service rendered is contained not only in the transportation service, but also in the efforts the Southern has been making over a term of years to educate the South to higher standards of agriculture, more particularly with reference to diversification of crops, the acquirement of live-stock, etc. In traveling through the South, one is impressed also by the interest the employees of the road seem to take in these things. The Southern Railway morale seems to be of extremely high standard. This is indicated in many ways; one of them is the manner in which the efforts of the traffic department are ably seconded by the operating department officers and men in the solicitation of freight.

Cotton, undoubtedly, is the most important single commodity carried over the Southern's rails. The tonnage of cotton carried in 1920 was 598,428 tons or 1.30 per cent of the road's total tonnage. The importance of cotton to the railroad consists not of the earnings received for moving the cotton, but the buying power which the cotton crop represents to the southern territory. In 1920, influenced by the high prices resulting from the abnormal demand and small crop

of 1919, the southern farmers produced a crop of 13,270,970 bales of cotton. Only about one-half this crop, however, was sold, the other half being held because of the declining prices and the hope that the high price would be restored. The result of this condition of affairs and its effect on the buying power of the South can easily be imagined. The 1921 crop of cotton is expected to be about 6,000,000 bales. The hold-over of the 1920 crop, however has gradually been brought to market in recent months. Considering the change in conditions, it is not surprising that business in the South is rather more optimistic than it seems to be in most other parts of the country. Mr. Harrison further points out in his annual report that, "While estimates of the cost of producing the cotton crop of 1920 have ranged from 27 cents to 33 cents a pound, the crop of 1921 probably has been made at the lowest per pound cost in years, notwithstanding the small crop. Little fertilizer has been used and labor has been plentiful and cheap, conditions which afford reasonable assurance of a fair profit at the prevailing prices."

SEVEN HUNDRED MEN returned to work after a long lay-off when the Chicago Great Western shops at Oelwein, Iowa, were opened on October 16.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### Unnecessary Transferring of Loaded Cars

New York.

TO THE EDITOR:

Referring to the articles in the September 17 and October 8 issues of the *Railway Age* on "Unnecessary Transferring of Loaded Cars." This question has been discussed for years and no real action taken to stop the large number of cars from being transferred. The remedy I would suggest is one that would cut down at least 50 per cent of the so-called transfers, if it could be put into effect.

It is not the fault of the car inspector who cuts out a loaded car for transfer that in his judgment is unsafe to run. Furthermore, I do not think any railroad today would stand for a vindictive car inspector cutting out cars unnecessarily. Our operating officials were greatly alarmed over the large number of cars that were being cut out for this purpose and wanted me personally to inspect cars at different points to see if the inspectors were justified in cutting them out. In almost all the cases I found the condition of the cars was such that the inspectors were justified in doing so. My greatest surprise was in many cases that the cars ever reached our terminals in such bad condition, being not only unsafe to run but unsafe for the lading.

I could go into considerable detail but will simply give the following figures taken recently from our records for a period of 30 days: Cars cut out numbered 803; of these 750 were foreign cars. Of these cars 157 were all-steel or steel underframe with defective underframes and sills. Of the remainder, 502 cars had wooden sills, broken draft timbers, burst ends, etc., and the balance of the defects were broken hoppers, bulged ends and defective trucks. A large percentage of the cars were of light construction and must have been in bad order when they were loaded.

The remedy is that no car should be loaded at a terminal that is not first inspected by a competent car inspector as to its fitness for the lading intended to be carried in it; it should also be inspected for the condition of the running parts.

Some few years ago the MCB Association proposed that all cars should be inspected and carded for the kind of lading they were intended to carry, but no final action was taken as it required the co-operation of the transportation department. If the railroads would take some action to this end it would soon bring out the fact that there are many thousands of cars not fit to carry ordinary freight unless they are repaired before loading.

It is true, as stated in the article in your September 17 issue that cars have been known to be transferred and sent back to the receiving line; that no repairs were made and the cars were again loaded with freight and sent forward by a different road. Many cases have been brought to our attention where we have been offered the same car on which no repairs had been made; these we have rejected and cut out the second time. Then again in some cases on the first transfer of the car it was loaded with grain and in such a condition that it could not be repaired; it was transferred and sent back to the receiving line, where it could be loaded with lumber or bricks and be safe for that class of lading.

The A. R. A. rules have defined what class of repairs

should be made to cars under load so as to save the expense of liability of damage to freight in transfer, but it is utterly impossible in many cases to carry out A. R. A. rules and make repairs to cars under load, and consequently transfers must be made to save delay.

Another point that should not be overlooked is that during federal control where cars were home on any railroad, we had a great many light capacity cars running over the system that never should have been allowed away from their home road. Until such time as the railroads can get their cars in first class condition and take more care in inspection before loading, we will continue to have numerous cases of transferring of loads. As suggested above, however, proper inspection of equipment before it is loaded will stop 50 per cent of the transfers.

F. W. BRAZIER.

### Derails and the Stop-and-Proceed Rule

Auburn, Cal.

TO THE EDITOR:

The *Railway Age* lately has published many arguments pro and con (mostly con) about the main track derail and the stop required at the stop-and-proceed automatic signal. But first let us look to the possible criticism that the signal men are doing all the talking.

With reference to the stop at automatic signals, at least one man who claims ample experience in the operating department has spoken in no uncertain terms. A. M. Burt, now assistant to the vice-president, operating department, Northern Pacific, in the issue of December 28, 1917, page 1158, wrote on this subject. Everyone interested should turn back and read his letter. In this connection after giving a number of reasons for abolishing the stop and proceed rule he said: "The stop and proceed indication should be put in the scrap heap, and in its place there should be a permissive indication. Under such a plan the three aspects of a permissive signal would be 'clear,' 'caution' and 'extreme caution.' No changes in present signals would be necessary.

"The efforts that have been made to pull the teeth of the 'stop and proceed' signal by using 'grade' or 'tonnage' permissive signals does not go far enough. The 'stop and proceed' signal should be done away with altogether, except possibly in some very unusual locations."

The two subjects pertaining to derails and stops at automatic signals may very well be discussed together because the main point in both cases is the observance of signal indications. Although the statistics called for by Mr. Rudd's series of unanswered questions in the issue of July 16, page 112, do not seem to be available, two things, I believe, are absolutely known: (1) That the derail sometimes derails a train which would have caused no damage if it had passed the stop signal—consequently there is a derailment when otherwise it would have been a case for discipline; (2) a derailment does not always prevent fouling of the "protected" track and a collision, if another train arrives at that time. The last point will recall the collision at Porter, Ind., last February, where the derail was only 311 ft. from the crossing. It must be admitted, however, that with the present customary distance of 500 ft. there is no certainty whatever that fouling of the "protected" track will never occur. Even without statistics, therefore, we seem fully justified in saying that the derail is an extremely crude and undependable device as a physical protection.

There remains, then, the "moral" effect—the old standby in defense of the derail. The belief (or it may have been a known fact) that the mere presence of derails had an important effect in enforcing observance of stop signals, dates back to the time when signal observance was possibly even more crude and undependable than is the physical protection

afforded by the derail. It is the writer's belief that this has all been changed by the general use of efficiency tests and the better understanding of signals in relation to safety which has grown up. If it were found that interlocking signals on a well conducted railroad, were better observed than block signals, there would still be a question as to how much credit should be given the derails for this condition. However, it appears that the general good observance of signals at the present time has made the "moral" effect of the derail so slight as to be far outweighed by its uncertain and unsatisfactory effect as a physical protection when a signal is disregarded.

The stop at an automatic signal has practically the same purpose as the derail. It is supposed to provide a certain physical protection in that, under ordinary conditions, a train is not likely to get as far above a safe speed in the block as it might if it entered without stopping. The stop also is supposed to have some influence as to the train proceeding through the block with caution. The stop itself is an observance of the signal and must be enforced by still other means; but the act of making a stop may be supposed to put the engineman in a frame of mind favorable to careful running in accordance with the rule, after the signal is passed.

As in the case of the derail, however, it is believed that present day signal observance is so good that any additional efficiency or protection due to the stop is too small to be considered. And, as in the case of the derail, the protection secured is crude and uncertain, depending as it does upon the weight of train, grade, etc., while the "moral" effect is probably even less certain than that of the derail. Indeed, it may well be that an engineman sometimes runs faster and less carefully after stopping than he would otherwise, because of his irritation at having to make what seems to be an unnecessary stop, his trouble in getting started again, and the resulting loss of time. The stop is, of course, a somewhat more definite thing, more easily checked than a prescribed limit of speed. There may be a tendency to take the easy course, make efficiency tests on the stop at automatic signals, and let it go at that. The important thing is the proper handling of the train in an obstructed block; and this is a matter for supervision quite as much as is observance of signals in other respects.

If the line of reasoning followed out above is correct, main track derails and the stops at automatic signals are unnecessary, and the derails are a possible cause of damage and death. Unnecessary things that impede operation or may cause "accidents" should be eliminated. It may be said, however, that there is at least one glaring weakness in this reasoning; that observance of signals is not so good and efficiency tests and other supervision are not so well carried out on some roads as on others. The answer is that the authorities now prescribing derails or, as in the case of the rules of the American Railway Association, throwing great weight on the stop at automatic signals, could do nothing better in the interest of safety than to prescribe the measures necessary to bring about the best attainable observance of signals.

C. C. ANTHONY.

## A Chemist in a Freight Car

SCRANTON, PA.

TO THE EDITOR:

Of the enormous total bill for loss and damage of freight on the railroads of the country—over 100 millions of dollars yearly—an appreciable percentage is due to large losses on merchandise which is damaged by coming in contact with chemicals and acids! Many carloads of sugar, flour, coffee and other similar commodities have been seriously damaged by being loaded into cars in which the floors were contaminated by various kinds of acids. In some cases not only

were the lower layers of bags eaten or damaged, but also those on the side of the car were eaten and the contents of the bags spilled over the floor.

Strong alkalis of which the drums have been broken open or leaked have produced similar results.

Machinery with parts nickel plated or galvanized have been badly corroded by the fumes of muriatic acid which had penetrated the floors. Rugs, carpets, cotton goods in rolls, etc., have been in many cases eaten 1 or 2 inches, thereby practically ruining the entire roll.

Cars which are contaminated with acid can be very easily detected. An acid car will in practically every case have the appearance of being oil-soaked or wet. Cars which are thoroughly dry or dusty have been found to be free of acid in nearly all cases. Blue litmus paper when placed in contact with acid will at once turn red; place a few drops of water upon the floor and lay the blue paper on the damp or wet place. In case the paper should not assume a reddish appearance red litmus paper should then be placed upon the floor. If the car is soaked with alkali the red paper will turn blue. Cars of this kind should be placarded "BAD ORDER," "ACID CAR" or "ALKALI CAR" and should in no case be used for loading any commodities which could be injured or damaged by acid.

If there is no reaction to either the blue or the red paper the car is probably contaminated with oil, and should not be used for sugar, coffee, flour, dry goods, etc.

Cars which are badly contaminated by acid need a new floor or a new lining. Where only slightly damaged the acid can be removed by washing well with a hose and sprinkling with baking soda.

On the Lackawanna, careful inspection for acids and alkalis has eliminated damage claims of this class.

Vegetables, such as potatoes, cabbage, onions, etc., have been found to be badly damaged on the lower layers when loaded in cars contaminated with salt. Great care should be exercised in the selection of cars for food stuffs and no cars should be loaded with these products which are contaminated with acids, alkalis or salt.

Covering the floor of the car with paper or sawdust will have little effect when the car is badly contaminated with acids or alkalis.

H. J. FORCE,

Chemist and Engineer of Tests, Delaware, Lackawanna & Western.

## Bad Order Car Situation

NEW YORK.

TO THE EDITOR:

In your October 15 issue, under the caption of "Bad Order Car Situation Presents Serious Problem," M. J. Gormley, chairman of the Car Service Division of the American Railway Association, stated that on September 15, 1921, there were in the country 374,431 freight cars in bad order. This was divided, 183,486 box, 153,275 coal and 37,670 miscellaneous types, or 16 per cent of the total ownership. This should, based on liberal allowance, be not over about 160,000 cars or 7 per cent. In other words, we now have over 210,000 freight cars in bad order which, under proper conditions of maintenance, should be in good order.

Mr. Gormley further said that the problem now before the railroads is to repair these cars, replace with new cars those that cannot be economically repaired or rebuilt, and make other necessary additions to the equipment to take care of business up to the maximum of the past.

During the past two years I have had opportunity personally to examine many freight cars at various large terminal and heavy tonnage movement points in the territory lying east of Kansas City. Never in my 30 years of railroad experience have I seen freight cars generally in a more dilapidated condition, due to lack of proper upkeep. This

situation is the result of several years of improper distribution, handling and use of cars, coupled with the making of costly repeated light repairs to keep them moving, whether loaded or empty, instead of making the ultimately less expensive substantial repairs, renewals and improvements at the time needed, in order to keep them in sound, safe and economical working order.

The downward trend of the freight car situation commenced when the U. S. R. A. Circular No. 7, issued June 8, 1918, promulgated modified Rule No. 2 of the A. R. A. Code of Rules Governing the Condition of and Repairs to Freight Cars for the Interchange of Traffic. This changed the instructions in effect as follows: "Empty cars offered in interchange, if in safe and serviceable condition, *must be accepted*," was substituted for "Empty cars offered in interchange *must be accepted* if in safe and serviceable condition, *the receiving road to be the judge*." Also "Loaded cars offered in interchange (except those having defective safety appliances) *must be accepted* by the receiving line, which may either run, repair or transfer lading from car," was substituted for "Loaded cars offered in interchange *must be accepted, with the following exceptions, (a) to (e) inclusive.*"

Following this modification the U. S. R. A. also suspended the use of M. C. B. defect cards for the period October 1, 1918, to May 14, 1919, thereby waiving any and all responsibility for defects for which the owners were not responsible during that period.

In addition, U. S. R. A. Circular No. 20 issued September 25, 1918 and revised November 25, 1918, established a limit of cost for making repairs to all wooden freight cars in need of general repairs. This stopped the making of repairs in kind, whenever the established limit cost was exceeded, regardless as to the variation of labor and material unit prices, and resulted in a large amount of deferred maintenance, or otherwise in the retirement of equipment which it would have been more economical to repair and continue in service.

The pooling of freight equipment, which was introduced during federal control, was partially abandoned about three months before the return of the roads to their owners, due to the fact that the cars had become badly scattered, from the standpoint of both the needs of traffic and of ownership, and the inadequacy of maintenance of the pooled equipment having become quite manifest during 1918. For example, when the roads were taken over on January 1, 1918, 44 per cent of the cars were on their home lines; when the roads were returned on March 1, 1920, only 21.9 per cent were on home lines. At the same time coal cars for loading on ownership lines in the East were held empty on foreign lines in the West; and box cars needed on ownership lines for loading in the West, were held empty on foreign lines in the East. Since then home cars have been gradually gotten back to the owner's lines and during the past six months' period—April 1 to September 30, 1921—the situation has averaged from 70 to 74 per cent ownership cars on home lines each month.

Until the cars reached their owners their general condition was not of much consequence, the principal idea being to keep them moving with the least delay and cost for upkeep. However, with the elimination of pooling and their return to home lines it has not required much of an inventory of their condition to determine their deferred maintenance condition.

A review of the foregoing will readily show why the railroads today have on their hands the 375,000 bad order freight cars referred to by Mr. Gornley.

My observations have led me to believe that the freight car situation offers one of the most costly propositions that the railroads are up against, both from a capital and operating expense standpoint, and that the cause for this is the lack of proper upkeep and the misuse of equipment during the federal control period; the neglect of preservation and resulting deterioration of metal in the car bodies and underframes

due to corrosion, and the damage to underframes and superstructures because of deficient and defective draft gear and attachments. This latter item is something that is giving all of the railroads a great deal of concern, as when, for example in all-steel equipment, the strength of the underframes is reduced through corrosion of the floor and other plates. If the cars are permitted to run without any cushioning resistance for the buffing and pulling shocks, it does not require much rough yard handling or heavy train service to destroy the center sill and underframe structure, more particularly between the body bolsters and end sills. The fact that cars have been permitted to run without proper draft gear renewals and maintenance during the federal control period, and which practice is being continued at the present time, is due largely to the re-establishment by the U. S. R. A., and by various representative railroads, of the long since discarded transverse key type of coupler and coupler yoke connection, which couples the coupler with the center sills and enables the running of cars in road service without draft gear.

It can be readily understood what shocks the underframes of cars are subjected to, both buffing and pulling, when they are operated in this condition. Until the A. R. A. eliminates the use of such a device and restores the use of an arrangement which *couples the coupler to the draft gear only*, and requires the maintenance of the latter, the existing conditions will not only continue but become more aggravated. The use of the coupler center sill key attachment is also resulting in extraordinary damage to couplers. Even the latest A. R. A. heavy "D" type couplers have been found with not only various parts cracked and broken, but also with the shanks between the coupler head and the butt stoved up as much as from  $\frac{5}{8}$  in. to 1 in., due to extraordinary buffing shocks in combination with being run without draft gear in proper condition. Furthermore, the neglect to maintain draft gear and attachments, in combination with the many useless so-called "friction" types of draft gears that have been applied during the past 20 years, is responsible for much extraordinary center and end sill, draft arm and lug, body bolster, coupler and coupler yoke damage that otherwise would not have occurred.

The modern freight car with its increasing ton-miles per day's work, in longer and heavier trains, requires *actual* maintenance to keep it in serviceable condition and the issuance of instructions to reduce the number of cars in bad order condition so that they will not exceed 4 per cent of the total; the establishment of a freight car depreciation account in the maintenance of equipment expenses to provide money for an equipment reserve fund, which money should properly be put into applied labor and material for the upkeep of existing equipment; the application to cars of defect cards to cover repairs needed for which the owners are not responsible will never take the place of needed actual repair and renewal work on existing equipment.

The Interstate Commerce Commission—Account 315—Freight Train Cars—Depreciation figures for the Class I roads under federal control in 1918 show an amount of \$61,722,302 as compared with a total expense of \$384,507,575 for Account 314—Freight Train Cars Repairs. The expenditure of the amount charged to depreciation in these maintenance of equipment expenses for actual labor and material for upkeep, would have done much to overcome the present freight car condition.

JOHN E. MUEHLELD.

PAUL HUEBNER, landscape gardener of the Philadelphia & Reading, has this month completed 31 years of service with the road. He has in charge 200 flower beds at 110 different points on the system. Along the right of way he has 5,000 evergreens and many miles of hedge. About 150,000 plants are used each year in the beds.



Visitors at Automatic Train Control Demonstration, Near Rochester, N. Y.

## Automatic Train Control Demonstrated on B., R. & P.

Test of System in Which No Physical Contact Is Made Between  
Engine Apparatus and Roadway

**A** DEMONSTRATION and test of an automatic train control device, which has been developed by the General Railway Signal Company, was made on October 24 on the Buffalo, Rochester & Pittsburgh, near Rochester, N. Y., before a party of railroad men and others interested in safety developments. A locomotive equipped

is of the intermittent contact type, using an inert or non-acting roadside element and is so designed as to cause the automatic application of the brakes on a moving train in case the right action is not taken by the engineman in passing a caution signal. The device is developed to work in conjunction with the automatic block signal system and to supplement the visual signal indications. The apparatus, which is the result of development work extending over a number of years, is of a simple and rugged type and can be easily and quickly installed.

As here installed the device operates in connection with the caution indication as well as the stop indication; but if the engineman is alert he can prevent the operation of the stop and the control of the train is thus left in his hands without automatic interference.

### The Track Equipment

The track equipment consists of a laminated iron structure about 5 in. high and 2 ft. across made in the form of a wide, shallow letter U, with large pole pieces resting on the top of each leg of the U. The top surfaces of these pole pieces are level with the top of the rail. On each of the legs is a coil of insulated wire, the coils being connected together and in turn connected through a contact of the signal relays. If the block ahead is occupied and the track relay open, the circuit to the track element is opened and this puts it in a position to stop a train. When the block is unoccupied and this circuit is closed, the apparatus is in condition to allow a train to proceed.

### Engine Equipment

The track equipment is protected from things dragging and all mechanical injury by a housing or shell resembling somewhat in appearance the back of a turtle. One of these roadside elements is located at each visual signal. It has no moving parts and the construction is such that even if submerged in water or covered with snow, ice, earth, or anything its proper performance is not affected. It is placed between



G. R. S. Automatic Train Control—Track Member

with the control instruments and one car was used in the experiment which was conducted between Rochester and Scottsville, 12 miles south, the track elements being placed at certain automatic signal locations between these stations. Caution, stop and clear signal indications were given and the train was operated at various speeds in both directions, the apparatus acting to stop the train when a caution or stop indication was received. The engineman and fireman, acting in conjunction, can prevent the application of the brakes by devices installed on the engine for this purpose.

The train control apparatus as developed by this company

the rails, avoiding the clearance problems connected with structures outside the rails.

The locomotive equipment consists of a storage battery; a receiving element; an audion amplifier; an electro-magnetic contacting device, or engine relay; and an electro-pneumatic valve; and a piston and cylinder arrangement for operating the engineman's brake valve and certain auxiliary devices known as the engineman's hold-by device, the firemen's hold-by device and the reset button. The audion amplifier, the engine relay and the electro-pneumatic valve constitute the translating apparatus that converts an electric impulse into a powerful mechanical force.

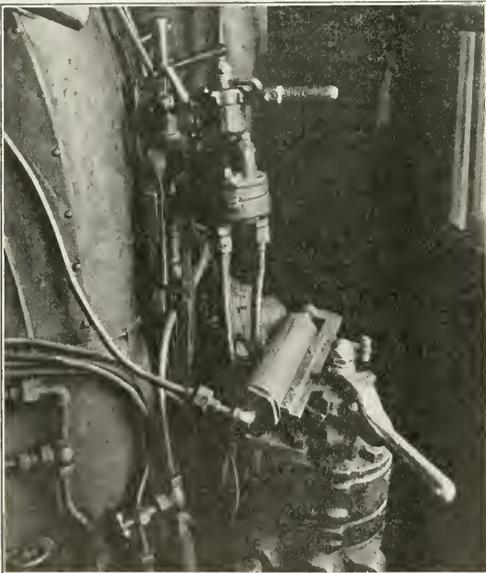
The receiving element on the engine consists of a U-shaped laminated iron structure, similar to the one fixed on the track, except that it is inverted. The lower surface of the pole pieces move directly over, and pass from three to four inches above the tops of the pole pieces on the track. Each of the vertical legs of the engine equipment carries a coil of insulated wire. One of these coils is supplied with energy from a storage battery placed in a box located con-

will act as choke coils, not allowing the magnetic flux to pass down and pass up through the engine receiving coil; thus there is no actuation of the brake control on the engine and the train proceeds without restriction.

The audion amplifier, familiar to those interested in wireless telegraphy, is a simple device for magnifying an electrical impulse. With this device it is not necessary to use an unduly sensitive engine relay. This system makes use of the regular air brake equipment, simply moving the engineman's brake handle in exactly the same way that an engineman would move it in stopping the train. A strong pressure is maintained on the brake lever until the reset button, on the outside of the locomotive, is operated; this relieves pressure and restores the brake apparatus to normal condition.

In the development of this device the General Railway Signal Company has not interfered with the requirement that the engineman observe all signals, nor has it encouraged him to relax vigilance. Anything which might tend to make him careless in this respect would be a step backward. A device is, therefore, provided for the engineman in the cab which, if operated in due season as each caution signal is passed, will prevent automatic application of the brakes. If the engineman does not act, the train will be caused to make an unnecessary stop; and either the engineman or the fireman must then get out of the cab and operate the reset button to release the brake handle so that the train may again proceed. This naturally will prove to be a strong incentive to the engineman to watch the caution signal, so that he may avoid the discredit of having the train stop improperly and of having to get out to reset the apparatus. It is optional with the road to require both the engineman and the fireman to operate the reset apparatus simultaneously. With this arrangement the responsibility for taking appropriate action in passing a caution signal is put upon two men instead of one. This is in line with the present rule on most roads that the fireman shall call the signals to the engineman.

This type of train control does not require other energy than that already in existence in connection with automatic block signals. The roadside element requires no battery or other source of electrical energy for its operation, hence the name "inert track element." The only source of energy used is in connection with the engine apparatus, namely, the storage battery carried on the engine.



G. R. S. Automatic Train Control—Brake Valve Attachment

veniently on the engine, thereby producing a strong magnetic field. The other coil is connected with the battery and to the translating apparatus in such a way as to keep air pressure on the brake-operating cylinder, which in turn leaves the brake handle free to be put in any position by the engineman.

Whenever the engine equipment passes over a track element while a stop condition exists, the magnetic field, which is produced as previously described, will pass down to, across and up from the track equipment, producing a magnetic flux through the other leg of the engine equipment, thereby producing an electrical impulse in its receiving coil. This impulse in the receiving coil is then converted by the translating apparatus to a power that will cause the operating cylinder to actuate the brake lever, pushing it over to the same position that the engineman would have pushed it if he had intended to stop the train.

In case, however, the circuit to the track equipment is closed, as the train passes, the coils on the track element



Photo from International

Placarding the First American Relief Train to Enter Russia

# Labor Board Opens Inquiry Into Threatened Strike

Brotherhood Leaders and Executives Before Board—Employees on Several Roads Against Strike

THE RAILROAD LABOR BOARD'S attempt to avert the threatened strike of train service employees set for October 30, reached its climax, when, in response to a call issued by the Board, the general chairmen representing the train service employees and telegraphers on all of the larger carriers, executives of the train service brotherhoods and the telegraphers organization, and executives or representatives of the various Class I carriers came before the Board on October 26. Because of the large number of interested parties present at the hearing it was necessary to obtain the use of the Coliseum Annex for the meeting and even this large meeting room was crowded.

After considerable time had been taken up with the roll call which showed that whereas representatives of almost every railroad were present but few of the general chairmen called by the Board put in their appearance, the meeting was opened with the reading of a statement by R. M. Barton, chairman of the Board, which outlined the nature of the hearing, the testimony which the Board would deem relevant, and the reasons for the calling of the meeting.

Mr. Barton said in part:

## Chairman Barton Opens Meeting

This proceeding is not a case brought to the Board by either employee or carrier, but one initiated by the Board on its own motion, it being principally moved thereto by the threatened interruption to commerce. It is an official governmental inquiry ordered and to be conducted by the Board. It is based on two provisions of the Transportation Act. One, Section 313, which provides that when the Board has reason to believe that any decision by the Board has been violated by any carrier or employee or subordinate official or organization thereof, it may, on its own motion, after due notice and hearing to all persons directly interested in such violation, determine whether in its opinion such violation has occurred and make public its decisions in such manner as it may determine. The other is the provision in Section 307, the emergency provision, which authorized the Board to act when a dispute is likely to substantially interrupt commerce.

The Board wishes all parties to bear these things clearly in mind and thoroughly understand the limits of this inquiry and conform thereto. The inquiry will be conducted wholly under the directions of the Board, as it is not a suit or application of either of the parties.

## Defines Scope of Hearing

On the first point, whether there is a threatened withdrawal from service of the several carriers in opposition to and in violation of Decision No. 147 and whether the parties have violated or are violating this decision and the law; the inquiry will be limited strictly to this question.

The merits of that decision or any other decision of the Board are not at this time in question and no discussion in regard thereto will be in order. The question is simply: Has there been a violation or is one threatened?

On the second subject of inquiry as to what other causes exist that are causing or liable to cause an interruption of traffic, the inquiry will be what either side has done or is doing or threatening to do that may lead to a stoppage of work, and, particularly, the nature of the exchange of proposals that occurred between the railway executives and the executives of the labor organizations at their conference at Chicago, October 14, 1921; what disputes resulted therefrom, and to what extent said disputes are the occasion of the threatened interruption. The Board will further inquire as to what, if any, wage reductions have been made or are in contemplation by the carriers without first securing the approval of this Board in a legal way.

The inquiry on behalf of the Board will be conducted by the chairman of the judiciary committee, Ben W. Hooper, but questions will be permitted by other members of the Board and either party or their representatives or any of the representatives of any of the parties directly interested may be allowed to ask questions and make statements that may bring out the real facts on the issues above indicated.

## W. G. Lee Questioned

After this outline, B. W. Hooper, a member of the public group of the Board began a quiz of W. G. Lee, president of the Brotherhood of Railway Trainmen, by a series of questions regarding identity, etc., and culminating in a request for a definite statement of the developments which led to the strike vote and orders and concerning the position of the organizations now regarding the threatened strike. In reply Mr. Lee outlined his view of the manner in which the present controversy developed the facts recited by Mr. Lee have in general been described in previous issues of the *Railway Age*. Coming to the actual preparation of the strike ballots in accordance with the resolutions adopted by those representing the men, Mr. Lee described in detail the reasons for his refusal to join with the other four train service organizations in a joint ballot because of the fact that the ballot they proposed contained a reference to "questions" he did not believe were involved.

"For once," he said, "I decided I was going to tell the men the truth. I didn't intend to camouflage the east. Let criticism fall where it may."

Leading questions from Mr. Hooper brought out the fact that the difference between the trainmen's ballot and that of the other organizations was in the statement of grievances over which the strike vote was taken. Mr. Lee frankly admitted that in his opinion the only grievance over which the men could strike at this time was the wage reduction ordered by the Labor Board in Decision No. 147. There followed a detailed description of how the trainmen's organization prepared the ballots, took the strike vote and counted the returns. The result, Mr. Lee said showed that 88 per cent of his organization preferred to strike rather than to work under the rates of pay fixed by the board. In presenting these figures Mr. Lee admitted that the two-thirds majority of strike votes had not been recorded for some carriers. As such carriers, he named the Belt Railway of Chicago, the Chicago & Western Indiana, the Chicago Junction, the Chicago River & Indiana, the Toledo, Peoria & Western, the Elgin, Joliet & Eastern, the Indianapolis Union, the Louisville & Jeffersonville Bridge, the Pennsylvania Lines East, the Pittsburgh & Lake Erie, the East St. Louis Connecting, the Lake Erie & Eastern, the Wiggins Ferry Company and the Central Indiana.

L. E. Shepard listed the following roads on which the necessary majority of the conductors failed to ratify the proposed strike: Bangor & Aroostook; Boston & Maine; Central of New Jersey; Cincinnati Northern; Detroit & Mackinac; Evansville, Indianapolis & Terre Haute; New York, Susquehanna & Western; Peoria & Pekin Union; Toledo, Peoria & Western; Zanesville & Western; Dayton & Union; Pennsylvania, Lines East and West; Pittsburgh & Lake Erie; Duluth & Iron Range; Duluth, Missabe & Northern; Philadelphia & Reading; Duluth, South Shore & Atlantic; St. Louis Terminal Association; Peoria Railway Terminal; Texas Midland; Trinity & Brazos Valley; and Arizona & Eastern. Mr. Carter listed the Pittsburgh & Lake Erie, the Duluth & Iron Range and the Indiana Central as the lines on which the firemen voted not to strike.

To show the manner in which the trainmen had been presented with the facts prior to and after the vote, Mr. Lee read portions of circulars sent to the membership in which warning to the men concerning the folly of a strike at this time was but thinly veiled. Reverting again to the difference

between the trainmen's ballot and the joint ballot of the other organizations, Mr. Lee said in reply to his questioners:

"I believe that we should incorporate in the ballot a statement showing the different conditions existing today. In the old days, we reported the result of a ballot to the officers of the roads and negotiations were begun anew. I believe that we should call attention to the difference now that the federal law was in effect and that we did not go back to the officers, saying that we were voting on the question of accepting or rejecting the wage cut of the Board. Time-and-one-half for overtime and future wage reductions were not considered."

#### Afternoon Session

The afternoon session opened with Mr. Hooper still interrogating Mr. Lee and attempting to establish that the inclusion of references to future wage cuts and overtime changes in the statement accompanying the trainmen's ballot was for the purpose of influencing the men to vote for a strike. Mr. Lee's reply was vague, frequent references being made to other sections of the statement which he said "murdered" these references. The quiz of Mr. Lee closed with a discussion of his power to call off the strike on the International & Great Northern. After giving a history of his part in this walkout, Lee denied that he has the power to call off the strike or could have prevented it.

The examination of Mr. Lee developed the fact that (1) the strike of the trainmen is in the hands of the men because of the manner in which the developments have been handled by him, in other words he has passed the buck to the men after giving them the best advice possible under the circumstances; (2) the trainmen's strike is solely a protest against the wage cut of last July and (3) only "satisfactory settlement" can bring about a recall of the strike orders.

#### L. E. Sheppard on Stand

L. E. Sheppard, president of the Order of Railway Conductors followed on the stand, opening his testimony with an outline of the laws of his organization regarding the strike. The vote polled by the conductors, Mr. Sheppard said, showed that 68 per cent of the men in eastern territory voted to reject the wage cut, 88 in southern territory and 87 in western territory. In support of his argument that there are other questions over which the men might strike, Mr. Sheppard charged that 19 carriers had filed applications with the Board for general revisions of schedules with the conductors, 54 for partial revision of the schedules, including the abolition of time-and-one-half for overtime, 12 for elimination of punitive overtime and 25 for material changes in the schedules. As with Mr. Lee, Mr. Hooper by skillful questions tried to bring out the fact that statements regarding overtime and future wage cuts were included in the strike ballots to influence the men. At one point, Mr. Hooper asked Mr. Sheppard if he thought it was fair to ask the carriers to make a promise to ask for no further wage cuts when relevant factors cited in the Transportation Act are changing so rapidly. To this question Mr. Sheppard replied that they were merely following precedent in so doing. Changes in wages or working conditions usually stand for at least one year he said. Mr. Hooper asked Mr. Sheppard if it was not unfair to "place an 'inflammatory' statement" in the statement accompanying the ballot. Mr. Sheppard took exception to the terms used and said, "Some of the men probably did not read the statement with the ballot."

#### W. S. Stone Has Argument

W. S. Stone, chief of the Brotherhood of Locomotive Engineers followed on the stand but at the start of his testimony, he was interrupted by Judge Barton on the grounds that his remarks were not relevant to the case. Mr. Stone wanted to submit a list of roads that he alleged had violated orders of the Labor Board but upon being stopped by Judge Barton said, "I will bow to your decision. If we cannot find redress in this Board I want to know where 80,000 engineers

can find relief. If I am prohibited from explaining the feelings of our men, then I do not see that there is anything more for me to say." Mr. Stone then refused to give the Board a list of the roads whose engineers had failed to poll a two-thirds strike majority, but upon the specific request of W. L. McMenimen a member of the labor group on the Board, promised to file the list later.

T. C. Cashen president of the Switchmen's Union of North America then told the Board that 85 per cent of his members had voted to strike and that a constitutional majority was polled on every carrier party to the dispute.

#### W. S. Carter Questioned

W. S. Carter, head of the Brotherhood of Locomotive Firemen and Enginemen, the next witness examined, told the Board that if the strike was to be called off, it would be necessary in his organization to take another referendum. Questions by Mr. Hooper were similar to those asked the other labor leaders and to a large extent the answers were similar. Employees on three roads, Mr. Carter said had voted to accept the lower wage scales.

#### Real Climax of Hearing

The real climax of the hearing came at the close of the afternoon session when Chairman Barton asked each of the five leaders to answer four vital questions. They were in substance: (1) What organization or individual can call off a strike? (2) Suppose you as the executive of a labor organization or your executive committee issued an order or a statement that the strike would not occur what would the men do? (3) If this board issued an order stating that the strike is not justified, would the men obey the order? and (4) If the Board declared a strike unjustified will you use all your power and efforts to see that it is obeyed?

The answer of the labor leaders spelled failure of the effort of Board if they accurately represent the feeling of the men. To the first question all answered that power lies either in their hands or in the executive committee or both. The second question brought forth the reply that if an order is so issued it would have little or no effect on the strike. The third question brought either an evasion or a statement that such an order would not be obeyed by the men. The fourth question likewise was either evaded or the statement was frankly made that the leaders would not co-operate unless a "satisfactory settlement was reached."

#### Executives Quizzed at Evening Session

The evening session was devoted to a quiz of the executives. It was opened by Thomas De Witt Cuyler, chairman of the Association of Railway Executives, who presented a statement reviewing the development of the present controversy and the action taken by the executives. In reply to a question asked by Mr. Hooper, Mr. Cuyler stated that it was not the purpose of any carrier to make reductions in wages without first holding conferences with the men and submitting the case to the Board for ruling. Mr. Hooper then brought out by a series of questions, directed at the executives in general, the actual position of the roads at the present time and their willingness to abide by rulings of the board.

Mr. Stone was finally allowed to read a list of 33 roads which he charged had violated the Board's orders in reducing wages without sanction, but the roads proved to be all short lines, many of which were not parties to the case. Answers were made on behalf of three of these roads. In each case the statement showed the willingness of the carrier to obey the Board's orders.

The case was finally brought to a sudden close with the announcement by the chairman of a probable decision within the next few days.

#### Board Confers Previous to Meeting

Previous to the opening of the meeting, members of the Board conferred with representatives of the employees and

of the carriers as to the procedure to be followed. Subsequently two statements were issued, one by the Board and the other by T. De Witt Cuyler, chairman of the Association of Railway Executives. The Board's announcement practically set forth its views as to the present situation and the disclosure of the compromise plan which it believed might meet the irreducible demands of the brotherhood chiefs.

Attributed to Mr. Hooper, the statement says in part:

1. Friction has arisen between practically all the Class I carriers of the United States and their train and engine employees and telegraphers represented by the following organizations:

Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, Brotherhood of Railroad Train-

**Defines Board's Position**

The Board has heretofore issued two decisions embracing shop craft rules. The remainder of the shop craft rules are still pending and the disputed rules of other classes of employees have not yet been touched.

No more difficult and complex question can ever arise before this Board than that of the revision of the rules governing the working conditions of any class of railway employees. It requires an immense amount of time and painstaking work. It is the judgment of the Board that, as a matter of procedure it would be unwise, and as a matter of policy, unjust, to discontinue the consideration of rules and working conditions and enter into a prolonged hearing of an application to reduce wages at this time.

It is not within the province of the Labor Board to shut the door in the face of either carrier or employee desiring to submit a dispute to the Board, or to dictate the time when such dispute shall be fixed. It is, however, within the discretion of the Board to fix the order in which it will take up and consider the numerous matters submitted to it.

In this aspect of the matter, it should be of material help to the carriers and their employees to understand that the status of the Board's work, as above set out and its plans with regard thereto.

It will thus become apparent that the employees, who are protesting against a further wage cut, are crossing bridges long before they can possibly get to them and that carriers cannot hasten a wage reduction by applying for it at this time.

The attitude of the Board in this matter must not be misunderstood. It is not affected by the threat of a strike. It had adopted



From the Birmingham Age-Herald

**Cold Iron**



From the Memphis Commercial Appeal

**The "Vaudevillians"**

men, Order of Railway Conductors, Switchmen's Union of North America, Order of Railway Telegraphers.

2. One of the principal causes of this trouble lies in the fact that said carriers have notified certain of the executives of said organizations that it is the purpose of the carriers to apply to the Labor Board for a further reduction in wages additional to that ordered July 1, 1921.

3. The proper consideration of the conditions surrounding the matters now pending before the Labor Board should remove any immediate occasion for strike between the carriers and said organizations of employees growing out of a possible reduction in wages by the Labor Board. The conditions referred to are as follows:

Since the organization of the Board a little more than 18 months ago more than 2,000 cases involving disputes between carriers and employees have been filed with the Board. More than 700 of these disputes have been disposed of and many others have been heard and not decided. The Board has been deluged with cases involving minor grievances which would not have been sent here to congest its dockets had the carriers and their employees co-operated in the establishment of adjustment boards as provided in the Transportation Act.

Three questions of paramount importance have been before the Board, the wage increase of 1920, the wage reduction of 1921, and the adoption of new rules and working conditions. Each of these matters has necessarily consumed a great amount of time. Each of them involved all the Class I carriers and every individual of every class of their employees in the United States.

The two wage controversies have been disposed of, but during the entire pendency of both, the revision of rules and working conditions have been pending and is now only well begun. The Board has been justly urged by the carriers to complete its consideration of the rules and hand down its decision. The Board's unavoidable delay in disposing of this question has subjected it to criticism by the public and restive complaint upon the part of the carriers.

several weeks ago the policy of making everything else secondary to the consideration of the controversies over rules and working conditions, but, with the ordinary number of unavoidable distractions, and even with the greatest diligence, it will require considerable time to complete the decision of rules.

Another factor that demands the highest consideration is the fact recognized by both carriers and employees that the question of wages and working rules are inextricably interwoven. Many of the rules and working conditions governing the employees have a money value and it would be difficult to give satisfactory consideration to the question of wages until the rules and working conditions to which the wages would apply are definitely fixed and known.

In view of the foregoing considerations, it is the purpose of

the Labor Board that the submissions of carriers and employees on rules and working conditions shall be completely disposed of as to any particular class of employees before a hearing is had on any question of wages affecting said class of employees on any carrier covered by Decision No. 147.

The rules governing any class of employees will be deemed to have been completely disposed of when the Board has passed upon all the submissions affecting said class either by a decision of disputed rules or by referring them back to a conference of the carrier and employees.

### Dispute Is With Board

The statement of Mr. Cuyler, issued immediately after, said in part:

The railroad executives are not aware of any present dispute between them and their employees. The strike vote and order is solely against a decision of the Railroad Labor Board reducing wages by 12 per cent as of last July 1.

The railroads have in fact determined to seek to reduce rates, and as a means to that end, to further reduce wages. But the carriers have expressly decided to proceed in accordance with the law requiring conferences with employees prior to taking such action, and to put no such reduction in wages into effect until it has been passed on by the Railroad Labor Board.

Any proposal to strike, therefore, is purely concerning a past decision of the Labor Board or against what the Railroad Labor Board might do.

The railroads wish it to be clearly understood that they would deprecate a strike, but that their first obligation is to the public to render adequate service at reasonable rates. Present rates are in many cases high and steps must be taken to reduce them. That reduction can only be effected by reducing costs, and of the costs by far the largest element is the wages of labor.

The issue is very clear. If present wages are to be continued, rates cannot be reduced. If rates are to be reduced, the present wages cannot be paid. The railroads are powerless to take any other position.

### Labor Board's First Effort at Mediation Fails

The events preceding this meeting and following the close of the report in last week's *Railway Age* are many and significant and may be summarized as follows:

The conference between members of the Railroad Labor Board and leaders of the five train service organizations which have issued strike orders, the call for which was reported in the *Railway Age* of October 22 (page 758), proved a complete failure. Representatives of the brotherhood, on leaving the conference, stated that the Labor Board had offered them no definite plan for the settlement of the controversy, and that consequently they were unable to take any action toward calling off the scheduled walkout. Members of the Board likewise stated that little had been achieved at the meeting except a "frank interchange of views."

Following the conference the brotherhood leaders again returned to Cleveland, where they divided their time between working on strike plans and issuing statements justifying their position in so far as it can be justified with nothing but a comparatively small cut in basic wages against which to strike.

"With regard to the position of the employees at this time," Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, said in one of these statements, "I can only say that their representatives are patiently waiting for any development that would appear to offer a solution.

"We are not now nor have we been desirous of being a party to precipitating a strike, but when it is quite apparent that the railroads propose not only to reduce wages, but to take from the employees practically all the conditions of service that have been obtained for many years, and the Railroad Labor Board is unable or fails to give us any assurance that the interests of the employees will be protected from such onslaught of the interests that control the transportation lines of our country, nothing is left for our employees but to stand upon their constitutional rights and retire from the service of these carriers."

\* Concerning these charges, R. M. Barton, chairman of the

Board and representative of the public group, said that he is "willing to let the public decide who is to blame if there is a strike."

"But," he added, "you may say this for me, as emphatically as you wish: Whether the Labor Board is to be blamed for anything or not, these men cannot justify their action on that ground. They can't thus excuse their throwing the country into such a terrific industrial crisis as a general railroad strike will bring about."

### Ten Organizations Decide to Withhold Strike Orders

The following days witnessed the withdrawal one by one of ten of the units in the "associated standard recognized railroad labor organizations." The latest reports indicate that the various railroad unions have aligned as follows:

The Brotherhood of Railroad Trainmen, the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, the Switchmen's Union of North America and the Order of Railroad Telegraphers have announced their intention to strike or have issued strike orders.

The six organizations comprising the Federated Shop Crafts, the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers, the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, the Brotherhood of Railroad Signalmen of America, the Brotherhood of Stationary Firemen and Oilers have indicated their intention to await further action by the Labor Board before actually calling their memberships out.

In this connection an announcement by the Federated Shop Crafts said in part:

"It develops that the four transportation organizations would not be bound to strike after they had received a settlement acceptable to them, even though those who had assisted them in making their strike successful had received no settlement and were still on strike.

"It must therefore be clearly evident to all the the membership of any of the four transportation organizations on any railroad, cannot and will not co-operate with any other class of employees. The above are indisputable facts, and the membership of the Federated Shops Crafts are entitled to know these facts.

"There is no hope for co-operation with the four transportation organizations. Therefore the Shops Crafts must outline and adhere to their own plan of action in so far as those organizations are concerned. It is recommended that the Shops Crafts await rulings by the Labor Board on general working rules, decision on which has been withheld."

### Telegraphers to Walk Out

The most unexpected development was the announcement by E. J. Manion, president of the Order of Railroad Telegraphers, that his organization would walk out in conjunction with the brotherhoods, following the same program as to the roads designated in the various groups. Up to that time it had been expected that the eleven "standard" unions, which recently split with the "big five" brotherhoods, would act in unison in whatever course was decided upon.

"Our general chairmen have concluded their deliberations," Mr. Manion said, "and are returning to their respective headquarters to complete their preparations for making the strike effective on the same railroads and dates named in the strike order of the other transportation organizations."

### Labor Board's Call to October 26 Conference

Closely following these developments came the order of the Labor Board for the conference which began on October 26. The Board's order said in part:

Whereas, it has come to the knowledge of the United States

Railroad Labor Board that a dispute exists between carriers and organizations of their employees; and,

Whereas, information has come to this board that a conference was held in Chicago on the fourteenth day of October, 1921, between certain of the executives of said carriers, and certain executives of said organizations of said employees, relative to the matters in dispute, at which conference no agreement was reached; and,

Whereas, immediately following said conference it was announced through the public press that the executives of said organizations of railway employees had issued and sent out to the members thereof orders or written authorities to strike, and that a strike vote had been taken on the lines of the said carriers; and,

Whereas, the board's information is to the effect that said strike is threatened on two grounds: First, in opposition to the wage award in decision No. 147 of the board, and, second, on account of an unsettled dispute both as to wages and working conditions; be it therefore,

Resolved, by the United States Railroad Labor Board:

1. That, in so far this threatened strike is in opposition to and in violation of decision No. 147 of this board, the said labor organizations on each of said carriers be and are hereby cited to appear before this board for hearing as to the question whether or not they have violated, or are violating, decision No. 147, and,

2. That in so far as said threatened strike is the result of a dispute between said carriers and their organizations of employees concerning wages and rules and working conditions, this board hereby assumes jurisdiction of said dispute on the statutory ground that it "is likely substantially to interrupt commerce," and said carriers and said organizations of employees are hereby cited to appear before this board at Chicago, Ill., for the hearing of said dispute.

Be it further resolved that both parties to said dispute are hereby directed to maintain the status quo on the properties of the said carriers until said hearing and decision.

**Brotherhood Leaders Meet**

Interest shifted from the Labor Board to a meeting of the Brotherhood chiefs and their respective chairmen on October 27. The situation on October 27 was substantially as follows: the inquiry conducted by the Labor Board on October 26, developed that with the exception of the trainmen, a strike has been voted for and ordered as a protest against the July wage reduction, against the announcement of the carriers that further wage decreases are to be sought and

against the proposed efforts of the railroads to bring about the abolition of punitive overtime. The trainmen's strike is based wholly on the July wage reduction.

A statement of the Board made on October 25, stated definitely that no further reductions for any group of any employees would be considered by the Board until rules and working conditions for that group were disposed of. As to overtime pay, the Board pointed out that in cases of the shop crafts rules already promulgated, overtime provisions were retained to a large extent. Furthermore, Mr. Cuyler had informed the Board that none of the carriers had any intention of making further changes in wages or working conditions without submitting controversies to the Board. These facts are pointed out as constituting what might be taken as a "satisfactory settlement" by the leaders of the labor organizations.

**International & Great Northern  
Trainmen Strike**

TRAINMEN on the International & Great Northern, members of the Brotherhood of Railway Trainmen, went on strike on October 22 as the widely heralded "opening gun" of the threatened national walkout. The strike was put into effect despite instructions from the Labor Board ordering the men to remain at their posts until after the meeting between the union leaders and railroad chiefs in Chicago on October 26. The walkout of the men was quiet and without any demonstration. Union men who were on trains when the strike became effective had received instructions to finish their runs before walking out.

Referring to the strike W. G. Lee, president of the Brotherhood of Railroad Trainmen, said:

"The men and committee of the brotherhood on that railroad have voted to withdraw from the service, and authority, as vested in our constitution has been given them. The matter is entirely out of my hands."



From the Chicago News

Preparing for the Big Railroad Strike Melodrama

With reference to the progress of the strike on the International & Great Northern, Thornwell Fay, executive officer for the receiver has advised the *Railway Age* in response to a telegram as follows:

Strike trainmen took place noon Saturday 22. Every passenger train on road has been operating on schedule since strike. Did not attempt to operate freights until Monday when we operated freights on every division and increased number on Tuesday and further increase today (Wednesday). Also doing considerable switching. Every point conditions improving daily. Trainmen demanded that we restore wages in effect June 30, 1920, hence strike is against Labor Board, which should have publicly denounced this strike as being against its orders and against the law, but am not advised that they took any action whatever about this particular strike.

#### Mr. Lee Asked About I. & G. N. Walkout

Action by the Labor Board was taken at the Chicago meeting on Thursday, when Mr. Lee, president of the Brotherhood of Railway Trainmen was asked about the strike on this road in connection with his other testimony. Mr. Lee read telegrams explaining that the Texas men voted to quit work in advance and by so doing forfeited their right to general strike benefits. Mr. Lee was asked by Mr. Hooper: "What action was taken to hold the men in service in accordance with the Board's order to preserve the status quo?" "None whatever," was Mr. Lee's reply. Mr. Hooper continued, "You understood there was to be no strike on any road until after this hearing?" In reply to this question, Mr. Lee said, "I understood that was the intention of this Board, and of course, we had our own ideas as to just how far this Board's intention was binding on us."

## Pennsylvania Again Before Labor Board

**I**N RESPONSE to a call issued by the Railroad Labor Board the Pennsylvania Railroad appeared before the Board on October 20 and again outlined its views of the Board's jurisdiction and explained its action in carrying on its own negotiations with its employees regardless of the Board's instructions as to the procedure to be followed. Representatives of the carrier told the Board in part that:

1. The carrier has informed the Board in its several pleadings filed in this case that it could not accept as a lawful decision the declaration of the Board that the election under which its employee representatives were chosen was illegal and that the rules and working conditions agreed upon by such employee representatives and the management were void and of no effect. This position was taken and is sustained by the carrier because it was and is of the opinion that the Board had no jurisdiction over the matter which was the subject of the decision.

The Board has said that "the question involved is merely one of procedure," and the carrier is advised that questions of procedure and the method and manner of selecting employee representatives are matters within the control of its management and its employees and wholly without the jurisdiction of the Board.

2. Disputes which are cognizable by the Board are, in the opinion of the carrier, those which threaten "an interruption to the operation of any carrier" and which involves or grow out of real grievances in connection with wages or working rules and conditions.

Working rules and conditions have been made the subject of agreements by and between the carrier and its shop craft employees, and those rules and conditions are subject to the jurisdiction of the Board and its decision thereon under the provisions and in accordance with the procedure of the Transportation Act.

3. The carrier states that it has not "violated" any decision of the Labor Board in the sense that it has set at naught and refused to comply with a lawful pronouncement of the Board; neither has it violated any provision of the Transportation Act, nor "defied" the Labor Board or the Congress which created it. To the contrary, the carrier has conceded the jurisdiction of the Labor Board to hear and decide such disputes as fall within the purview of the Transportation Act, and it is a willing party to several submissions now pending before the Board in the matter of wages and working rules and conditions.

4. The carrier further states that it is its opinion the Board, in

its said Decision No. 218, has without warrant of law exercised the functions of an administrative or regulatory body, and as such has assumed to invade the domain of management and to assert jurisdiction over matters solely referable to the functions of railway management.

5. The carrier represents to the Board that in denying its jurisdiction over the subject matter of Decision No. 218 it does so with all due courtesy and with no lack of respect for the Board's decisions on matters within its mediatory jurisdiction of real disputes affecting the wages and the working conditions of its employees.

6. The carrier is convinced that the power sought to be exercised by the Board in this proceeding has not been conferred upon it by Congress, and consequently the order or decision which it has made is entirely beyond the scope and authority of the Board.

The carrier strongly deprecates any controversy with the Board with respect to the extent of the powers or jurisdiction conferred upon it by the Transportation Act, and, if compliance with the decision had involved no serious consequences, the carrier in order to avoid any controversy on the subject would have submitted to the decision notwithstanding its belief that the Board had assumed a jurisdiction not conferred upon it by Congress. But the carrier, in the consideration of the question as to whether the directions of the decision should be observed, was obliged to determine whether the system of employee representation which it had inaugurated was to be impaired and its usefulness and value largely destroyed, or whether in order to avoid non-compliance with the decision it should, in considering and determining what rules governing working conditions should be established, consult with an organization which, the carrier believes, advocates (a) the closed shop, (b) the sympathetic strike and (c) limitation of output, and which had been largely instrumental in framing rules governing the operation of the shops during the period of Federal control. The carrier asserts that these rules had reduced the efficiency of shop labor on its lines to the extent of at least 35 per cent.

Following the presentation of this statement B. W. Hooper, public member of the Board, started the cross examination of the legal representatives of the Pennsylvania who were present. However, the latter rested their replies largely upon the statement which they had just presented and the cross examination did not bring out any points in this controversy other than those which have been apparent for some time.



From the Indianapolis News

Somebody Will Give Us a Lift

# Railroads Prepare Against Strike Possibility

Loyalty Poll, Volunteers and Schools, Features; Loss of Seniority, Pensions, etc., Threatened

**A**LTHOUGH the general impression seemed to prevail that the general conference called by the Railroad Labor Board on Thursday as well as other factors in the situation would be likely to result in the withdrawal of the strike order of the train service brotherhoods, the railroads in all parts of the country have spent the last two weeks in bending every effort towards meeting the strike if it should occur.

The railroads around New York have co-ordinated their work through the general managers' committee, of which E. M. Rine, vice-president and general manager of the Delaware, Lackawanna & Western is chairman. Each of these roads has asked its employees to consider carefully any decision to leave the service. The employees have been warned that if they leave the service, they will lose not only their jobs but their seniority rights and pension privileges. Ralph Peters, president of the Long Island, in his letter to employees of that road, further asks the question, "Can you

schools have been established at various points by the different roads.

## Appeal to Employees' Loyalty

A letter typical of those which have been addressed to the train service employees is that signed by William H. Truesdale, president of the Delaware, Lackawanna & Western. Mr. Truesdale's letter was dated October 20 and read as follows:

To all employees in engine, train and yard service:

Although the Delaware, Lackawanna & Western has not received notice from its employees in engine, train and yard service of such intention, the newspapers contain apparently authentic information to the effect that a strike of such employees has been ordered to take place on November 1, 1921.

It is stated the strike has been ordered as a protest against a reduction in wages authorized by the United States Railroad Labor Board in Decision No. 147, effective July 1, 1921.

Therefore, the proposed strike is directed, not against this company, but against the United States Railroad Labor Board, created by an Act of the Congress of the United States of America, and is in defiance of an overwhelming public sentiment.

Misleading information is being disseminated as to the intention of the railroads to arbitrarily further reduce wages. Under the law this can only be accomplished through agreement with employees or by order of the United States Railroad Labor Board.

Facing, as you do, at this time a very important crisis in your lives, and one that will in its outcome cause you and your families serious and permanent loss, the management of the company feels that it is justified, for many reasons, in making this personal appeal to you to give careful thought and consideration to the question of obeying the order you have received to leave the service of the company on November 1.

Many of you have been in the company's employ for years, during which you have worked your way up to the positions of priority you now hold and which are of much value to you. You should not, in justice to yourselves, voluntarily sacrifice such rights without being sure of getting full value in return.

You, each and all, we are sure, are fair enough to recognize that this company, since the United States Railroad Labor Board was established has complied fully with every order issued by that Board governing wages and working conditions of railroad employees.

We earnestly urge each one of you, before taking a step which you cannot retrace and one which may involve you and your families in loss, and possible suffering for many years to come, most carefully to weigh and consider the wisdom and justification of obeying the order for cessation of work on the date above mentioned.

## Company Will Take Over Insurance

Will you not answer to your own satisfaction the following questions:

Am I justified in giving up my position and seniority rights for which I have worked all the years I have been connected with the company?

Will I obtain anything that will compensate me for the pension benefits which I will lose by giving up my position?

Am I sure of getting, in return for the sacrifice of lifelong friends, associates and surroundings for myself and family, anything that will justify the risks I am taking by now giving up my position?

The company realizes that in remaining loyal to it at this critical time many of you may sacrifice certain insurance protection you now have for your families through the organizations with which you are connected. It is not desired that you shall suffer loss in this way, and in event therefore, of your being forced to give up these insurance benefits as result of your loyalty continuing at work, or if, for any reason, you should desire to withdraw from the organizations which now provide this insurance for you, the company will take over same and guarantee, on equal terms as to premiums, etc., with those you now pay, to carry it for you. In doing this it will arrange with one or more actuaries of leading life insurance companies to work out in

**The New York, New Haven & Hartford Railroad Company**  
**Central New England Railway Company**

**BALLOT**

VOTE YES OR NO

REMAINING AT WORK IF STRIKE NOW ORDERED IS ACTUALLY CALLED

YES

MARK WITH (X)

NO

SIGNED \_\_\_\_\_

OCCUPATION \_\_\_\_\_

Loyalty Poll Ballot

secure another position where your experience will count and where steady work can be secured at equally remunerative wages?"

A feature of the steps taken by the roads represented in the general managers' committee has been the taking of a so-called loyalty poll, in which each employee has been asked pointedly whether he will stay on the job or walk out. Announcement was made after a meeting of the committee on Tuesday that a majority of the men questioned by supervisory officers had signified their intention of remaining loyal in case of a strike.

The roads have announced their intention of taking care of the employees who stay with them during the emergency. Various of them, including the Delaware, Lackawanna & Western, the New Haven, the Long Island, etc., have advised their intention of taking care of the insurance of any employees who may lose their insurance in the brotherhood organizations by remaining loyal to the road.

When the strike call was first announced, several of the roads inserted advertisements in the daily papers asking for men to take the place of those who may walk out in response to the strike order. The response to such advertisements was in a number of cases so great that the advertising was discontinued within a few days. Volunteers have also come forward. The colleges in particular have taken the lead in this respect. To train the new employees and volunteers,

tial plan of insurance that will fully and fairly protect you and your families.

We earnestly hope you may decide upon your course cautiously and wisely.

The New Haven, which addressed a similar letter to its employees, enclosed a reprint of editorials, from a number of leading newspapers, intended to show how public opinion was expressing itself in connection with the strike call.

### Training Schools Established

Among the roads that have announced the establishment of training schools for volunteers is the Long Island. "The Long Island Railroad has no quarrel with its men," says a circular addressed by that road "To the people of Long Island and the patrons of the Long Island." The circular says in part:

The management and the men have complied with all the orders and regulations of the Labor Board, a body duly authorized to handle all such matters under the Transportation Act of 1920. If the threatened strike takes place and a majority of the men on the Long Island Railroad obey the order of their leaders it will seriously affect train service and cause great inconvenience to the public. To prepare against this eventuality the management asks the co-operation of its patrons, and calls for volunteers who, with such men as remain in the service, may operate the trains necessary to meet the daily requirements.

We will need men who can be trained to perform duty as engineers, firemen, motormen, conductors, trainmen, yardmen, switchmen, etc.

Schools of instruction will be opened at once at Jamaica and Morris Park Shops, where an organization for training men for this service has been provided. All volunteers and applicants for employment to fill the places of such men who may leave the service are requested to present themselves to the assistant general superintendent at his office at Jamaica, room 210, where they will be classified and instructed between the hours of 8.00 a. m. an 10.00 p. m. daily until their services are required.

The intention is not to employ professional strikebreakers, and the railroad company guarantees that those who enter its employ will not be discriminated against as to the permanence of their employment.

### Volunteers

Volunteers to man trains are presenting themselves in many quarters. In the suburban zone around New York, many communities have formulated plans for manning the suburban trains. Mayor Charles H. Martens of East Orange, N. J., who played an important part in the outlaw strike of April, 1920, is perfecting an organization to assist the Lackawanna and Erie. Among other things, he has sent out a questionnaire to the persons who have volunteered asking each whether he can qualify as a locomotive engineer, fireman, trainman, clerk or motor truck driver.

Dean George E. Hodges of Williams College, Williamstown, Mass., has announced that his institution has decided to place the student body at the service of the Boston & Maine. Some 700 students have volunteered at Harvard and a school has been established near the college grounds to instruct men. The work is in the hands of an undergraduate committee, the college not having taken any official action. News concerning the volunteering of college men is also received in connection with Stevens Institute, Hoboken, N. J.; Lehigh University, South Bethlehem, Pa.; Trinity College, etc.

### State Officials Take Action

Several of the states have taken official action relative to the calling of the strike. Each of the governors of the New England States has established a general emergency committee to provide food and fuel for the people. These committees are co-operating with each other and each has made or is making a survey of the food and fuel situation throughout its state. In so far as possible, they are arranging for transportation by motor truck, water and air in case of a railroad tie-up.

Probably the most decisive step, however, has been made

in Kansas. Governor Henry J. Allen has advised the New York Times in response to a telegram that Kansas will act in the situation as follows:

The Industrial Court act of Kansas prohibits any men engaged in transportation from conspiring to deprive the public of this essential utility. It prohibits the railroad managers from closing down their transportation lines or from entering into any conspiracy to deprive the public of this utility. It prohibits the employees from entering into a conspiracy to deprive the public of transportation. The Kansas law provides that all controversies between the railroads and their employees relating to wages or working conditions shall be adjudicated in the Court of Industrial Relations. In the meantime the lines shall continue to function.

This law will be enforced in Kansas, just as it was during the outlaw switchmen's strike, when the few who violated it were arrested and prosecuted for the violation. The executive office is now receiving and listing the names of volunteers who are capable of working in railroad industries. The law gives the state the power to take over the railroads and to operate them in behalf of the public. In case of the failure of the railroads to operate their lines, the state will take over those which are necessary to the public welfare. It is possible that the strike will not be made applicable to Kansas. When the general strike was ordered something over a year ago by the International Brotherhood of Stationary Firemen and Oilers, the executive committee specifically exempted Kansas from the provisions of the strike on the ground that a railway strike in Kansas is a strike against the law of the state.

### Lee Endeavors to Explain Strike Cause

CAUSES for the strike of the train service men were explained by W. G. Lee, president of the Brotherhood of Railroad Trainmen, in a statement given to the Associated Press October 22. The statement was issued, Mr. Lee explained, because "the public is rather confused" as to its causes.

Three causes were ascribed by Mr. Lee:

- (1) The wage reduction of July 1.
- (2) Proposed further reductions.
- (3) Proposed elimination of rules, which would mean still further reductions.

Mr. Lee's statement as to the causes of the strike said in part:

The public is rather confused as to the causes for the railway strike. There is a belief on the part of some that the strike is for higher wages, and is not understood to be a demonstration against a wage reduction, to which have been added propositions further to reduce wages and eliminate rules which would mean still further reductions.

Railroad transportation employees, even when peak wages were paid, did not receive advanced wages in keeping with the increased living costs. The daily rate paid transportation men was fixed for all classes in the United States in 1913 and, regardless of the increased costs of living, there were no increased wages for these employees until January 1, 1918, and only then after a most searching investigation had been made by the Lane Commission to determine what should be the reasonableness of wages paid transportation employees. This commission reported that wages were inadequate and, contrary to public opinion, did not measure up with wages paid in other classes of service.

The rate of a freight brakeman between Chicago and New York was \$2.67 a day, which was referred to by the railways in their publicity campaigns as a princely wage, and the public naturally supposing that a business representing so much as the railway business would tell the truth, accepted the railway statement without question. It does not take long to determine how much could be earned in a month of thirty days at a rate of \$2.67 per day. Until January 1, 1918, \$80.10 was the princely wage some fifty-odd thousand railroad men received in what is known as the Eastern territory. Other wages were in proportion to the wages of the freight brakemen.

With the reduction in wages of July 1, 1921, the present wage of this employee is \$134.40 for thirty days in the month, and he is fortunate indeed if he is able to make every day in the month. The hazards of the service, exposure to the weather and very many other reasons all contribute their share towards making him an intermittent, as well as a piece worker. Transportation employees are not paid by the month, but by the day, or trip.

# Administration Strike Policy More Conciliatory

President Leaves Labor Situation in Hands of the Labor Board  
and Departs on Four-Day Trip

By Harold F. Lane

WASHINGTON, D. C.

THE suggestion of the Railroad Labor Board that proposed requests for further reductions in wages be deferred for several months came as somewhat of a surprise in view of the uncompromising attitude heretofore displayed by the administration and in view of the well-known desire of the President to meet the public demand for rate reductions.

The President and his advisers had failed to display any fear of a strike and had let it appear that they were relying mainly on the manifest fact that public opinion would not lend any support for a strike against the orders of the Labor Board, while proceeding rather calmly and deliberately to prepare for an emergency if it came. It had been assumed since the statement issued by the public group of the Labor Board in Washington on October 16, that the actual presentation to the board of the new requests for wage reductions might be temporarily delayed until after the Interstate Commerce Commission should have rendered its decision reducing grain rates and possibly in other cases, in order that an opportunity might be afforded to demonstrate that the proposed wage reductions are intended not for the benefit of the railroads but to make rate reductions possible and in order to allow a "cooling-off" period. It was also understood that in the ordinary course of procedure the Labor Board would hardly be able to reach a decision in a new wage reduction case without allowing some time to elapse, but it was not expected that the wage case would be postponed indefinitely or be expected to wait until next July for a decision, particularly as the Interstate Commerce Commission has discounted further reductions in expenses in order to find a ground for reducing the grain rates. It can hardly be doubted that the action of the Labor Board was taken with the knowledge of the President, since he has so plainly been trying to co-ordinate both the Labor Board and the commission with an administrative policy, but it has been suggested that the Labor Board may have stretched to unexpected lengths the period of time implied in the suggestion that the wage requests be deferred temporarily.

## Possibility of Postponing Issue

The idea of postponing the issue until next July seems to suggest that the opposition of the government to a compromise applied particularly to a compromise of the wage reduction already made which is the technical basis for the strike threat, but if the new wage case is to be long postponed the brotherhoods would have attained what is understood to have been all along their real purpose, that is, to head off further encroachments upon the advantages they had gained during the war period. A settlement upon that basis also would apparently limit for some time the fulfillment of the general desire for rate reductions to those which may still be made out of the 12 per cent wage reduction, although the decision in the grain rate case has apparently been a signal to many other shippers to demand rate reductions. The American Wholesale Coal Association has already got its complaint in and others are to follow.

The administration continues to act as if it were not in the least afraid of a railroad strike. The policy of President Harding was revealed to some extent in Chicago on October 21 when the Railroad Labor Board, following an informal conference with the labor leaders the day before, issued its formal order calling upon both the labor organi-

zations and the railroads to maintain the status quo pending an appearance before the board on Wednesday of this week. Another phase of the policy was manifested in the report of the Interstate Commerce Commission reducing Western grain rates. The order issued by the board on Friday indicated that the meeting was in line with the purpose as announced at the White House last week of "definitely ascertaining whether we have created a futile agency" in the Labor Board and of using the board as the legally constituted authority to inform the organizations that have threatened a strike in protest against its former wage reduction order that such a strike would place them squarely in violation of an order of the board, if not of the "toothless" law, and that under such circumstances those responsible for such a step could only be regarded as enemies of the society that has set up the board as an impartial tribunal to decide just such controversies. The suggestion that a new wage issue now be postponed appeared a plan to make it easy for the brotherhoods to acquiesce.

## President Directs Policy

The President's determination to deal with the situation, through the properly constituted authorities of the government instead of handling it directly himself is in accordance with the policy he has previously announced on several occasions not to "go over any one's heads." After he had declared in his message to Congress last April that rates and the cost of transportation must come down, an impression was created in many quarters that he was about to order the Interstate Commerce Commission and the Labor Board to take the necessary steps. It was stated at the White House, however, that the President clearly recognized that rate-making and wage-fixing were the functions of the two bodies and that he had neither the authority nor the intention to assume either of those functions. That did not mean, however, that he should not confer with members of the commission and of the board and let his desires be known, while receiving from them information and advice as to the practical and technical questions involved.

The President conferred shortly after his message to Congress with the chairmen of the Interstate Commerce Commission and of the Labor Board and later with railway executives and representatives of labor, the shippers, the security owners and other interests involved. He called on the Interstate Commerce commissioners personally and recently he has had several conferences with the chairman of the Interstate Commerce Commission as well as his recent meeting with the public group of the Labor Board and the commission. Undoubtedly some of the ideas the President started with have been modified to some extent by these conferences and possibly he was able to stiffen the attitude of both organizations by letting them know that action of a certain kind would be regarded as fulfilling policies of the administration and would, therefore, have its support.

At any rate, after the President had made it clear that the handling of the strike threat situation was the job of the Labor Board, which has heretofore had some doubt as to whether it had any powers except those represented by its influence on public opinion, it issued an order which indicated all the confidence of any public authority which states the mandate of Uncle Sam, and on the following day

the Interstate Commerce Commission, which was recently so doubtful of its authority to reduce rates under present conditions that it recommended instead of ordered a reduction in live stock rates, came out with a decision reducing western grain rates and also indicating its view of the necessity of effecting further reductions in railroad operating costs. Both actions were those of the respective bodies themselves and within the province of each, yet they had been made a part of a specific policy of the Executive after consultation with him.

### Grain Decision Expedited

The commission's rate decision, although it had been made in a formal proceeding entirely independent of the recent developments in the labor situation, was undoubtedly expedited and made public at the time it was for the purpose of fitting in with the policy formulated for dealing with the present situation. It serves to call the attention of the public and of the railroad employees themselves to the fact that wage reductions have been made and are proposed not merely for the benefit of the railroad companies but for the purpose of making rate reductions possible. When the grain rate decision is considered in connection with the reductions that have already been made by the railroads voluntarily in recent months and the reduction in live stock rates they made on the recommendation of the commission, it will be seen that a very large proportion of the wage reduction ordered by the Board effective July 1 has already been passed on to the public and other decisions of the commission in formal cases are in prospect.

An explanatory statement from either the White House or the Interstate Commerce Commission to the public to this effect would easily demonstrate, if Commissioner Potter's opinion in the grain rate decision has not already done so, that any extensive further reductions in rates can hardly be expected without a further reduction in wages.

The President has thus far shown no indication of following the suggestion that he summon the brotherhood chiefs or the railroad executives to Washington for the purpose of mediation. He is leaving the strike matter in the hands of the Labor Board until it is clearly demonstrated that the law which governs its actions is not strong enough to accomplish the purpose. If that should turn out to be the case it would be incumbent upon him to act, by calling upon Congress for more drastic legislation or in other ways.

The fact that the date set for the appearance of the brotherhood leaders and the railroad representatives before the Labor Board is so close to that set for the strike gave an impression of confidence on the part of the administration that a plain statement of its position through the medium of the board would be sufficient to persuade the brotherhood leaders, as the leaders of most of the other railroad unions have already been persuaded, that the times are not propitious for a strike in defiance of the government.

### War-Time Power to Take Over

#### Roads Not Relied Upon

Meanwhile the President has made another move in letting it be known authoritatively that no consideration is being given to the various proposals, most frequently suggested from the side of the union leaders, that the war time powers of the federal government be invoked to handle the situation. The fact that the United States is still technically at war and will retain that status legally until formal exchange of the ratifications of the peace treaties is not to be relied upon and the announcement of this fact is likely to have considerable weight in the councils of the labor leaders if the theory is correct, as there are many grounds for believing that one of their chief motives was to induce the government to take over the railroads.

Under the law the President is authorized in time of war

to take over the railroads, as President Wilson did in 1917. As soon as the peace treaties are ratified he would not have such power and there are other powers in the national defense act that would likewise expire. The announcement that he is not considering taking advantage of a technical possibility, therefore, means that he sees no necessity for and has no intention of trying to avert the threatened strike by taking over the roads. He has plenty of authority for the use of troops to protect the mails and can declare martial law if necessary to deal with violence.

If one of the purposes of organized labor was to try to throw the railroad payroll again onto the backs of the taxpayers rather than the rate-payers in the hope of repeating the era of frenzied wage increasing that marked the McAdoo-Hines administration of the roads, they have now been given ample warning that there is "nothing doing" in that direction. It is somewhat difficult to imagine why they should desire a repetition of that performance, for which the present administration is still struggling to pay the bills, in view of the fact that railroad wages are now higher than they were when the government relinquished the roads.

President Wilson in 1917 commandeered the roads on the theory that it was necessary to the prosecution of the war, although it was generally recognized that one of the reasons was the fear of the consequences of a labor controversy then developing. He also not only retained the war time control of the roads for nearly a year and four months after the armistice but the technical state of war was taken advantage of after that date to commandeer rails and coal for which the owners asked higher prices than the government desired to pay.

President Harding, however, has gone so far as to indicate that as soon as the treaty ratifications have been made he will issue a formal proclamation of peace, in order to make it certain that war time laws are not to be used three years after the war was ended.

### Preparations for Emergency

Among the preparations being made are those of the post office department for handling the mails, and those of the war department for preserving peace if necessary and also for manning trains with such of the men in service as have had railroad training. Secretary Hoover has also announced that the plans of his department for the mobilization of food supplies, coal and other necessities in case of a walk-out on the railroads had been completed.

The governors of all states have been communicated with by the department, which will act as a clearing house of information and advice. Food and fuel are being concentrated at strategic points to make possible quick distribution. Preparations have been made for the massing, if necessary, of fleets of motor trucks and automobiles to move commodities. One estimate puts the number of machines quickly available at 1,000,000. Transportation service by water carriers and airplanes also will be expanded to supplement the motor vehicles and such trains as can be operated.

Some industries, it is said, have been preparing for weeks to face a strike emergency. Under the plans devised the governors would direct the emergency work, with the Department of Commerce helping to co-ordinate effort. In disputes concerning the distribution of foodstuffs or fuel the department would be prepared to act as arbiter. The department is well equipped to direct and co-ordinate such work because of the conferences with representatives of various industries which Secretary Hoover has held since taking office. Plans have included a survey of motor transportation facilities to make possible the rapid requisition of motor trucks and automobiles.

The Department of Justice is also making preparations for any activities that may fall to its share if the brotherhoods do actually go so far as to make it necessary. Attorney

General Daugherty, after conference with the President, summoned to Washington for a conference on Monday the United States district attorneys from five cities, New York, Chicago, Cleveland, Buffalo and Indianapolis, to arrange for "concerted action and harmony of effort." Following their conference instructions were also sent to other district attorneys. Mr. Daugherty gave a statement to the press indicating that if necessary the department is prepared to act with vigor. He said:

#### District Attorneys Confer

I asked the district attorneys to come here in order to have a conference and understanding in any event and any emergency.

I still doubt that there will be any strike, but it is the duty of the Department of Justice to be prepared for any emergency, and it is necessary that there be uniformity of proceedings and policy determined in any event. So I called these gentlemen here, and have discussed with them fully the various plans of the department, if there should be a strike. They will be here tomorrow and we will have another conference.

We did not discuss the merits or the matters in dispute between the railroads and the employees who have threatened to strike. With the merits of that controversy the Department of Justice takes the position that it has nothing to do, and the merits probably will not be entered into at any time.

We probably would concede that the men have the right to strike—that means quitting their employment. They may strike in groups. I don't say they can strike in groups scattered broadcast over the country without violating a conspiracy law when it comes to antagonizing the government of the United States.

I would say that, peacefully doing so in a lawful manner men may quit their employment and stop. But I do say that when it comes to the government's interest, they cannot strike at that.

When it comes to these facilities the government has the power, right and duty to see that the owners of the railroads give the American people the service they are entitled to. Many, many more American people are interested in these facilities, in seeing that they serve the public, than in the controversy between the railroad operators and employees, regardless of who is right or who is wrong.

The conference has been held for the purpose of bringing concerted action and harmony of effort, to the end that the railroads may continue to give this service with the least interruption possible, and as soon as possible without interruption, so that the public may be served. There is involved the accommodation of people who travel, and the providing of the people with coal as winter approaches, and food, which cannot be distributed without these facilities.

The government has the power and ample authority, and it will be as just and reasonable as it can be, but these arteries of commerce must continue to serve the people, property must be preserved, life protected, law enforced and order maintained. The government is big enough and strong enough to see that this is accomplished.

The district attorneys at the conference were selected from railroad centres, Mr. Daugherty said, and because the headquarters of many of the railroad labor unions were located in their districts. It was inferred that if legal action were taken it would probably be started in one or all of these districts.

President Harding himself apparently feels so little apprehension or at least has his plans so well in hand that he absented himself from Washington for nearly four days this week, from Tuesday to Friday, on a trip to the South, and there was no cabinet meeting on Tuesday.

#### Department of Justice Busy

The Department of Justice, through its representatives located throughout the United States, has been gathering from the most authoritative sources information as to the probable effect upon the various sections of the country of the threatened railroad strike.

"This information is being gathered primarily to enable the public agencies which will be called upon to co-ordinate and govern the transportation and distribution of necessities in the event of a strike to function in the light of accurate knowledge of conditions. Copies of all reports are now being furnished to Secretary Hoover, who has undertaken work of this character. Enough information has already been obtained

to make it clear that even if the strike should take place as threatened, there is no danger that any part of the country will suffer any serious hardship from lack of food or fuel for a period of at least two weeks after a general tie-up.

"All parts of the country report an abundance of food supplies with the exception of fresh meats, for which most of the large communities depend upon frequent shipments from the packers in the Middle West. Grain supplies, canned goods and other provisions are plentiful, and there appears to be no danger that any one will starve.

"However, a note of warning is sounded by many public officials and others interviewed by department operatives against the hoarding of food-stuffs and fuel. Their optimistic statements are based upon the assumption that the American people will be judicious in their purchases and will not buy in excess of their daily needs. A sure way to cause a shortage, with its attendant ills, would be for the American households to begin an orgy of buying and hoarding.

#### Public Organized

"One item to which the department is giving special attention is the milk supply. Small communities and the large cities of the West expect but little inconvenience in this regard, since their milk supplies are largely brought in by wagon or motor truck. In the large Eastern cities, however, this presents a serious problem, but active steps are being taken by municipal and civic organizations to meet it.

"The fuel supply appears to be normal for this time of year except to the Northwest. There the scarcity appears to be due mainly to faulty distribution, since ample supplies are reported to be in storage at lake ports. Lighting plants and other public utilities generally report that their fuel supplies will last from two to six weeks without replenishing.

"An especially reassuring feature disclosed by the investigation is the extent to which the public is organized for its protection. Under the leadership of the Mayor or other public official, practically every city has formed an organization to cope with the situation which would result from a general railroad strike. Inventories are being made of the available supplies of necessities, and steps are being taken to insure an efficient distribution. Also a count is being made of all available wagons, motor trucks and other transportation facilities, and plans are being made to use them to the best advantage.

"In the course of its investigation the department has sought to obtain from railroad officials in various parts of the country expressions of opinions as to the extent to which their respective lines would be able to operate in the event that a strike is called, as now threatened. The estimates thus gathered vary widely, and, of course, cannot be given out in detail. The officials interviewed are unanimous in saying that there will be some men, particularly those having seniority and pension rights, who will remain loyal, and that they will be able to call in pensioners and others, thus forming a nucleus of trained men. With these and any experienced men who may volunteer the officials predict that they will be able to maintain at least a partial service, which will improve in efficiency and volume as the strike continues."

The President, Mr. Daugherty said, would no doubt "say what he had to say when the time came," and the people throughout the country would know what the government's policy comprised. Those responsible for the situation would have to take the consequences, the attorney general added.

While maintaining his disbelief that a general strike would materialize, Mr. Daugherty declared the Justice Department was prepared to act "judiciously within the law" to prevent a tie-up of the country's transportation facilities. He did not discuss specifically the department plans, explaining that the government might use one method in one section, adopt another course of action in another, and use all of its legal weapons in a third locality.

## State Versus Interstate Rate Regulation

WASHINGTON, D. C.

WHILE THE HEARINGS before the Senate committee on interstate commerce in the general railroad inquiry have been temporarily suspended (it is said for the purpose of heading off a general debate on the strike situation), the committee on Monday, October 24, began hearings on the bill introduced by Senator Capper of Kansas and supported by the agricultural "bloc," or "block" as it is now sometimes called, to restore the power of the states to reduce railroad rates without too much regard for the effect on interstate commerce. Incidentally the bill proposes to repeal Section 15a of the act to regulate commerce as amended by the transportation act, because the fact that the unwillingness of some states to allow rates which would contribute sufficiently to the provision of a 6 per cent return for the roads was taken by the federal commission as one ground for ordering intrastate rates advanced.

The agricultural bloc also held a caucus at the Capitol last week and adopted a program on the railroad situation which calls for the repeal of Section 15a on the ground that it constitutes a guaranty to the carriers, this reasoning being based apparently on the fact that although the rates established by the commission under its authority actually produced a return of less than 3 per cent for a year, the rates which the farmers and other shippers have been paying during the year were intended to produce a 6 per cent return. They are, therefore, just as objectionable to many shippers as if they were high enough to make 6 per cent. The caucus also declared for a reduction in the rates on agricultural products. Whether the action of the commission in reducing grain rates in spite of the law will lead to any change in the program has not yet been stated. Senator Cummins is not yet recognized as a member of the agricultural bloc, but he is understood to have swung around to their way of thinking to some extent as to state rates.

### Supreme Court Orders Rehearing

in Wisconsin Rate Case

The question of the constitutionality of the provisions of the transportation act relating to jurisdiction over state discriminations against interstate commerce, or the legality of the Interstate Commerce Commission's interpretation of the law in its various orders increasing state rates is destined to remain unsettled by the highest court for several months yet. Presumably because ex-President Taft has succeeded the late Chief Justice White, the court on October 24 ordered a reargument on December 5 of the Wisconsin rate case, the first of the cases growing out of the commission's orders under the new law to reach the court. Many people had looked for a decision this fall. The court also set for argument on January 3 the petition of the state of North Dakota to file an original bill attacking the commission's order advancing the state rates in that state.

### Contends I. C. C. Has Misinterpreted Act

John E. Benton, solicitor of the National Association of Railway and Utilities Commissioners, was the first witness before the Senate committee on the Capper bill. He did not exactly support the provisions of that bill but presented resolutions adopted at the recent Atlanta convention of the association. Setting forth its objections to the "centralization of authority in Washington" Mr. Benton argued that the commission has misinterpreted the law and that "chaos" in regulation had resulted.

### Roads Wrecked by Government Control

Solicitor General Beck, in presenting the argument in the Supreme Court in support of the Interstate Commerce Commission's order in the New York intrastate passenger rate

case, in which the state rates were ordered increased by the amount of the interstate increase, declared that the government, having "wrecked the railroads to win the war" now is attempting to rehabilitate the carriers under the provisions of the Transportation Act. He said that the wreck of the roads by government control was exceeded in its disastrous effects only by the government's merchant marine venture, where, he stated, the result has been a great deal worse. The object of the government would be destroyed, he contended, if the various states should be allowed to refuse to advance rates sufficient to allow the railroads a fair return.

## Railroad Securities Bill Reported by Senate Committee

WASHINGTON, D. C.

THE SENATE COMMITTEE on Interstate Commerce at a meeting on October 22 ordered a favorable report on the bill to authorize the War Finance Corporation to purchase railroad securities from the Railroad Administration for the purpose of providing funds with which to settle the accounts of the railroads against the government. Instead of reporting the Townsend bill, which as introduced in the Senate differed somewhat from the Winslow bill as passed by the House, the committee reported the bill as passed by the House with a number of amendments, the principal of which provides that in making settlements with the carriers under the Transportation Act no payments or allowances shall be made to any carrier on account of so-called inefficiency of labor during the period of federal control and no final settlements between the United States and any carrier shall be made which does not forever bar such carrier from setting up any further claim, right or demand of any kind or character against the United States growing out of or connected with the possession, use or operation of such carrier's property by the United States during federal control, except certain claims specified.

The language of the House bill as passed has been interpreted as barring any railroad against seeking a settlement in court after failing to settle with the Railroad Administration. Another amendment authorizes the President to sell any bonds, notes or other securities acquired by him under the provisions of the transportation and federal control acts without the use of the War Finance Corporation as an agency and the proceeds shall be a fund to be used by the President in settling the accounts, any balances to be paid into the Treasury of the United States as miscellaneous receipts. Any such sales must be at a price which will save the United States from loss in the transaction. To the provision authorizing the War Finance Corporation to purchase railroad securities and to carry them pending final disposition is added a provision that no purchase shall be made by the corporation under this section which will interfere with the corporation in granting the fullest aid for financing the handling and exporting of agricultural products. It is the intention that this section shall be so construed and administered as to give the preference to such financing and exporting of agricultural products.

AT A TIME when every effort should be made to build up our foreign trade, the United States Senate has struck one of its hardest blows to injure it. This was done last week when, by a vote of 36 to 30, in which 11 Republicans joined 25 Democrats, the section of the tax bill defining traders and foreign trade corporations was stricken out. . . . This country's policy evidently is to tax its foreign trade out of existence. To escape the heavy taxation now facing it under the revenue bill, it will follow the line of least resistance and incorporate under foreign laws.—*N. Y. Commercial.*



ness centers imposes a perpetual tax upon the handling of commodities which may hamper the business and industrial development of the city, and the ultimate growth and prosperity of a community is intimately associated with the development of its retail, jobbing and manufacturing industries."

On the other hand, the report points definitely to the desirability of a city plan which can be set up as a guide for future development of the city, its industries and the railroads. With the aid of such a plan, the report states that the city, "will have avoided many disturbing conditions when it shall have doubled its present population."

#### Tunnel and Detour Plans Impractical

Two plans are outlined in the report as alternative to the one recommended. One of these proposes a tunnel under the Neches river as a necessary feature of the depression of the tracks of the Southern Pacific below the grades of the street, but this is considered out of the question because of the prohibitive cost, \$10,000,000, and the hazards of flooding the tunnel and other obstacles. Another plan involves the detouring of the tracks of the Southern Pacific and the Kansas City Southern so as to avoid the passage of trains across the main streets in the heart of the city. This plan, however, would add five miles to the distance of trains on the Southern Pacific to enter the present passenger station and a distance of four miles for the movement of freight trains through the city. However, the plan was rejected primarily as a violation of the general principles outlined in the foregoing.

#### Proposed Track Elevation of the Southern Pacific

In proposing track elevation as the most feasible plan for grade separation of the Southern Pacific tracks, the report points to the difficulty arising from the grade crossings now obtaining. An abstract of the plan follows: "If neither the tunnel plan nor the detour plan is adopted there remains nothing except to separate grades at principal thoroughfares by means of either viaducts or underhead crossings. In studying this plan for the Southern Pacific one method is to secure the necessary headroom, in part by elevating the tracks and in part by depression of street grades. According to this plan, the Southern Pacific will start on an upgrade about 3,000 ft. east of the Neches river bridge, continuing to an apex at Pearl street, thence on a downgrade to a point 3,000 ft. west of Pearl street. This grade has been taken at 0.411 per cent, being the same grade now in use on the approach to the Neches river bridge. This results in raising the tracks about 7 ft. above their present elevation at the bridge and about 11 ft. above their present elevation at Pearl street: Orleans, Main, Pearl, Travis and Cypress streets will be depressed on an average of about 5 ft. below the general street level, or approximately 6 ft. below present track levels, thus providing a clear headroom of 13.5 ft. at Orleans and Pearl streets, 12 ft. at Main street, 11 ft. at Travis street and 10 ft. at Cypress street. These tracks are to be carried on a reinforced concrete viaduct from the river to a point near the Southern Pacific depot where the construction will be changed to retaining wall and fill.

#### Provision for Switch Tracks

"Provision is made for maintaining switch tracks at street grade reaching all the industries that are now served by the Southern Pacific. In this way an uninterrupted roadway is secured at Orleans, Pearl, Main and Travis streets except for the very infrequent switching to industries and no doubt this switching can be done at hours that will but slightly interfere with street traffic.

"In connection with this scheme, it is proposed to construct a viaduct over the Southern Pacific yards starting at Magnolia and Liberty streets and landing at Crockett and Neches streets. This viaduct probably would not be needed

at this time but it is shown as illustrating a means for taking care of future traffic requirements. The plans also include a viaduct over the tracks at Mariposa from South street to Cedar street.

"A second method of elevating the tracks is to put them high enough to obviate the necessity for depressing streets below the general level. In this plan the only interference with present street grades will be to remove the 2 ft. or 3 ft. elevation that is found at present at the railway crossings. This plan involves the extension of the raised portion of the main railway track about 800 ft. further in either direction than that mentioned in the first plan. Service tracks and other connections can be cared for with this additional elevation in practically the same manner as described above. This additional elevation will cost about \$100,000 more than where the streets are depressed to secure a part of the height. This additional cost will be reduced, however, at least in part, by the decrease of possible damages to property resulting from depressing the streets. By either plan of elevation, conditions at the passenger station remain unchanged except that the track platforms will be elevated and broad stairways or ramps will lead from the waiting rooms to the platforms. The new elevation of tracks at the passenger station above that at present will be about 7.5 ft. if the tracks are partially elevated, or about 11 ft. if they are sufficiently elevated to permit street grades to remain as they are. This plan for the Southern Pacific involves fewer changes in present conditions and, therefore, interferes less with the operations of the railway than any other plan that can be devised. It is also possible, by the construction of viaducts, further to increase traffic facilities over the Southern Pacific properties, as they may become necessary in the future. All switching service now rendered by the Southern Pacific will remain undisturbed and the use of valuable railroad properties may be continued."

#### Track Elevation Not Practicable for K. C. S.

In dealing with the Kansas City Southern, because of the shorter distance from the river to the passenger station and to connection with yards, it is not possible to elevate the tracks as has been suggested for the Southern Pacific and get down to ground without interfering with yard layouts. Therefore, the plan suggested for the Kansas City Southern is to build viaducts over the tracks on those streets where conditions demand an improvement in traffic facilities. The drawing shows a viaduct at Pearl street and one at Park street. These structures start at Wall street on the north and land at Franklin street on the south, and it is suggested that they be made the full width of the street so that abutting property can be developed in such way as to treat the viaduct surface the same as an ordinary street surface. This is frequently done and the result has been very satisfactory, in fact, after the viaduct reaches a certain height from the ground property abutting on either side has the advantage of two street levels.

The cost of elevating the Southern Pacific tracks without depressing the streets is estimated at \$1,360,000 while the plan involving partial depression costs about \$100,000 less. Both of these estimates assume that no new superstructure will be necessary for the Neches river bridge. The cost of two viaducts over the tracks of the Kansas City Southern, is estimated at \$700,000.

A LONE MASKED BANDIT held up the express messenger on a train of the Canadian Pacific between Swift Current, Sask., and Moose Jaw recently and robbed the safe of about \$5,000 in currency. The robber entered the car, tied and gagged the messenger, went through the open safe and then dropped off the train unobserved. The messenger was found and released when the train reached Moose Jaw.

# Commission Reduces Western Grain Rates

Looks to Future as to Effect on Railroad Revenues—Present Rates Declared Obstacle to Returning Prosperity

W. B. H. H. D.

**R**EDUCTIONS in the rates on wheat and hay between points in the Western and mountain-Pacific groups of roads to the extent of one-half of the increases authorized last year in Ex Parte 74 and in the rates on coarse grains to 10 per cent less than the wheat rates, were directed by the Interstate Commerce Commission in a report made public on October 22, in the case initiated by petitions filed by the western state commissioners and various shippers' organizations. The increases last year were 35 per cent in the western group, 25 per cent in the mountain-Pacific group and 33½ per cent interterritorial. Rates on grain products are to be reduced to the extent that they exceed rates that would be made by continuing the relationships that now exist, except that differentials subjected to the percentage increases are to be reduced proportionately with the rates.

The commission did not issue a formal order, but it did not confine itself to recommendations as it did in the western livestock case. It declared the present rates unjust and unreasonable for the future to the extent shown and stated that an order will be entered in accordance with the findings if that becomes necessary and that it will expect the reductions to be made as soon as practicable and not later than November 20. It is also stated that the reductions required may make desirable some reductions in rates east of the western district, particularly interstate in Illinois, and it is expected that certain readjustments to equalize the through rates to competitive markets in accordance with the usual practice will be made.

The report, by Commissioner Aitchison, attempts to conform with the requirements of Section 15-a, the new rate-making rule of the Transportation Act, by stating that the commission is "not restricted by past or present statistics of operation and earnings" and that its conclusions "look to the future." While it is shown that the carriers have not yet earned the statutory rate of return under the new rates, the opinion says that neither the diminished cost of labor nor the diminished prices of materials and supplies have yet been reflected as completely in operating expenditures as must occur and that lower future costs are reasonably to be expected. Also traffic seems to be increasing. There is no specific prediction that the rate reductions will so stimulate traffic as to increase revenues but the report is based on the idea that rate reductions will help toward the return of normal traffic and that as to the commodities involved they are vitally necessary to the agricultural industry.

## Western Farmers Suffering

Although the decision is based on a proceeding of investigation ordered by the commission early in the summer and submitted to the commission on hearings and arguments on September 3, it was expedited and made public at a time to make it part of the administration's policy in meeting the strike threat situation. It was discussed at the recent joint conferences of the public group of the Railroad Labor Board and the Interstate Commerce Commission, during which the public group recommended an immediate general rate reduction to the extent of the wage reductions made in July, and the fact that it was forthcoming had been intimated unofficially at the White House. It is understood also that it was discussed in conferences between Chairman McChord and the President. The printed report says it was decided October 20, and it was given out on the morning of October 22, much sooner than most commission decisions emerge from the government printing office.

In discussing the evidence presented, the commission says that the western farmers are suffering from severe readjustments and, generally speaking, are operating at a loss or without profit. Among the causes for this condition, the various elements of the post-war readjustment are referred to. It is stated there is evidence of reduction in demand for coarse grains and hay, although the wheat movement in July and August, 1921, has been almost unprecedented. Prices of some grains have fallen from war to pre-war and in some instances to lower than pre-war levels. There was testimony strongly tending to show that if present conditions are continued the less fertile farms will not be cultivated next year or the acreage of grains will be curtailed and reorganization of farming must follow along lines less favorable to society and to the railroads.

It is said that the large movement to market this year does not show that the farmer can continue to operate under present production and distribution costs, as it is the result of forced marketing regardless of prices or freight rates. The weight of the evidence, the commission says, indicates that a continuance of the existing burdens must result in diminishing production. Prices and other conditions affecting the condition of the agricultural industry are discussed at length and the report says that so far as increased loss and damage claims on account of the movement of these commodities constitute a partial basis for the increases of 1918 and 1920, that basis no longer exists to the same degree.

The report refers to the contention of petitioners that a reduction in the freight rates would give the producers an increased purchasing power which would favorably react on the railroads through increased inbound freight, although it is pointed out that the railroads denied that such a reduction would stimulate demand, on the ground that it would probably not reduce prices to the consumer.

While the railroads consistently opposed any reduction in the rates on hay and grain, they took the position that the relief sought was wholly insufficient in amount to yield any real relief to the average individual. It was calculated that the annual savings per farm resulting from a 25 per cent reduction in the rates would range in round figures from \$10 to \$50 and that such a change would be less per bushel than frequent daily fluctuations in market prices. The report says, however, that the facts disclosed make it appear that grain and grain products and hay on the whole are bearing a share of transportation charges which is disproportionate.

The financial circumstances of the carriers were also discussed and reference is made to the evidence of the railroads that equating to a full year the results for the nine months commencing September 1, 1920, the net railway operating income of the western, Class I roads yielded a return of only 2.78 per cent. It was also claimed that the actual results were even less favorable because of undermaintenance estimated at the rate of \$188,000,000 per annum.

## General Conclusions

The general conclusions of the report are as follows:

Since our decision in Ex Parte No. 74 the wages and working conditions of the employees have been considered by the Railroad Labor Board, and many questions relating thereto have been determined by that body. On July 1, 1921, there became effective reductions estimated to average about 12 per cent in wages, and certain changes in labor rules and working conditions have also been accomplished which have lessened expense. For the entire country and upon the basis of a

normal number of employees it is estimated that these reductions in wages and changes in conditions now in effect will produce a saving of about \$425,000,000 per year, and that of this amount about \$160,000,000 will accrue in the western and mountain-Pacific groups.

The cost of important commodities which enter largely into the operating expense accounts of the carriers has also decreased. With some important commodities, as, for instance, coal, the change is not yet marked as to some carriers—others have for several months shown noticeably decreased fuel costs. Many other commodities have receded to price levels approaching those of pre-war times.

Neither the diminished cost of labor nor the diminished prices of materials and supplies have yet been reflected as completely in operating expenditures as must occur. Certain of the readjustments of labor rules and working conditions which have been made possible by orders of the Railroad Labor Board have not yet become fully effective. Term contracts for supplies, entered into at high price levels, still are holding the operating expenses of various carriers to levels which must be accepted as abnormal. With the expiration of these contracts, lower future costs are reasonably to be expected.

There is also every indication that the volume of traffic is on an increasing curve. This is evidenced by the steady increase in the number of carloads of revenue freight and the reduction in the number of surplus cars.

We are to administer, and, so far as possible, give force and life to all the provisions of the interstate commerce act. Section 1 requires that no more than just and reasonable rates for transportation be exacted, and in determining what is just and reasonable it has always been recognized that, among other factors, not only the cost of the service, but its value to the user, must be considered. In the exercise of our power to prescribe such rates, however, we are now required by section 15a to initiate, modify, establish, or adjust rates (as that term is defined in the section) so that carriers as a whole or in designated rate groups will, under proper standards of operation, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation.

Summarizing the situation before us, petitioners speak for a basic industry which the evidence shows is in a state of financial prostration, receiving for its products prices which approach and in some cases have fallen below pre-war levels, but paying transportation costs many of which are still at the war-time peak. On the other hand, the evidence shows with equal clarity that respondents are likewise suffering from financial depression and that their net earnings have been far below the standard which has been fixed by the law, although the tendency is now upward. It becomes necessary to consider whether rate reductions may be made on grain, grain products, and hay in western and mountain-Pacific territory which will be fair and lawful so far as the carriers are concerned.

The purpose of section 15a was undoubtedly to better stabilize the credit of railroads, reassure investors, and attract capital to the railroad industry. It is plainly our duty to do everything in our power to carry out this purpose. The experience of the past 12 months, however, has shown the limitations which surround in actual practice the operation of this provision of the law. The increases of 1920 were intended to give the carriers the specified return, and no doubt they would have done so if the volume of traffic had remained normal. Instead, it fell off sharply, and net earnings failed by a considerable margin to reach the desired mark. Nevertheless, when it became apparent that this would be the case, carriers and shippers alike agreed that it was not our duty, under section 15a, to raise rates to still higher

levels. To have done this would clearly have been a vain thing, harmful alike to the country and to the carriers. The rate adjustment cannot with advantage be made dependent upon fluctuations in traffic.

It is also to be noted that the duty cast upon us by section 15a is a continuing duty and looks to the future. It does not constitute a guaranty to the carriers, nor is the obligation cumulative. We are not restricted by past or present statistics of operation and earnings. These are serviceable only as they illuminate the future. What is contemplated by the law is that in this exercise of our rate-making power the result shall reflect our best judgment as to the basis which may reasonably be expected for the future to yield the prescribed return.

The conditions with which we are called upon to deal are extraordinary and unique, since they are the aftermath of a world catastrophe. The sufferings of the western farmers may be ascribed to that fact. The prostration of agriculture in this country is the product of world-wide forces. The high level of freight rates has been an obvious and tangible circumstance which has quite naturally been a target of dissatisfaction, but we are not persuaded that it has been more than a minor factor in bringing about distress.

The important thing at present, however, is not the source of the disease but the means of recovery. Whatever part freight rates may have played at the outset, many qualified to form an opinion entertain the view that the present level of these rates is one of the obstacles in the way of returning prosperity and likewise one of the obstacles to substantial reduction in the cost of living. The facts that many railroad charges are still levied at the war-time peak and the cost of living in some respects has not fallen far below it are alike the cause of discouragement to the producer who has been unable to maintain his own prices and to the employee who has experienced a reduction of wages.

The really vital concern of the carriers, in this situation, is to promote the return of what may be deemed normal traffic, and anything which will help toward this end is greatly to their benefit. So far as a tendency downward in their rates can be induced, and so far as the reductions in wages and prices which have already been made effective can be converted into rate reductions, we are assured that the full return of prosperity will be hastened for both industry and labor. The carriers have, we feel, themselves manifested a realization of this fact in the substantial reductions in rates which, from time to time in recent months they have voluntarily made.

The case before us relates only to certain basic commodities. Necessarily our findings and orders will be so confined. In reaching our conclusions we have taken into consideration, among other things, the facts of record in regard to the present status of these commodities and of their production and marketing, the vital importance of the industry which they represent to the country as a whole, the reductions in operating expense which respondents have experienced since our decision in Ex Parte No. 74, and the present trend of traffic. They are, in brief, conclusions which look to the future, in accordance with the intent of section 15a, and which are based upon our best judgment as to what will produce the best results for all concerned, including the carriers.

#### Commissioner Potter's Opinion

Commissioner Potter, in a concurring opinion, strongly emphasized the necessity for further wage reductions. He said in part:

I concur in the majority report although in my opinion there is uncertainty as to whether we are doing the right thing. The report does not recite all of the considerations which influence my vote. This fact, coupled with the fact that we are dealing with fundamentals which go far beyond

this particular case, prompts me to file a separate expression of my views.

At a time when our railways are charging lower rates and paying higher wages than carriers of other countries, it takes a lot to explain an order requiring a rate reduction when the earnings of the carriers are much less than the minimum fair return which the law prescribes.

I have the keenest appreciation that we must be watchful and alert to see whether our action is beneficial or harmful. Our action will be wrong and will need prompt correction, if the results of recent and further needed readjustments respecting operating costs do not strengthen the carriers. So far for the current year net earnings have been insufficient to compensate the carriers for their services, in the amount which the law has fixed as a fair return upon the value of their properties used in the public service of transportation. If future operating results are no better than those of the past nine months, the carriers will be unable to maintain their efficiency and render the service which is vital to the public welfare—ignoring entirely the element of common justice to the owners in the way of a fair return upon their investments. In the public interest, as well as in fairness to the carriers, there must be done without delay whatever is necessary to so improve their operating showing as to protect their credit, restore confidence, and attract new money to make betterments for which there is urgent need. To require a rate reduction under such circumstances is for us to assume a grave responsibility. Notwithstanding the risk involved, we must be guided by our best judgment, and I am convinced that a reduction should be made.

It is not clear to me that the savings made in the matter of wages and other costs since we decided Ex Parte 74 have been sufficient to justify the present reduction in its entirety, but those savings, with further prospective savings do, in my opinion, justify our findings. The prospective future reduction of wages and other operating costs are, perhaps, more essential to justify the rate decreases than the reductions that already have been realized. I am led to concur in the report by a firm conviction that the transportation burden on the industry and commerce of the country is too heavy and must be reduced, and that, as a part of a needed general readjustment, it can be reduced with increase of net earnings. I believe increase in traffic and a reduction of operating costs may be expected, and that increased net earnings to the carriers may be looked for.

Practically everyone admits that rates are too high. Rates too high are unjust and unreasonable and under the law must be reduced. Those who justify present rates regard them as a necessary evil—something that must be tolerated because high costs of operation prevent their reduction. That is no justification. If operating costs are holding rates at a level too high, the thing to do is to reduce the costs.

#### Reduction of Production Costs Necessary

Almost everything has been too high. The fundamental trouble with the industrial and commercial affairs of the country is that there is insufficient production and costs are too high. The latter is the cause of the former. Production in this country at the present time is far below normal needs. If normal conditions could be brought about, the industries of the country could operate normally for a long period to take care of the markets of this country, to say nothing of the markets in other countries. Normal operation of the country's industries would furnish employment to labor generally, revive markets, and increase the general buying power which the country needs. A reduction of production costs is essential to this result.

Freight rates are an important element of manufacturing and production costs. In a large country like ours, with its long hauls and wide distribution of producing industries, it is obvious that the freight burden in its relation to other

cost factors must be stable. Until within the last few years the tendency of the factor of transportation cost in relation to other factors has been downward. Recently it has been upward, and it is now out of proper relation to other factors. Rates must be gotten back to the proper relation to other things. They must come down, and whatever is necessary to bring them down must be done.

Many of the cost factors of railway operation which forced higher rates have been substantially reduced within the last year. The most important item of cost is labor. The carriers tell us that they are now paying extravagantly high wages. If we may rely upon their statement in this regard, they are not operating their properties economically and efficiently and, therefore, operating costs may further be reduced. We have no jurisdiction over wage controversies, but we may take note of the admission of the carriers and require them to find out whether their wage scales are too high, and to lower them if they can.

If upon the presentation of the facts as the law requires, the Labor Board decides that wages are not too high, those using transportation will have to pay the bill of the organized railway employees. The shippers of the country and labor generally are entitled to their day in court, and the carriers are the ones to present their case, for carriers, shippers, and laborers employed in all of the country's industries which use the carriers are interested in this issue. It is true that the wage burden has increased enormously during the last few years. For the calendar year 1916 it was, for Class I railroads, \$1,468,576,394, which was the largest amount paid for any year in the history of the railroads to that date. Following the year 1916, increases, all of which were made through government agencies, beginning with the Adamson act, followed by orders of the Railroad Administration during 1918, 1919, and the first two months of 1920, and finally the decision in July, 1920, by the Railroad Labor Board, resulted in bringing up the total compensation bill of these railroads for the year 1920, based on the last eight months of the year, to an amount exceeding \$3,900,000,000. They have been reduced by the wage board as of July 1, last, by 10 or 12 per cent.

The significance of these wage increases was brought out upon the hearing in this case where it was testified that if the wage burden, as it rests after the decrease of approximately \$400,000,000, as of July 1, were to be reduced by an additional \$1,000,000,000, it would be possible for the carriers to reduce freight rates approximately 18 per cent and still earn the return upon the investment in their property which the transportation act contemplates. Such a reduction, of course, would be reestablish railway credit, enable carriers to secure the moneys urgently needed to maintain adequate service, and relieve the distress of disappointed multitudes of investors in railway securities. It was further testified that after such a reduction the organized railway employees would still enjoy an increase which compares favorably with the increase which organized labor in other industries has enjoyed and, of course, far in excess of increases enjoyed by labor generally. It was further testified that such an increase would be in harmony with the increase of the cost of living which has taken place.

#### Carriers Should Reduce Costs

The right and power to reduce wages rests initially with the carriers. They have no excuse for maintaining the wage levels which they say are too high. If they believe them to be too high, they should take steps to reduce them. Until they make the effort they are not entitled to refer to wages as exorbitant high rates. The Labor Board was created to determine such questions and shippers have the right to require carriers to resort to that tribunal. Until they have the protection of an award made under existing conditions by the Labor Board, they cannot justify the present rates. On the

face of things, there is nothing in the wage situation to justify a rate level entirely abnormal and which is menacing the country's welfare. The carriers should bring the general economic situation to the attention of the Labor Board.

Some urge that we must take wage conditions as we find them, and not contemplate further wage reductions in dealing with rates. On the argument it was pointed out to us by the representatives of the petitioners that such is not the law. They urged upon us that it was the duty of the commission to consider the broad economic question as to what rates the industry of the country could stand, and that our finding in this regard should be taken into consideration in the fixing of wages. I am inclined to the view that the opinion thus urged upon us by counsel for the petitioners is sound, although it was new to me. It seems to me there is warrant for their view in action which the Labor Board has heretofore taken.

The transportation machine of the country is being used for the benefit of the shippers and railway employees, and the owners of the machine are receiving much less for its use than the law says they are entitled to. In considering what railway employees should receive, regard should be had for what the shippers can afford to pay. The record in this case shows that the Labor Board has declined to give consideration to this broad basic question, and has refused to hear shippers while considering wage controversies. The question as to what rates are fair and reasonable is with us. If the broad economic question as to how much shippers can afford to pay is a question to be determined by us when we fix fair and reasonable rates, it will follow that the Labor Board, in considering wages, would regard our finding as one of the relevant circumstances to be taken into consideration in fixing wages. In this aspect of the case there apparently is necessity for a determination by us as to the proper rate level, and we are authorized to order a rate reduction without waiting for wages to be reduced, to a point where the carriers can prosper under the rate level which we prescribe.

## Brooklyn-Richmond Freight and Passenger Tunnel

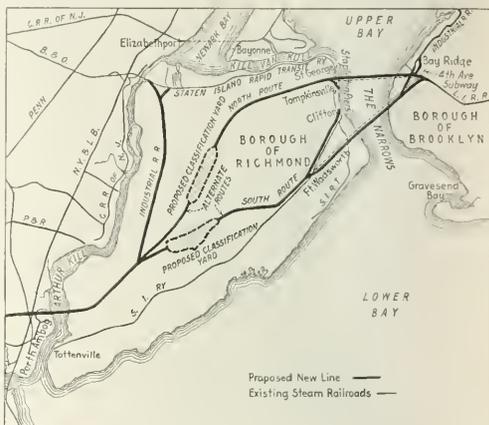
THE BOARD OF ESTIMATE AND APPOINTMENT of the City of New York has recently submitted its preliminary report on the construction of a tunnel or tunnels to connect Staten Island with Brooklyn. The general plan which has been submitted includes in addition a system of belt lines, industrial tracks and other facilities necessary to create a greater unification of the present steam railroad and electric traction lines leading in and out of New York City.

It is proposed to construct an outer belt line, somewhat similar to the outer belt line suggested in the report of the New York-New Jersey Commission, intersecting all the New Jersey roads and running from Haworth, N. J., on the north, via Paterson, N. J., the Passaic river, Short Hills-Summit, Scotch Plains and Metuchen to Perth Amboy on the south. Crossing Arthur Kill on a high level viaduct, the line bisects Staten Island from south to north for its entire length and connects with the proposed tunnel under the Narrows. Two locations have been submitted for the freight tunnels across the Narrows as well as for two classification yards and tracks in the north half of Staten Island. These are shown in the illustration. The plan includes connections on the Island with the existing Staten Island Rapid Transit Railway for access to the new Stapleton piers, and for purposes of passenger business.

Passing under the Narrows the line descends on one and two per cent grades with the latter as a maximum, passes under the channel and rises on a two per cent grade into Bay

Ridge, Brooklyn, and to connections with the Long Island Railroad, over which access can be had to the Jamaica Bay development, to points in Long Island, the Bronx and New England, and to a proposed industrial railway along the Brooklyn waterfront.

The operation of the plan includes the idea of having the New Jersey roads make suitable classifications at divisional yards, dispatching freight destined for Long Island in solid trains. Any further classification can be handled at the yard on Staten Island. Steam power will be used in the west, but east of the Staten Island yard, or Richmond yard as it is called, the line will be electrified. To complete the unifica-



Map of Staten Island, Showing the Alternate Locations of the Proposed Line, Tunnels and Connections

tion of the railroad facilities it is proposed to connect the New York Central and the New York, New Haven & Hartford by a double track tunnel about 3.7 miles long running from a point approximately opposite West 168th street in Manhattan, under the Harlem river to about Longwood avenue in the Bronx, where the tracks would be arranged so as to permit of a head-on connection with the New York Connecting Railroad over the Hell Gate bridge, or to the New Haven's yards at Oak Point. A connection on the east side of the Harlem river will provide direct rail service to the proposed municipal terminal market and permit of the development of a marginal belt line railroad in the Bronx, upon which jointly operated stations could be located at points convenient to the existing bridges, thereby serving both Manhattan and the Bronx.

The decision as to the location of the tunnel across the Narrows hinges on the question of the relative costs and practicability of the trench method and the shield method of tunnel construction, one site being favorable only to the shield method while the other is as yet doubtful, though the belief is that the trench method can be used. To meet the local traffic needs of Staten Island, it is expected to start shortly with the construction of a passenger tunnel to connect into the Fourth Avenue subway in Brooklyn, with terminals in Staten Island and connections with that Island's transit facilities.

The total cost of the project has been estimated at \$141,000,000, subdivided as follows: Cost of the belt line and classification yard, \$42,000,000; freight and passenger tunnels and connections, \$51,000,000; elevated industrial railroad along Brooklyn water front, \$25,000,000; and the tunnel or connecting link between the New York Central and the New Haven, with all connections, \$23,000,000.



A \$3,000,000 Fire—Photo from International

## Fire Protection Association Meets in Chicago

Annual Meeting Included Numerous Papers and Lively Discussion  
of Means of Reducing Losses

**T**HE Railway Fire Prevention Association opened its eighth annual convention at Chicago on the morning of October 18. Meetings were held at the Hotel Sherman and continued for three days with W. F. Hickey (N. Y., N. H. & H.) presiding and about 150 members and visitors present. The gathering was addressed at the opening session by J. E. McDonald, chief of the Chicago Fire Prevention Bureau, the association thereafter applying itself diligently to the consideration and discussion of the numerous reports and papers presented.

### President Speaks on Problems of the Association

In his opening message Mr. Hickey, president, discussed the progress of the organization and the problems confronting it during the past year, calling attention particularly to the importance of co-operation on the part of the managements and of enthusiastic interest on the part of the members in the work of fire prevention.

"The past fiscal year," he began, "has been a very successful one for the Railway Fire Protection Association, notwithstanding the critical period through which railroads generally have been passing. We have kept our membership intact although some of the smaller lines have felt it necessary to withdraw temporarily on account of curtailment of expenses, but the resignations have been offset to a large extent by new members and now that railroad executives are appreciating more and more what the Railway Fire Protection Association is accomplishing and the necessity for an organization of this kind, it is confidently expected that the next year will show a still larger membership roll."

Speaking of the problems confronting the organization and the railroads at the present time and the most effective method of meeting them, Mr. Hickey said: "Railroad owners will not be satisfied unless the present waste is reduced and, of course, they have a duty in providing fire resistive structures and fire fighting appliances, but until the general financial conditions improve and those things can be provided wherever needed, we must exert every effort to make the best of existing facilities and conditions. However," he went on to say, "we should not defer an improvement where the condition is acute and many features of improvement can be taken care of as ordinary maintenance items. In any event, we should endeavor to have our managements provide im-

proved facilities gradually and it is suggested that if not already being done, each railroad prepare a budget of fire protection items each year, stressing the most urgent and important and work toward the accomplishment of the budget. The fact that the number of fires was reduced but the amount of loss showed an increase in 1920 as compared with 1919 may indicate that better facilities and more efficient means of fire extinguishing would have reduced the loss. It is our work to endeavor to improve our construction, have adequate water lines, piping, fire pumps, sprinkler systems, and other features of protection provided, and at the same time bring maintenance and house-keeping conditions up to the highest standards so as to eliminate the causes of fires."

"This work," said Mr. Hickey, "can be done better and with more facility as an association than by the individual members working on their own lines, but it means co-operation and co-ordination among the members of the Railway Fire Protection Association. To that end," he said, "let us continue to give our best efforts to the association, meet more frequently during the year—take an enthusiastic interest in the work of the association and enlist as many new members as possible."

### Resolutions Adopted

Following the president's address and the report of the secretary and that of the executive committee (when it was learned that the association now has a membership of 210, representing 77 roads) three sets of resolutions were adopted by the organization. One, presented by Robert Scott (A. C. L.), after directing attention to the fact that a very considerable part of the \$0 per cent of fire loss in the country attributable to carelessness is the direct result of the smoking habit, recommended that it be recognized as "a moral obligation of all manufacturers or packers of tobacco to enclose with their product fire hazard warnings."

A second resolution, presented by G. L. Ball (St. L.-S. F.), after reciting the hazard from oil on water in harbors recommended that railroads support the passage of legislation to eliminate it, while the third, presented by E. B. Berry, (Sou.), after dwelling upon the enormity of losses by fire on railroads, the importance of its reduction and the indispensability of co-operation, addressed itself to the attention

of railroad executives in 10 expressions, one of which requests that "executives make manifest and proclaim their interest in fire prevention and protection, give active support and direction to enforcement and acceptance of individual responsibilities as a matter of daily duty and encourage the inauguration of a system of education to develop comprehensive interest in fire prevention;" and a second of which recommended "that all fire prevention activities on each railroad be co-ordinated through a central administrative officer for the promulgation of rules and regulations for the protection of property and guidance of officers and employees."

The resolution concerning the oil hazard in harbors gave rise to a lively controversy as to the actual danger presented from this source. W. F. Steffens (N. Y. C.) opened the discussion by making a detailed recitation of his experience and study with the oil scum found on water in New York harbor and contending that such oil was more of a fire retardant than a fire hazard. J. B. Lalor (Lalor Fuel Oil System, Baltimore), however, contended that the experience which Mr. Steffens had with piling in salt water was anything but a criterion of what might happen in fresh water and stated very emphatically that the sample of oil which Mr. Steffens exhibited would burn as readily as gasoline, once the temperature had reached 600 deg. William McGrath (D. L. & W.) stated that timbers in the very condition described by Mr. Steffens had burned at the recent pier fire at Hoboken. On the other hand J. R. Richards (S. P.) spoke of finding conditions on the Southern Pacific comparable to those described by Mr. Steffens but distinguished between new oil and old oil. Owing to the evident diversity of opinion among the members, therefore, together with the importance of the subject, it was decided to make the investigation of the subject the work of a special committee.

#### Reduction in Number of Railway Fires

G. R. Hurd (I. C.) presented the statistical report. This consisted of the presentation of an elaborate collection of figures and information on railway fires obtained from 75 roads, together with the classification of fires and a suggestion as to the method of prevention in each case. According to this report, 7,975 fires, representing a loss of \$10,563,914, occurred during 1920 as compared with 9,144 fires and the attendant loss of \$8,516,473 during the year 1919. "A total of 442 of these fires reported for 1920," the report went on to say, "were caused by the spreading of fire from adjacent property." This figure and the loss of \$594,706 which it represents is compared with 457 fires and \$1,158,860 loss in 1919. Electric wiring was reported as having caused 108 fires in 1920 with an aggregate loss of \$253,895 as compared with 81 fires and a loss of \$159,709 in 1919. Forest fires gave rise to 32 railroad fires in 1920 as compared with 27 in 1919, a comparison of the losses showing an increase of \$66,292 during 1920 over 1919.

Friction, hot boxes, brake shoes, etc., were reported as having caused 113 fires in 1920 with a loss of \$135,815 as compared with 84 fires and a loss of \$206,324 in 1919. Heating appliances and flues were reported as having caused 854 fires with a loss of \$547,097 in 1920 as compared with 840 fires and a loss of \$811,378 in 1919; and a total of 114 fires representing a loss of \$288,915 were reported as having resulted in 1920 from incendiary causes as compared with 92 fires and a loss of \$145,951 in 1919. Lightning was reported to have caused 55 fires in 1920 as compared with 64 in 1919; sparks from locomotives caused 1,821 fires to railroad property in 1920 with an attendant loss of \$1,085,758 as compared with 3,080 fires in 1919, while hot coals from locomotives caused 390 fires with an attendant loss of \$299,253.

Smoking resulted in 223 fires with a property loss of \$128,301 for 1920 as compared with 233 fires in 1919 and spontaneous combustion was reported as having caused 218 fires with a loss of \$1,927,856 as compared with 178 fires

and an attendant loss of \$162,352 in 1919. As to the other causes of fire, torches were reported to have caused 135 fires in 1920, tramps 172, and wrecks 100, while 1,538 fires were reported to have resulted from unknown causes. Referring to the report in his address, President Hickey placed emphasis upon the fact that the number of fires was reduced from 9,194 in 1919 to 7,975 in 1920, rather than upon the fact that the total losses increased from \$8,500,000 in 1919 to \$10,500,000 in 1920, his contention being that the number of fires is a fairer test of accomplishment in prevention work than the actual fire losses inasmuch as all fires have small beginnings.

#### Extensive Report on Shop Protection

The most elaborate report presented at the convention was that of the Shop Committee, of which J. R. Peters (Pennsylvania) is chairman. This treated of all phases of shop fire prevention and the protection of shop units and was prepared with a view to its incorporation in a handbook contemplated by the association. The first part of the report dealing with locomotives was presented last year, so that the convention directed its attention this year only to that portion dealing with freight and passenger car shops, paint shops, woodworking buildings, upholstering shops, bumping and lacquering shops, battery-recharging buildings, tanks, reclamation plants, chemical laboratories and outside fire protection.

#### Standardizing Hose Couplings

The question of standardizing hose couplings was discussed somewhat during the consideration of the report of the Shop Committee, following the contention raised by E. W. Osborne (N. P.) that a conflict existed between a previous year's report, which advocated the National Standard coupling for all railroad fire connections, and the statement in the report under consideration which advocated the interchangeability of hose couplings with local fire department standards. The subject assumed a position of particular prominence when later on in the convention a paper on Recent Progress in the Standardization of Hose Couplings was presented by E. R. Townsend of the National Board of Fire Underwriters.

In his talk Mr. Townsend endeavored to impress upon the railroads the importance of standardization in fire connections and pointed out the influential position they occupy in many sections of the country and urged them to lend their support to this movement. He stated that there are in use throughout the country 30 or more different size couplings as a result of which conflagrations occur regularly where the equipment of one city or industry is useless to the other.

F. H. Elmore (Hutchinson, Rivinus & Co., Philadelphia) called attention to the fact that while the Association had approved the National Standard, many of the roads were hesitating about standardizing both because of their dependence in many places upon towns using other standards and the objections to using adapters. This position of some of the railroads was given added emphasis when S. B. Pollard (S. P.), stated that all Pacific coast cities used a Coast Standard of coupling, and when W. F. Steffens (N. Y. C.) showed the futility of adopting the National Standard in New York City until that city had also adopted it. It developed, however, that many railroads do use the National Standard and a keen interest was taken in tools exhibited by Mr. Townsend whereby a large proportion of existing hose couplings may be adapted inexpensively and speedily to take the National Standard thread.

#### Handbook on Handling Explosives Prepared

One of the most valuable contributions presented at the convention was the report made on the handling of explosives and other dangerous articles. This report, prepared in hand-

book form by W. F. Topping, of the Bureau of Explosives, presented concise and authoritative instructions covering the packing, storing, shipping, inspecting and otherwise handling of explosives and all other dangerous material, together with a description and an enumeration of the characteristics of such materials and the proper methods of meeting situations precipitated by wrecks, fires, etc.

#### Fire Prevention and Protection at Coaling Stations

W. E. Cathcart (Pennsylvania) read the report of the Committee on Fire Prevention and Protection at Coaling Stations. It was in the nature of a revision of the 1915 specifications in view of their incorporation in the Association handbook. The report addressed itself decidedly in favor of electricity for power purposes, reinforced concrete construction, the thorough cleaning of coal bins at least once a month; and also the installation of automatic dry pipe sprinklers, as against open head sprinklers or perforated pipe systems. The report also provided a form of inspection record which it recommended to be made out weekly to cover the condition of the sprinkling system.

Considerable discussion ensued upon the reading of this report, the greater portion of which referred to sprinkling systems in these structures and upon which a lively controversy developed. Taking objection to the stand of the committee in that open head sprinklers or perforated pipe systems are not to be recommended, E. W. Reilly (Erie) contended that open head sprinklers are entirely satisfactory for fires below the roof, while another member supported the system of perforated pipe and A. Murphy (M. R. & B. T.) approved of manually controlled systems at isolated points. In support of the committee, of which he is a member, W. H. Klin-sick (C. B. & Q.) and also J. R. Peters (Pennsylvania) emphatically condemned the open head and perforated sprinklers as presenting a severe drain on water supplies and reducing the effectiveness of streams when they are needed. W. F. Hickey (N. Y., N. H. & H.) called attention to the fact that the Underwriters do not approve of open systems. Mr. Hickey said that the difference in cost between an automatic and an open sprinkling system was negligible.

#### Fire Prevention on Foreign Roads

In a paper on the practices of foreign roads L. E. Wilcox (John Page & Co.) pointed out the relatively small losses suffered from fire in foreign countries and attributed this largely to the little wood work and combustible material used, the abundance of rainfall and the greater vigilance customary by individuals. A detailed description of the prescribed system of fire protection and prevention on one of the typical English railroads indicated that although the equipment and methods differ somewhat from those in this country and might even be considered antiquated in some respects, the instruction in fire prevention is comprehensive and exact and responsibility is fixed to a high degree.

#### Protecting Tunnels From Fire

S. B. Howatt's (S. P.) paper on the fire protection and prevention in tunnels was especially instructive and interesting. "Tunnel protection and prevention," he said, "is in a class by itself. We have not the room to combat the flames. They can only be approached from the two ends and usually one end, and sometimes both are so hot that it is a very difficult task to work near them." Mr. Howatt then went on to state the difficulties in the way of putting out fires in tunnels—owing to the chimney-like form of construction and the facility of air to gain access to the tunnel through crevices and cracks in sufficient amount to maintain a hot fire, even when the ends have been blocked. He also pointed out the practical impossibility of putting out a fire in a tunnel after it had once reached the tons of loose material and timber that are often placed behind the lagging in timber tunnels to fill the pockets occurring at the time of the construction,

and emphasized his statements by describing several fires which had occurred on his road.

Mr. Howatt condemned the practice of placing any reliance in such instrumentalities as sprinkling systems and fire-proof paint, however adaptable they are to other kinds of fire prevention. The problem, he said in effect, is rather one of preventing fire from entering the tunnel from an outside source, of preventing wrecks from occurring in the tunnel, and of eliminating man carelessness." Singular though it is, Mr. Howatt stated that no tunnel fires, in his knowledge, had arisen on the Southern Pacific from locomotives. Clearing away all brush for a distance 100 ft. back of the entrance, whitewashing wood portals and 50 ft. or more of the barrel, establishing an adequate water supply and piping it into the tunnel when possible, excluding all open lights from the tunnel wherever electricity is available and insisting upon the close inspection of tunnels by all parties having occasion to work inside of them, are some of the suggestions which Mr. Howatt made to prevent fires.

While such preparations would afford a reasonable protection against tunnel fires, Mr. Howatt emphasized the desirability of replacing timber with concrete as the only sure protection. On the Southern Pacific 6½ miles of tunnel, Mr. Howatt stated, have been concreted in the last 15 years, the plan being to concrete the portal and the first 50 ft. of the barrel of the most hazardous tunnels, also to apply concrete to the bad spots inside the barrel. The section inside the tunnels, Mr. Howatt pointed out, serve a valuable purpose from a fire protection standpoint inasmuch as they act as fire walls. During the discussion this report was commended as an unusual contribution to both fire prevention and construction engineers.

#### Motor Truck and Locomotive Hazards

Other reports read before the convention included one of a committee on the Storage and Handling of Gasoline and Electric Motor Trucks in Freight Depots and Terminals and one from the committee on Locomotive Hazards. E. J. Reilly (Erie) presented the report on electric and gasoline trucks. It favored the use of electric trucks for all interior work owing to the tendency of gasoline equipment to drop oil and to backfire. In discussing this report J. P. Clear (I. C.), in reply to an inquiry as to whether fires have ever arisen from the use of trucks, told of two fires started in cotton by electric trucks, the wiring of which had become abraded sufficiently to cause a short circuit. In discussing the advisability of permitting gasoline trucks to operate inside of buildings, W. F. Hickey (N. Y. H. & H.), among others, emphasized the fact that where such trucks are permitted to enter buildings, operators should not be allowed to stop the engine, thus reducing oil dripping and back-firing to a minimum.

E. N. Floyd (C. C. C. & St. L.) read the report on locomotive fire hazards. It comprised a comprehensive discussion of the mechanical features of locomotives with respect to their connection with the fires attributed to locomotives and directed particular attention to the consideration of front end screens, ash pans, fire doors and combustion tubes. The report also discussed comprehensively the fire hazard of the fuel oil burning locomotives.

The report elicited considerable controversy by prescribing screens or wire mesh in the place of perforated plates on front ends. E. A. Ryder (B. & M.) stated that experience on the Boston & Maine had proved the perforated plate to be much superior to wire mesh from a standpoint of wear as well as draft and it is considered satisfactory from a fire prevention standpoint. Referring to the position of the committee and the statement of A. Murphy (M. R. & B. T.) that the perforated plate presented altogether too large an opening to sparks, E. W. Reilly (Erie) stated that in Canada, where railroads are required to secure permits before using perforated netting, the netting adopted by the Erie was

passed upon favorably. On the other hand, J. D. Lodge (Railroad Insurance Association) directed the attention of the supporters of perforated plate to the fact that the Master Mechanics' standard front end arrangement calls for wire netting in the place of perforated plates and H. B. Pollard (S. P.) emphasized the importance of being on the conservative side, owing to the importance of reducing the number of fires attributed to locomotive sparks.

### Discussion of Several Subjects

Pursuant to the plan of the organization to institute a general discussion of special subjects at each convention, a portion of Wednesday was set apart for this purpose and papers were read on the following subjects: Organization of employee fire brigades; fire fighting equipment recommended at outlying points; methods and difficulties of enforcing Bureau of Explosive regulation on safe handling of inflammables; locomotive sparks as fire hazards; methods of securing co-operation of foremen and employees in fire prevention, and what an inspector should look for in sprinkler installations. This session was presided over by Z. B. Claypool (St. L.-S. F.) in the absence of the chairman, J. L. Walsh (M. K. & T.).

Of the several discussions instituted, that on the organization of fire brigades stood out prominently as the most spirited discussion of the convention. Initiating this discussion W. F. Barnard (Wabash) stated that the three largest shop units of the Wabash were provided with fire brigades, the members of which were paid extra compensation in the way of an extra day's time each week. The Erie, E. W. Reilly pointed out, had a very extensive and effective organization until two years ago. This organization was instituted 15 years ago, and the interest was maintained by the holding of annual athletic tournaments and issuing annual passes over the road to the members of the brigades. It is expected that the holding of tournaments on the Erie will be resumed next year.

On the Rock Island L. F. Shedd stated that no difficulty was encountered in keeping up an efficient fire fighting organization at the shops. This road also compensates the men for their membership in the organization by issuing annual passes and allowing and extra hour's time a week, except at Silvis where a department is maintained exclusively for fire protection service. C. A. Hayes stated that the success of the U. S. Steel Corporation in maintaining efficient fire brigades was to be attributed largely to the fact that each member was given a badge to identify his connection with the department, to which Mr. Reilly responded with the statement that the Erie also furnished badges. During the discussion, it was brought out that regardless of the efficiency of the local shop fire brigade, it should only be considered in the light of a first aid remedy—not to the exclusion of the municipal fire department.

R. R. Hackett (B. & O.) started the discussion on fire fighting equipment and its care at points where no organized employee fire brigade is maintained. Mr. Hackett called attention principally to the importance of devoting special study to each condition, owing to the variety of conditions met on railroads and to the importance of efficient inspection by competent inspectors of all fire fighting equipment and property subject to fire hazards. The discussion developed the fact that the barrel and bucket still furnish the most effective fire fighting equipment at many outlying points, although in some localities it has been necessary to use fire extinguishers in place of water barrels for sanitary reasons.

James Scott (M. K. & T.) initiated the discussion on methods and difficulties in enforcing Bureau of Explosive regulations for the safe handling of gasoline and other inflammable materials. Mr. Scott stated that the various refineries and loading racks along the M. K. & T. always invited inspection of their property, but that about 10 per cent

of them are somewhat lax in carrying out regulations. As a result of the negligence found on the part of casinghead plants in some places and of other conditions, Mr. Scott cautioned against permitting any switching by train crews at night, owing to the possibility of fires from sparks and open flame lanterns.

### Locomotives Only Partially to

#### Blame for Right-of-Way Fires

On the subject of locomotive spark fire hazards and their relation to right-of-way fires, wooden trestle fires, etc., a particularly interesting discussion developed, of which J. R. Richards' (S. P.) paper was the most prominent feature. Referring to conditions on the Southern Pacific, Mr. Richards endeavored to show, among other things, that the popular conception that locomotives are to blame for 90 per cent of the fires along the right-of-way is not well founded and to this end he told of his experiences with cigarettes, greasy sacks, the carelessness of trespassers, the carelessness of trainmen in handling fires in cabooses, the burning of old ties and the disposition of waste from journal boxes, also the relation to these fires of motor cars and incendiary practices.

One of the most interesting developments of this discussion was reference to the survival of a creosoted bridge on the Nashville, Chattanooga & St. Louis, as described in the *Railway Age* of September 10. W. F. Hickey (New Haven) stated that he was given to understand by Dr. Von Schrenk that there was an increase in the inflammability of creosoted timber over untreated timber during the first six months, after which the inflammability decreased. S. B. Howatt (S. P.) supported this statement but recalled instances where creosoted bridges had burned to the ground and F. H. Elmore, skeptical of the value of creosote, stated that during a certain test made of fire-proof paint, neither the fire-proof painted specimen nor the creosoted specimen showed themselves immune from the test fire. W. F. Steffens referred to the incident as an important one in the light of its bearing on bridge construction and stated that the New York Central laboratory is now making a study of creosoted timber from this standpoint.

On the subject of the method of securing co-operation of foremen and employees in maintaining clean premises and removing fire hazards, A. Murphy (M. R. & B. T.) stated that the co-operation of the officers was of primary importance, after which was to be remembered the necessity of thoroughness of inspection, of fair play with the men in charge of the properties inspected, the constant remembrance that the fire inspector's position is one of advising rather than one of criticising; also the importance of cultivating a pleasing personality and the importance of dressing for the occasion.

J. H. Wilde (Railroad Insurance Association) presented a paper on what an inspector should look for in automatic sprinkler installations. He referred to the necessity of proper installation of the equipment, the importance of an ample volume of water under reliable pressure and the constant inspection of the system against the effects of time and of the carelessness of the workmen in buildings.

### The Election of Officers

At the annual election on Thursday afternoon the following were selected: G. L. Ball (St. L.-S. F.), president; E. A. Ryder (B. & M.), vice-president; and R. R. Hackett (B. & O.), secretary and treasurer. B. F. Mace (B. & O.) was elected an honorary member and such vacancies were filled as to make membership of the Executive Committee consist of the following: R. H. Newbern (Pennsylvania) G. R. Hurd (I. C.), Robert Scott (A. C. L.), E. B. Berry (Sou.), W. F. Hickey (N. Y., N. H. & H.), W. S. Wollner (N. W. P.), and W. S. Topping (Bureau of Explosives).



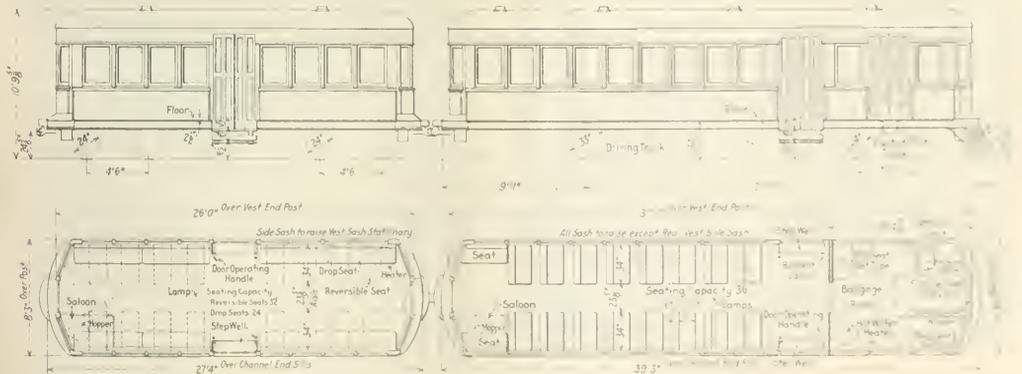
One of Three Bowen Motor Cars Recently Delivered to the Pittsburg & Shawmut

## Bowen Gasoline Motor Driven Passenger Car

### Arrangement of Power Transmission System and Rear Truck Are Features of Design

A GASOLINE MOTOR driven passenger car particularly adapted for use on branch or short line steam railways, which involves a unique combination of standard automobile practice with the essential features of railway rolling stock design, has recently been developed by the Bowen Motor Railways Corporation, St. Louis, Mo. The car shown in the illustration is one of three for the Pitts-

burg & Shawmut, the construction of which was recently completed by the Barney & Smith Car Company. The features of construction of particular interest in this car are the arrangement of the power transmission system and the design of the rear truck, through which the power is transmitted to the rail.



Elevation and Floor Plan of Motor Car and Trailer

burg & Shawmut, the construction of which was recently completed by the Barney & Smith Car Company. The features of construction of particular interest in this car are the arrangement of the power transmission system and the design of the rear truck, through which the power is transmitted to the rail.

The power plant is a four-cylinder automobile motor with 4½-in. by 6-in. cylinders, capable of developing 62 brake horsepower at 1,600 revolutions per minute, which is attached directly to the underframe. From the motor clutch, which follows the lines of automobile practice, power is transmitted

by means of a longitudinal shaft to the main transmission, which provides for four speeds. The ratio of shaft speed at the driven and driving ends of this transmission vary from 4.99 to 1 for the first speed to 1 to 1 for the fourth or high speed. From this transmission power is again transmitted through a longitudinal shaft to an auxiliary reversing transmission, which provides a speed ratio of 1 to 1 in forward

motion and of 1,085 to 1 in reverse. From this transmission to the rear axle gear case power is again transmitted by a longitudinal shaft.

The cast steel gear housing of the rear axle is built in two sections to permit easy inspection and repair of all gears and pinions. This construction makes it unnecessary to disassemble the truck in case any gears are to be removed. The arrangement of the combination bevel and spur gears is such that the gear ratio of the drive and, therefore, the car speed can be changed at any time by replacing the bevel gear set by another of a different ratio. From the motor to

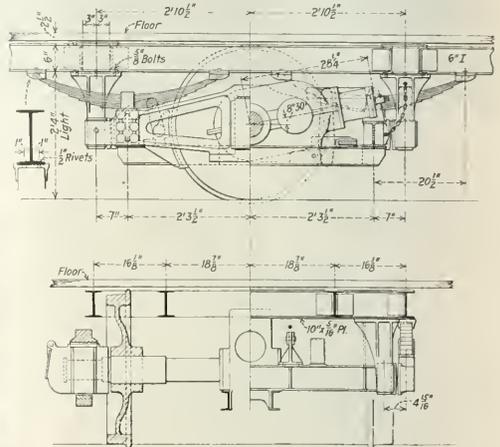
the rear axle gear case the transmission devices and shaft connections throughout follow standard automobile practice, the details conforming to the standards of the Society of Automotive Engineers.

Compressed air to operate the brakes is provided by an air compressor mechanically driven by a longitudinal shaft from a power take-off located at the main transmission.

The two-wheel driving truck under the rear end of the car is of unique construction, combining the requirements of a fixed angular relationship between the center line of the axle and the center line of the car with a complete unity of construction which permits the rear axle with the brake rigging and gear case to be removed from the car intact. This truck is built up of cast steel side frames which are joined at the ends with cast steel cross pieces of I-section. The side frames are provided with pedestals for standard M. C. B. journal boxes. The gear case which surrounds the center of the axle is rigidly supported by two longitudinal members of rolled channel section, bolted to the underside of the truck frame end pieces. Lugs on the truck frame provide for the support of two brake beams, one in front and one at the rear of the driving wheels, which are fitted with M. C. B. standard brake heads and brake shoes. These are

The weight of the car body is transmitted to this truck frame through four semi-elliptic springs the center bands of which rest in suitable pockets in the truck frame and the ends of which bear against small flanged wearing shoes riveted to the underside of the car body underframe. The longitudinal distance between the front and back truck spring pockets is 4 ft. 7½ in., which is great enough to provide considerable transverse torsional stability to the gear case without sacrificing the complete freedom of the truck from attachment to the car body.

The engine is located under a hood at the front end of the car with the radiator let into the end wall just under the



Details of Rear Axle and Truck

front window. The hood is asbestos lined in order to permit the space over the engine to be filled with small baggage or express packages, thus conserving baggage room floor space.

With a 10-ft. 4 3/8-in. baggage compartment and 36-in.



Interior View of Passenger Compartment

connected with simple clasp brake rigging, operated by Westinghouse semi-automatic air brake equipment.

The alignment of the truck with respect to the car body is maintained by four column castings bolted to the underside of the car underframe. These castings are provided with vertical wearing shoes on their inside transverse faces and outside longitudinal faces which bear against corresponding wearing shoes secured to the end pieces of the truck frame and to projections from the side frames. Lateral alignment is thus maintained at four points on the truck frame and the driving thrust in either direction is transmitted to the car body at two points through these shoes, which are free to move vertically with respect to each other.

DETAILS OF OPERATION OF THE BOWEN MOTOR CAR

Month	March	April	May
Days operated	31	30	31
Total miles	3,987	3,960	4,092
Passengers carried	4,240	3,721	2,780
Gross revenue	\$1,215.82	\$1,146.44	\$834.40
Callons of gas	677	599	630
Cost of Gas	\$169.25	\$144.76	\$168.00
Cost of oil, grease and coal	11.16	18.53	15.00
Operating labor	260.00	207.80	183.68
Maintenance labor and parts	16.35	7.30	13.20
Total expense	\$461.71	\$378.39	\$379.88
Net cash earnings	\$754.11	\$768.05	\$464.52
SUMMARY			
Gross earnings per mile	.305	.289	.206
Cost of operation per mile	.115	.095	.092
Net earnings per mile	.190	.194	.114

The population on the line of above road is 175 per mile.

door openings at the sides of the passenger compartment, the car has a seating capacity of 36 persons. Other arrangements can be used seating as many as 43 passengers. The power plant is considered large enough to handle a trailer on grades not exceeding three per cent and a design has been developed for such a car 27 ft. 4 in. long over the channel undersills, which may be provided either with reversible seats or longitudinal drop seats. In the former case a seating capacity of 32 may be provided while in the latter case the seating capacity is 24. With the exception of the interior finish, the entire construction is of steel, the underframe or chassis, the longitudinal members of which are 6

ft. I-beams, being completely standardized. Changes in the body construction and arrangement may be made to suit local requirements. The car illustrated weighs 28,000 lb. complete.

The first car built by the Bowen Motor Railways Corporation was placed in service about three years ago. It has now operated over 175,000 miles and is still in service. Its performance was carefully analyzed and while no fundamental defects developed, it was considered advisable to change the later design by making changes in the size and design of the car body.

Records of the operation of these cars indicate that they can be run at a cost of about 18 cents per train mile where

the railroad train service wage scale is in effect, or 12 cents per mile under non-union conditions. Further details of the cost of operation of a Bowen motor car on the Westfield Railroad are given in a tabulation herewith.

While this car is designed particularly for handling passengers, express, mail and baggage on short and branch line steam railways, it was also adapted for use on suburban electric lines where the cost of power is excessive. In new construction, the gasoline motor cars have important advantages over electric cars, eliminating the necessity for overhead wiring and the extra cost for the installation and maintenance of power stations.

# Freight Car Loading Highest Since Last November

## Greatest Gain in Coal Loading—Car Service Division Issues Bulletin of Current Statistics

WASHINGTON, D. C.

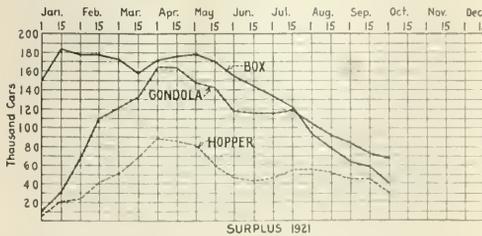
REPORTS RECEIVED by the Car Service Division of the American Railway Association show that 906,034 cars were loaded with revenue freight during the week ended on October 15, an increase of 10,294 cars over the week before. This was the largest number of cars loaded during any one week since November 13, 1920, but was

number loaded during the corresponding week in 1920 and 25,910 cars less than during the corresponding week in 1919.

Loading of merchandise and miscellaneous freight, which includes manufactured products, increased 4,659 cars over the previous week, the total being 550,808. During the same week last year, the total was 563,483 cars. Shipments of forest products amounted to 53,017 cars or a gain over the week before of 3,558 cars while livestock totaled 36,210 cars, an increase of 2,137 cars compared with the week of October 8. Coke loadings increased 278 cars to a total of 6,332 cars but ore fell off 5,913 within a week to a total of 19,789 cars.

Reports also showed a decline in the loading of grain and grain products compared with the week before, the total being 48,372 cars or 5,592 cars less than the total for the week of October 8. Comparisons show, however, that shipments of grain and grain products continue to run ahead of those of last year and also 1919, the total for the week of October 15, being 7,562 cars in excess of the corresponding week in 1920 and 5,355 cars greater than during the corresponding week in 1919.

Except for livestock, which showed a gain of 1,154 cars and grain and grain products, loading of all commodities was below that for the corresponding week in 1920. Compared by districts, increases over the previous week in the loading of all classes of freight were reported from all except



112,505 cars less than were loaded during the corresponding week last year and 66,044 cars below the total for the corresponding week in 1919.

The biggest gain in the loading of coal, which totaled 191,506 cars during the week or an increase of 11,167 cars over the week before. This was 35,165 cars under the total

### REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO FOR WEEK ENDING SATURDAY, OCTOBER 8, 1921

Districts	Year	Total revenue freight loaded					Received from connections					
		Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise	Miscellaneous	Corresponding year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	8,191	3,176	46,209	1,823	4,573	2,420	63,951	81,886	212,125	192,125	192,125
	1920	5,869	2,905	58,173	4,021	8,256	10,761	48,134	110,134	173,756	173,756	173,756
Allegheny	1921	3,241	3,348	31,081	2,609	2,614	5,130	47,090	58,553	116,108	116,108	116,108
	1920	2,125	3,236	67,579	7,136	3,545	16,022	40,668	71,937	270,185	270,185	270,185
Peachontas	1921	262	338	21,437	178	1,266	93	5,697	4,084	33,345	33,345	33,345
	1920	117	358	24,382	1,040	1,724	262	5,410	4,935	38,238	38,238	38,238
Southern	1921	3,870	2,147	24,627	486	16,054	376	39,411	41,603	128,574	128,574	128,574
	1920	2,954	2,438	28,319	1,447	18,385	1,380	36,085	38,793	133,301	133,301	133,301
Northwestern	1921	13,478	9,033	10,010	619	11,625	16,190	28,551	43,293	137,818	137,818	137,818
	1920	14,553	8,891	11,892	1,998	13,849	44,825	9,100	42,117	167,255	167,255	167,255
Central Western	1921	15,333	12,633	22,212	218	6,734	746	37,369	57,306	143,441	143,441	143,441
	1920	10,831	12,184	26,906	521	6,811	3,994	31,350	50,553	142,580	142,580	142,580
Southwestern	1921	4,589	3,418	4,763	121	6,593	748	16,396	29,620	66,522	66,522	66,522
	1920	4,626	2,882	6,812	184	7,446	634	17,930	30,247	70,461	70,461	70,461
Total all reads...	1921	53,964	34,073	180,339	6,054	49,459	25,702	233,465	312,684	895,740	895,740	895,740
	1920	41,375	32,594	224,063	16,347	60,516	39,278	208,785	348,736	1,116,645	1,116,645	1,116,645
1919	42,798	39,707	224,617	8,655	61,758	54,950	149,337	400,449	1,116,645	1,116,645	1,116,645	
Increase compared 1920	12,589	1,479	56,276	1,707	11,057	53,776	24,738	24,738	30,052	115,926	115,926	115,926
Increase compared 1919	11,166	.....	55,672	.....	.....	.....	.....	.....	84,228	86,431	86,431	86,431
Decrease compared 1919	.....	5,634	44,278	2,601	12,290	20,248	8,265	8,265	.....	.....	.....	.....
October 1	1921	57,075	32,868	179,095	5,615	49,466	26,393	234,337	311,429	901,078	901,078	901,078
September 24	1921	51,848	30,933	171,474	4,946	48,202	30,333	233,212	300,257	873,305	873,305	873,305
September 17	1921	55,331	30,309	166,058	4,853	46,472	28,215	235,062	287,371	852,767	852,767	852,767
September 10	1921	54,457	25,108	142,049	4,590	42,145	27,632	198,516	255,617	748,118	748,118	748,118

the northwestern. The central western was the only one to show an increase over the corresponding week last year.

The summary for the week of October 8 is given in the table on the preceding page.

The Car Service Division has compiled an information bulletin dealing with car statistics which makes the following comments on the showing up to October 8.

Comparing with the previous week the number of cars loaded fell below for all commodities enumerated except livestock and coal. The loading during corresponding week in October, 1920,—1,011,666 cars,—was the heaviest weekly loading of which there is record. While for the week grain and grain products loading fell off about 3,000 cars the total loadings of grain and grain products, June 1 to October 8, inclusive, were 1,002,085 cars, which is an increase of 275,118 cars over the corresponding period of 1920.

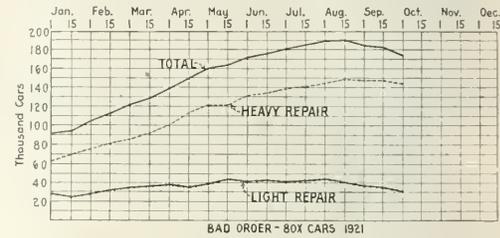
Lumber loading appears to be about on the level with the previous week and does not yet reflect the increase anticipated by reason of increased demands for equipment on the part of the lumber loading roads. Forest products loading is now about 15 per cent below that of last year. There is brisk demand for cars for increased loading of cotton, tobacco and general merchandise.

Coke and ore loading are at an extremely low ebb due to the continued inactivity of the steel mills.

The heavy demand for refrigerators is general. Loading is particularly heavy in California, Washington, Oregon,

representatives of the railroads have been called together in two groups—one at Washington and one at Chicago, representing the Eastern, Southeastern and Southwestern railroads. These conferences have resulted in an immediate movement of 5,500 railroad refrigerator cars into the territory of greatest demand.

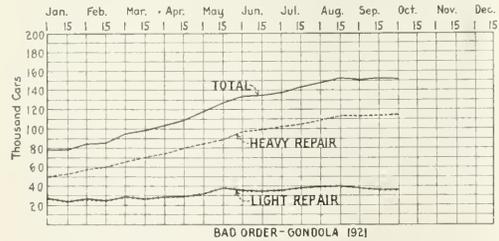
There is a most unusual movement of potatoes coming out of the Northwest this season which up to the present is being handled in box cars. It will soon be necessary to provide protection against frost for this movement, which,



with the beginning of the citrus movement from California and Florida in the immediate future will make demands for refrigerator cars continuous.

The load per car for refrigerators is less than for any previous season. For the three months ended June 30 the average load per refrigerator car was 13.5 tons. This compares with 14.5 for the corresponding period in 1920 and with 15.7 tons per car when compared with what has been done heretofore, taking refrigerator loading as a whole. In the citrus movement the loading from Southern territory is considerably lower than that from the West. During the Fall months of 1920 the loading from the Florida section averaged 15.1 tons per car while the western loading of the same commodity was 17.8 tons per car. If the transportation requirements are to be met satisfactorily this factor of heavier loading of cars available must have attention on the part of shippers and receivers and their co-operation given to the best possible use of equipment.

Records recently compiled of loading of flour and mill stuffs at one of the largest milling centers indicate that the loading of flour for the month of August, 1921, averaged 29 tons per car, whereas during the same month in 1920 the loading was 35.7 tons per car. Mill stuffs loaded at the same terminal for the same period showed 23.9 tons per car as against 30.6 tons per car last year. This means that on



Idaho and Colorado with large increase in loading over previous records. For fruit and vegetables there was recorded a loading for the season up to October 1 of 261,210 cars, which is an increase of 28,843 cars over previous year for the same period. Recent weekly records of loading indicate a higher percentage of increase with prospects of 30 to 40 per cent increase during the next few weeks over the corresponding period of a year ago. To meet this situation rep-

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS  
WEEK ENDED OCTOBER 15, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Received from connections							
										This year 1921	Corresponding year 1920	Corresponding year 1919	This year 1921	Corresponding year 1920	Corresponding year 1919		
Eastern	1921	8,932	3,332	48,327	1,923	4,437	1,166	61,715	84,487	214,319	.....	.....	229,025	.....	.....		
Eastern	1920	6,405	3,156	60,830	3,931	8,024	10,238	48,991	105,300	246,966	.....	.....	237,721	.....	259,100		
Altoheny	1921	2,948	3,530	53,436	2,674	2,951	2,945	47,427	58,829	174,760	.....	.....	119,927	.....	.....		
Altoheny	1920	2,649	3,530	67,128	6,866	3,492	13,989	40,358	76,593	.....	.....	214,605	201,531	.....	153,837	147,404	
Poconahos	1921	212	474	25,137	172	1,242	11	5,527	4,060	36,835	.....	.....	14,733	.....	.....		
Poconahos	1920	82	469	25,604	1,058	1,680	536	5,327	5,138	37,694	.....	.....	36,184	.....	19,674	20,110	
Southern	1921	3,547	2,289	25,415	452	53,917	489	40,087	41,268	311,537	.....	.....	73,932	.....	.....		
Southern	1920	2,953	2,522	29,059	1,566	18,579	3,350	36,519	40,790	.....	.....	135,338	132,953	.....	76,250	76,912	
Northwestern	1921	15,575	9,035	11,108	741	12,732	13,655	29,184	42,680	134,700	.....	.....	57,048	.....	.....		
Northwestern	1920	14,013	9,525	11,620	1,734	14,216	44,394	29,115	43,322	.....	.....	167,939	161,725	.....	61,337	64,527	
Central Western	1921	12,960	14,102	21,936	218	7,200	734	56,922	146,183	.....	.....	.....	.....	.....	63,167	.....	
Central Western	1920	10,636	13,027	27,516	473	7,069	3,385	31,487	51,920	.....	.....	.....	.....	.....	66,758	79,449	
Southwestern	1921	4,198	3,428	5,127	148	7,479	799	16,500	30,021	67,700	.....	.....	51,546	.....	.....		
Southwestern	1920	4,071	2,827	6,914	150	7,252	737	17,895	30,638	.....	.....	.....	.....	.....	50,738	50,683	
Total, all roads	1921	48,372	36,210	191,506	6,332	53,017	17,989	233,541	318,267	906,034	.....	.....	.....	.....	609,878	.....	
Total, all roads	1920	40,810	35,056	226,671	15,778	60,312	76,429	209,692	353,791	.....	.....	.....	.....	.....	687,694	.....	
Total, all roads	1919	43,017	42,830	217,416	8,435	61,061	53,334	148,279	397,716	.....	.....	.....	.....	.....	66,758	694,945	
Increase compared 1920	1920	7,562	1,154	.....	.....	.....	.....	22,849	.....	.....	.....	.....	.....	.....	.....	.....	
Increase compared 1920	1920	.....	.....	35,165	.....	9,446	7,295	56,640	.....	35,524	112,505	.....	.....	.....	78,316	.....	
Increase compared 1919	1919	5,355	.....	.....	.....	.....	.....	.....	.....	84,262	.....	.....	.....	.....	.....	.....	
Decrease compared 1919	1919	.....	.....	6,610	25,910	.....	8,044	33,545	.....	79,449	66,044	.....	.....	.....	85,567	.....	
October 8, 1921	1921	53,964	34,073	180,339	6,103	49,459	25,702	233,465	312,684	895,740	1,011,666	.....	.....	982,171	597,524	701,083	700,513
October 1, 1921	1921	52,890	31,868	175,005	5,615	49,466	26,393	215,429	301,893	892,283	.....	.....	.....	.....	581,252	687,338	711,193
September 24, 1921	1921	53,046	32,933	171,474	4,946	48,702	30,333	232,312	300,757	854,503	1,008,109	.....	.....	.....	599,901	569,626	693,881
September 17, 1921	1921	56,019	30,399	166,058	4,853	46,472	28,215	233,063	287,371	854,500	991,166	.....	.....	.....	678,200	692,737	

\* Grain and total figures revised due to correction on D. L. & W. reports.

the basis of current loading of flour for every six cars dispatched there was one more car used than was necessary.

Reports for July, 1921, show an average loading per car for all commodities of 27.5 tons. The corresponding figure for the same month in 1920 was 29.5 tons per car. Assuming that there was a total of 3,363,000 cars loaded during the month of July, 1921, had the same tonnage per car been loaded this year as was loaded last year, there would have been 228,000 less cars loaded during the month,—one of the cures for coal shortages.

Since Labor Day there has been a marked upward tendency in total coal loading. In the anthracite fields the production is remaining fairly constant with supply of equipment equal to the demands.

Advance figures indicate a continued reduction of surplus so that by or prior to November 1 the surplus of equipment of gondola and hopper cars will be exhausted. There are indications of sectional shortage, the total shortages as of October 1 being approximately 3,300 cars.

The total number box cars in bad order, October 1, was 175,551, of which 144,078 were awaiting heavy repairs. It will be noted that the turn in this condition came during the early part of August, since which there has been a reduction of total box cars awaiting repairs of approximately 15,000 and a reduction in the heavy repair cars of approximately 5,000. It may be assumed that 7 per cent of the total box cars owned would represent the number normally in bad order under present conditions. This equals approximately 73,000 cars. Excess over normal is therefore 102,500 cars.

There has been little change in the total number of bad order open top cars comparing August 15 and October 1. The increase has apparently been stopped and advance indications are there will be a downward tendency dating from October 1. The number of open top cars awaiting repair August 15, were 153,406 while on October 1 this figure stood at 152,768. Figures of bad order open top cars as divided between hoppers and gondolas are not available. It may be assumed that 7 per cent of the open cars owned would represent the number normally in bad order under present conditions. This equals approximately 68,500 cars. Excess over normal is therefore 84,000.

The freight car surplus showed a further reduction during the week ending October 15 to 121,944, of which 36,882 were box cars and 69,558 were coal cars. There were shortages amounting to 3,683 cars, of which 1,098 were refrigerator cars.

## High Surtaxes Kill Sale of Equipment Trusts

WASHINGTON, D. C.

**A**N EXPLANATION of why the sales of the railroad equipment trust certificates taken by the Railroad Administration in payment for the standard equipment allocated to the railroads were suddenly stopped recently after the War Finance Corporation had disposed of some \$94,000,000 of them in two or three weeks, is afforded by a letter written by Eugene Meyer, Jr., managing director of the corporation, to Chairman Fordney of the House ways and means committee.

The proceeds of the sales increased the funds of the Railroad Administration available to make its settlements with the roads. Mr. Meyer says that upon the discussion in the Senate of an increase in the maximum surtaxes in the revenue bill from 32 per cent as provided in the House bill, to 50 per cent, which was forced upon the Senate leaders by the "agricultural bloc" all sales of these securities immediately ceased. They bear interest at the rate of 6 per cent and the higher the rate of surtax of the income tax law, the greater

is the inducement for large investors to put their funds into lower rated tax-exempt securities.

The letter recalled Mr. Meyer's testimony before Congressional committees in connection with the railroad funding bill, in which he stated the opinion that the funds used by the corporation in carrying out the provisions of the bill would be recovered through the sale of securities before June 30, 1922.

"I based that estimate on the ability to sell gradually the securities which we would probably take from the director general of railroads," Mr. Meyer said. "I based my confident expression of opinion, however, upon certain facts and conditions, as you will remember. The facts were:

"1. Improving gross and net earnings of the railroads, due to the improvement in business, and especially the improvement in the general business of the country that I expected would follow the passage of the bill itself, through the increased purchasing power of the railroads in connection with maintenance and repair work.

"2. The increasing ease in the money market and the prospect of an improved investment demand.

"Both of these conditions have been emphasized since I appeared before your committee.

"There was one other condition upon which my expectation with reference to the sale of securities was based, and that was the enactment into law of the recommendations of the Secretary of the Treasury with regard to the reduction of the upper brackets of the income taxes. This latter condition was also made clear in my testimony on the railroad funding bill before the interstate and foreign commerce committees of the Senate and the House.

"Following the adoption by the House of Representatives of the reduction of the maximum surtax to 32 per cent, I was able, acting informally by authority of the President and the director general of railroads, to arrange the sale in September of about \$100,000,000, par value, of the railroad equipment trust certificates held by the government, at exact cost to the United States government with accrued interest.

"Immediately upon the assembling of the Congress and the discussion of an increase in the surtax to a maximum of 50 per cent, all sales of these securities immediately ceased. It is fair to assume that the discussion of the increased surtaxes was intimately related to the termination of the market for railroad equipments. The sales did not cease because of the exhaustion of the supply of desirable securities of the good roads, as the government now holds \$54,000,000 par value of the equipment trust certificates of the same roads of which a considerable part already has been actually disposed of.

"The tax situation is intimately related to the marketing of railroad and industrial securities on a reasonable basis, and in view of my previous statement, I am writing you this letter because I am not willing to be responsible for any plans based upon the expectation of marketing railroad securities on a 6 per cent basis, if the surtaxes are to be raised above the House schedule."

THE INTERSTATE COMMERCE COMMISSION is receiving many applications from railroads and individual officers and directors for authority to retain the position of officer and director of more than one company after December 31. Among the latest applications received are the following: From M. L. Bell for authority to retain the office of director, vice-president and general counsel of the Chicago, Rock Island & Pacific, while also holding office with various subsidiary companies and the Minneapolis & St. Louis; from the Chicago & Western Indiana for authority for its officers to hold similar positions on the Belt Railroad of Chicago; from C. A. Peabody for authority to retain the position of director of the Illinois Central, the Union Pacific, Delaware & Hudson, the Baltimore & Ohio, the Pittsburgh, Fort Wayne & Chicago and various subsidiaries.

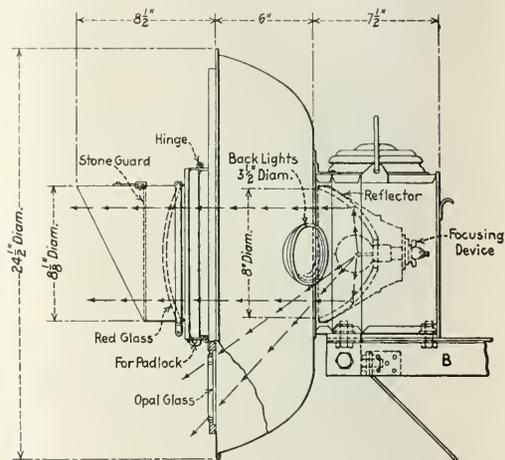
## Morrison's Flashlight Signal for Highway Crossings

THE NEW YORK, NEW HAVEN & HARTFORD has recently put up at a number of highway grade crossings in Massachusetts, Rhode Island and Connecticut a new style of light signal (with no bell) to give indications both day and night. The new signal is attached to the post of the ordinary crossing sign and the light is controlled electrically by approaching trains, by means of track circuits actuated by the moving trains, as in the ordinary audible crossing signal. The light is a standard Edison, incandescent. The red roundel, eight inches in diameter, is surrounded by an illuminated disk which, to the wayfarer, says "WHEN RED, STOP." The letters (white) stand out prominently, especially at night. The light is of the same general design as that used in the automatic block signals on the New York division of the road, which were described in the *Railway Age* of April 27, 1917. The reflector is 24 in. in diameter and the drum carrying the lens is 8 in. in diameter. The Edison socket of the lamp is held in place by an adjusting device so arranged that, within certain limits, it can be centered at any point in both

100 to 200 per cent. It is calculated that, thus operated, the bulbs will last at least a year; and by renewing the bulbs at regular periods, well within the time limit, a high factor of safety will be obtained.

Photometer readings indicate that when the lamp is properly focused in the reflector, the projected beam through the red roundel is about 6,000 c. p. at one degree from the axis of the beam.

The bracket, B, by which the lamp is fixed to the post, is fitted with set screws by which the lamp may be adjusted in both the horizontal and the vertical planes. A double slow-releasing relay, so designed that one member reacts upon the



Morrison's Red Light Day and Night Signal for Highway Crossings



Red Light Crossing Signals at Andover, Connecticut

the horizontal and the vertical planes. The parabolic reflector is of mirrored glass, and it is permanently fastened to the lantern.

The electric light bulb is a G-18½, 40-watt, 8-volt. It is a 1000-hour lamp designed especially for the signals of the New Haven road. The filament is a horizontal spiral with a focal distance of 15/16 in. with an allowance for variation of not more than 3/32 in. The lamp has a standard Edison medium screw base. The filament is of such shape that it gives a spread of 12 deg. of high intensity light, that is, six degrees on either side of the axis of the beam. The lamp is rated at 1,000 hour at normal voltage, but is operated at about 15 per cent below normal, thus increasing the life of the lamp

other, automatically opens and closes the contacts for flashing the light. This relay is so adjusted that the time between the pick-up and release of one pair of magnets is different from that of the other; this provides the proper time element for the energizing and de-energizing of the lamp filament. The apparatus is adjusted to give 30 flashes a minute, which is believed to be the most suitable arrangement. The relay is so adjusted that in each cycle the lamp is alive 75 per cent of the time and 25 per cent of the time it is dark.

The circuit arrangement is such that practically all abnormal conditions will produce a constant red light, except failure of the track circuit, in which case a flashing red light will be displayed.

Energy is provided from an eight-volt storage battery having a capacity of 56 ampere hours, under intermittent service. The storage battery is slowly charged by floating across a primary battery. It is proposed to use the storage battery for all installations; but at certain points where commercial current is available the accumulator is charged direct from the commercial source rather than by the primary battery. As shown in the perspective illustration, a light signal is provided on each side of the railroad.

These signals have proved so satisfactory that the railroad has been allowed to install them, in some cases, in place of watchmen, resulting in a substantial saving in operating expenses.

These signals are in service at Titicut, Mass.; Norton, Mass.; Cranston, R. I.; Andover, Conn.; New Britain, Conn.; Hamden, Connecticut, and Derby, Connecticut. Three of them are now being put up at crossings in New York State.

# General News Department

## Mechanical Convention at Atlantic City

The Executive Committee of the Railway Supply Manufacturers' Association met at the Waldorf-Astoria Hotel, New York City, October 26, 1921. The situation was thoroughly discussed regarding the meeting and exhibits of the Association for 1922. The letter ballot as to the preference of all members indicated a three-to-one vote in favor of the meeting and exhibits. The letter ballot and reports from the various members of the committee, representing all parts of the United States, showed also that the members were decidedly in favor of going to Atlantic City for the meeting and exhibits. A formal vote was taken and it was unanimously decided to hold the 1922 meeting and exhibits in Atlantic City.

The General Committee of Division 5—Mechanical, American Railway Association, held a meeting in New York City on the afternoon of October 6, and decided unanimously to hold its annual convention at Atlantic City, June 11 to 21, 1922. Division 3, American Railway Association (Purchases and Stores) will be invited to hold its annual meeting at the same time and place.

The American Railway Chief Surgeons' Association held its semi-annual meeting at the Hotel Sherman, Chicago, on October 17. The principal topic under discussion was the proposed vaccination of all employees against smallpox and typhoid fever.

A sleeping car line 785 miles in length is now in operation in Great Britain. It extends from Aberdeen, Scotland, to Penzance, in the southwest part of England, not far from Land's End. The route is over the Caledonian, the North British, the North Eastern, and the Great Central to Banbury, and thence by the Great Western.

## Meals at One Dollar on the Pennsylvania

Meals at one dollar, a luncheon or a dinner, can now be had on the dining cars of the Pennsylvania Railroad, special combination lunches and dinners being served at this price, on all cars throughout the System. This convenience is in addition to the usual a la carte features. During a brief experimental period about thirty different combinations have been tried. Others are being added, and changes are to be made frequently, in order to afford variety of choice as well as to determine those which are most popular. Each special combination consists of either meat or fish, two vegetables, rolls and coffee, tea or milk.

## Conference on Railroad Tie Specifications

A conference on the proposed unification of specifications for railroad cross ties and switch ties, called by the American Engineering Standards Committee, was held at Washington on October 25 at the office of the United States Forest Service. The conference decided unanimously that such unification should be undertaken, but as to the question as to the scope of the work it was thought best to confine the work to unifying the existing specifications as to size and quality and not to consider the matter of treating ties. The Forest Service and the American Railway Engineering Association were appointed as sponsors for the organization of the work and committees will be formed including representatives of the lumber industry and other interests. John Foley, forester of the Pennsylvania, represented the American Railway En-

gineering Association at the conference. The National Association of Railroad Tie Producers was represented by W. C. Nixon. Representatives were also present of the National Hardwood Lumber Association, the National Lumber Manufacturers' Association, the West Coast Forest Products Bureau, the American Society for Testing Materials, the American Electric Railway Association, the Forest Service and the Bureau of Standards.

## Machine Tool Builders' Convention

The twentieth annual convention of the National Machine Tool Builders' Association was held October 18, 19 and 20 at the Hotel Astor, New York. A considerable proportion of the membership was in attendance at the opening session, when H. Tuechter, president of the association, read his opening address. He discussed the possibilities in the way of standardization of tools, improved standard methods of cost accounting and the value of the statistical service being developed by E. F. Du Brul, general manager of the association. It was proposed to make this statistical service a business barometer to guide the members of the association. The president's address was followed in the afternoon by addresses by Charles L. Underhill, Congressman from Massachusetts, on "How Present Political Policies Affect Business", Professor Jordan, of New York University, on "Business Cycles," and C. L. Cameron and E. F. Du Brul, on "What Things Should Machine Tool Builders Do and What Should They Avoid at Various Stages of the Cycle?" The second day of the convention was devoted to committee meetings, and the third to addresses of general interest followed by an executive session. Officers of the association for the year 1921 were re-elected for 1922, the only change being in the election of Howard W. Dunbar, Norton Company, Worcester, Mass., as secretary.

## Valuation Bureau Reorganization

The Bureau of Valuation of the Interstate Commerce Commission is undergoing an extensive reorganization affecting the engineering, accounting and land sections, which involves some reduction of the force, as the field work has been practically completed, and the principal remaining work consists of compilation and the preparation of tentative reports. The work is now being centralized in Washington and the district offices are to be closed and the engineering board abolished. In place of the board, H. M. Jones, who was district engineer at Chattanooga, has been appointed supervising engineer at Washington and will have a staff similar to the staffs maintained by the district engineers. The Chicago office is to be maintained until November 30, but the Kansas City and San Francisco offices were closed on October 26 and the Chattanooga office has already been closed. Approximately 300 employees of the district offices will be moved to Washington, but many of them, particularly from the more distant offices, did not care to move and in some instances this will mean that others will be taken on at Washington to fill their places. A considerable number of men will remain in the field closing up their work until the end of the year. C. C. Witt, district engineer at Kansas City, has been appointed assistant supervising engineer at Washington. R. A. Thompson and Edwin F. Wendi, district engineers at San Francisco and Washington, have resigned effective on October 30, and the resignation of W. D. Pennington, district engineer at Chicago, becomes effective on November 30. Similarly the land section is to be centralized at Washington and the service of the valuation attorneys is to be terminated on November 15.

Operating Statistics of Large Steam Roads—Selected Items for the Month of August, 1921

Region, road and year	Average miles of road operated	Locomotive-miles				Car-miles		Ton-miles			Average number of locomotives on line daily				
		Trains	Principal helper		Light	Loaded (thous. cars)	Empty (thous. cars)	Per cent. loaded	Gross. Excluding ton and tender	Net. Revenue	Serv-ice-able	Un-ser-vice-able	Per cent. un-der-ice-able	Stored	
			Principal	helper											Loaded
<b>New England Region:</b>															
Boston & Albany.....	1921	394	237,289	256,462	29,707	4,470	2,320	65.8	50.0	232,576	90,975	123	29	19.1	...
Boston & Maine.....	1921	394	645,874	645,874	36,773	5,000	3,474,384	2,771	68.8	50.0	164,768	135	30	18.2	30
Boston & Maine.....	1920	2,469	509,599	564,575	36,610	11,094	4,627	70.6	50.5	561,444	230,743	325	132	28.9	62
Boston & Maine.....	1920	2,469	748,603	837,170	86,990	15,442	6,074	72.0	50.8	348,382	390,619	371	96	20.5	1
N. Y., N. H. & H. ....	1921	1,960	452,517	487,934	30,355	10,498	5,192	66.9	49.2	537,300	222,152	309	79	20.3	45
N. Y., N. H. & H. ....	1920	1,938	549,258	577,632	38,069	11,970	4,278	73.7	49.1	624,611	295,346	318	80	20.1	...
<b>Great Lakes Region:</b>															
Delaware & Hudson.....	1921	880	339,246	445,083	33,260	8,556	5,196	62.2	50.4	561,387	276,273	276	35	11.3	114
Delaware & Hudson.....	1920	881	474,557	677,898	45,849	12,388	6,257	61.4	49.1	860,783	456,243	263	37	12.4	8
Del., Lack. & Western.....	1921	997	511,778	625,962	115,829	15,943	6,873	69.9	50.2	875,637	416,323	306	56	15.5	46
Del., Lack. & Western.....	1920	997	603,361	731,377	134,938	15,233	7,763	70.5	50.5	1,079,114	547,967	304	74	19.5	...
Erie (inc. Chic. & Erie).....	1921	2,259	951,327	1,066,507	89,796	31,627	15,208	67.6	50.5	1,067,603	839,152	550	177	24.3	53
Erie (inc. Chic. & Erie).....	1920	2,259	1,145,156	1,303,498	50,243	38,707	16,718	69.8	50.8	2,296,856	1,126,903	578	109	15.9	5
Lehigh Valley.....	1921	1,431	559,876	614,036	59,717	15,883	9,365	62.9	52.9	924,633	431,766	439	107	19.6	129
Lehigh Valley.....	1920	1,429	692,753	780,257	75,312	21,447	9,127	70.1	48.7	1,028,081	705,534	510	184	31.0	80
Michigan Central.....	1921	1,829	749,153	857,183	78,260	13,836	7,422	62.3	46.3	742,837	367,288	384	20	10.4	107
Michigan Central.....	1920	1,826	612,979	699,210	21,475	20,506	7,644	72.8	48.3	1,096,847	532,369	339	75	18.1	...
New York Central.....	1921	5,655	1,677,716	1,856,719	133,241	59,097	35,692	62.3	47.6	3,435,800	1,455,922	927	262	38.9	248
New York Central.....	1920	5,655	2,154,718	2,509,751	196,247	84,032	42,437	66.2	49.9	5,053,436	2,498,332	1,111	(3)	(9)	(1)
N. Y., Chic. & St. L.....	1921	572	320,416	393,049	9,937	9,969	4,630	68.3	51.3	508,026	200,011	199	49	22.9	...
N. Y., Chic. & St. L.....	1920	573	447,359	449,434	938	13,564	3,894	77.7	56.5	694,440	335,864	115	49	29.8	1
Per. Marquette.....	1921	296	345,847	351,558	6,881	8,689	4,066	68.1	48.6	475,349	206,294	163	45	21.5	18
Per. Marquette.....	1920	2,208	373,699	387,523	5,931	10,089	2,681	79.0	51.6	524,692	274,784	158	39	19.7	...
Pitts. & Lake Erie.....	1921	225	67,273	70,156	5,599	2,374	1,434	63.9	48.4	166,136	73,179	59	37	31.5	22
Pitts. & Lake Erie.....	1920	225	75,594	79,375	1,391	2,277	1,439	67.9	49.9	146,628	26,143	63	19	19.0	...
Wabash.....	1921	2,418	595,359	627,690	9,632	16,308	7,490	58.5	48.2	874,616	372,818	276	71	20.5	39
Wabash.....	1920	2,418	653,517	669,184	8,762	19,849	5,513	78.3	49.0	1,024,809	502,607	265	69	20.7	14
<b>Ohio-Indiana-Allegheny Region:</b>															
Baltimore & Ohio.....	1921	5,185	1,671,430	1,772,694	137,693	40,623	25,729	61.2	48.6	2,690,838	1,322,018	1,002	293	28.2	192
Baltimore & Ohio.....	1920	5,154	2,194,745	2,450,990	173,081	59,741	31,902	62.5	49.1	4,039,162	2,153,618	1,082	227	37.3	9
Central of N. J.....	1921	679	264,944	297,263	40,173	6,237	3,733	62.6	49.3	390,283	192,294	206	56	21.3	14
Central of N. J.....	1920	679	360,193	391,220	38,226	8,039	4,276	65.5	51.9	515,978	268,996	219	50	18.6	...
Chicago & Eastern Ill.....	1921	1,131	246,902	248,431	3,695	5,818	3,573	62.2	51.2	355,515	177,339	127	49	27.7	46
Chicago & Eastern Ill.....	1920	1,131	316,805	318,183	4,260	8,008	2,791	62.5	53.2	445,531	235,982	137	52	32.4	32
C. C., C. & St. L.....	1921	2,382	627,199	655,303	2,912	17,213	11,295	60.4	48.6	1,067,098	468,446	299	43	22.4	66
C. C., C. & St. L.....	1920	2,393	755,389	786,263	738	21,999	10,758	67.2	52.9	1,332,925	640,091	304	75	19.8	...
Elgin, Joliet & Eastern.....	1921	836	87,348	94,207	4,710	2,714	1,301	67.6	52.1	197,442	106,104	97	11	10.0	43
Elgin, Joliet & Eastern.....	1920	835	162,238	184,249	13,030	13,030	5,343	69.4	49.9	361,574	166,640	94	13	13.5	5
Long Island.....	1921	395	40,990	50,416	8,585	888	401	59.5	49.9	52,861	12,833	35	10	22.6	1
Long Island.....	1920	395	45,413	55,044	12,638	2,900	289	64.3	51.2	27,023	11,319	39	11	22.3	...
Pennsylvania System.....	1921	10,877	3,958,882	4,278,363	300,264	100,933	57,353	65.8	48.8	6,776,305	3,376,523	2,615	854	24.6	843
Pennsylvania System.....	1920	10,838	5,349,632	5,930,715	440,219	135,669	75,213	64.3	49.9	9,157,578	4,928,190	2,166	888	28.2	5
Phila. & Reading.....	1921	1,131	501,839	508,126	19,229	17,990	9,235	65.2	51.5	833,576	398,487	267	189	23.9	168
Phila. & Reading.....	1920	1,119	678,152	794,177	11,471	17,872	7,942	69.2	51.6	1,200,244	693,052	299	81	21.3	1
<b>Poconahs Region:</b>															
Chesapeake & Ohio.....	1921	2,548	641,697	694,937	20,147	18,473	13,211	58.3	48.6	1,395,262	749,688	456	102	18.3	126
Chesapeake & Ohio.....	1920	2,548	929,620	1,004,891	18,179	28,167	17,731	61.4	50.9	2,162,628	1,191,590	416	112	21.1	4
Norfolk & Western.....	1921	2,221	665,948	800,708	29,845	18,164	10,241	60.1	49.1	1,373,981	744,037	614	88	12.5	216
Norfolk & Western.....	1920	2,190	866,697	1,111,145	51,608	26,493	14,674	64.3	49.0	1,939,576	1,104,221	505	174	25.6	62
<b>Southern Region:</b>															
Atlantic Coast Line.....	1921	4,887	474,410	478,123	6,809	9,953	5,295	65.3	52.6	508,139	197,762	295	113	27.6	68
Atlantic Coast Line.....	1920	4,890	601,553	640,338	8,667	13,200	5,989	68.8	49.5	694,673	308,977	289	149	34.0	1
Central of Georgia.....	1921	1,908	227,007	229,216	2,022	4,427	2,242	66.4	49.0	229,958	98,910	110	25	18.8	17
Central of Georgia.....	1920	1,913	259,948	262,639	5,231	5,312	1,896	73.7	48.4	274,367	129,280	112	18	13.7	...
I. C. (inc. Y. & M. V.).....	1921	6,151	1,549,470	1,555,055	30,251	40,852	24,441	62.9	50.0	2,579,683	1,147,793	712	95	11.8	16
I. C. (inc. Y. & M. V.).....	1920	6,152	2,054,011	2,019,249	41,983	52,432	22,256	69.1	49.9	3,233,574	1,606,406	690	103	10.0	...
Louisville & Nashville.....	1921	5,020	1,461,786	1,556,544	55,523	25,033	16,956	59.6	49.5	1,625,062	766,006	551	103	15.8	37
Louisville & Nashville.....	1920	5,024	1,673,331	1,836,710	65,758	30,528	14,873	67.2	49.6	1,871,885	946,519	540	112	17.2	...
Seaboard Air Line.....	1921	3,537	351,147	360,355	6,708	7,156	2,888	71.4	52.7	355,145	144,844	166	90	35.2	6
Seaboard Air Line.....	1920	3,537	442,766	451,037	10,722	10,087	3,651	73.3	50.7	525,507	242,154	175	37	35.6	1
Southern Ry.....	1921	6,942	1,181,316	1,202,071	84,862	14,832	7,834	65.8	48.7	1,832,748	797,239	619	239	21.4	64
Southern Ry.....	1920	6,942	1,507,552	1,540,787	37,802	33,426	11,674	74.1	50.4	1,739,792	800,546	896	205	18.6	2
<b>Northwestern Region:</b>															
C. & N. W.....	1921	8,371	1,631,872	1,680,576	22,430	34,517	21,536	61.6	48.9	2,034,514	787,534	813	262	24.4	62
C. & N. W.....	1920	8,370	1,790,225	1,840,351	25,344	49,456	26,324	61.6	49.0	2,327,448	1,077,277	885	290	25.1	4
C. M. & St. P.....	1921	10,992	1,590,480	1,631,684	64,028	38,562	19,533	66.6	50.4	2,175,458	992,748	808	208	19.1	137
C. M. & St. P.....	1920	10,626	1,816,265	1,879,207	74,843	47,270	24,728	55.7	46.1	2,600,077	1,174,690	664	274	29.2	6
C. St. P., M. & O.....	1921	1,726	345,988	366,270	15,068	6,481	2,618	69.0	51.2	354,545	155,939	156	57	26.6	23
C. St. P., M. & O.....	1920	1,726	368,007	389,											

Compared with August, 1920, for Roads with Annual Operating Revenues Above \$25,000,000

Table with columns: Region, road and year; Home; Foreign; Total; Average number of freight cars on line daily; Gross ton-miles; Net ton-miles; Net ton-car-day; Car-miles; Pounds of coal per 1,000 gross ton-miles; Passenger service (Train-miles, Passenger train-car-miles).

### International Commerce Body to Meet at Rome

The second annual meeting of the International Chamber will be held in Rome, Italy, beginning September 18, 1922. At the first annual meeting held last June in London more than 200 American business men, representing virtually every industry in the United States, attended. Among the subjects which are to be studied by international committees are: Export credits, foreign exchange, reciprocal treatment of foreign banks, bills of exchange, economy of fuel, international bureau of statistics, international commercial arbitration, international protection of industrial prosperity, unification of tariff nomenclature, reciprocal treatment of commercial travelers, reform of the calendar, through freight trains on great international traffic routes, uniformity of ships' tonnage measurement, combined rail and ship bill of lading, uniform ocean bills of lading, uniform interpretation of meaning of trade terms, and uniform passport regulations.

### American Railway Association

The regular meeting of the American Railway Association will be held at The Waldorf-Astoria, New York City, on Wednesday, November 16. Reports of divisions of the association are expected to be presented as follows:

*Division I.*—Operating; Freight Station Section; Medical and Surgical Section; Protective Section; Safety Section; Telegraph and Telephone Section.

*Division II.*—Transportation.

*Division III.*—Traffic.

*Division IV.*—Engineering; Construction and Maintenance Section; Electrical Section; Signal Section.

*Division V.*—Mechanical; Equipment Painting Section.

*Division VI.*—Purchases and Stores.

*Division VII.*—Freight Claims; Car Service Division; Joint Committee on Fuel Conservation; Joint Committee on Automatic Train Control; Conference Committee on Grain.

Copies of the reports will be forwarded to members in advance of the meeting.

## Traffic News

The New England Traffic League, at a meeting in Boston last week voted approval of the action of the Boston & Maine in reducing freight rates to meet auto truck competition.

J. L. Neely, for the past eight years assistant traffic manager of the American Sheet & Tin Plate Company, has been promoted to traffic manager succeeding the late Andrew G. Young. Mr. Neely has been in the traffic department of the company for the past 20 years.

The Chicago Shippers' Conference Association will hold its annual meeting at the Hotel La Salle, Chicago, on November 1. Numerous traffic problems will be brought up, and the annual election of officers will be held. The chairman of the convention committee is R. J. Wallace, traffic manager of the Jaques Manufacturing Company.

The Pennsylvania has announced the restoration of its winter Florida passenger train, the "Southland," between Chicago and Jacksonville, Fla. It will make its first trip from Chicago at 8:30 p. m. on November 14. This train will be operated daily over the Pennsylvania to Cincinnati, Ohio; from there to Atlanta, Ga., over the Louisville & Nashville, from Atlanta to Albany, Ga., over the Central of Georgia, and from Albany to Jacksonville, on the Atlantic Coast Line.

Grain for export, shipped east from Buffalo, N. Y., by rail amounted, in one day last week, to 2,000,000 bushels, the largest total yet recorded this year and about double a normal day's movement. It is estimated that about 60 per cent of this grain goes to Philadelphia. The chief reason for this heavy movement is believed to be the threat of a strike by the brotherhoods. It is estimated that there are approximately 15,000,000 bushels of grain now in elevators at Buffalo.

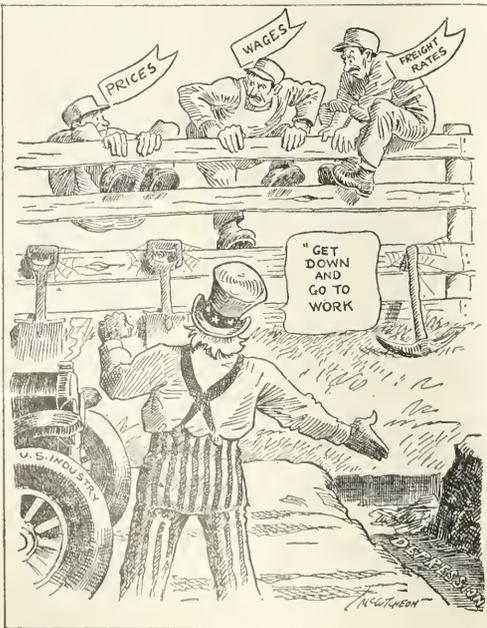
The Interstate Commerce Commission has issued sixth section permission orders authorizing the railroads to put into effect on one day's notice special tariffs which will give practically free transportation for Marshal Foch and other representatives of foreign governments for their trips by special train to Kansas City for the convention of the American Legion. The rate provided for was \$1 for the train for each stage of the journey between New York and Washington, and between Washington or New York and Chicago and between Chicago and Kansas City.

### Coal Production

The production of soft coal increased slightly during the week ended October 15, according to the weekly bulletin of the Geological Survey. The total output is estimated at 9,696,000 tons, an increase of 573 tons over the week preceding.

### Coal Association Asks Rate Reduction

The American Wholesale Coal Association has filed a petition with the Interstate Commerce Commission requesting it to institute an investigation into the reasonableness and propriety of the general level of interstate rates on coal and coke throughout the United States, and also into the reasonableness and propriety of the charges for reconignment, diversion and detention of coal cars. The petition says that transportation costs cannot continue to be unaffected by conditions which affect every other item of cost and that railroads which depend upon the nation's industries for their revenues cannot continue to exact charges on a basis which prevents or tends to prevent industries from returning to normal conditions. A reduction in the rates on coal, it says, would reduce costs in nearly every line of industry and would stimulate and encourage industry to a larger extent than would a reduction in rates on any other commodity. The petitioner does not desire investigation of individual rates or relationships, but expresses the conviction that the



Copyright 1921, by the Chicago Tribune

On the Road to Normalcy

commission should work toward a restoration of the rates and relationships which existed in 1917. Reference is made to the investigations already instituted by the commission into the rates on livestock, grain and lumber. It is asked that the coal investigation be assigned for hearing at an early date and that it be expedited. The petition was filed by Wilbur La Roe, Jr., who has recently formed a partnership with former Chairman Clark of the Interstate Commerce Commission.

George H. Cushing, representing the Coal Association, has also filed a formal complaint with the commission asking it to suspend on one day's notice all charges with respect to the detention, diversion, reconsignment or other charges or penalties affecting the transportation and delivery of coal and coke in carload lots except the ordinary transportation charge, in order to encourage the shipment of coal to meet a possible railroad strike situation. The complaint says that if the shippers should ship to market in anticipation of needs that will become most urgent in the case of a strike, in excess of current demands, they would be charged with demurrage and reconsignment and other charges which would more than absorb their entire gross margin.

### Traffic Statistics for July

Revenue traffic statistics compiled by the Interstate Commerce Commission for July, and for seven months of 1921, covering 167 Class I roads, show only 24,990,000,000 ton miles of revenue freight for the month as compared with 37,075,000,000 for July last year. The freight revenue for the month was \$313,441,273 as compared with \$356,072,338. The total of passenger miles was 3,637,499,000, as compared with 4,801,015,000, and the passenger revenue was \$108,652,164, as compared with \$122,969,456. For the seven months' period the ton miles were 170,806,000,000, as compared with 227,772,000,000, and the freight revenues were \$2,177,314,692 as compared with \$2,210,199,657. The average revenue per ton mile was 1.275 cents. The number of passengers carried one mile for the seven months were 22,019,876,000 as compared with 26,580,007,000 in 1920, and the passenger revenue \$683,341,005 as compared with \$688,900,560. The average journey was slightly less than last year and the average number of revenue passengers per car was 16.67 as compared with 19.84.

The commission has added to its report on revenue traffic statistics certain data regarding commutation traffic for July, 1921, which shows the following:

District and region	Commutation traffic			Miles per passenger per road		Revenue per passenger-mile	
	Revenue passengers carried (thousands)	Revenue passengers carried one mile (thousands)	Passenger revenue	Commutation	Other than commutation	Commutation	Other than commutation
Eastern District:							
New Eng. Region	4,559	72,425	\$733,323	15.80	27.56	0.999	3.426
Great Lakes Region	6,432	111,909	1,115,866	17.40	69.74	0.997	3.287
Ohio-Indiana-Allegheny Region	11,893	202,169	2,018,134	17.00	34.98	0.998	3.166
Peachontas Region	18	304	3,946	16.79	45.95	1.298	3.320
Southern District (exclusive of Peachontas Region).....	1,614	16,993	204,668	10.53	52.23	1.204	3.340
Western District:							
Northwest Region	2,187	39,822	472,460	18.21	85.00	1.186	3.379
Cent. West Region	2,812	37,379	351,273	13.29	89.40	0.940	3.213
Southwest Region	214	2,548	41,103	11.91	63.08	1.613	3.394
United States.....	29,729	483,549	4,930,763	16.27	51.74	1.020	3.280

THE EXECUTIVE COMMITTEE of the Railway Supply Manufacturers' Association met at the Waldorf-Astoria Hotel, New York City, October 26, 1921. The situation was thoroughly discussed regarding the meeting and exhibits of the Association for 1922. The letter ballot as to the preference of all members indicated a three-to-one vote in favor of the meeting and exhibits. The letter ballot and reports from the various members of the committee, representing all parts of the United States, showed also that the members were decidedly in favor of going to Atlantic City for the meeting and exhibits. A formal vote was taken and it was unanimously decided to hold the 1922 meeting and exhibits in Atlantic City, New Jersey.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until February 22, the operation of certain schedules published by the Atlantic Coast Line which propose increased commodity rates on lumber from various points in the Carolinas to Newport News, Va.

The members of the Interstate Commerce Commission on October 22 presented their former chairman, Edgar E. Clark, with a silver tea service. Mr. Clark was called to the hearing room of the commission on some pretext and Chairman McChord made the presentation speech.

### Personnel of Commissions

R. A. Thompson, in charge of the Pacific district of the Bureau of Valuation, Interstate Commerce Commission, has resigned, the district offices having nearly closed up their business. Mr. Thompson is going to Wichita Falls, Tex., where he will be chief engineer in charge of the construction of dams for the Wichita County Water Improvement District.

## Court News

### Hours of Service Act—Telegraph Operators

The Circuit Court of Appeals, First Circuit, holds that a telegraph operator, who was paid for about 12 hours' service out of 24-hour periods, but was in actual service only 5 or 6 hours, being released from time to time for periods of 1 to 2 hours by the train dispatcher, was not on duty for a longer period than 9 hours in violation of Section 2 of the Hours of Service Act.—United States v. New York, N. H. & H., 274 Fed. 321.

### Concealed Damage Discovered After Three Months

The consignee of a shipment of plate glass accepted it as in good order and kept it crated for three months. When it was then uncrated it was found broken. In an action against the railroad the South Carolina Supreme Court holds that recovery could not be based on the presumption that the glass was broken when delivered and the further presumption that the terminal carrier caused the breakage since this would be to mount a presumption upon a presumption. The plaintiff must first show that the glass, when delivered to him, was in a damaged condition.—Nimmer v. Northwestern (S. Car.), 107 S. E. 479.

### Violation of New York Fencing Law

#### Not Negligence as to Child

The New York Court of Appeals holds that where a child strayed on a railroad track and was killed by a train, the fact that the railroad had not fenced the road according to New York Railroad Law, §52, requiring fences to keep out live stock, was no basis for any claim of negligence against the company, the absence of a fence being no breach of a statutory duty owing to the deceased. The court states that there seems to be no prior decision in New York State on the point. Elsewhere under somewhat similar statutes the results conflict. In Massachusetts, Maine, New Hampshire, Ohio, Illinois, Indiana, and Iowa, it is said that the object of the Legislature is solely to prevent the straying of cattle. The contrary, at least so far as children are concerned, is the rule in Wisconsin, Missouri, Minnesota, Nebraska, and Michigan. The Supreme Court of the United States does not seem to have had a similar statute before it for construction.—Di Caprio v. New York Central (N. Y.) 131 N. E. 746.

## Railroads' Right to Abandon Road Operated at a Loss

The Minnesota Supreme Court holds that, unless a railroad company has contracted to keep its road in operation, it has the constitutional right to abandon it if the line can no longer be operated except at a loss; but apparently the Railroad and Warehouse Commission has no power to authorize an abandonment on this ground, since the statute limits its power to allow abandonment if it "will not result in substantial injury to the public."—*In re Duluth & N. M.* (Minn.), 184 N. W. 186.

## Driver of Truck Held Negligent at Crossing Though Motor Fails

The Pennsylvania Supreme Court holds that where the driver of a motor truck, without stopping, looking, or listening, drove on a crossing and was killed by a train, he was guilty of contributory negligence as a matter of law, even though the accident would not have happened had the engine of the motor truck not stopped, the tendency of such an engine to stall if driven at low speed being well known to all drivers. In undertaking to calculate his chances on crossing the track ahead of the train the deceased was held bound to foresee and take into consideration this additional danger.—*Fendale v. Hines* (Pa.) 114 Atl. 497.

## Insufficient Evidence of Flooding by Filling in Trestle

In an action against a railroad for damages to growing crops caused by obstructing the flood waters of a stream by filling in a trestle, the testimony showed that there was an excessive rainfall and several extraordinary overflows, which flooded the entire valley of the stream, both above and below the railroad embankment. The Mississippi Supreme Court reversed a judgment for the plaintiff because there was no testimony to enable the jury to separate the damages attributable to the wrongful act of the railroad company from that caused by the excessive rains on the crops and the consequent flooding of the land independent of the trestle.—*Davis v. Hambrick* (Miss.) Co. 88, 511.

## Not Liable for Derailment

### Caused by Transverse Fissure

In an action for personal injuries resulting from the derailment of a passenger train between Rahway and Elizabeth, N. J., the undisputed evidence showed that it was due to the breaking of a rail, caused by an internal transverse fissure not discoverable by the naked eye, and that no other test than the actual breaking of the rail would have revealed the defect. The rail was made by a reputable manufacturer, and had been in use about five years, about one-third of the normal life of such a rail; and the track was inspected daily. The Circuit Court of Appeals for the Third Circuit holds that the railroad was not liable, and judgment for the defendant was affirmed.—*Holland v. Director General*, 273 Fed., 928.

## Railroad Not Liable for Shortage in

### Weight of Package Freight

The District Court for the Northern District of Georgia holds that under Section 20 of the Bills of Lading Act of 1916, where a railroad loads package freight (cotton in bales) it is required only to state the number of packages and such marks or description as will identify them. A further statement, in an order bill for baled cotton, of the weight of the shipment is voluntary and gratuitous, and where it is qualified by the words "subject to correction" does not render the railroad liable to the holder of the bill, under Section 22, for a shortage in weights, and the qualification is not forbidden by law. The court adds: "It is appreciated that since cotton is not bought and sold by the package, but by the pound, this conclusion militates greatly against the attainment of one of the aims of the Bills of Lading Act; but the liability cannot be extended beyond the plain words of the act."—*Leigh Ellis & Co. v. Payne*, 274 Fed. 443.

## Foreign Railway News

### South Manchuria to Buy Supplies Here

The South Manchuria Railway plans to spend approximately \$20,000,000 annually in the United States, during the next few years for railway equipment and supplies, according to the New York Evening Post, which ascribes the statement to Yozo Tamura, an officer of the company, who recently arrived from Japan.

### Spain Finances Harbor and Railway Improvement

Important construction projects reported recently by the American embassy in Spain include the issue of government bonds to the value of \$1,100,000 to finance improvements at the port of Ceuta; also extension of credits to the Northern Railway and to the Madrid, Zaragoza & Alicante Railway for the purchase of railway material provided for in the royal decree of October 15, 1920.

### Extent of Depression in Great Britain

The business depression in Great Britain, as shown by traffic statistics of the railways, is severe. In July of this year passenger traffic, as shown by total passengers carried (exclusive of season ticket holders), had fallen 32.8 per cent from the figure for July, 1920, to a total of 101,450,975. Freight traffic declined 36.5 per cent to 1,088,443,125 ton-miles. Average receipts per ton-mile were 2.074 pence (about 4 cents). The average car load was 5.12 long tons and the average train load 123.52 long tons, as compared with 5.45 and 133 for the same period in 1920.

### Important Railway for State of Matto Grosso, Brazil

A third railway in the Brazilian state of Matto Grosso, which will undoubtedly have the greatest influence on the future development of this rich section of Brazil, has been initiated, according to Commerce Reports. The first railway connects the two navigable stretches of the Madeira river, while the other, a more extensive line, crosses the southern part of the state, connecting the Parana and Paraguay rivers. While both lines have been important in the development of Matto Grosso, the present line, if carried to a successful completion, will be much more important. The proposed line is to commence at the Agua Clara station on the Northwest of Brazil Railway and, with an extension of approximately 620 miles, will reach Cuyaba, after having passed by Bahu, Santa Rita do Araguaia, and the thriving village of Rondonopolis. The commission of engineers is now making the last definite studies of the proposed railway line.

According to the plans, this railway should form the trunk line of a system of future railways along the margins of the Madeira river and other large tributaries of the Amazon.

### Argentine Railway Dividends

Compared with last year's distribution the dividends recommended by three leading Argentine railways are disappointing, though they are in accordance with expectations in view of present conditions, according to the Railway Gazette (London). For the fiscal year 1920-1921 the Buenos Aires Great Southern, the Buenos Aires Western and the Central Argentine are each paying 4 per cent, whereas for the previous year the Great Southern and the Western each paid 7 per cent and the Central Argentine 6 per cent. The position of these three companies was strengthened last year by the transference to reserve of exceptional profits accruing from the high exchange value of the Argentine dollar.

For the financial year just ended, however, the Gazette continues, no such windfall can be expected and the traffic returns have been discouraging. In the 52 weeks the gross income of the Great Southern had fallen by \$4,125,000 and the net returns by as much as \$8,575,000. Similarly, the Western gross returns

were lower by \$5,750,000 and the net figures by \$6,350,000. The Central Argentine does not publish net returns, but its gross figures for the 52 weeks showed an increase of only \$75,000. To pay this year's reduced dividend the Great Southern will admittedly have to take \$2,750,000 and the Western \$2,500,000 from reserve.

**Railroad Fosters "Good Roads"**

**Campaign in Argentina**

The Buenos Aires & Pacific has begun an active campaign to arouse interest among farmers and landowners in the improvement of roads leading to the railway, according to Commerce Reports. Motion pictures have been prepared showing the present state of the roads together with pictures of good roads in the United States and methods of road building. These pictures have been well received in the country districts. The railroad company announces that it will assist in the organization of local committees, the loan of road-building machinery, and offers the services of its surveyors.

**Australian Railway Gage Conversion**

A uniform railway gage for Australia, which has been under discussion for many years, is now brought a step nearer realization by the recent report of the commission appointed by the federal government in December, 1920, to investigate the subject, according to the Railway Gazette (London). As had been anticipated, the commission recommends the adoption of the 4 ft. 8½ in. gage, which has been in use from the first on the New South Wales Government Railways, and was deliberately adopted for the Trans-continental railway of the federal government from Kalgoorlie to Port Augusta, which was opened in 1917. The estimated cost in 1913 of the general conversion of the Australian railways to the 4 ft. 8½ in. gage was \$115,000,000, but at the conference last December of the chief civil engineers of the different state railways, the estimate for the conversion of the whole of the existing railways was put at \$468,000,000.

In view of this very heavy cost it is proposed, as a first step, that the gage be made uniform between the five state capitals. This, at present prices, has been estimated to cost \$132,500,000. The main difficulty now is the question of finance, which has to be arranged with the premiers of the different states. Mr. Hughes, the federal prime minister, who has always been a strong advocate of gage uniformity from the point of view of national defense, is understood to be ready to discuss with the conference of state premiers the practicability of taking action to begin a gradual conversion.

**French Railways and the State**

The paramount problem awaiting solution in France is, according to a special dispatch to the New York Tribune, the reorganization of the railroads. Before the war the railroads averaged enough to pay fixed charges, the dispatch continues. Stocks and bonds of the railroads are guaranteed by the government through an agreement by which the railroads will gradually pass under state ownership in 1980. Public opinion is strongly opposed to an extension of state activity now and it would not be surprising if public monopolies are abandoned as unprofitable. During the war the railroads were greatly overworked and in the zone of German occupation were systematically destroyed. Now the pre-war status has been restored. Of the 600 bridges destroyed, 565 have been rebuilt, while locomotives number more than 1,000 above the pre-war total. Recently an American signaling system has been installed at great expense. Plans for electrification are being rapidly pushed and it is estimated that within five years 5,000 miles will have been completed.

To cover these productive expenditures the Chamber of Deputies is now preparing to ratify a bill already passed by the Senate for a large increase in rates, amounts of which are left to the discretion of the railroads. These may reach 180 per cent for freight and baggage and 100 per cent for passengers. They are to continue until 1926. The railroad deficit last year of \$600,000,000 was said to be due to adoption of the eight-hour day and to reconstruction improvements. Now conditions are rapidly improving as a result of lower coal prices and the termination of reconstruction.

**Railway Conditions in Soviet Russia**

The following observations on railway conditions in Siberia and European Russia are from a source which the Bureau of Foreign and Domestic Commerce considers reliable and are of recent experience:

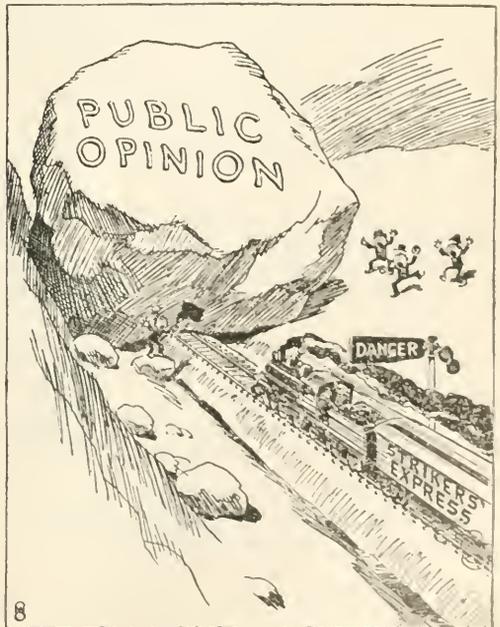
"On the main line of the Trans-Siberian Railway the roadbed seemed to be in good condition all the way. Section hands and trackmen employed under the old régime have remained at their posts, despite arrears in their pay, and have made the necessary repairs in track ballast. Telegraph lines are also in good condition, and fully half the poles have been renewed during the last two years, according to the date marks on them. A number of stops were made en route on account of delays in transportation.

"The rolling stock of the railways is in a very unsatisfactory condition, chiefly due to lack of spare parts for repairs. This is especially true of locomotives. The yards in practically every terminal were filled with locomotives that had been junked. There seems to be a large supply of box and gondola cars, although many of them have been requisitioned on sidetracks to house soldiers and in some cases refugees. There is great shortage of passenger cars, and all of them are in bad condition. Hot boxes were very frequent all along the lines on account of worn-out bearings and inferior oil.

"Trains are running regularly three times a week from Irkutsk to Omsk, taking four days for the journey, and to both Petrograd and Moscow, requiring from four to five days each. A large number of the passengers on these trains are soviet officials, as it is exceedingly difficult for civilians to secure permission from the authorities to travel. A large number of civilians, however, were traveling with their possessions in freight cars in both directions.

"The north route to Perm and the routes from Moscow to Petrograd, Reval, and Riga are in fair condition, but the southern routes to the Urals and many of the others in central and southern Russia have been partially or completely abandoned.

"A German commission is in Moscow negotiating for the operation of some of the railway lines."



from the New York Tribune

Well, They Can't Say the Signal Wasn't Working

## Equipment and Supplies

### Freight Cars

THE ILLINOIS CENTRAL is inquiring for 1,000 40-ton refrigerator cars.

THE VIRGINIAN RAILWAY is inquiring from the car builders, for prices on the repair of 4,000 freight cars.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 500 steel underframe box cars of 40-ton capacity.

THE CENTRAL OF NEW JERSEY has ordered 125, 50-ton coal cars and 85, 40-ton box cars from the Standard Steel Car Company.

THE GRAND TRUNK is inquiring for 200 refrigerator cars for the Chicago, New York & Boston Refrigerator Company, which is controlled by the Grand Trunk.

THE CANADIAN NATIONAL RAILWAYS this week let contracts to the Canadian Car & Foundry Company and the Eastern Car Company for the repair of 3,000 box cars with wood underframes.

THE CHICAGO, MILWAUKEE & ST. PAUL, reported in the *Railway Age* of October 8 as inquiring for 2,500 composite gondola cars of 50-ton capacity, is now inquiring for 1,000 general service cars and 2,000 gondola cars.

THE TOLEDO & OHIO CENTRAL, reported in the *Railway Age* of October 22, as asking for prices on the repair of a number of freight cars, has entered into a contract with the Ralston Steel Car Company for the repair of about 360 cars, for this road and the Kanawha & Michigan. A contract has also been given by the Toledo & Ohio Central to the Hamilton Car Company, Newark, Ohio, for the repair of 200 box cars.

### Iron and Steel

THE CHICAGO, BURLINGTON & QUINCY is inquiring for bids on 1,500 tons of plates for car repairs.

THE PHILADELPHIA & READING recently received bids on 28,000 tons of fabricated steel for use on nine bridges.

THE CHICAGO, BURLINGTON & QUINCY has awarded a contract for three 55-ft. girder spans, 100 tons, to the McClintic-Marshall Company, Chicago.

THE CHICAGO & ALTON has awarded a contract for 201 tons of steel for approaches to a freight house at Chicago to the American Bridge Company, Chicago.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS are receiving bids at Tokio, November 4, through Mitsui & Company, New York, for 1,800 tons of 60-lb. rail and 4,700 tons of 75-lb. rail.

THE UNITED STATES STEEL CORPORATION announces a reduction in the price of open hearth steel rails, from \$47 to \$40 a ton. Orders have already been placed for 100,000 tons of rail at the new price.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS, through Suzuki & Company, New York, have ordered 200 tons of 100-lb. rail and 5,000 tons of 75-lb. rail, from the U. S. Steel Products Company.

THE CANADIAN PACIFIC has ordered 32,000 tons of rail from the Algoma Steel Corporation. This is in addition to the 25,000 tons ordered from the same company, as reported in the *Railway Age* of September 17.

THE GREAT NORTHERN has let a contract for 485 tons of steel for a drawbridge at Delta, Wash., to the Milwaukee Bridge Company, Milwaukee, Wis., and not the Wisconsin Bridge & Iron Company as incorrectly reported in the *Railway Age* of October 22 (p. 802).

MITSUI & COMPANY is inquiring for 2,050 tons of 60-lb. rail for export to Japan; also for 100 tons of galvanized steel wire. Bids are also wanted on 7,000 tons of steel tower material for the Formosa Electric Power Company.

### Miscellaneous

NICHOLSON THERMIC SYPHONS have been ordered from the Locomotive Fire Box Company, Chicago, for the 14 Mikado locomotives ordered from the American Locomotive Company by the Chicago, Rock Island & Pacific.

THE ATCHISON, TOPEKA & SANTA FE has awarded a contract for one 55,000 bbl. steel tank, 115 ft. in diameter and 30 ft. high, and one 152,000 gal. tank, 24 ft. in diameter by 40 ft. high, to the Graver Corporation, Chicago, to be erected at Clovis, New Mexico. Both tanks are for the storage of fuel oil for oil-burning locomotives.

THE GREAT NORTHERN is asking for prices on 1 heavy-duty, all-steel, No. 3, industrial pile-driver, capable of handling concrete piles weighing 8,000 lb., driving radius not less than 20 ft., and equipped with locomotive type boiler, with steam hammer and 4,000-lb. drop hammer, Pyle electric headlight and air brake and to be self-propelling.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, November 2, 1921, at Roanoke, Va., for electrical material; 300 rods wire fencing; 2,500 steel ties; 10 steel ship building channels; 200 bars reinforcing steel; 90,000 lb. welding and threading steel; its requirements of locomotive driving wheel and truck tires, for the months October to December, 1921, and 7,500 steel switch plates.

### Railway Construction

CHICAGO & ALTON.—This company has awarded a contract to I. D. Lain & Company, Bloomington, Ill., for extensive grade separation work at Division street, Bloomington. The same company will also build a second track from Godfrey, Ill., to Brighton Park, a distance of 6 miles, at an estimated cost of \$256,000, and from Roodhouse, Ill., to Manchester, a distance of 5 miles, at an estimated cost of \$96,000.

GREAT NORTHERN.—This company, in conjunction with the Northern Pacific, is negotiating with the city of Minneapolis, Minn., for extensive grade separation work.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of October 22 (page 804) as accepting bids for the reconstruction of a depot at Marissa, Ill., which was recently destroyed by fire, has awarded a contract for this work to the Ellington-Miller Construction Company, Chicago.

MISSOURI, KANSAS & TEXAS.—This company is planning the construction of a freight house at Oklahoma City, Okla.

ST. LOUIS-SAN FRANCISCO.—This company will soon accept bids for the construction of a station at Francis, Okla.

YAZOO & MISSISSIPPI VALLEY.—This company has filed an application with the Louisiana Public Service Commission for permission to erect a new passenger station at Baton Rouge, La.

THE SECOND ANNUAL meeting of the International Chamber will be held in Rome, Italy, beginning September 18, 1922. At the first annual meeting held last June in London more than 200 American business men, representing virtually every industry in the United States, attended. Among the numerous subjects which are to be studied by international committees are: Export credits, foreign exchange, reciprocal treatment of foreign banks, bills of exchange, economy of fuel, international bureau of statistics, international commercial arbitration, international protection of industrial prosperity, unification of tariff nomenclature, reciprocal treatment of commercial travelers, reform of the calendar, through freight trains on great international traffic routes, uniformity of ships' tonnage measurement, combined rail and ship bill of lading, uniform ocean bills of lading, uniform interpretation of meaning of trade terms, and uniform passport regulations.

## Supply Trade News

The H. K. Ferguson Company, Cleveland, Ohio, has taken over the exclusive sales rights for the Shoemaker gap crane and other products of the Morgan Engineering Company, Alliance, Ohio, in the railway field.

W. H. Snedaker, formerly in the Tacoma, Wash., office of the Griffin Wheel Company, Chicago, has been appointed manager of sales at the office established by the company in the Rialto building, San Francisco, Cal.

The Reilly-Peabody Fuel Company, Pittsburgh, Pa., announces a change in name to Peabody Fuel Company with the following officers: F. E. Peabody, president; R. E. Peabody, vice-president; W. Russel Carr, vice-president; C. M. Rhoads, secretary and treasurer, and T. J. Atchison, general sales manager. All these also are officers of the American Coke Corporation, with the same titles. F. E. Peabody has resigned as treasurer of the Eastern Fuel Company and severed all his connection with that company and its subsidiary, the Georges Creek Coal Mining Company.

Press G. Kennett, formerly representative of the Flint Varnish & Color Works, with headquarters at St. Louis, Mo., in charge of sales in the south and southwest, has been appointed manager of the railway sales of the Chicago Varnish Works, with headquarters at Chicago.



P. G. Kennett

Mr. Kennett has been with the Flint Varnish & Color Works for the past 12 years, and when the Du Pont interests took over the company he was appointed representative at St. Louis. Prior to going with the Flint concern, he was connected with the purchasing and supply departments of several railroads in the south and southwest, serving as general storekeeper for Illinois Southern

in 1905 and in the same capacity for the Southern Indiana in 1906 and 1907.

### Inland Steel Company Enters Rail Market

The Inland Steel Company is making arrangements to manufacture steel rails at its Indiana Harbor works and will be in a position to offer standard section rails for delivery beginning in March, 1922. The decision of the company to engage in rail production is based on the fact that the demand for rails is anticipated to be one of the most important branches of the steel industry in 1922, and that another producer in the west is needed. Work has been started on a new building, 100 ft. by 800 ft., at the Indiana Harbor works of the company, in which the rail finishing equipment will be housed. The entire plant will have a capacity of 2,000 tons of finished rails daily and consists of a 28-in. mill, 3 high and 3 stands of rolls, served by a 32-in. roughing mill, which in itself is served by a 40-in. blooming mill, all electrically driven and the most recent installation of its kind. Four large heating furnaces are necessary as it is the intention of the company to re-heat the blooms before rolling the rails. The 28-in. mill referred to has heretofore been used chiefly in the manufacture of heavy structural material, the demand for which in the Chicago territory is not engaging the full capacity of the mill under present conditions.

### Rumored Pullman and

### Haskell & Barker Will Combine

There is persistent rumor at Chicago that the Pullman Company is about to absorb the Haskell & Barker Car Company, this rumor going so far as to name the head of the consolidated company. The plan, it is said, calls for a meeting of the directors of the two companies in the next week or ten days, when details will be discussed. It is reported that the officers of the two companies involved have already discussed the plan informally and that John S. Runnels, president of the Pullman Company, is to become chairman of the board of directors of the new company and Edward F. Carry, president of Haskell & Barker, is to become president. The merger would bring together the Pullman Company, with a capitalization of \$173,000,000, and with plants at Pullman, Ill., St. Louis, Mo., Wilmington, Del., Buffalo, N. Y., and Richmond, Cal., and with a capitalization of \$36,000,000, the Haskell & Barker Car Company, with a plant at Michigan City, Ind., with an annual capacity of 22,500 freight cars.

### Obituary

George R. Henderson, formerly consulting engineer of the Baldwin Locomotive Works, died on October 19, at Media, Pa. He was born on January 14, 1861, at Philadelphia, Pa., and graduated from Lauderback Academy, Philadelphia, in 1876. Two years later he began railway work, serving consecutively to 1887, as apprentice, draftsman and assistant chief draftsman of the Pennsylvania Railroad. He was then to March, 1899, with the Norfolk & Western as assistant superintendent of the Roanoke shop and mechanical engineer. From March to July, 1899, he was with the Schenectady Locomotive Works, and from July of that year to June, 1901, served as assistant superintendent of motive power and machinery of the Chicago & North Western. He was then assistant superintendent of machinery and superintendent of motive power of the Atchison, Topeka & Santa Fe until August, 1903. The following year he became a consulting mechanical engineer at New York and in 1910 went to Brazil, serving for two years on the railways of Brazil. He then returned to the United States to become consulting engineer of the Baldwin Locomotive Works. During the war Mr. Henderson was consulting engineer to the Federal Fuel Administration in the Philadelphia district. He was the author of several books on engineering, also of a number of articles published in the *Railway Age*.

### Trade Publications

**MATERIAL HANDLING SYSTEMS.**—The Stearns Conveyor Company, Cleveland, Ohio, has issued a 16-page booklet—bulletin No. 100—in which ten pages are devoted to belt conveyors, two pages to traveling bucket hoists, and one page each to wall winches and car movers. The booklet is amply illustrated with photographs and line drawings and includes engineering data of value covering the design of belt conveyors.

**TELESCOPIC HOISTS.**—Gillis & Geoghegan, New York, have issued a new 20-page, two-color catalog descriptive of its telescopic hoists and the various uses to which they may be put. The booklet is illustrated with photographs of actual installations for handling ash cans, barrels, trays and other loads. It contains two forms of specification for each model, one of which describes the various parts of a complete telescopic hoist installation.

**MEALS AT ONE DOLLAR,** a luncheon or a dinner, can now be had on the dining cars of the Pennsylvania Railroad, special combination luncheon and dinners being served at this price on all cars throughout the System. This convenience is in addition to the usual a la carte features. During a brief experimental period about thirty different combinations have been tried. Others are being added, and changes are to be made frequently in order to afford variety of choice as well as to determine those which are most popular. Each special combination consists of either meat or fish, two vegetables, rolls and coffee, tea or milk.

# Railway Financial News

**ALABAMA & MISSISSIPPI.—Authorized to Abandon Line.**—The Interstate Commerce Commission has issued a certificate authorizing the receiver of the Alabama & Mississippi railroad companies of Alabama and Mississippi to abandon their lines of railroad extending from Vinegar Point, Ala., to Pascagoula, Miss., 67 miles.

**ALABAMA GREAT SOUTHERN.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1 to Dec. 31).....	\$9,805,561	.....
Operating expenses (March 1 to Dec. 31).....	7,661,510	.....
Net revenue from operations.....	2,144,051	.....
Taxes.....	283,053	.....
Operating income (March 1 to Dec. 31).....	2,057,918	.....
Standard return (January and February, 1920, full year 1919).....	283,863	\$1,703,180
Total non-operating income.....	236,193	180,973
Gross income.....	2,577,574	1,884,153
Interest on funded debt.....	465,239	461,917
Total deductions from gross income.....	918,406	637,972
Balance of income over charges.....	1,659,168	1,246,180
Dividends:		
7 per cent on preferred stock.....	236,625	236,625
7 per cent on ordinary stock.....	548,100	548,100
Balance carried to profit and loss.....	873,350	461,456

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with the previous year as follows:

	1920	1919
<b>OPERATING REVENUES</b>		
Freight.....	\$8,345,701	\$7,470,847
Passenger.....	2,507,382	2,476,753
Total operating revenues.....	\$11,703,433	\$10,529,739
<b>OPERATING EXPENSES</b>		
Maintenance of way and structures.....	\$1,325,738	\$1,513,344
Maintenance of equipment.....	2,675,990	2,587,465
Traffic.....	252,359	160,372
Transportation.....	4,655,846	3,906,049
General.....	305,706	223,988
Total operating expenses.....	\$9,313,423	\$8,463,777
Net revenue from operations.....	2,390,010	2,065,963
Taxes.....	331,740	285,014
Operating income.....	2,056,964	1,779,530
<b>PASSENGER TRAFFIC</b>		
Number of passengers carried.....	1,173,303	1,235,036
Number of passengers carried the mile.....	81,387,423	93,468,232
Average distance hauled per passenger (miles).....	69.37	75.63
Average receipts per passenger per mile (cents).....	3.08	2.68
<b>FREIGHT TRAFFIC</b>		
Number of revenue tons carried.....	5,702,772	5,463,638
Number of revenue tons carried one mile.....	928,543,723	838,745,409
Average distance hauled per ton (miles).....	162.82	153.51
Average receipts per ton per mile (cents).....	0.90	0.89

**HAUUKINI TERMINAL & RAILWAY.—Authorized to Issue Stock.**—The Interstate Commerce Commission has authorized this company to issue for cash at not less than par \$620,000 of capital stock, the proceeds to be used in constructing and equipping its proposed line on the Island of Kauai, Territory of Hawaii.

**CALIFORNIA SOUTHERN.—Bond Issue.**—This road, which was taken over recently by the Atchison, Topeka & Santa Fe, was authorized by the Railroad Commission of the State of California, on October 3, to sell at not less than face value \$35,000 of first mortgage bonds to pay for rails used in extending the line. The order provides that none of the bonds shall be delivered until a note for a like amount and for which the bonds have been pledged shall have been paid.

**CANADIAN NATIONAL RAILWAYS.—Resignation of Director.**—E. C. Cantley has resigned as director having accepted a nomination for the Canadian House of Commons.

**DENVER & SALT LAKE.—Petition Court to Close Road.**—The Bankers Trust Company of New York, trustee for the bondholders, filed a petition in the United States District Court at Brighton, Colo., on October 26, asking that the court either order the railroad closed or issue an order that wages or operating costs be reduced so that the road can operate at a profit. The court set November 3 next for hearing on the petition. The Denver & Salt Lake operates between Denver, Colo.,

and Craig, 255 miles. It has been in the hands of receivers since August 16, 1917.

**FORT WORTH & DENVER CITY.**—This company has applied to the Interstate Commerce Commission for authority for the extension of \$8,176,000 of its 6 per cent first mortgage bonds for 40 years from December 1 at 5½ per cent.

**GEORGIA, SOUTHERN & FLORIDA.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1 to December 31).....	\$4,281,953	.....
Operating expenses (March 1 to December 31).....	4,457,031	.....
Net revenue from operations.....	Def. 175,078	.....
Taxes.....	158,423	.....
Operating income (March 1 to December 31).....	Def. 360,377	.....
Standard return (January and February, 1920; full year 1919).....	85,243	\$511,457
*From U. S. Government account guaranty, March 1 to August 31.....	130,000	.....
Total non-operating income.....	216,912	13,246
Gross income.....	Def. 85,222	524,703
Interest on funded debt.....	280,000	280,000
Total deductions from gross income.....	312,800	333,619
Balance of income over charges.....	Def. 370,725	171,084
Dividends of 5 per cent on preferred stock.....	.....	88,400
Balance carried to profit and loss.....	Def. 370,725	82,684

\*Includes only the \$130,000 actually received from the United States Government on account of the amount due the company under the guaranty provision of the Transportation Act, and does not include the balance of \$530,336 claimed by the company on said account.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	1920	1919
<b>OPERATING REVENUES</b>		
Freight.....	\$3,304,555	\$2,783,070
Passenger.....	1,539,896	1,236,272
Total operating revenues.....	\$5,433,079	\$4,374,501
<b>OPERATING EXPENSES</b>		
Maintenance of way and structures.....	\$930,927	\$740,901
Maintenance of equipment.....	1,299,502	1,051,681
Traffic.....	97,921	72,889
Transportation.....	2,876,782	2,099,221
General.....	154,323	129,814
Total operating expenses.....	\$5,391,095	\$4,121,924
Net revenue from operations.....	41,985	252,577
Taxes.....	193,423	188,553
Operating income.....	Def. 154,166	63,054
<b>PASSENGER TRAFFIC</b>		
Number of passengers carried.....	806,073	802,414
Number of passengers carried one mile.....	49,496,593	44,816,041
Average distance hauled per passenger (miles).....	61.40	55.85
Average receipts per passenger per mile (cents).....	3.111	2.736
<b>FREIGHT TRAFFIC</b>		
Number of revenue tons carried.....	1,749,446	1,508,743
Number of revenue tons carried one mile.....	282,410,416	240,934,568
Average distance hauled per ton (miles).....	161.43	159.69
Average receipts per ton per mile (cents).....	1.170	1.155

**KANAWHA & MICHIGAN.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation (January and February).....	\$215,857	.....
Additional compensation account completed additions and betterments.....	33,398	.....
U. S. Government guaranty, March 1 to August 31.....	680,271	.....
Net railway operating income, September 1 to December 31.....	524,134	.....
Total (compared with compensation accrued in 1919).....	1,453,660	\$1,379,651
Total other income.....	93,621	78,820
Gross income.....	1,547,321	1,458,471
Interest on funded debt.....	364,608	299,818
Total deductions from gross income.....	542,677	530,291
Less revenues and expenses applicable prior to January 1, 1918, settled by U. S. R. A.....	84,189	76,290
Net corporate income.....	930,414	1,004,470
Dividends declared five per cent.....	450,000	450,000
Surplus for the year.....	470,414	554,470

\*Credit in 1919.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	1920	1919
<b>OPERATING REVENUES</b>		
Freight.....	\$4,501,296	\$3,521,721
Passenger.....	691,252	60,741
Total operating revenues.....	\$5,404,656	\$4,334,755
<b>OPERATING EXPENSES</b>		
Maintenance of way and structures.....	\$1,078,824	\$661,721
Maintenance of equipment.....	1,997,833	1,615,610
Traffic.....	45,538	39,004
Transportation.....	2,128,972	1,594,379
General.....	174,400	168,114
Total operating expenses.....	\$5,413,888	\$4,074,931
Net revenue from railway operations.....	Def. 9,202	249,824
Railway tax accruals.....	400,732	254,138

PASSENGER TRAFFIC

Number of revenue passengers carried.....	1,288,863	1,344,291
Number of revenue passengers carried one mile.....	24,213,327	25,137,836
Average distance each revenue passenger carried (miles).....	18.79	18.70
Average revenue per passenger per mile (cents)...	2.85	2.63

FREIGHT TRAFFIC

Number of revenue tons carried.....	5,270,432	4,412,546
Tons of revenue freight carried one mile.....	565,136,973	484,820,916
Average distance hauled of one ton of revenue freight.....	107.23	109.87
Average revenue per ton per mile (mills).....	7.96	7.26

**KANSAS, OKLAHOMA & GULF.—Loan from Revolving Fund Asked.**—This company has applied to the Interstate Commerce Commission for a loan of \$800,000 for 15 years from the revolving fund for the purchase of 500 steel underframe coal cars.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Asks Authority to Abandon Line.**—This company has applied to the Interstate Commerce Commission for authority to abandon 3.9 miles of line between Ironhub and Deerwood, Minn.

**MOBILE & OHIO.—Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1 to December 31).....	15,660,779	16,881,459
Operating expenses (March 1 to December 31).....	16,881,459	16,881,459
Net revenue from operations.....	Def. 1,220,680	0
Taxes.....	531,190	531,190
Operating income (March 1 to December 31).....	Def. 1,151,113	0
Standard return (January and February, 1920; full year 1919).....	481,982	2,597,478
*From U. S. Government account guaranty March 1 to August 31.....	1,325,000	0
Total non-operating income.....	1,414,749	87,823
Gross income.....	745,618	2,685,301
Interest on funded debt.....	1,359,090	1,365,090
Total deductions from gross income.....	1,872,744	1,672,294
Balance on income over charges.....	Def. 1,127,127	1,013,007
Dividend of 4 per cent on common stock.....	0	240,672
Balance carried to profit and loss.....	Def. 1,127,127	772,335

\*Includes only the \$1,325,000 actually received from the United States Government on account of the amount due the company under the six months' guaranty provision of the Transportation Act, and does not include the balance of \$1,583,182 claimed by the company on said account.

†Dividend of \$240,572 for 1920 charged to profit and loss.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	1920	1919
<b>OPERATING REVENUES</b>		
Freight.....	\$15,088,362	\$12,527,835
Passenger.....	2,404,393	2,226,122
Total operating revenues.....	\$18,796,153	\$15,636,715
<b>OPERATING EXPENSES</b>		
Maintenance of way and structures.....	\$3,673,004	\$2,815,764
Maintenance of equipment.....	6,025,990	5,041,699
Traffic.....	422,868	295,419
Transportation.....	9,127,377	7,372,567
General.....	612,143	507,413
Total operating expenses.....	\$19,872,796	\$16,043,045
Net operating revenues.....	Def. 1,076,643	Def. 406,331
Taxes.....	654,150	588,022
Operating income.....	Def. 1,731,135	Def. 995,911
<b>PASSENGER TRAFFIC</b>		
Number of passengers carried.....	2,310,935	2,242,094
Number of passengers carried one mile.....	79,410,411	78,577,198
Average distance hauled per passenger (miles).....	34.36	35.05
Average receipts per passenger per mile (cents).....	3.028	2.883
<b>FREIGHT TRAFFIC</b>		
Number of revenue tons carried.....	7,199,292	6,150,826
Number of revenue tons carried one mile.....	1,774,969,989	1,493,380,726
Average distance hauled per ton (miles).....	246.55	242.63
Average receipts per ton per mile (cents).....	0.850	0.839

**NEW YORK, NEW HAVEN & HARTFORD.—Authorized to Sell Equipment Notes.**—This company having heretofore been authorized by the Interstate Commerce Commission to pledge \$2,000,000 of its equipment trust notes as collateral security for loans evidenced by promissory notes, has now been authorized by the commission to sell the equipment trust notes to the amount of \$1,602,000 on a basis of 7½ per cent.

**PERE MARQUETTE.—Authorized to Abandon Branch Line.**—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of the branch line from Harrison to Leota, Mich., 9.88 miles.

**SAVANNAH & ATLANTA.—Foreclosure Action Allowed.**—An order allowing the filing of foreclosure proceedings against this company has been signed by Judge Evans, on the application of the Farmers Loan and Trust Company, of New York, trustee for

the bondholders. The Savannah & Atlanta has been in the hands of receivers since March 4, 1921.

**SOUTHERN.—Authorized to Issue Bonds.**—This company has been authorized by the Interstate Commerce Commission to sell \$5,655,000 of first consolidated mortgage 5 per cent gold bonds to provide funds for the retirement of an equal amount of the first mortgage bonds of the Georgia-Pacific which mature January 1.

**Annual Report.**—A review of this company's annual report for 1920 appears on another page of this issue.

**ST. LOUIS-SAN FRANCISCO.—Authorized to Issue Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue \$4,578,000 of prior lien mortgage bonds, to be pledged and re-pledged from time to time as collateral security for short term notes.

Railroad Administration Settlements

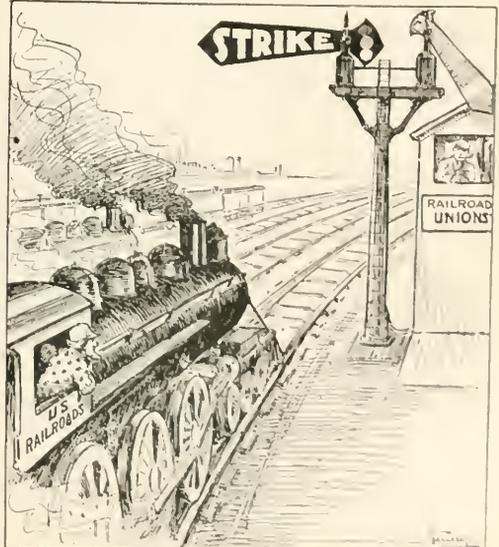
The United States Railroad Administration reports the following final settlements, and has paid out to the several companies the following amounts:

Fullam Company.....	\$7,250,000
Danville & Western.....	260,000
Hartwell.....	24,500
Carolina & Tennessee Southern.....	5,000
Asheville & Craggy Mountain.....	5,500
Denison & Pacific Suburban.....	13,000
Weatherford, Mineral Wells & Northwestern.....	36,000
Birmingham & Northwestern.....	10,000
<b>SHORT LINE RAILROADS</b>	
Middle Tennessee.....	5,000

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

Dividends Declared

Delaware & Hudson.—2½ per cent, quarterly, payable December 20 to holders of record November 26.  
 Illinois Central.—1½ per cent, quarterly, payable December 1 to holders of record November 4.  
 Norfolk & Western.—Common, \$1.75, quarterly, payable December 19 to holders of record November 30.  
 Pennsylvania Railroad.—1 per cent, quarterly, payable November 30 to holders of record November 1.



From the Providence Journal

Go Ahead, Mr. Engineer—Damn the Signals

## Railway Officers

### Financial, Legal and Accounting

**M. B. McBride** has been appointed auditor of the Cowlitz, Chehalis & Cascade with headquarters at Seattle, Wash., effective September 1.

**R. P. Crutchfield**, whose appointment as treasurer of the Union Railway with headquarters at Memphis, Tenn., was announced in the *Railway Age* of October 22 (page 806), was born at Paris, Tenn., on July 24, 1893, and was educated in the public schools. He entered railroad service on July 5, 1911, as utility clerk in the master mechanic's office of the Louisville & Nashville, and was promoted to timekeeper in May of the following year. He left that road in February, 1915, to become accountant in the auditor's office of the Union Railway, with headquarters at Memphis, Tenn., and was promoted to chief clerk to the auditor on June 1, 1915, which position he was holding at the time of his recent promotion.

### Operating

**O. F. Ohlson**, trainmaster of the Northern Pacific, with headquarters at East Grand Forks, Minn., has been transferred to Mandan, N. D., succeeding C. T. Sponsel, who has been granted a three months' leave of absence. **F. W. Lyons** will succeed Mr. Ohlson as trainmaster at East Grand Forks.

### Traffic

**G. G. Early**, general agent of the Wabash, with headquarters at Philadelphia, Pa., has been promoted to assistant general freight agent, with headquarters at St. Louis, Mo. **R. A. Walton** will succeed Mr. Early at Philadelphia.

**A. Brostedt** has been appointed general traffic agent of the Canadian National with headquarters at Shanghai, China. Mr. Brostedt will have supervision of the company's freight and passenger traffic interests in China, Japan, the Straits Settlements and the Philippines.

**J. W. Williams**, general agent of the freight department of the Gulf Coast Lines, with headquarters at Beaumont, Tex., has been promoted to general agent, with headquarters at Birmingham, Ala., succeeding W. W. Stine, deceased. **F. W. Nason** will succeed Mr. Williams as general agent of the freight department at Beaumont.

### Engineering, Maintenance of Way and Signaling

**J. S. Lemond**, chief engineer maintenance of way and structures of the Southern, Lines East, with headquarters at Charlotte, N. C., will retire from active service on November 1 at the age of 70 after having served the Southern for 39 years. He will continue in service in an advisory capacity as assistant chief engineer maintenance of way and structures, and **J. B. Akers**, engineer maintenance of way with headquarters at Knoxville, Tenn., will succeed him as chief engineer maintenance of way and structures. **J. A. Killian** will succeed Mr. Akers.

**H. S. Clarke**, division engineer of the Delaware & Hudson with headquarters at Carbondale, Pa., has been promoted to engineer, maintenance of way, with headquarters at Albany, N. Y., succeeding W. B. Leonard, assigned to other duties. **H. S. Rogers**, division engineer with headquarters at Oneonta, N. Y., has been transferred to Carbondale, succeeding Mr. Clarke. **C. D. Hughey**, division engineer at Plattsburg, N. Y., has been transferred to Oneonta, succeeding Mr. Rogers, and **F. P. Gutelius, Jr.**, assistant engineer with headquarters at Albany, has been promoted to division engineer with headquarters at Plattsburg, succeeding Mr. Hughey.

### Purchasing and Stores

**B. T. Jellison**, general purchasing agent of the Chesapeake & Ohio, has been appointed special agent, handling special matters assigned, and the position of general purchasing agent has been abolished, effective November 1.

**C. W. Dearworth** has been appointed division storekeeper of the Erie with headquarters at Huntington, Ind., and **R. H. Pauling** has been appointed to a similar position with headquarters at Marion, O., effective October 1.

**C. K. Reazor** has been appointed assistant manager of stores of the Erie with headquarters at New York. **F. J. Talbot** has been appointed superintendent of stores of the New York and Hornell regions with headquarters at Hornell, N. Y., and **J. H. Sweeney** has been appointed to a similar position for the Ohio and Chicago regions, with headquarters at Meadville, Pa.

### Obituary

**J. S. Browne**, assistant engineer maintenance of way of the New York, New Haven & Hartford, died October 22.

**Edward L. Hill**, car accountant of the Louisville & Nashville with headquarters at Louisville, Ky., died October 17 at the age of 68 at Louisville. Mr. Hill had been in the service of the Louisville & Nashville for 45 years.

**Harry C. Meloy**, supervisor of electrical appliances, New York Central lines west of Buffalo, whose death was noted in last week's issue of the *Railway Age*,



H. C. Meloy

16, 1865, in Bedford, Pa. After completing a high school education in Bedford, Mr. Meloy entered the railway shops of the Pennsylvania at Altoona, Pa., and served an apprenticeship course there. After completing the apprenticeship course he was employed for a short time at the Swissvale plant of the Union Switch & Signal Company, after which he accepted a position as chief electrician of the Norfolk & Western at Roanoke, Va., which position he held for ten years. In April, 1902, he left the serv-

ices of the Norfolk & Western to accept a position on the Lake Shore & Michigan Southern as chief electrician in charge of car lighting. In 1910 he was promoted to supervisor of electrical appliances and in 1914 the Lake Shore was consolidated with the New York Central. After the consolidation Mr. Meloy continued to hold the title of supervisor of electrical appliances on lines west of Buffalo, which position he held until the time of his death. Mr. Meloy was a charter member of the Association of Railway Electrical Engineers. He was president of the association in 1908 and from the time of its organization.

**Albert Sartiaux**, formerly and for many years general manager and chief engineer of the Northern Railway of France, died recently at his home in Paris, at the age of 72. Mr. Sartiaux was one of the best known railroad officers of Europe. He was a life-long advocate of a tunnel beneath the Channel to England.

**T. S. Walton**, freight claim agent of the Missouri Pacific, with headquarters at St. Louis, Mo., died suddenly at his home in that city on October 20. Mr. Walton had been in the service of the Missouri Pacific for several years and was a member of the general committee of the Freight Claim division of the American Railway Association.

# Railway Age

Vol. 71 November 5, 1921 No. 19



Taking a Railroad "Movie"—Courtesy of Goldwyn Pictures

## Contents

**"Satisfactory Settlement" Ends Threatened Strike** ..... Page 871  
 Labor Board's Efforts to Avert Walkout Successful—Brotherhoods' Threats Again Win Concessions.

**America's Wealth Due Largely to Railway Expansion** ..... 875  
 Increased Population, Production and Wealth Have Followed Closely Railroad Expansion, by Dr. J. M. Goldstein.

**Strike Settlement Leaves Many Issues Confused** ..... 887  
 Necessity Seen for Improving Machinery for Dealing with Recurrence of Similar Situation, by Harold F. Lane.

### EDITORIALS

More Business Than Last Year ..... 859  
 The Railroads Can Help ..... 859  
 Foreign Trade a Stabilizer ..... 859  
 Developing Branch Line Traffic ..... 859  
 Packing and Handling in Movies ..... 860  
 An Incidental Saving ..... 860  
 The Passing of Bassener Rail ..... 860  
 New Rail Price Brings Out Orders ..... 860  
 Wanted—Better Labor Leaders ..... 860  
 Railroads and National Progress ..... 861  
 A Fundamental Weakness of the Transportation Act ..... 861  
 The Superpower Survey ..... 862  
 Have Railway Managers Become Mere "Lobbyists"? ..... 862  
 The Mechanical Convention ..... 863

### NEW BOOKS

Wage Statistics Inquiries ..... 863

### LETTERS TO THE EDITOR

Watch for the Good ..... 864  
 Elimination of Rough Handling ..... 864  
 Unprofitable Road Co-operation from Railways ..... 865  
 In the Interest of Better Convention Programs ..... 865  
 Locomotive Runners' Working Conditions ..... 868  
 Do Railroads Want College Men? ..... 866

### GENERAL ARTICLES

Proposed Modification of Stop-and-Proceed Rule ..... 867  
 Freight Rate Reductions Made Since Ex Parte 74 ..... 869  
 "Satisfactory Settlement" Ends Threatened Strike ..... 871  
 Emergency Organization for Meeting Strike Situation ..... 873  
 Train Service Board of Adjustment in Southeastern Territory ..... 874  
 America's Wealth Due Largely to Railway Expansion, by Dr. J. M. Goldstein ..... 875  
 Railroad Securities Bill Reported to Senate ..... 879  
 Plan for Electrifying Sections of Eleven Railroads ..... 881  
 Amendments to Transportation Act Likely to Be Considered by Congress ..... 886  
 Strike Settlement Leaves Many Issues Confused, by Harold F. Lane ..... 887  
 The Requirements for a Modern Car Repair Shop, by H. H. Dickinson and P. Schioler ..... 890  
 Freight Car Loading Continues to Increase ..... 893  
 Oldham Sponsor for New Rail Consolidation Plan ..... 895  
 Railway Statistics for Year Ending August 31, 1921 ..... 898  
 Designing Locomotives for Economical Operation, by J. Partington ..... 899  
 How to Better Bad Railroad Conditions, by G. H. Brown ..... 904

### GENERAL NEWS DEPARTMENT ..... 906

Published weekly and daily eight times in June by the

**Simmons-Boardman Publishing Company, Woolworth Building, New York**

EDWARD A. SIMMONS, *President*  
 L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
 SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
 ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building PHILADELPHIA: 407 Bulletin Bldg. CINCINNATI: First National Bank Bldg. CLEVELAND: 4300 Euclid Ave. LONDON, England: 34, Victoria St., Westminster. S. W. I. Cable address: Urasimtec, London. WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
 ROY V. WRIGHT, *Managing Editor*

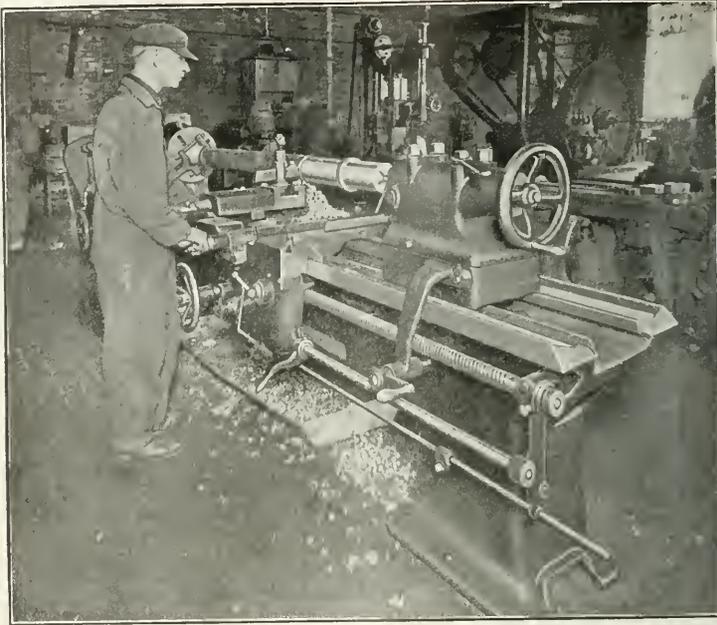
E. T. HOWSON A. F. STUEBING MILBURN MOORE  
 B. B. ADAMS C. W. FOSS E. L. WOODWARD  
 H. F. LANE K. E. KELLENBERGER J. E. COLE  
 R. E. THAYER ALFRED G. OPFLER J. G. LYNE  
 C. B. PECK F. W. KRAEGER J. H. DUNN  
 W. S. LACHER HOLTOMER PARKES D. A. STELL  
 J. C. LITTLE C. N. WINTER K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue, 8,000 copies were printed; that of these 8,000 copies, 7,880 were mailed to regular paid subscribers, 54 were provided for counter and news company sales, 336 were mailed to advertisers, 65 were mailed to employees and correspondents, and 462 were provided for new subscriptions, samples, copies lost in the mail and office uses; that the total copies printed this year to date were 417,950, an average of 9,493 copies a week.



Piston rods turned on Ryerson-Conradson Lathes have the accuracy and smoothness essential to successful operation.

## Piston Rods

Piston rods must be accurate in size and smooth. A rough or untrue piston rod is destructive to packing and returns a locomotive to the shop before its time.

Ryerson-Conradson Lathes are good tools to have in the shop when idle locomotives are waiting for accurate, smooth piston rods, and other parts that are turned on lathes.

*Write for Bulletin 1,301*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

In the operating statistics of large steam roads for August—those having annual operating revenues above \$25,000,-

### More Business Than Last Year

000—shown in last week's *Railway Age*, only three roads handled more net ton-miles of freight than in August last year. These roads are the Chicago, Rock Island & Pacific, the Long Island and the Gulf, Colorado & Santa Fe. The Rock Island in August this year handled \$33,384,000 net ton-miles of freight, revenue and non-revenue, as compared with 789,196,000 in August, 1920. Naturally with this increased business, there has been a pronounced betterment in earnings. The road in August, 1921, had a net railway operating income of \$2,365,961. For the first eight months of 1921 the net railway operating income was \$8,690,907, as compared with a deficit in the first eight months of 1920 of \$2,390,599. For purposes of comparison, it may be noted that the standard return, based on the three years ending June 30, 1917, was \$14,912,379. The increased traffic has enabled the road to make some interesting improvements in its operating statistics. The net tons per train in August, 1921, were 550 as compared with 536 in August, 1920, or 505 for the full year 1920. The car load of 26.4 tons in August this year compared with 25 in August of last year and 24.5 for all of 1920. The miles per car per day were 29.4 as compared with 30.5 in August, 1920, and 26.6 for the entire year. We are informed that the Rock Island has been favored with a considerably improved morale in recent months. It is apparent, on the whole, that the showing it is making is another of the many reasons for feeling optimistic about what future months are going to bring forth.

One important recommendation made by the Transportation Committee of the Unemployment Conference recently

### The Railroads Can Help

held in Washington was that the conference "urge upon the public the policy of immediate general buying as a patriotic duty," the idea being that as long as there is a buyers' strike, from whatever cause, there can be no general resumption of business and alleviation of unemployment. The railroads themselves, being one of the largest buyers of equipment and supplies in the country, are convinced of the wisdom of this policy and are buying materials as fast as finances will permit. Orders for steel, machinery, building material, etc., are being placed and, other opinions to the contrary notwithstanding, the fact remains that the railroads are going out of their way to place orders and thus help improve general business conditions. For example, on October 4 the Delaware, Lackawana & Western issued a request for bids on approximately \$200,000 worth of machine tools and accompanied this request with the following note: "We desire to state that we are not in immediate need of these machines, but if sufficiently attractive prices are quoted, we are ready to place orders and pay for same upon terms agreed upon, in the hope that it will help the general business and labor situation at this time." There is no evidence that the expression "sufficiently attractive prices" means anything more than the absence of war-time inflation and in fact the manu-

facturers were helped in every possible, practical way to ascertain the machine requirements and submit bids. It is not this an example of the kind of intelligent co-operation and readiness to help which, if followed by all railroads and all industries, will soon build up business, reduce unemployment and bring the country once more to a condition of normal prosperity?

In England several of the larger railway lines make a practice of building their locomotives in their own shops. It has

### Foreign Trade a Stabilizer

been argued that these roads should alter this practice so that a part of their requirements at least would be supplied by private builders. These domestic orders are needed by the private builders, it is said, to provide a nucleus which will assure a continuity of operation for them when foreign business is slack. The converse might be said to be true in this country, where the domestic market for railway equipment and supplies is the more important—that is to say, a foreign market should be maintained so that, even when domestic business is light, enough foreign orders are received to insure at least the continuity of operation so essential to the efficient conduct of a business. At a time, then, when the domestic market leaves much to be desired, it is an encouraging sign to see an American concern, the Baldwin Locomotive Works, secure an order for 85 locomotives from the Argentine State Railways. This is doubtless one of the largest single orders, domestic or foreign, which have been placed this year. Baldwin has studied the foreign field and knows how to meet its requirements. Aggressive activity in foreign markets and careful attention to orders when received, even when domestic business is booming, offers a very definite reward to manufacturers of railway equipment and supplies and the subject merits their careful attention.

Somewhat over a decade ago there occurred a remarkable development of electric interurban lines. Many of the routes

### Developing Branch Line Traffic

paralleled existing branches of steam roads and railroad managers, scanning the receipts from local trains running between the same points, predicted that the traffic would not be sufficient to make the operation of the electric roads profitable. But the interurban demonstrated that by establishing a regular schedule, with trains at frequent intervals, the passenger traffic could be increased greatly over that which the steam railroad secured with its few daily trains. At the present time a similar situation exists, but the competitor now is the motor bus. It is time for railroad officers to analyze the situation and decide whether they will passively allow an outside agency to step in and develop the potential traffic along their lines, or whether they will inaugurate rail motor car service and secure the business themselves. The railroad has several important advantages over busses operating even on improved roads. The grades and curves on the railroad are usually less severe than on the highways and the riding is notably smoother. Furthermore the cost of upkeep

vehicles running on rails is lower and heavier loads can be hauled with the same power. It seems that the only condition under which busses on the highways have a decided advantage is where the railroads are located some distance from the centers of population along the route.

In the attempt to interest shippers and employees in the importance of secure

### Packing and Handling in Movies

packing of goods and careful handling in transit, the New York Central has had prepared two reels of motion picture films which show in an interesting manner the lesson it is endeavoring to teach. The two reels make up a connected narrative and the audience is taken to various points on the New York Central lines where the results of improper packing and handling are shown, together with instances of unavoidable conditions, such as sudden stops, which make careful packing and stowing necessary. This picture should prove a decided success, because it brings home its lesson in such an interesting way and without seeming to preach. The average railroad man or shipper can look at it with considerably more unforced interest than he does at some of the motion pictures which he pays to see. When the New York Central has shown the good results obtainable by this sort of venture, it is to be hoped that the idea will spread to other carriers, for there is ample opportunity for vast improvement in the matters touched upon in the picture.

Discussion of the action of the feedwater heater is usually based on the effect of the device on the boiler alone. While

### An Incidental Saving

this is the primary effect, the heater also influences to some extent the action of the cylinders. When the heater is in use about 12 per cent of the exhaust steam is diverted to it, thereby lessening the amount discharged from the exhaust nozzle and reducing the back pressure. This improves the efficiency of the cylinders. On the other hand, the reduction in the rate of combustion for a given rate of steam generation results in lower flue gas temperatures and lower superheat, which tends to decrease the cylinder efficiency. To ascertain the effect of each of these modifications on the action of the engine, tests were recently conducted with the injector and with the feedwater heater under identical conditions of speed and cut-off. The indicator cards taken on these tests showed that the reduction of back pressure due to the heater increased the power of the cylinders from three to six per cent, depending on the speed. This increase in power was accompanied by a decrease of about 22 deg. in the superheat which would increase the steam consumption per horsepower two per cent. The net effect, therefore, is to increase the power obtained from a given weight of steam about four per cent. This gain in the overall efficiency of the cylinders is in addition to the direct effect of the heater on the boiler.

One interesting commentary on the recent reduction in the price of rails is to be found in the fact that Judge Gary's

### The Passing of Bessemer Rail

statement mentions but a single figure as the selling price for "standard rails." In other words, Bessemer rail has become such a small factor in the rail market that it is not worth while to state a separate figure for it and the term "standard rail" as used by Judge Gary is to be understood to designate only open-hearth rail. While most of the manufacturers are in

a position to roll the Bessemer product if it is desired, only a few of them have rolled it recently. Of the 2,604,116 tons of rail rolled in 1920, only 142,899 tons, or 5.5 per cent, was Bessemer rail as compared with practically 100 per cent in 1899. When it is considered that in 1920 nearly 500,000 tons of rails were rolled in sections weighing less than 45 lb., it is safe to assume that a very large proportion of the 1920 Bessemer tonnage was utilized for industrial purposes and very little of it was applied to standard railway requirements. Thus, the tendency of the times clearly indicates that the Bessemer rail will soon be as rare as iron and will, therefore, concern the railway officer only in connection with relayers and scrap. This is the answer to those who, during stress of war conditions, sought to force the railroads to return to the use of Bessemer steel.

No better illustration of the wholesome effect of price readjustment is to be had than that noted with the recent

### New Rail Price Brings Out Orders

cut in the price of standard rails from \$47 to \$40. This reduction in prices was announced by Judge E. H. Gary on October 25 with the statement that it applied alike on new orders and all tonnages due on unfilled orders, and had the immediate effect of releasing requisitions for 100,000 tons of rail. This statement is not made without a due regard for the fact that a number of inquiries for rail were made before the price cut was announced, nor does it overlook the increased interest in the market for track spikes, bolts and other fastenings observed in recent weeks. However, the announcement of the cut served to bring out a number of definite orders and others are expected shortly. This renewed interest in this country, coming simultaneously with orders by the Canadian roads for 87,000 tons of rail, has given the rail industry a genuine impetus. Another development which points to a restored demand for this important requisite to good railway track is the recent announcement of the Inland Steel Company of its decision to enter the field of rail manufacture in March, 1922. Aside from the increased capacity thus afforded, the potential competition involved should have a wholesome effect.

Prof William Starr Myers of Princeton is reported in the newspapers to have made the statement that a railroad strike,

### Wanted—Better Labor Leaders

sooner or later, is inevitable because union heads want the government to take over the lines. In his opinion, however, the threatened strike would have failed in two or three days because "no strike was ever won when the public was opposed to it. The strike," he said, "would have brought about the emancipation of American labor itself, for labor would then choose new and responsible leaders." There are many who believe that with the failure of great railroad strikes in Great Britain and France and with the calling off of the proposed strike in this country, the day of extensive railroad strikes has passed. After all, the public is the principal sufferer from such strikes. Recent years have brought it to a full realization of this and it will not tolerate tying up of the traffic in the future. It is undoubtedly true that some of the labor leaders have deliberately used every means within their power to discredit the railroads and weaken them to a point where government ownership would be imperative. It ought not to require a strike, however, to bring about a change of attitude on the part of these leaders. Undoubtedly they have already seen the handwriting on the wall. The great mass of railroad workers in this country are far too intelligent and sensible to stand much longer, for this sort of

leadership. Moreover, if the railroad executives will further exert themselves to bring about the right sort of understandings with the men this question of false leadership will be settled in a hurry. "Whom the gods would destroy, they first make mad." The action of some of the labor leaders at the recent conferences in Chicago would indicate that they are in a fair way to destruction.

During the first decade of the last century an eminent American statesman predicted that not until 300 years had elapsed would this entire country be settled. Yet, after little more than a century, a growth has taken place in population and economic power which puts to shame many of the countries of

### Railroads and National Progress

Europe. The obvious cause for a great part of this improvement is the enthusiasm shown by the people up to the last decade in the development and expansion of the railroads. Something more definite, however, regarding the influence of the railroads on our economic development is given by Dr. J. M. Goldstein in an article appearing elsewhere in this issue. There it is shown in what striking fashion population and production have followed railroad expansion and how such improvement has been the most pronounced where and when railroad construction was greatest. Dr. Goldstein is a Russian who has served as an economic adviser to various branches of his government. He was attached to Kerensky's railway mission to this country. Coming as he does from a country where the policy toward railway expansion has been the antithesis of ours and where failure to recognize the importance of modern methods of transportation caused the defeat at arms, the triumph of the Bolsheviks and economic disaster, Dr. Goldstein is in a position to appreciate wherein lies the economic strength of the United States. Consequently his conclusion—that the practical cessation of railroad extension in this country during recent years is a matter worthy of considerable concern—is, to say the least, thought provoking.

## A Fundamental Weakness of the Transportation Act

THE WAY IN WHICH the strike of the train service employees was prevented forcibly calls attention to a vital weakness of the Transportation Act. It was plain the labor leaders were desperately afraid of the outcome of a strike. They wanted some assurance or concession from the Labor Board or the railroads which they could tell their members afforded the basis of "a satisfactory settlement." The railroads gave public assurance that they would not make any further reductions of wages except under an award from the Labor Board. This is being mentioned as one of the bases of a settlement, but it doesn't mean anything. Every-body directly concerned knew the railroads intended to make no further reductions of wages not authorized by the board.

The thing that really afforded the labor leaders a substantial basis for announcing "a satisfactory settlement" was a statement made by the Labor Board to both the railway executives and the labor leaders. Apparently this statement subsequently was interpreted and amplified by Ben W. Hooper, one of the public members, in a conference with the labor leaders. This statement was, in effect, that the board had pending before it many cases involving rules and working conditions; that it intended to hear and dispose of these cases as to each class of employees before it heard any case involving their wages; and that, therefore, it would necessarily be a long time before an award in any new case involving wages could be made. The board did not speci-

fically mention any length of time that it thought would elapse before any new case involving wages would be settled. Newspaper reports credited Mr. Hooper with having mentioned nine or ten months, and even as much as a year, in his conference with the labor leaders. The board is best qualified to say what its statement meant. In view of the fact that it was largely because of it the labor leaders canceled the strike order there can be no doubt as to the interpretation they gave to it.

Acting, both of them, under provisions of the Transportation Act, the Interstate Commerce Commission regulates railway rates and the Labor Board railway wages. It is an open secret, or rather no secret at all, that the Commission has been subjected to heavy pressure by high officials in Washington to bring about reductions in rates. For the Commission to order substantial reductions of rates while railway labor and other costs continue as high as at present seems in direct disregard of the rate-making provisions of the Transportation Act and of the Constitutional prohibition of confiscation. The Commission in the recent grain rate case based its order for reductions of rates on the assumption that the operating expenses of the railways were to be substantially reduced. The largest part of their expenses is within the control of the Railroad Labor Board. The interpretation naturally placed by most people on the statement issued by the board in the strike negotiations is that it intends deliberately to block a further substantial reduction of wages for a long time.

If the administration and the Interstate Commerce Commission are going to persist in their efforts to reduce rates and the Railroad Labor Board is going to carry out a policy of long delaying reductions of wages, the railways will be presented with two very unpleasant alternatives. One will be to resist all future efforts to reduce rates, even to the extent of carrying the matter to the highest courts. The other will be to yield in the matter of rates, go on earning entirely inadequate net returns, and continue to postpone all rehabilitation and expansion of their properties. Acceptance of the latter alternative will ruin some railways, prevent an increase in purchases by all of them, and thereby help to protract the industrial depression. It will prevent the railways from getting ready to handle a large traffic when business revives and pave the way for congestions of traffic and car shortages which will cause the public heavy losses and exasperate public opinion.

The vital defect in the Transportation Act which this situation discloses is the utter want of relationship between the body that regulates the rates and the body that regulates the wages. No industry can function properly under a system of regulation which results in one body forcing its prices or rates down on the theory that its operating costs will be reduced and another body preventing reductions of its operating costs. The Transportation Act must be changed. The best policy that could be adopted would be to vest the regulation of rates and the regulation of wages and working conditions of the employees in the same body—preferably the Interstate Commerce Commission. If this is not to be done the regulation of wages and working conditions should be given to some body subordinate to the Interstate Commerce Commission. It is manifestly absurd to have two government regulating bodies working at cross purposes as the Commission and the Labor Board are now. If they persist in working at cross purposes as they are now, the results produced will be transferred from the domain of the absurd to that of the outrageous and disastrous.

Meantime there is only one course for the railways to follow. First, they must put to the test at the earliest possible time the question of how long the Labor Board really intends to postpone any further reduction of wages. Secondly, they should resist all efforts to bring about reductions in the rates which would continue to make them unreasonably

low in proportion to their present operating costs. The Interstate Commerce Commission and the Railroad Labor Board are both government bodies which represent the public. The public has no right, moral or legal, to insist through one government body that the railways shall maintain the present wages and through another that they shall make reductions in rates, which if present wages are to be maintained, will be disastrous to the railways financially and render them incapable of putting their properties in shape to handle the larger traffic that is bound to come.

Doubtless if the railways resist to the limit all general reductions of rates while present wages are maintained they will arouse a hostile public sentiment. That will be unfortunate. If, however, by yielding now to utterly unreasonable demands from the government and the public, they temporarily placate public sentiment, they will be doing the very thing which is best adapted to raise against them later an overwhelming public sentiment. In other words, they will be doing the thing best adapted to render them unable to handle the commerce of the country when business revives, and all the most serious outbursts of public sentiment against railways in the past have been caused by acute traffic congestions and huge car shortages.

Ever since the present rates were fixed reductions in them have been made to correct unfair discriminations or to remove rates which really were so excessive that they interfered with the movement of traffic. Such changes should and will be continued. On the other hand there should be no yielding to the outcry for general reductions in rates unless there are to be made simultaneously corresponding reductions in labor costs.

## The Superpower Survey

A BRIEF ABSTRACT of that part of the so-called superpower survey report which deals with electrification of heavy-traction railroads is published elsewhere in this issue. The purpose of the survey is unquestionably a good one. By consolidating the power supply in the large districts in question, power could be produced and delivered at a lower cost than is now possible, a much better load factor could be obtained, less coal would have to be moved and a number of other savings could be made. It is unfortunate that those who prepared the report should in their enthusiasm show a spirit of partisanship.

For example, it is assumed in the report that 7.5 lb. of coal are required by a steam locomotive to do work at the rim of the drivers equal to one kilowatt hour. A value of 7.56 lb. was obtained by tests made on the C. M. & St. P. in 1910 on locomotives not equipped with fuel saving devices. Even if the value of 7.5 lb. is correct for the average steam locomotive now operating in the zone in question, it will not be true of steam locomotives in operation in 1925 or 1930, at which time it is proposed to have the superpower system in operation.

The report states: "The inherent wastefulness of the steam locomotive is proved by its own advocates in their claim that 40 per cent of the coal can be saved by the careful use of these auxiliary devices. Then why be skeptical of a saving of 60 per cent by a modern power station, which has all the devices in greater completeness and, in addition, has brains to use them?" Perhaps, as suggested, a saving of 60 per cent can be effected by a power plant, but why call it 60 per cent if steam locomotives can be improved in such a fashion as to save 40 per cent? The only really important economy device applied to power plants that has not been applied to locomotives is the condenser, and power line transmission losses have no bearing on the steam locomotives.

The report also states that no more skill is required to operate an electric locomotive than is demanded of an ordinary chauffeur. The railroad man who has taken a long freight train over a grade will be afforded a smile when he reads this.

A steam locomotive equipped with economy devices is spoken of in the report as a "full-jeweled movement." It is true that many enginemen speak of the devices applied to steam locomotives as jewelry, but to use the expression "full-jewelled movement" in a report of this character savors of partisanship.

Unfortunately, because of such statements, the data presented must be accepted with reservations. The use of electric traction is practically certain to develop rapidly during the next decade in the district in question. Much of the data presented in the report will be valuable to those roads considering electrification; but in using the report as a guide it would appear that it must be done with discretion.

## Have Railway Managers Become Mere "Lobbyists?"

THE COLUMNS of a railway paper should be open to criticisms of railway management if they evidently are intended to improve the transportation situation and are made by persons who really know something about the railroad business. It is for this reason that we publish elsewhere an article by George N. Brown in which he makes severe and rather sweeping criticisms of the attitude and conduct of railway officers within recent years. Mr. Brown was for some time chief examiner of the Interstate Commerce Commission. In that capacity he dealt with many railway officers in Washington, and also came in contact with them while conducting hearings in important rate cases throughout the country.

Mr. Brown criticises the higher railway officers because, as he charges, they spend too much time in Washington trying to get favors from Congress and the Interstate Commerce Commission, when they ought to be at home administering the properties in their charge. He says that "the managing heads have lost their initiative"; that "they are not and have not been engaged in railroad business" but "have become expert lobbyists and put in their time seeking concessions from constituted authorities."

To a large part of Mr. Brown's indictment the managing heads of the railways must plead guilty. They are even more painfully conscious than he is that for years they have been spending more and more of their time in conferences and hearings relative to regulation and less and less of it in struggling with the problems of actual railroad development and operation. They must also plead guilty to the charge that they are exercising much less initiative regarding railroad management in all its phases than they or their predecessors formerly did. They must agree that all this is very bad for the railways and worse for the public.

While the railway managers cannot, however, evade a substantial part of the responsibility for these conditions, they cannot in fairness be held mainly responsible for them or their results. For years railway heads have opposed increases in government regulations on the very grounds, among others, that they would transfer from the managers to public authorities a large part of the authority which should reside in and be exercised by the managers of every business, and that if this were done the managers, instead of being able freely to exercise their initiative, would perforce become largely lobbyists and expert witnesses.

Almost every extension of government regulation which the railway managers have opposed has been made. Regulating bodies today fix the rates they may charge and the wages and working conditions of their employees; are empowered to

dictate in periods of emergency the operation of their terminals, locomotives and cars; tell them how many men they must have in a train crew, and so on ad infinitum.

The unavoidable result has been that the functions of the railway managers have been changed. Prior to about eleven years ago railway managers could and did stay at home, as Mr. Brown suggests, and direct the development and operation of the properties, the making of their rates and the work of their employees, as the managers of any other business can. The most important result of the increase in government regulation has been that no matter how well a railway manager may perform those functions which he has been left free to exercise, his railway may be entirely deprived of all the fruits of his efforts by the regulation to which it is subjected. Consequently it has become imperative that the heads of the railways, either personally or through other appropriate officers, shall devote a very large part of their time and energy to conferences with each other and to what Mr. Brown calls "lobbying" with public authorities regarding the great and vital problems of regulation.

Mr. Brown is right in saying the situation is most unfortunate. It is impossible, however, to agree with him as to the cause or the remedy. The main cause is unfair and excessive regulation, and the only remedy is to remove the cause. He says "continued waiting about Washington for government favors can lead to but one thing, and that is government ownership and control." This, he believes, "would end in disaster and would be destructive of all advancement in our transportation facilities." He is undoubtedly right in this. But the danger of government ownership is not due to railway managers hanging around Washington. It is due to a system of regulation which makes it necessary for them to hang around Washington. Railway managers have no more desire than other business men to hang around Washington. There is no atmosphere on earth that is so distasteful to most of them as that of Washington and no place they would so gladly stay away from.

We all know what the government has done to the railways within the last ten years in spite of the fact that their high officers spend so much time in Washington as to call forth Mr. Brown's protest. God only knows what the government would have done to them if the railway managers had gone to Washington less!

## The Mechanical Convention

IT IS GOOD news to learn that Division V, Mechanical, American Railway Association, has decided, as announced in last week's *Railway Age*, to hold its convention next June with exhibits. Never were the problems confronting the mechanical departments of our railroads so serious and so complicated. It is a matter of vital necessity for the officers and other subordinates to get together and counsel about these problems at as early a date as practicable.

If the Mechanical Division is to stand on its own feet and merit approval of the American Railway Association and the higher executive officers, it must assert itself and do something more than drift at a time when every effort should be made to improve the efficiency of operation. It will be necessary to make some radical additions to the committee assignments. Time will not permit going into this in detail, but the *Railway Age* has already made extensive and detailed suggestions in special articles on this question in its issues of June 10, 1921, and August 20, 1921.

This much we may say, however, in the way of emphasis. President Smith of the New York Central made the statement at a hearing before the Interstate Commerce Committee of the Senate that "95 per cent of railroading is human." The mechanical department, more than any other department,

is an employer of labor and yet, strange to say, this has hardly been recognized in its proceedings; nor have important questions of operation, in the discussion of which the mechanical department officers ought to participate. Why, for instance, is it not of just as much or of more importance that the mechanical department consider the economics of labor and the economics of operation as it is for the engineering officers to consider these questions? More than this, our great industries employing men of the same degree of skill as those employed in the mechanical department but with their entire forces concentrated in single plants find it necessary to give much thought and consideration to problems involving the human element in the operation of their plants. Is it not more important that the mechanical department, with large forces concentrated at some plants and smaller forces scattered over much territory should give even more thought and attention to these things? Truly the Mechanical Division has a big problem on its hands and now is the time, if ever, that these matters should be tackled intensively. The convention next year should be the largest and the most important in the history of the organization.

It is important that the meetings should be made as businesslike as possible and that nothing should be allowed to interfere with them. It is also advisable that they be attended by large numbers of the subordinate officers, for part of the time at least, in order that they may get some of the inspiration of the meetings and at the same time have an opportunity of visiting the exhibits. The wonderful educational effect of these exhibits is not generally understood. The latest improvements in mechanical equipment are shown and, generally speaking, the exhibits are in the hands of experts who can thoroughly explain the advantages and workings of the devices and at the same time answer questions or furnish information to those who may have used the devices and who may not have secured the best results because of misunderstandings as to the application or workings of the apparatus.

## New Books

*Wage Statistics Inquiries, November, 1921, Edition.*, 38 pages, 6 in. by 9 in. in size. Bound in paper. Published by the Railway Accounting Officers' Association, 1116 Woodward Building, Washington, D. C. Price 10 cents.

This pamphlet has been compiled by the Railway Accounting Officers' Association in collaboration with the Bureau of Statistics of the Interstate Commerce Commission. It is intended as an assistance in the uniform interpretation and filling of the Commission's order for the compilation of wage statistics and embodies the principles of all interpretations or instructions issued in this connection by the Bureau of Statistics.

The Interstate Commerce Commission has prescribed the form of wage statistics that shall be reported to the Commission, these same statistics being also furnished to the Railroad Labor Board. The compilation of statistics of such a highly technical nature naturally involves questions of one sort or another. These questions are submitted to the Bureau of Statistics and the latter gives the carrier submitting the inquiry an interpretation on the specific point involved. This pamphlet is a compilation of these interpretations as given to the various carriers. In the pamphlet duplicate inquiries are eliminated as are also those portions of the inquiry or answer which are not essential to an understanding of the interpretation given. A complete index adds considerably to the book's value. The pamphlet is indispensable for a comprehensive understanding of the basis underlying the wage statistics. It will presumably have a large circulation among those interested in or concerned in the compilation, interpretation or application of such statistics.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### Watch for the Good

BREWSTER, Ohio.

TO THE EDITOR:

With the confidence born of the performance in the past, we have waited patiently for the *Railway Age* to analyze the operation of the D., T. & I. under the Ford regime, which was admirably done in the issue of September 10. Nearly all of the comments written, particularly by men of railroad experience, have carried an air of criticism and ridicule. In fact, some have gone so far as to be personally abusive. There is a lesson to be drawn from every calamity, famine or miracle, and it may be that a review of the occurrences on the D., T. & I. for the past six months will show some principles of practice that would be beneficial to all of the railroads.

The public should know what has actually transpired on Mr. Ford's railroad. Surely it has had sufficient publicity, and as has been correctly stated, no miracle has been performed. What has happened is that by shrewd business foresight Ford acquired the D., T. & I. as an adjunct to his manufacturing business, and has, by virtue of this combination, put the property on a paying basis, so that in place of the property being a notorious failure it is now a success. That should be one factor in his favor.

Why not review the situation with the thought of getting what good there is out of it? Ford, as a manufacturer and business man, is a success. His principle of standardization of practice has rewarded his efforts well, financially. Apparently, he has started the policy on the D., T. & I. of "More business in railroading, and less railroading in business," which, if applied systematically, should result in economy.

Standardization of materials used in railroad maintenance, both mechanical and way, is one of the fields where strides for economy are possible, but it is only by the approval and support of the executives that results can be obtained. The re-organization of the accounting system on the D., T. & I. as outlined in the *Railway Age*, is well worth studying, in particular on railroads where the distance to headquarters is not great. Duplication of accounting is not infrequent, and possibly the so-called "shop organization" may fit into railroad service to the benefit of all concerned.

The making of the station agent a "general manager" of his territory is a novel idea, and a good one. Review the conditions on many of the railroads and see if it is not true that many locations can be recalled where such a plan would save labor and money. Of course, there are many who will say the agents are not qualified. This condition, however, can be overcome.

By far the most important feature of the Ford organization at the present moment seems to be his "labor policies." Say what you will, the satisfied employee is an asset. Theorize as you may, the best employee is one satisfied with his wages and working conditions, and it is this condition that Ford has developed on the D., T. & I. Pay men well, so well in fact, that they cannot afford to lose their jobs, and we may feel assured of the results.

So, therefore, granting all that has been written as true about Ford and the D., T. & I., would it not be well to

study the good points of his organization and standardization, and apply them, if by so doing we can bring about economies so necessary at this time? Give the man a chance, and if he wins we should all profit by his experience. If he does not, then only Ford loses.

JOHN SESSER.

### Elimination of Rough Handling

GREENVILLE, TEXAS.

TO THE EDITOR:

The Interstate Commerce Commission defines rough handling as improper handling of cars in a train, or in switching. The figures given for damage to freight by the American Railway Association, Freight Claim Division, run into many millions of dollars each year, not taking into consideration damage to equipment, delays to freight and the additional per diem on cars.

Recently there has been a campaign started to reduce rough handling. The question is how badly do we want to reduce it. Plans and suggestions have been proposed that will not entirely eliminate rough handling but will materially decrease it. The idea has been advanced that we should reduce the speed of cars at point of impact while switching to two-and-one-half or three miles per hour. A great many practical trainmen and yardmen will agree at once that such a speed is impractical and that it is not possible to switch cars at a speed of two-and-one-half to three miles an hour without materially slowing down the switch movement. They invariably overlook the point that the handling speed and the speed at instant of impact are not the same. In some yards or leads it requires a switching speed of six or seven miles an hour to get a car home or at point of impact at two-and-one-half or three miles an hour. At other leads it only requires a speed of three miles an hour. In some gravity yards or humps only the slack is necessary to get the pin.

This question of switching speed should be worked out for each individual yard or lead. The only way that rough handling in yards—where 95 per cent of the rough handling occurs—can be eliminated will be by the conscientious and painstaking efforts of those handling equipment and constant and intelligent supervision.

There is nothing revolutionary in this but it will require courage, perseverance and continued efforts. It will to some extent, but not to any serious extent, slow up yard work, especially in flat yards; it will increase to some extent the cost of car handling, and will reduce the number of cars handled per engine hour. This will depend upon the physical characteristics of the yard and lead, and the personnel of the yard forces.

At a small yard where we handled from 30,000 to 35,000 cars a month, a campaign to educate the men was started in June. On a lead at one end of a flat yard which is practically level, and a classification track of approximately 3.47 of one per cent ascending grade, to get cars home at a distance of 420 ft. (ten car lengths or 15.25 rail lengths) at an impact of no greater speed than two miles per hour, required that they be turned loose on the lead at a speed of eight miles an hour, or one rail length in 2.75 seconds. The curvature in the turn-out and the ascending grade reduced the speed for each rail length the car rolled; as the distance increased the car slowed up to a speed of one rail length in nine seconds. This brought the speed down to approximately two-and-one-half miles per hour at point of impact.

I will not go into the details of making these tests, as the average engine foreman or switchman or engineer should be able to distinguish the speed at which he is handling cars after a thorough training by the proper supervising official. These instructions should cover a period of at least 15 days.

It is not the cannon that makes the loudest report that is

the most effective—the same applies to our yard operation. We may be able to handle an average of 20 to 25 cars per engine hour, probably reducing our operating expense one engine day; this will amount to about \$60 per day, or \$1,800 in 30 days. It will require switching the cars from five to 15 miles per hour and letting them strike at point of impact from five to ten miles per hour, thus damaging equipment and lading, which will require the cars to be transferred and placed on the rip track with consequent delay to traffic. By doing this we have saved \$1,800 in operation, but have spent from \$3,000 to \$5,000 in claims and to repairs to cars on the rip track, to say nothing of the loss of business due to inability to move the cars on schedule time.

During the period that we were making this test in our yard we were able to handle from 18 to 22 cars per engine hour without any damage to equipment or lading. We entirely eliminated excessive speed at the point of impact.

B. J. BLAIR,  
Yardmaster, M., K. & T.

## Universities Need Co-operation From Railways

COLUMBUS, Ohio.

TO THE EDITOR:

The discussion now going on as to the worth of college graduates in the field of transportation would seem to indicate that the universities are not taking any active part in meeting the needs of the situation. The truth is that those universities which have a College of Commerce offer work in transportation as a matter of course. Such universities are Chicago, Yale, Leland Stanford, Illinois, Wisconsin, Harvard, and a host of others. The university which I attend is an example of the sort of thing which is being done. After two years of preliminary college work the student may take up the study of transportation and continue in that group for two more years, making a four-year course.

I am not taking the transportation group but I am this year electing a railway subject, railroad economics. Perhaps the eyes of some of the oldtime railroad men would open if they were to see the kind of work done in this course. No attempt is made in it to represent the railroads as an enemy of the public. The university library contains no end of literature upon the railway question, including bound copies of all the speeches of railway executives which have been given in the last 20 years. The next few paragraphs are taken from the university catalogue.

"The courses in Transportation and subjects closely related thereto which are offered in this group will be of value to those who will sometime occupy administrative posts in the railway business and who will be responsible both to railway investors and to the public. The work offered in Public Utilities is intended for those who will occupy positions with utility companies or serve in some capacity in the government regulation of utilities.

"The extreme specialization of a modern railway system makes it difficult for a young man entering this field to bridge the gap between mere routine work and positions of responsibility. There is an increasing number of positions in the traffic, finance and statistical departments of railway and steamship companies, but without previous knowledge of the system as a whole, one entering such work is unable to see much beyond his own department and to appreciate the organic relations between it and the other departments.

"Many difficult problems affecting rate making, the railway security market, and railway administration await solution. The extent to which these problems are solved will in a great measure depend upon the special training and breadth of mind of those who administer the railroads."

The required courses in this group, while concerned in the main with railroad matters, are expected to give an insight into businesses closely allied to the railway. A student may elect additional courses in subjects in which he is particularly

interested. The required courses are as follows: Transportation Economics, Business Law, Corporation Economics, Principles of Accounting, Public Utilities, Traffic Management, Geography and Commerce of the United States, Public Utility Accounts and Statistics, Railway Accounts and Statistics, Marketing, Labor Legislation, Railway Organization and Finance, and Industrial Relations.

The universities need more co-operation from the railways. The young man does not want to be hampered by an ancient system of seniority. I have a chum who may be chief clerk in a small office in about 30 years. With such examples, coupled with those of family favoritism—I live in a small shop town where this is carried out—the young man is scarcely liable to seek railroad work.

OHIO STATE UNIVERSITY STUDENT.

## In the Interest of Better Convention Programs

CHICAGO

TO THE EDITOR:

In your review of the convention of the Roadmasters' Association, held at Chicago on September 20, 21 and 22, you commend the executive committee for suiting the program each year to "the particular need of the times" and you accord warm praise for the things that were done and said. This is all right, I guess; every editor must be an optimist, and it may be that I am unreasonably impatient; but how often it was necessary in the course of the roadmasters' discussion to note that the things left out were the matters of most importance! Are our technical associations like rivers in level countries, which wear their channels to a level and cease thereafter to manifest any power, except as it is transmitted to them by the perfunctory flowing of the tides?

Everybody was talking of the same old problems which have been, or ought to have been, put out of the way years ago; problems which are no nearer settlement than they were when they were discussed by the now forgotten New England Roadmasters' Association and the American Society of Railroad Superintendents when it was steered by Waterman Stone and Charles A. Hammond.

It seems to be difficult for the members to grasp the idea that "old times have changed, old manners gone"; that what is needed today is maintenance of track by contract and work done by power-operated tools; that the only rivalry among track forces is the rivalry among themselves for paid places in the union, and that a new rivalry in knowledge must be substituted, or we must go to smash.

As the meeting progressed I jotted down these *ifs* (I crave the forgiveness of Kipling) which are, as it appeared to me just what was not intended to be brought out.

If you can think, think, think, and keep thinking on a problem, and not rush into it regardless of consequences.

If you can say "No" with emphasis and "Yes" with good reason, regardless of what you know to be the questioner's own view.

If you are prepared to obey all reasonable requests.

If you can handle an emergency without losing nerve, or going to pieces when the bottom falls out.

If you can talk or write to a subordinate in a way that will elevate him, rather than cause him to lose his self-respect.

If you are not one of that class of talking "live wires";

If you have learned the difference between cleanliness and economy;

Then you're in a fair way to become a really big man in a railroad—a roadmaster.

Most railroads today are running wild on labor, while doing nothing in the way of backing it up by materials. Where labor absorbs more than its percent of the cost of maintenance, it is certain that the track work is not being efficiently done. Mr. Editor, if you have a roadmaster on your staff, let him show up some of the facts bearing on this feature.

W. L. DERR.

## Locomotive Runners' Working Conditions

TRENTON, N. J.

TO THE EDITOR:

Your editorial of October 29, setting forth, in detail, what to do to revise railroad employees' wages, opens up a good many avenues of possible progress. Not the least in importance of the questions now before us is that raised by Professor Cunningham, namely, how to restore the normal difference between the pay of an experienced locomotive runner and that of a comparatively unskilled track laborer or shopwork helper. Our paternalistic government advanced wages in war time on the basis of an arbitrary standard of living; a man who was getting \$45 a month was advanced to a level with others who had been receiving \$75; this on the theory that both ought to be enabled to live on the same scale of expenditure. This is beautiful, as socialism; but in real life the sober fact is that the track laborer, because of lesser abilities, must live in a poorer house and wear cheaper clothes than does the engineman. And the economist must recognize this fact. We can wish that it were otherwise; but there is no use in fighting immutable laws. The law of supply and demand will, sooner or later, reduce the trackman or advance the engineman; but it is the duty of the employer, howsoever benevolent he may be, to recognize this law frankly every day rather than waiting to be driven by it.

But in readjusting the engineman's wages, it is important to get rid of all false conditions. If he deserves ten dollars a day because of his skill and experience, well and good; but do not pay him two dollars a day more than he is worth just because he, or the company, is wasting that much money.

An engineman of a large Eastern road, writing recently to a local paper in justification of the present rates of pay, said that some enginemen have to move their home with every change of time-table. There, so far as the statement is true, is a serious waste; but the engineman is not responsible for it (except as his brotherhood committee bulldozes the superintendent into making all sorts of petty rules about seniority). In the same letter this engineman says that one-third of the enginemen are on the extra list. In that situation, of course, they earn irregular pay, except when business is rushing. The query arises whether the earnings of these part-time men are fairly stated when included in published exhibits of average personal incomes. A man on the extra list ought to have work on a farm, or somewhere, to fill in the time when he is not running. This again is a cold fact which the socialist and the philanthropist do not like to acknowledge; but the honest economist *must* acknowledge it.

Another waste, for which the railroads and the enginemen (and trainmen) are both to blame, is the great amount of deadheading. Those runners who are required to move their headquarters when their runs are changed by the absurd seniority rules, evade the issue by riding in passenger cars 50 to 100 miles before and after each trip. This was brought out in the investigation of a collision at Stamford, Conn., a few years ago, where a passenger engineman rode 40 miles to and from his work. It is a duty to the public, in the interest of safety, incumbent on both the roads and the brotherhoods, to put a stop to such useless expenditure of energy. The Ivanhoe and the South Byron collisions, two years ago, exposed discreditable conditions somewhat similar to this.

Now is the time, if enginemen's wages or working conditions are to be readjusted, to start a general movement to make our safety arguments and our wage arguments consistent, one with the other.

NEW JERSEY

## Do Railroads Want College Men?

MOBILE, Alabama.

TO THE EDITOR:

The railroads want, and need, college men, but what the college man wants, and needs, before he should consider himself qualified to handle the position for which he has taken four years training, is a first-hand knowledge in handling the most intricate element in the transportation machine—that is, the human element.

It will be a bold graduate from any of the engineering schools who will expect to fill an executive, or semi-executive position—if I may use the term—in the maintenance, mechanical or transportation department the day after he graduates.

A. R. A. Clerk says in the *Railway Age* of October 8, 1921, page 661: "When a college graduate is out of school he is mature, and can't earn his salt as a call boy." True he could not and keep up the appearance that the monthly allowance "Dad" has given him for four years has permitted, but he could "pioneer" in the sense that our forefathers did in settling this country, always keeping a lookout for the job ahead, no matter what it is. If he kept his eyes and ears open he would begin to get a first-hand knowledge of the "human element" when he went to call an engineman or a conductor for "Second thirty-two, leaving at 6-10 a. m.," and the man called had been out to a dance most of the night, or had been up with a sick child, or had not made a trip for a week.

The common carriers of the country, with very few exceptions—with special reference to the mechanical department—are the least progressive of any of our larger manufacturing concerns, and there is a good and valid reason for it. Their revenues are limited by a government body, and about 60 per cent of their expenses are fixed by organizations, which at times seemed as strong, if not stronger, than the government. Many of the carriers have frequently been compelled, much against the best judgment of those in charge, to "Do as you've always done," to again quote from the A. R. A. Clerk.

The engineering department has always preferred college men, but we could not make division engineers nor supervisors out of them the day after they were graduated. They must first go to school again and learn to read—read human nature.

A college man has an advantage over his less fortunate fellow. In his four years of college work, his analytical and technical training have been such that it is not necessary for him to "spend a lifetime" in mastering his assigned duties, before he is ready for advancement. But he must understand that advancement is no more rapid—and no more slow—in the railroad business than in any other line of endeavor. Much, as may well be expected, depends upon the man and his personality.

The railroads want and need college men, but the seniority rule which applies with so much force in the mechanical and transportation departments will not permit of their being employed immediately after graduation in either of these, except as an apprentice or in some very humble capacity which they feel they cannot take.

The most open road to positions of trust and responsibility in the railroad business is through the engineering or maintenance of way department, and that road is necessarily a narrow one.

There is no business which so much needs scientific treatment as the manufacture of transportation, and I will venture the assertion—the truth of it may never be proven—that if the carriers had the same freedom of action as other manufacturing concerns, the college men for the railroad business would be at a premium.

H. S. JONES,  
Chief Engineer, Gulf, Mobile & Northern.

# Proposed Modification of Stop-and-Proceed Rule

## Details of Practice on Fourteen Roads Using "Tonnage" Signals, Relaxing the Stop-and-Proceed Rule

THE PAPER by A. H. Rudd, on the Stop-and-Proceed rule, criticising its use as usually employed in automatic block signal practice, which was printed in the *Railway Age* of August 6, page 247, was promptly responded to by F. P. Patenall, signal engineer of the Baltimore & Ohio, whose signal for permitting a train to pass a stop signal without stopping is illustrated in Fig. 1. Since then we have received information from 14 other roads (besides some from roads which have not considered this question) and we give below some notes concerning practice in this detail on these roads.

Mr. Rudd's position is that it is unnecessary to stop a



Fig. 1. Baltimore & Ohio Automatic Block Signal with Auxiliary Arm

train when the engineman can see a clear road a considerable distance ahead, and that the non-stop rule, as practiced quite extensively on steep ascending grades (where oftentimes the starting of a train is slow and difficult) ought to be made universal, regardless of grades. Those who have expressed opinions agreeing in substance with him are F. P. Patenall (B. & O.); T. F. Brennan (B. R. & P.); C. A. Christofferson (Nor. Pac.); and W. J. Eck (Southern). Most of the roads replying to our inquiries have, however, given us no definite expression of opinion on this point. Four have expressed definitely adverse opinions, namely: Central of New Jersey; Chicago & North Western; Great Northern; Louisville & Nashville.

Fourteen roads using these special signals are listed in our table.

The Baltimore & Ohio has in use 78 block signals arranged for this use, an auxiliary arm being used to convey to trains the indication that when the principal arm is horizontal (indicating that the block ahead is occupied)

they need not stop, provided the way is seen to be clear. Rule 501 AA, requiring that a train encountering a stop signal shall stop, and then proceed under control, is suspended, and instead the train is to be governed by Rule 501 G: "Proceed at slow speed, prepared to stop short of train or obstruction."

This rule applies to both passenger and freight trains. The main arm and the auxiliary each have an independent operating mechanism. No colored light indications are given with the lower arm; the blade is made visible at night by the rays of the light (uncolored) of the lamp fixed on a bracket near it.

These signals will be found on five different divisions of the Baltimore & Ohio, as follows: Baltimore 21, Cumberland 23, Conneville 21, Pittsburgh 12, Toledo 1. The locations are largely on ascending grades where, of course, the avoidance of unnecessary stops is particularly desirable.

Many of these signals have been in service eight years and their use is reported as highly satisfactory. F. P. Patenall, signal engineer, sees no objection to making Rule 501 G universal with automatic signals; which is to say, the auxiliary arm is unnecessary.

Supplementing the information given in the table and in the illustrations, we quote from letters from other roads, as follows:

*Chicago & North Western.*—Those who believe that the relaxation of the stop-and-proceed rule is unwise base their argument on the likelihood of failure of discipline; and this is most concisely expressed by the Chicago & North Western's reply, which says: "Operating officers find it difficult to administer discipline when there is any question about the

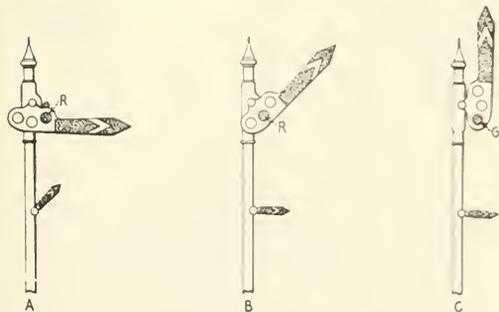


Fig. 2.—Lehigh Valley.—Arms colored red; lights, red or green as indicated.

action of the engineman; and in disciplining him for disobedience of automatic signals, there is very often a question, as between the observer and the man who is to be disciplined, as to what happened. Actual stoppage of the train eliminates any possibility of question of speed."

*Chicago, Burlington & Quincy.* Signals are distinguished by having blades painted yellow and the addition of a purple light fixed to post below blade.

*Chesapeake & Ohio.*—Uses a yellow fixed light. Between Charlottesville and Staunton, 40 miles, where light signals, three-indication, are now being installed, the regulations will permit all trains to proceed at low speed in an occupied

block; but in connection with the automatic train-control apparatus being installed on that section of the road, it is planned to limit the speed, in all such cases, to 12 miles an hour.

**Central of New Jersey.**—This road has considered the matter carefully, but has decided to use none of these signals. On the Central of New Jersey lines, where grades are steep, the road is in a mountainous country, with many curves. In a few cases, the block sections have been shortened to overcome the trouble from too frequent stops.

**Cleveland, Cincinnati, Chicago & St. Louis.**—On this road the double-track lines are, in many cases, signaled so that trains can be run in either direction on either track; and the special permissive signals, when introduced, will have to be arranged as on a single-track line; the connections being arranged so that the shorter arm cannot be displayed in the proceed position when a train is coming in that section from the opposite direction.

**Delaware, Lackawanna & Western.**—The signals on this road are lower quadrant, home and distant. Both blades are painted yellow. The night indication for the top arm is given by a yellow light, the same as for the lower arm. These signals will be found on three different divisions, as follows: Morris & Essex, 4; Scranton 44; Buffalo 18. The signals on the Scranton division have been in service 16 years; service highly satisfactory.

**Delaware & Hudson.**—Same style of signal as on the Lackawanna.

**Erie.**—The auxiliary arm is attached to the post 6 ft. 6 in. below the principal arm. The letter "G" denotes "grade." The fixed position of the lower arm is 45 deg. upward.

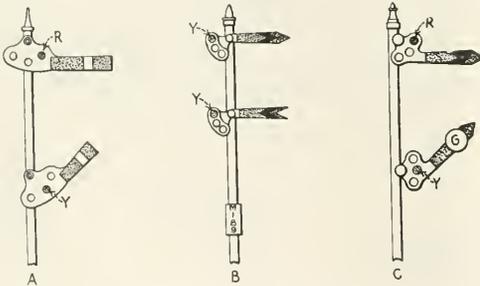


Fig. 3A—B. R. & P.—Arms colored red; lights, red and yellow, as indicated.

Fig. 3B—D. L. & W.—Both arms and both lights yellow.

Fig. 3C—Erie.—Arms yellow; lights, red and yellow, as indicated (lower arm fixed).

These signals are to be found on two divisions; the Kent division between Kent and Marion, 11 eastbound and 16 westbound, and the Delaware division, 10 eastbound and 8 westbound.

**Great Northern.**—This company planned to introduce some of these signals in Minnesota several years ago, but the State Railroad Commission would not consent to their use.

**Illinois Central.**—On this road the rule permits all trains to take advantage of the signal to omit the stop, but passenger trains are not so heavily loaded as to make it necessary, and in practice the rule is applicable only to freight trains. These signals are located on five divisions, as follows: Illinois, 13; St. Louis, 6; Wisconsin, 3; Tennessee, 8; Louisiana, 1. The auxiliary indicator is a yellow disk. The letter "T" on the disk (meaning tonnage) is illuminated at night by a lamp fixed behind it. These indicators have been in use about four years, with satisfactory results.

**Lehigh Valley.**—Of the signals on this road, 25 are on the New Jersey division, 23 miles; 27 on the Wyoming division, 33 miles; eight on the Seneca division, 12 miles; and ten on the Buffalo division, 22 miles. On double-track the small arms are mechanically operated by a connection from the upper arm; but on single-track they are operated by motor and are so controlled as to stand at stop when a train is moving in that block from the opposite direction. In the position shown at A Fig. 2 the short arm is illuminated as on the Baltimore & Ohio. Signals in use 16 years with very satisfactory results.

**Louisville & Nashville.**—Signals similar to those of the Baltimore & Ohio.

**New York Central.**—On the Eastern lines the signal ar-



Fig. 4—Illinois Central.—On the left a lower quadrant signal; on the right, an upper quadrant.

angement is similar to that of the Baltimore & Ohio, except that the lower arm, which is of standard size, has a standard lamp. This light, staggered, in relation to the

USE OF AUTOMATIC BLOCK SIGNALS

WITH SPECIAL ARRANGEMENTS TO OBIVATE STOPPING HEAVY TRAINS WHEN ROAD IS CLEAR FOR SOME DISTANCE AHEAD

Road	Number of Signals in use, how used, etc.
Ateh., T. & Santa Fe.....	On 60 miles of road; on all grades of 1½ per cent or over; all trains.
Baltimore & Ohio.....	78; mostly on grades; all trains; some on single track.
Buff., R. & Pitts.....	10; on grades; same as B. & O., but with yellow (or green) light at night. All trains.
Ches. & Ohio.....	6; others in contemplation; used on grades for heavy freights.
Chi. & N. W.....	5; at entrance to large freight yards.
Chi. B. & Q.....	10; on grades; for heavy freights only. In use seven years.
C. C. C. & St. L.....	Will install two.
Del., L. & W.....	66; all trains; on grades of busy freight and suburban passenger lines.
Del. & Hudson.....	12; on grades; all freight trains.
Erie.....	27; on grades; heavy freights. The arm is fixed.
Great Northern.....	Proposed to use in Minnesota, but was forbidden.
Ill. Central.....	31; on grades; heavy freights.
Lehigh Valley.....	70; on grades; all trains.
Louisville & W.....	19; mostly on grades; all trains.
N. Y. Central (East).....	55; on grades; all trains.
N. Y. Central (West).....	152; on grades; for heavy freights.
Nor. Pac.....	None.
Southern.....	52; on grades; yellow disk 15 in. diameter, for heavy freights only.

main light, shows yellow when the other shows red. The instructions contain an illustration of a three-position up-quadrant signal with blades (pointed) painted red. On the Western lines automatic block signals are arranged for this function by the addition of a yellow disk, as on the-

Illinois Central; but instead of *T* for tonnage, the disk shows *G*, for grade.

*Northern Pacific.*—Four of these were installed in 1915, but, as in the case of the Great Northern, the State Railroad Commission of Minnesota refused to permit the special signals to be used.

*Southern.*—The signal used by this company is similar to that of the Illinois Central, shown in the engraving, except that the letter is "G" for grade, instead of "T" for tonnage.

## Freight Rate Reductions Made Since Ex Parte 74

### Traffic Bureau of Commission Prepares Memorandum of Principal Readjustments

WASHINGTON, D. C.

**A** MEMORANDUM prepared by the Traffic Bureau of the Interstate Commerce Commission showing the principal reductions and readjustments in freight rates made since the increase of August 26, 1921, mainly by voluntary action of the carriers, has been printed as a public document by order of the House of Representatives at the request of Representative E. E. Sanders of Indiana. The compilation was furnished to Congressman Sanders by Commissioner Lewis with the following letter:

#### Letter of Explanation

In accordance with your request I am sending you herewith a list of the rate reductions which have been made since August 26, 1920, by the carriers with the approval of the commission.

The first seven pages are intended to show the more general reductions, while those following, consisting of over 100 type-written pages, show reductions of varying extent on specific commodities. The attached list does not by any means cover the total number of reductions which have been made. During the year ended June 30, 1920, there were filed with the commission 135,426 tariff schedules containing changes in freight, express, and pipe-line rates and passenger fares, of which more than three-fourths covered freight. All of these schedules contained a number of changes in rates, some of them carrying as many as 3,000, and it would be safe to say that during the year which has passed since the general increase following Ex parte 74 at least a million changes in individual rates have been filed with the commission. Many of those changes, which because of lack of time it has been impossible to include, are minor in character, consisting of the establishment of commodity rates in lieu of class rates, correction of errors, opening of new stations, and numerous changes of a more or less routine character. A mere enumeration of a number of these rate changes that consisted of reductions and the number that consisted of advances would afford very little basis for determination of the extent to which transportation charges in the aggregate have been advanced or reduced. Some of the individual reductions mean a loss of many millions in revenue to the carriers. The reduction in western grain, grain products, and hay rates alone, it is estimated, amounts to \$35,000,000 to \$40,000,000.

The list is necessarily incomplete, because the time in which it was prepared—only one week—was insufficient to admit of a complete check of the files of the commission in an attempt to gather data on all of the reductions. The compilation of a statement showing all the reductions made would require several months.

The more general reductions mentioned are as follows:

1. Reduction of 7 cents per 100 pounds in rates on lumber and other forest products from California and the Northwest (Washington, Oregon, Idaho and Montana) to Chicago, the Missouri River, and territory east thereof, to and including Pittsburgh and Buffalo. A very large movement is affected by this reduction.
2. Rates on grain from Buffalo and Lake Erie ports, both export and domestic, to points in the Atlantic seaboard States, applicable on grain moved from the West by lake.
3. Withdrawal of the entire increase of 1920 as to rates on range cattle and other live stock from points in the Southwest (Texas, New Mexico, etc.) to feeding grounds in the Middle West and Northwest, to and including Montana. Ordinarily there is a heavy movement during the summer months of stock

The letter is illuminated by an electric light when the signal arm goes to the stop position. These signals have been in use on the Southern for about seven years. The disk is 15 in. in diameter and painted yellow. The notes in the second column of the table are intended to show whether the signals with auxiliary arms are provided for the benefit of (a) all trains; or (b) heavy trains or (c) only heavy freight trains. In all cases, the signals referred to in the table are on double-track lines, unless otherwise noted.

cattle between the points affected; therefore the reduced rates would, under ordinary circumstances, cover a very heavy movement of traffic. So far as is known, however, the movement this year has been lighter than usual and there is little ground to believe that the reduction in rates stimulated the movement to any material extent beyond that which would have taken place without the reduction.

4. Reductions in rates on hay (prairie and alfalfa) from Idaho, Wyoming, and Utah to the Missouri River and points beyond. This reduction amounted to nearly 40 per cent, but there was only a small movement under the reduced rates.

#### 20 Per Cent on Raw Sugar

5. Reduction of about 20 per cent in rates on raw sugar from the Atlantic seaboard to sugar refineries in the Middle West.

6. General reductions amounting to 15 to 25 per cent in rates on hay from Colorado, New Mexico, Arizona, Utah, western Texas, and western Oklahoma to the Missouri River, Chicago, Mississippi River points, and the territory beyond. Ordinarily there is a very heavy movement of hay on these rates.

7. General reductions in rates on sand, gravel, crushed rock, and other road-building materials in New England.

8. Reductions amounting to 25 to 35 per cent in the rates on blackstrap molasses from Gulf ports and other southern producing points to points in the Mississippi Valley, the Southeast, Missouri River points, and the Northern States generally. Blackstrap molasses moves in large volume from and to the points affected for use in the manufacture of stock feeds.

9. Reductions in the rates on grain and grain products from points on the Mississippi River and west to the Rocky Mountains, including the Northwest, to Atlantic ports for export. These reductions cover very heavy movement of traffic and range from 3 to 4 cents per 100 pounds, the principal purpose thereof being to readjust the rates to the Atlantic ports as compared with Gulf ports.

#### 28 Cents on Coal for Lake Movement

10. Reduction of 28 cents per ton on coal from Pennsylvania, West Virginia, Ohio, Kentucky, and other eastern producing points to ports on Lake Erie when destined for movement by lake to Wisconsin, Minnesota, the Dakotas, and the Northwest generally. Annually there is a heavy movement of this coal and the reduction as made will probably affect 10,000,000 tons. The purposes of this reduction were to avoid coal shortage in the Northwest during the coming winter and to readjust the rates on eastern coal as compared with Illinois and Indiana coal in the northwestern territory.

11. Reduction of 3 cents per 100 pounds in the rates on grain products from Buffalo and other New York mills to Atlantic ports for export, applicable in connection with grain transported from the West by lake.

12. Reduction of 25 per cent in the rates on molasses, the refuse of sugar factories in Colorado, Idaho and Utah, to middle western and southeastern points. This commodity is used in the manufacture of feed for live stock and the reduction is for the purpose of assisting in the sale not only of the commodity itself but of the products of alfalfa produced in the Middle West to the farmers and stock raisers of the Middle West and the Southeast.

13. General reductions in the rates on alfalfa meal and other products of alfalfa from Colorado and New Mexico to eastern destinations. The purpose of this reduction was the same as

that made upon molasses from the West, viz., to assist in marketing the products of alfalfa raised in western territory.

14. Reduction of 5 cents per 100 pounds in the rates on corn, wheat, and rye and 3 cents per 100 pounds on oats and barley ex-lake from Buffalo and other lake ports to seaboard for export.

15. Reductions varying from 4 cents to 10 cents per 100 pounds in rates on potatoes from points in eastern Oregon, Idaho, and Montana to points east of the Rocky Mountains and west of Mississippi River, but including Chicago, Peoria, and other Illinois points, as well as St. Paul and Minneapolis.

#### Reductions on California Cantaloupes

16. Reductions varying from 8½ cents to 33½ cents per 100 pounds in rates on vegetables and cantaloupes from California producing points to points east of Chicago.

17. Reduction of 3 cents per 100 pounds in rates on grain from Illinois points to Atlantic seaboard with corresponding reductions in rates from the same territory to Gulf ports.

18. Reductions of 16½ cents per 100 pounds in rates on fresh apples from points in the Pacific Northwest to points east of the Rocky Mountains.

19. Reductions varying from 15½ cents to 55 cents per 100 pounds in rates on canned goods, dried fruits, and beans from Pacific coast to points east of Rocky Mountains.

20. Reductions varying from 14½ cents to 21½ cents per 100 pounds in rates on canned salmon from North Pacific coast points to points east of the Rocky Mountains.

21. Reductions varying from 8 cents to 15½ cents per 100 pounds on condensed or evaporated milk and buttermilk from North Pacific coast points to points east of the Rockies.

22. Reductions in rates varying from 8½ cents to 25½ cents per 100 pounds on rice from North Pacific coast points to eastern seaboard points.

23. Reductions varying from \$1.98½ to \$7.25½ per ton in rates on smelter products (copper, lead, etc.) from Colorado, Wyoming, Utah, and New Mexico to points in Central Freight Association territory east of Chicago, eastern trunk-line points, including a few points in eastern Canada.

24. Reduction of 28 cents per ton on coal from Pennsylvania, West Virginia, Ohio, and other eastern producing points, which was limited to ports on Lake Erie when destined for movement by lake to Wisconsin, Montana, the Dakotas, and Northwest generally, was extended to apply on lake cargo coal to ports on Lake Erie when destined to ports on Lakes Michigan or Huron, regardless of whether the coal was for local consumption at those ports or destined to points beyond. This affects an additional movement of about 3,000,000 tons of coal.

25. Reduction of 7½ cents per 1,000 pounds on grain and grain products from Chicago, Mississippi River crossings, and points in Illinois, Indiana, and other Eastern States to Atlantic ports for export.

26. Reduction of 5 cents per 100 pounds in export rates on flour from Buffalo to Atlantic ports when manufactured from grain brought into Buffalo by lake.

27. Reduction of 5½ cents per 100 pounds on grain and grain products for export from the Missouri River and Mississippi River points, also territory between the two rivers and in Illinois to Gulf ports, Mobile to Galveston, inclusive. Also reductions ranging from 1 cent to 5½ cents per 100 pounds from the territory lying west of the Mississippi River in Nebraska, Kansas, Colorado, and Oklahoma to Gulf ports.

28.—Reduction of 4½ cents per 100 lbs. on domestic grain, grain products and by-products from Mississippi River, Chicago, etc., to eastern points with relative adjustment from other points in Central Freight Association territory to same destinations.

29. Reduction of 20 per cent in long-haul rates on cattle, hogs and sheep in the territory on and west of the Mississippi River and Chicago. The amount of reduction in carriers' annual revenue which will result is not definitely known, but has been estimated to be upward of \$10,000,000.

30. Reduction in rates on sand and gravel and crushed stone between practically all points in trunk-line territory, including Pennsylvania, New Jersey, Delaware, Maryland, and portions of West Virginia and Virginia. The basis employed in constructing the reduced rates is 15 per cent higher than the rates in effect prior to the general increase of August, 1920, thus substituting a 15 per cent increase for a 40 per cent increase. It is expected that the annual reduction in transportation charges on the commodities affected will be much in excess of \$1,000,000.

31. Reduction of 25 per cent in rates on export iron and steel from Chicago and Central Freight Association points to eastern seaboard, with relative adjustments to South Atlantic coast ports.

32. Reduction of about 50 per cent in rates on munition lint from points in the Southwest to points east of the Rockies.

33. Reductions in rates amounting to from \$5 to \$10 per car on stock cattle from points in Tennessee to points in Virginia.

34. Reduction of 7 cents per 100 pounds on rates on barrels and kegs, Gulf ports to Ohio River crossings and Central Freight Association points.

35. Reduction of about 63 cents per 100 pounds in rates on orchard heaters from eastern territory to Pacific coast territory.

36. Reduction of about 12½ per cent in rates on domestic grain and grain products between points in eastern trunk-line territory and New England.

37. Reductions in all rates on iron ore throughout the so-called eastern territory, including generally points east of the Mississippi and north of the Potomac and Ohio Rivers, including, of course, ex-Lake ore moving from Lake Erie ports. These reductions will eliminate all increases effected under Ex. part 74, and it is conservatively estimated the amount will reach in round figures \$5,000,000 per year.

#### Various Other Readjustments

A number of other reductions and readjustments involving a considerable number of points of origin and destination and a considerable traffic, but in most cases not quite as important in extent as the ones above outlined, are as follows:

*Pig iron.*—From southern producing points to Pacific coast territory.

*Iron pipe.*—From southern producing points to Pacific coast territory.  
*Iron and steel articles.*—From central freight territory, including Chicago, to transcontinental territory.

*Smelter products.*—From Utah and other smelters to Pacific coast.

*Vinegar.*—From Pacific coast to Missouri River, Mississippi River crossings, Chicago, and points between.

*Ore.*—A large number of reductions have been made from producing points to numerous smelter points in western territory.

*Salt.*—From Utah producing territory to Pacific coast.

*Sugar.*—Pacific coast to Chicago, Mississippi River, and west thereof.

*Road-building material.*—A general readjustment in several States.

*Ground limestone from Michigan.*—To all New York destinations.

*Sulphur.*—From all Texas producing points to destinations in all States east of Colorado territory and to and including Atlantic seaboard and south-eastern territory.

*Grain minimums.*—General readjustment of minimum carload weights, resulting in reductions (entire United States).

*Copper products.*—From upper Michigan producing points to Atlantic ports, iron and steel articles, bars, and rods from Alabama, Tennessee, and Kentucky producing points to Gulf ports on traffic destined to Pacific coast via Panama Canal.

*Commodities of all descriptions.*—From interior Atlantic seaboard territory to Mobile, Ala., and points beyond. Restoration of the rail and lake differential under the all-rail between eastern trunk line territory and western points, also restoration of the rail and water differential via coastwise steamers between trunk-line territory, Missouri River, Colorado, and Utah common points, including points west of the Mississippi River.

*Brick rates.*—There has been considerable readjustment of brick rates in the various parts of the country.

*Cotton export.*—From eastern producing points to Pacific coast ports.

*Commodities for export.*—Practically all commodities for export from points west of the Indiana-Illinois State line and south of the Ohio River to Pacific coast ports, including agricultural implements, canned goods, cooperage, dry goods, glassware, iron and steel machinery, pig lead, oil (lubricating), petroleum and its products, paints, paper and articles thereof, roofing material, rope, soap, heating apparatus, tires, tobacco and articles manufactured therefrom, vehicles of all kinds, wood pulp and wood-pulp board.

*Ice.*—Emergency ice rates applying generally throughout western trunk line territory.

*Apples.*—From Texas producing points to St. Louis, Kansas City, Chicago, Milwaukee, Fox River, Memphis, Louisville, Cincinnati, Omaha, Davenport, and Little Rock, Fort Smith and other points.

*Coal.*—From Illinois mines to Michigan points. From Canon City district, Colorado, to Colorado, Kansas, and Nebraska destinations. From Montana to approximately 150 destinations in Montana.

*Copper wire and cable.*—From Montana points to transcontinental territory.

*Sugar for export.*—From Sugarland, Tex., to Gulf ports.

*Nut coal.*—From points in New Mexico to points in Colorado.

*Fruits and vegetables.*—From El Paso and Deming, N. Mex., to Arizona and New Mexico points.

*Copper and lead bullion and smelter products.*—From Pacific coast points and Montana smelters to points in New York, New Jersey, Ohio, Pennsylvania, Minnesota, Michigan, and other States.

*Asphalt.*—From Gulf ports to points in various States in the South and to Ohio and Mississippi River crossings and points basing thereon.

*Lumber.*—From Virginia to eastern cities, Canadian points, trunk-line and New England territories.

*Commodities imported via Pacific coast.*—The following list of articles imported from the Orient via ports on the Pacific coast destined to all territory in the United States east of the Rocky Mountains: Antimony ware and other antimony products, bamboo, rattan, fiber; brooms, brushes, bristles; bulbs, plants, and stems; buttons, agate or porcelain; camphor, crude, and camphor oil; chinaware, glassware, earthenware, porcelain; coconut, concentrated or desiccated; coffee, green, in bags; copra, copra cake, and copra meal; eggs, dried, shelled, and albumen; fiber, flax, jute, or straw, hemp, sisal, rice straw, flax, tow, and waste; glassware, glasses, jars; gums, all kinds; hides, cattle, sheep, goat; peanuts; oils, vegetable; palm kernels; rubber, crude; sack, sago flour, tapioca, tapioca flour, cassava flour, and potato flour; silk, waste; vegetable tallow; skins and hides; rugs and mats; tea, tea dust, siftings, sweepings, and waste; tin, bar, block, pig, or slab; toys, all kinds.

*Item 38.*—Reduction on manganese and chrome ore throughout eastern territory, 28 per cent.

*Item 39.*—Sand and gravel and crushed stone and other highway construction materials in Ohio, Michigan, Indiana, and parts of Illinois, 15 per cent reduction.

*Item 40.*—Reduction of half of the ex parte 74 increases on grain, grain products, and hay west of the Mississippi, amounting to at least \$35,000,000.

# "Satisfactory Settlement" Ends Threatened Strike

Labor Board's Efforts to Avert Walkout Successful—Brotherhoods' Threats Again Win Concessions

WITHIN A FEW HOURS after the last issue of the *Railway Age* was on the press, leaders of the five train service brotherhoods, assembled at Chicago, voted to recall their orders for a strike which was to have started on October 30. This action was taken as the result of a combination of circumstances, the most important of which were: (1) the attitude of the Labor Board as indicated in the memorandum handed down by the Board and reproduced in part in the *Railway Age* of October 29, page 821; (2) the "peace" efforts of B. W. Hooper, member of the public group on the Board; (3) the preparations which had been made by the government to combat the strike; (4) the attitude of W. G. Lee, president of the Brotherhood of Railroad Trainmen, who opposed the calling of the strike at this time; (5) the plans formulated by the carriers for preventing any serious interruption of traffic, and lastly the general disapproval of the public.

In a reference in last week's *Railway Age*, page 823, to the statement of the Board on October 25 (the statement in question appeared on page 821) it was pointed out that this statement said definitely that no further reductions for any group of any employees would be considered by the Board until rules and working conditions for that group were disposed of. It was also noted that as to overtime pay, in the cases of the shop crafts rules already promulgated, overtime provisions were retained to a large extent. Mr. Cuyler, it was further pointed out, had informed the Board that none of the carriers had any intention of making further changes in wages or working conditions without submitting controversies to the Board. The reference to the Board's statement continued, "These facts are pointed out as constituting what might be taken as a 'satisfactory settlement' by the leaders of the labor organizations." It developed that the Board's memorandum of October 25, together with the statements of representatives of the carriers at the hearings on October 26, did actually constitute a "satisfactory settlement" to the brotherhood leaders.

It was evident at Wednesday's inquiry as Mr. Hooper questioned the heads of the five train service brotherhoods regarding their reasons for calling this strike that, with the exception of the Brotherhood of Railroad Trainmen, the strike vote was taken ostensibly in protest to the wage reduction of last July but in reality to place a club in the hands of the labor leaders with which they might ward off further reductions in wages or changes in working conditions, especially the punitive overtime provisions in the brotherhood's schedules. The strike vote of the Brotherhood of Railroad Trainmen was taken solely on the wage cut of last July and it was noticeable in this connection that Mr. Lee never openly favored a walk-out. When it was pointed out to the executives of the organizations that the Board's previous memorandum contained an assurance that the Labor Board would not "enter into a prolonged hearing on an application to reduce wages at this time," the memorandum was accepted by the labor leaders as a satisfactory settlement of one of the three major excuses for the strike call. It was probably recognized at the same time that the comparatively small wage reduction of last July did not, in itself, constitute a reasonable excuse for attempting to tie up the railroads of the country. Furthermore, the labor leaders were cognizant of the fact that the Labor Board has already ruled, in the case of the shop crafts, in favor of the principle of time and one-half for overtime except for Sunday and holiday work and has by other means indicated a disposition to con-

sider punitive overtime favorably where it does not constitute an undue hardship upon the carrier. The application of this attitude to the third excuse of the brotherhood leaders for ordering the walk-out, i. e., proposed changes in working conditions, would undoubtedly constitute a "satisfactory settlement" of that point. The net result then was practically a victory for the brotherhoods involved, inasmuch as all of the organization chiefs had stated bluntly that they could only call the strike off unless a "satisfactory settlement" had been reached, then 24 hours later announcing that "satisfactory settlement" by the recall order.

## B. W. Hooper Addresses Brotherhood Chiefs

The vote ending the strike came at midnight after an all-day session on October 27. Earlier in the day the general chairman of each of the five organizations conferred separately. In the afternoon a joint session was held which was addressed by Mr. Hooper. The latter's appearance before the Board is said by the brotherhood chiefs to have marked the turning point in their discussions.

Mr. Hooper presented to the brotherhood leaders the memorandum of October 25, which through some oversight had not been officially given to them before, and explained and emphasized the points contained therein which could be accepted by the brotherhood leaders as constituting a "satisfactory settlement." He also emphasized the announcement of representatives of the carriers at the Wednesday inquiry, that no changes in either wages or working conditions will be sought except as provided by the law through the Labor Board.

## Mr. Hooper Explains Visit to Labor Representatives

Upon returning to his offices, Mr. Hooper issued a statement in which he said in part:

The Labor Board did not send me before the brotherhood and only two or three members knew I was going. I went to talk to the representatives of the organization as a man, a citizen, and a member of the board, with the hope that I might make myself useful in averting the strike. Perhaps I went by invitation, certainly by agreement, and the brotherhoods sent Mr. Whitney, vice-president of the trainmen, to accompany me.

The immediate occasion of my appearance before the leaders of the employees was this:

Day before yesterday I submitted to the Labor Board a memorandum, bearing indirectly upon the strike situation, which was adopted. By an awkward oversight this memorandum did not reach the chief executives of the brotherhoods until last night and had not yet been presented to the committeemen and chairmen present in the city.

This memorandum was laid before the executives of the carriers on the day it was adopted. I read this memorandum to the several hundred officers of the brotherhoods this morning and, in addition, addressed them along general lines, urging every consideration possible against the strike.

Naturally, it was not within propriety for me to commit the Board or even myself to any given action on any question that may hereafter come before the Board further than the course of procedure set out in the memorandum referred to.

This memorandum, briefly stated, expresses the purpose of the Board to complete its consideration of the rules and working conditions of each class of employees before taking up consideration of any application affecting wages of that particular class, and give ample reasons for that course. These reasons it is, perhaps, unnecessary to recapitulate.

In my judgment that memorandum constitutes the only practical basis for an honorable adjustment of the present strike trouble and works no injury to anybody. It is well within the discretion and power of the Board to fix the order in which to dispose of matters before it.

If this memorandum has the effect of removing the principal

cause of friction from immediate operation, it has an additional virtue.

### Resolution Calling Off Strike Explains Brotherhood's Position

The text of the resolution calling off the strike adopted by the brotherhoods opened with a history of the recent events in the controversy. It called attention to the resolution of the Board ordering the inquiry on October 26 and said in discussing the testimony given at that time:

*Whereas*, at said hearing the Board was given full information as to the contentions and purposes of the organizations and the carriers in connection with the wage reduction provided by Decision 147 as to the intention of the carriers in reference to further reductions in the pay of employees, as to reductions in wages made by a number of carriers without authority of the Board and as to applications of carriers for the elimination of time and one-half for overtime and changes in agreements relating to working conditions of the employees; and

*Whereas*, the contention of the representatives of the employees before the Labor Board was that the proposed strike was voted for in opposition to Decision 147 of the Board and was justified upon the ground that no employee may be required to continue in the service of the employers on a scale of wages considered by said employee to be unsatisfactory; and

*Whereas*, the Board propounded numerous questions for the purpose of developing information as to what effect the statement contained in the ballot relating to the proposed further reduction in wages and changes in working rules had upon the employees in casting their ballots for or against a strike, in response to which the representatives of the employees expressed the opinion that the matters, referred to in the statement, were of vital concern to the employees, but that the ballot expressly stated that it was cast in opposition to or in favor of the acceptance of the decrease in wages, as provided in Decision 147; and,

*Whereas*, the representatives of the employees seriously objected to the criticism of the Board to the effect that in its opinion they were in violation of the law in declaring a strike upon matters not yet decided by the Board, and took occasion to call the Board's attention to the injustice of this criticism in view of the fact that 35 or 40 carriers, which were listed and made a part of the record, had violated Section 301 of the Transportation act, as well as the decision of the Board, by arbitrarily putting into effect reductions in wages and by making changes in working conditions without complying with the provisions of the act; and,

*Whereas*, after interrogating the representatives of the employees the Board interrogated the representatives of the carriers; and,

*Whereas*, in a reply to questions propounded to him, T. DeWitt Cuyler, chairman of the Association of Railway Executives, representing 95 per cent of the carriers cited to appear, stated that none of the carriers represented by his association would revise wages or change working conditions unless by agreement with their employees or by decision of the Labor Board, nor would they violate the Transportation Act in any particular in respect to any dispute between the carriers and the employees; and

*Whereas*, in reply to the questions propounded by the Board to the representative of one of the carriers a number of the Association of Railway Executives, who had reduced wages and changed working conditions without authority of the Board, he stated that such reduction in wages and changes in working conditions would be restored and that no further changes would be made except upon decision of the Board or by agreement with the employees; and

*Whereas*, We interpret this question and answer to mean that all carriers who have reduced wages or changed working conditions without authority of the Board will voluntarily cancel such reduction in wages or changes in working conditions or be called to appear before the Labor Board and show cause why they should not do so; and

*Whereas*, in reply to questions propounded to representatives of short line railways such representatives stated that they would comply with the provisions of the Transportation Act and that no reduction in wages or changes in working conditions would be made in violation of the law, and

*Whereas*, in view of the questions propounded by the Board to the carriers that reduced wages or changed working conditions are in violation of the law, there is every reason to expect early decisions requiring the cancellation of such reduction in wages and changes in working conditions.

### Board's Memorandum an Acceptable Basis

The Board's memorandum of October 25 is then quoted and the following comment made:

*Whereas*, we interpret the foregoing memorandum to mean a number of important things to the membership of our organizations. Among these things we mention:

*First*, it is evident that the Board has adopted a policy under which it will not be in a position to give consideration to any application, affecting the wages of transportation employees, for a considerable period of time.

*Second*, that it does not propose to take any action on wage applications, affecting any class of employees, until it is definitely known what working conditions apply.

*Third*, that the train and engine service employees will be given full consideration in view of the hazard, responsibility and other conditions peculiar to their employment; and,

*Whereas*, in paragraph 3 of the Board's memorandum and during the progress of the hearing the Board announced that owing to the failure of the carriers and their employees to agree upon the organization of voluntary adjustment boards, provided for by law, the docket of the Labor Board has become so seriously congested as to make it impossible to give proper and full consideration without extended delay to important questions submitted for its decision; and

*Whereas*, we construe this paragraph and announcement to mean that the Labor Board will lend its support to the organizations in their efforts to induce the carriers in different regions to speedily organize such adjustment boards in order that the Labor Board may comply with the provisions of the law, that it shall receive for hearing and as soon as practicable and with due diligence decide disputes, involving grievances, rules and working conditions, which are not decided as provided in Section 301 and for which such adjustment boards would be required to receive for hearing and decision under the provisions of Section 303; and

*Whereas*, in addition to the foregoing it has become apparent to your representatives that the powers in control of railways have so arranged conditions as to shift the burden and expense of a strike to the shoulders of the people; and,

*Whereas*, with this information before us, we feel that a solemn obligation rests upon us to forego the full satisfaction of our demands rather than to cause loss and suffering to the people by carrying on a strike, the expense and hardships of which would fall upon the public instead of upon the railroads; and,

*Whereas*, as a result of the activities of these organizations since July the public is assured a reduction in freight and passenger rates, which would not otherwise have been made, and which should be reflected in a substantial reduction in the cost of living that will in a measure compensate the employees for the reduction in wages imposed upon them; and,

*Whereas*, we are not unmindful of the public concern in the issues involved in the strike, but point out that the public is not correctly informed upon these issues. The representatives of the employees have found it impossible, in view of the attitude of the press, to get their case properly presented to the American people; therefore, the people have formed conclusions upon the matter from information wholly inaccurate and misleading as published from day to day in the newspapers; we believe that if the public knew the facts we could with entire confidence rely upon its decision; and,

*Whereas*, the employers of labor, except in the railway service, consider it a reasonable and fair policy to make term agreements with their employees, and every adjustment of wages is made for a period of one, two or three years; and,

*Whereas*, it was one of the aims of the employees in this dispute to secure a settlement of the railroad wage controversy for at least a period of one year, in order that the business interests of the country might not be disturbed at frequent intervals by serious disputes between the railroads and their employees, too often reaching the point of a threatened cessation of work by the employees, and that the employees would not be obliged to assume the enormous expense incident to conducting repeated hearings before the Labor Board involving their wages and working conditions, and because the employers as well as the public are entitled to settled conditions in respect to these important matters; and

*Whereas*, we here take occasion to inform the public that as a result of the World War railway employees were the last to receive increases in wages and among the first to have a reduction of wages imposed upon them; therefore, be it

*Resolved*, That we, the Executive Committees and General Chairmen representing the organizations named herein, are sincerely of the opinion that the memorandum announcing the policy of the Board, and the pledges of the railway executives, made to the Board, constitute an acceptable basis of settlement, justifying the calling off of the strikes, which were authorized by a vote of members of our organizations.

And we hereby call off such strikes, having confidence that good results will follow the adoption of the memorandum by the Labor Board and the pledges of the railway executives made to the Board at public hearing on October 26; and, further, to afford

an opportunity for reduction of freight and passenger rates to correspond with existing reductions in wages, to determine what effect such reductions in freight and passenger rates will have upon the cost of living.

### Labor Board Renders Decision on Strike

The Labor Board's decision finally disposing of the principal questions involved in the strike situation was handed down by the Board on October 29. According to the terms of this decision, railroad unions calling strikes in the future in violation of the Board's decisions will be outlawed, and furthermore, will lose all benefits and rights to protection and appeal to the Board under the Transportation Act. At the same time, the Board definitely ruled that no changes in working conditions or wages may be made until duly authorized by the Board. The decision says in part:

The subject and impelling cause of the inquiry was the threatened general strike of the employees comprising the membership of the above named labor organizations on practically all the first class railroad lines in the United States, which, if it had culminated, would have resulted in a national calamity of incalculable magnitude. It was the purpose of the Board to develop the causes and true facts and conditions to the end that all possible measures might be taken to avert the disaster. It was shown that a vote had been taken and a strike called on all the roads, and as to the Brotherhood of Railroad Trainmen, had gone into effect on one, the International and Great Northern, on account of dissatisfaction with Decision No. 147 of the Board making a reduction in wages. Since the hearing and as a result thereof the strikes have all been called off by the officials of the organizations and the danger of an interruption of traffic removed.

The representatives of the carriers and the representatives of the employees have announced their intention and purpose to conform to the law, and abide by the orders of the Board. These facts render it unnecessary for the Board to make any further orders on or about this matter, and move it to congratulate the parties directly interested and the public most vitally and profoundly interested on this return to industrial peace, triumph of the reign of law and the escape from this national disaster.

But at this time, and while the matter is so intensely before the minds of all, the Board deems it expedient and proper to make its rulings and position on some of the points involved so clear that no ground for any misunderstanding can hereafter exist.

First, when any change of wages, contracts or rules previously in effect are contemplated or proposed by either party, conference must be had as directed by the Transportation Act, and by rules or decisions of procedure promulgated by the Board, and where agreements are not reached the dispute must be brought before this Board, and no action taken or change made until authorized by the Board.

Second, the ordering or authorizing of the strike by the organizations of employees parties hereto was violation of Decision 147 of this Board, but said strike order having been withdrawn, it is not now necessary for the Board to take any further steps in the matter.

The Board desires to now point out that such overt acts by either party tending to and threatening an interruption of the transportation lines, the peaceful and uninterrupted operation of which are so absolutely necessary to the peace, prosperity and safety of the entire people, are in themselves, even when they do not culminate in a stoppage of traffic, a cause and source of great injury and damage.

The Board further points out for the consideration of employees interested that when such action does result in a strike, the organization so acting has forfeited its rights and the rights of its members in and to the provisions and benefits of all contracts theretofore existing, and the employees so striking have voluntarily removed themselves from the classes entitled to appeal to this Board for relief and protection.

### Strike "Settlement" Represents Truce

Now it is possible to appraise the developments of the past few weeks correctly and it is generally agreed that, although a serious crisis has been averted, the "settlement" is but temporary and that the issues which led to the polling of a strike vote have not been settled definitely and will again become of major importance at a time when a threatened walk-out may be fraught with much more danger than at the present time. It is plain, for instance, that the so-called "settlement" of the strike does not obligate the carriers in any way except perhaps not to arbitrarily reduce wages or change working conditions until all of the terms of the

Transportation Act have been complied with. In this connection, Samuel M. Felton, president of the Chicago Great Western, said recently: "Our program for the immediate future, as announced on October 14, remains unchanged. This program includes plans to ask the Labor Board for permission to make further reductions in wages and to pass the savings made in this manner to the public in the form of reduced rates."

The position of the labor organizations as to this program indicates that they are depending upon the assurances contained in the Board's memorandum of October 25 and the statements of Mr. Hooper. This is indicated by the remark of Mr. Lee, who, upon being told of Mr. Felton's announcement, said, "Of course, they will continue to ask for the 10 per cent reduction. The Board's docket is crowded, however, Mr. Hooper told us, and there is no chance of immediate action."

### I. & G. N. Strike Called Off

The other remaining issue in the strike situation is the situation on the International & Great Northern, where the trainmen walked out on October 22. The progress of this strike up to October 26 was described in the *Railway Age* of October 29 (page 823).

Conflicting reports have been circulated regarding the strike situation on the International & Great Northern and as a result Thornwell Fay, executive officer for the receiver, was asked to make a statement as to developments from October 25 to date. In reply Mr. Fay said:

Report splendid progress from October 25. All embargoes were raised on October 27, and since then we have been in position to handle promptly all traffic offered. I understand Labor Board states strike called off, and I am informed President W. G. Lee of the Brotherhood of Railroad Trainmen concurs. General chairman on International & Great Northern did not so advise his men, and vice-president of trainmen's organization now here in an endeavor to have strikers restored. To this end he has taken subject up with United States court at Houston, Texas, and matter heard November 2.

## Emergency Organization for Meeting Strike Situation

WASHINGTON, D. C.

PLANS WHICH had been made by the Department of Commerce for mobilizing the nation's food, fuel and other supplies in the event of a strike and an outline of a federal emergency organization which had been formed were made public by Secretary Hoover on October 27 following the calling off of the strike. The emergency organization included Secretary Hoover as chairman, with an assistant and an executive secretary, and divisions, consisting of a chairman and assistant, on railway transportation, motor transport, breadstuffs, meat, livestock, dairy products, canned goods and milk; fruits and vegetables, coal and oil. C. E. Spens, vice-president of the Chicago, Burlington & Quincy, was named as chairman of the rail transportation division, and E. S. Gregg, head of the transportation division of the Bureau of Foreign and Domestic Commerce, as assistant. The organization also included liaison officers of the War Department and J. W. Powell, president of the Emergency Fleet Corporation, as liaison officer of the Shipping Board. In order to facilitate contact, the country was divided into regions under regional representatives centering at Boston, New York, Chicago, Houston, San Francisco, Washington or Pittsburgh, Aberdeen or Pierre, Seattle, Atlanta and Kansas City.

The organization set up in Washington was to have as its primary object the handling of interstate and inter-

regional problems, all other questions being left to local initiative of governors' organizations.

The plan of operation and a statement of the general situation was outlined as follows:

### I. Determination of Fact

1. To determine the primary, secondary and tertiary stocks of food, fuel and feed throughout the country—*Primary* stocks being those available within state radius; *Secondary* being those within interstate water and motor radius; *Tertiary* being those within interstate rail and water radius.
2. To determine the areas dependent upon interstate movement for supplemental supplies.
3. To determine the character of movement, whether by water, rail or truck, required or available.

### II. Administrative

1. To assist the governors and their state organizations in securing interstate movement of the supplemental necessities that they require.
2. To set up relations with food and fuel industries to assist in interstate or inter-regional movements of supplies.
3. To secure co-ordination of railway and water movement in delivery of these necessities to points in need.

### III. State Activities

The whole supply problem is largely primary for the first 30 days and secondary for the next 60 days.

In addition to the federal survey, each locality will make its own survey of commodities and the transportation problem comprising:

1. Commodities: a. breadstuffs, b. sugar, c. meats, d. milk, e. groceries, f. potatoes, g. other perishables, h. feed, i. coal, j. gasoline.
2. Transportation: a. trucks, b. water, c. amount of railway movement that develops.
3. Local Resources: a. town stocks, b. immediate surroundings, c. secondary reserves.

In making these surveys, two alternatives will be apparent: 1. That the railways cease operation and that reliance must be placed solely upon trucks and water. 2. That limited operation of railways is maintained.

#### The Present Situation as to Supplies

The food situation is generally good. Stocks are well distributed and the movement to secondary reserves already brought about by federal action should prevent any hardships for four to six weeks in any section, even though all rail transportation should stop—providing motor and water transportation is fully utilized.

#### Assuming that Railway Operations Entirely Cease

In case of complete stoppage of the railways, there are available in all towns and cities, supplies for about 30 days or more.

All towns and cities outside of the "dense area" can supply themselves by motor or water for at least 60 days without any consequential interstate movement.

In the "dense area" (New England, New York, New Jersey, Delaware, Maryland, Pennsylvania, Ohio, Indiana, Illinois) certain commodities exist or can be supplied by water and motor movement alone for 60 days. There are few exceptions, which will be provided for.

The supplies of coal throughout the country are generally satisfactory.

All public utilities are supplied with coal for approximately 75 days.

Owing to the almost universal pipe line supply or refineries of their location at points available to water transport, there will be no difficulty in maintaining the crude oil supply, and consequently wide distribution of gasoline. Steps have been taken in anticipation of any difficulties to provide supplies where necessary.

#### If Railways Are Operated 20 Per Cent.

The public can be supplied with all essentials indefinitely by a series of priorities.

#### Preparedness

The public should be informed that it can be of assistance in the emergency by confining purchases to daily requirements. Hoarding of any commodity is to be carefully avoided—so as to prevent undue price advances and profiteering.

The department will supply graphic maps to state committees showing primary reserves of each commodity available without movement; secondary reserves available by water and motor without rail movement; tertiary reserves available with 20 per cent railway operation; lines of railways to be

operated in first instance; priorities to be established between commodities; shipping and barge arrangements; truck transport available; truck mobilization for long and local hauls.

Organization is complete for reports of volume and character of traffic moving by rail and water and for co-ordination of such traffic.

Complete information will be sent out to governors' committees the first day of the strike.

It is not expected that interstate movement will be undertaken before the fifth day, by which time the amount of railway movement available will be evident.

Two primary changes in the situation from pre-war conditions are to be noted:

1. By war experience the country understands the whole process of civilian and industrial organization to meet emergencies.
2. The motor truck has given every town an extended radius of food supplies by some 50 miles and thereby protects such vital matters as milk and perishables against the first shock.

One phase of the government's plans for dealing with a strike if it came was revealed by the instructions sent to the district attorney in Texas, which the attorney general said would be a model for similar orders to other district attorneys. As an initial step the local federal courts were to be called upon to issue a proclamation setting forth the inherent power of the government to intercede to prevent the disastrous effect upon the community of interference with interstate commerce. It was also understood that plans had been made for obtaining injunctions against the leaders if a strike had been called.

## Train Service Board of Adjustment For Southeastern Territory

IN COMPLIANCE with an agreement entered into some time ago between 16 railroads in southeastern territory and the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, Order of Railway Conductors and the Brotherhood of Railroad Trainmen, a board to be known as the Train Service Board of Adjustment for the Southeastern Region, has recently been organized at Washington, D. C., with the following personnel: Representing the railroads, Col. Albert B. Bayless, Louisville & Nashville, chairman; W. T. Caldwell, formerly general superintendent, Southwestern District, Southern Railway; W. A. Durham, formerly member Railroad Adjustment Board No. 1, and E. W. Grice, assistant to president, Chesapeake & Ohio; representing the organizations, F. A. Burgess, B. of L. E., vice chairman; W. N. Doak, B. of R. T.; C. J. Goff, B. of L. F. & E., and W. C. Turner, O. R. C. The office of the Board is at 1319 F Street, N. W., Washington, D. C., and John L. Mindling has been appointed secretary.

The jurisdiction of the board is confined to the adjustment of disputes growing out of personal grievances or out of the interpretation or application of the schedules, agreements or practices now or hereafter established on the railroads named which cannot be adjusted by direct conference between representatives of the individual railroads and their respective employees. All decisions of the new board shall be final and binding upon both sides if approved by a majority of the full membership. The board will have no jurisdiction over disputes involving rates of pay, or in rules covering working conditions, jurisdiction over such matters being vested in the Labor Board. The roads involved are:

Atlantic Coast Line	Louisville, Henderson & St. Louis
Atlanta & West Point and the Western Railway of Alabama	Nashville & Nashville
Central of Georgia	Nashville, Chattanooga & St. Louis
Charleston & Western Carolina	Norfolk Southern
Chesapeake & Ohio	Norfolk & Western
Florida East Coast	Richmond, Fredericksburg & Potomac
Georgia	Seaboard Air Line
Gulf & Ship Island	Winston-Salem Southbound

# America's Wealth Due Largely to Railway Expansion

Increased Population, Production and Wealth Have Followed Closely Railway Expansion

By Dr. J. M. Goldstein,

Professor of Economics, Institute of Industry and Trade and University of Moscow

TRAVELING IN 1913 over the United States and Canada, the writer was struck by the truly phenomenal influence produced upon the economic growth of these countries by railroads only recently built. Endless prairies or deserts, containing a few years before only rare settlements with a few scores of inhabitants, had within five or ten years changed into endless pastures and smiling fields, with numerous herds of cattle and prosperous farms. And what used to

How rapidly some of the cities were increasing their population under the influence of newly built railroads in the above mentioned sections of the United States may be seen from the figures of the last three censuses in the preceding table covering the 20-year period from 1900 to 1920.

In this connection it is highly interesting to note the fact that in spite of the tremendous development of economic life in the United States under the influence of the war, and the ensuing progress of agriculture and industry after the conclusion of peace, the increase in the population of the cities enumerated above was, during the period from 1910 to 1920, not only in its relative but in its absolute volume as well, considerably slower than during the period from 1900 to 1910, as shown by the following comparison:

	Increase of population	
	1900-1910	1910-1920
Absolute increase.....	898,200	844,900
Ratio of increase.....	141%	62%

Comparing these figures with the increase in the railroad

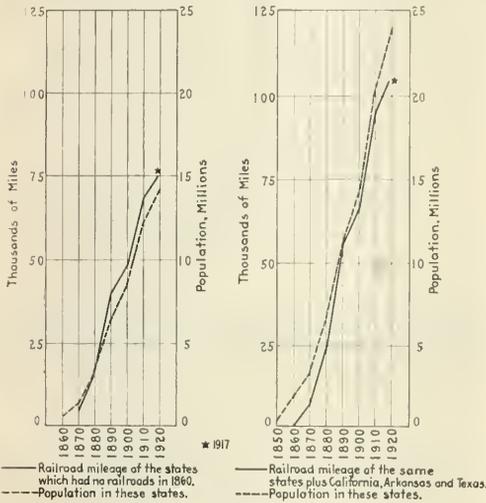


Fig. 1

be only straggling little settlements of a few houses had changed within some ten years into prosperous towns with tens of thousands of inhabitants with immense grain eleva-

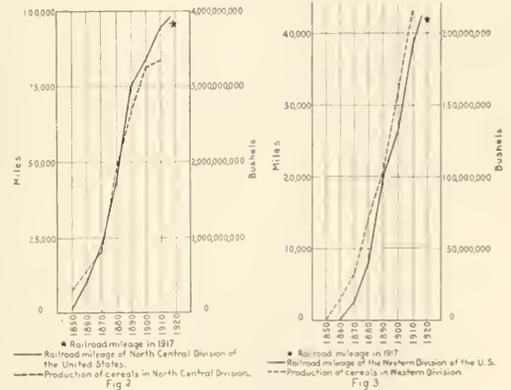


Fig. 2 and 3

	POPULATION			Per cent of increase
	1900	1910	1920	
Tacoma, Wash.....	37,700	83,700	97,000	158
Portland, Ore.....	90,400	207,200	258,300	186
Houston, Tex.....	44,600	78,800	138,300	210
San Antonio, Tex.....	53,300	96,600	161,400	213
Oakland, Cal.....	67,900	151,200	216,300	223
Dallas, Tex.....	46,300	92,100	159,000	243
Seattle, Wash.....	86,100	237,200	315,000	266
Fort Worth, Tex.....	26,700	73,300	106,500	299
San Diego, Cal.....	17,700	39,600	74,700	322
El Paso, Tex.....	15,900	39,300	77,600	388
Los Angeles, Cal.....	104,300	319,200	576,700	453
Oklahoma City, Okla.....	16,000	64,200	91,300	813
Tulsa, Okla.....	1,400	18,200	72,100	5,050
	601,400	1,499,600	2,344,500	290

mileage of the states in which these cities are situated, the following results are obtained:

	Increase of railroad mileage	
	1900-1910	1910-1918
Absolute increase.....	12,768 miles	4,507 miles
Ratio of increase.....	57%	13%

The total railroad mileage in these five states in 1900 was 22,426 miles, in 1910 it was 35,194 miles and in 1918, 39,791 miles.

## Population Increase Parallels Increased Construction

A rapid increase in the population is, therefore, observed not during the last decade, but during that of 1900 to 1920, when an enormous amount of railroad construction was going on in these sections. At what an accelerated rate it was proceeding at that period in these states is to be seen from the fact that during the same period of 1900 to 1910 the increase

tors and stockyards, splendid stores and numerous huge factories and mills.

As an illustration, it will be sufficient to call attention to the development of agricultural areas and cities in the states of Washington, Oregon, Texas, Oklahoma, California and the western provinces of Canada—Manitoba, Saskatchewan, Alberta and British Columbia.

in the railroad mileage of the other 43 states was nearly 3 times slower, being only 20%.

It is understood, of course, that an important share is due to the wealth of the natural resources of these states, such, for instance, as oil and mineral deposits; to the proximity of convenient ocean routes, etc. Nevertheless it should not be forgotten that all these factors *existed* already before the construction of the railroads, but that they could never have been effectively utilized without the latter.

Especially characteristic instances, showing the effect of railroads upon the economic growth of the country, are given in the accompanying diagrams which show the increase of the railroad mileage, the population and crops in those regions of the United States and Canada in which railroad construction began to develop comparatively late.

The first diagram (Fig. 1), which consists of two parts, shows the growth of railroad mileage and the increase of population in the states which had no railroads at all or almost none in 1860. The first part of the diagram shows the development of the railroads and the increase of the popula-

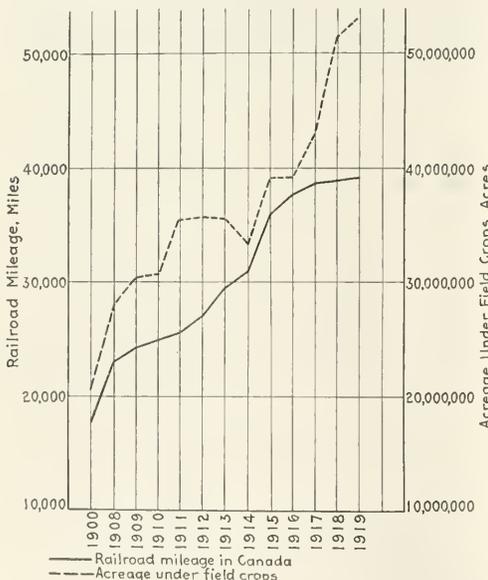


Fig. 4

tion in a group of states that had no railroads at all in 1860. To this group belong Colorado, Idaho, Arizona, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, North and South Dakota, Oklahoma, Oregon, Utah, Washington and Wyoming.

The second part of the same diagram shows the development of the railroad net and the growth of the population in the above mentioned states, together with those states in which more important railroad lines had at that time only commenced to make their appearance. So, for instance, California had in 1860 only 23 miles of railroad, Arkansas 38 miles, and the immense state of Texas, with a territory 5½ times larger than that of the state of New York, had only 307 miles. Studying this diagram we will find the increase in the population to be nearly parallel with the increase of railroad mileage. Quite naturally, the increase in the population, which was caused by increased railroad facilities, created in turn a new incentive for further railroad construction.

### Increased Railroad Mileage Brings Greater Grain Production

Figs. 2 and 3 show the relation between the increase in the length of the railroads and production of grains in the North Central part of the country and in the Western states from 1850 till 1910.

The figures of the last census for all the states of this group were not yet published at the time this diagram was prepared.

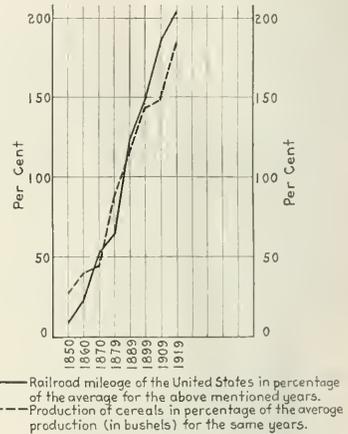
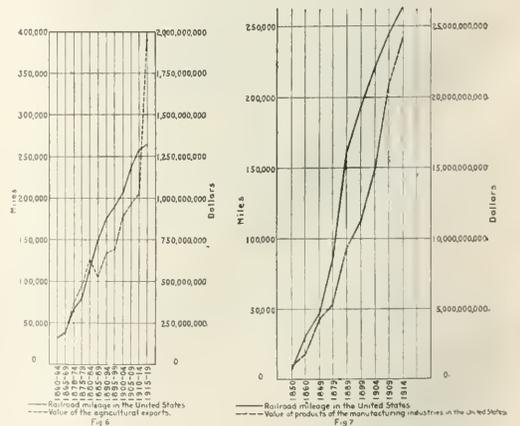


Fig. 5

The group of the North Central section is composed of the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North and South Dakota, Ohio and Wisconsin. The Western group embraces Mon-



Figs. 6 and 7

tana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon and California.

In both the North Central and Western sections of the country the development of the cultivation of grains followed almost parallel the increase in railroad mileage. This could be seen even more clearly from a diagram showing the railroad mileage in the United States for the same years in percentage of the average for the above mentioned years in

relation to cultivation of grains in percentage of the average for the same years. This diagram as the others showing these percentages have been omitted for future publication.

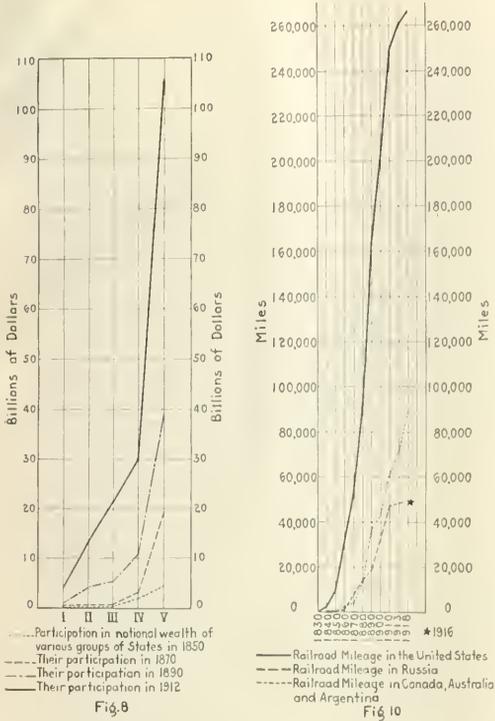
A similar close interdependence between the increase in railroad mileage and the growth of agriculture is shown by Fig. 4, giving the figures for railroad mileage and the increase in the area under field crops for the whole of Canada since 1900, i.e., from the time railroad building in Canada had begun to expand rapidly, traversing many immense territories which had had no railroads previously. It was only owing to the enormous increase in railroad mileage during the last decade that Canada was enabled to utilize the splendid opportunities in the world market for agricultural products after 1915. From 1900 to 1919 the railroad mileage of Canada increased more than 21,000 miles, having grown from 17,660 miles in 1900 to nearly 39,000 miles in 1919.

Passing by a multitude of important facts disclosed by the detailed study of the development of one or another branch of economic life in the several sections of the United States and Canada following railroad development, I shall give here only three diagrams which tend to show the influence of the railroads upon the development of the economic life of the United States as a whole.

The first of these diagrams, Fig. 5, shows the relation between the growth of railroad mileage and the increase in grain crops in the United States. Looking over this diagram we will see that the grain crops, calculated in percentages of the average for the years mentioned in the diagram, had been fluctuating almost parallel with the increase of railroad mileage.

**Our Importance as Exporter of Food-stuffs Increases**

The same holds true for Fig. 6, showing the value of exports of agricultural products from the United States. The only seeming exception are the years following the outbreak of the World War. I say "seeming" because actually the increase in the value of exports for the period 1915-1919 was caused by inflated war prices. Taking in consideration that the average inflation for the five year period 1915-1919 amounted to approximately 50 or 60 per cent, it will be seen that even during the period from 1910 to 1919 the growth of exports actually followed the increase in railroad mileage for the last decade. Not to mention the fact that if



Figs. 8 and 10

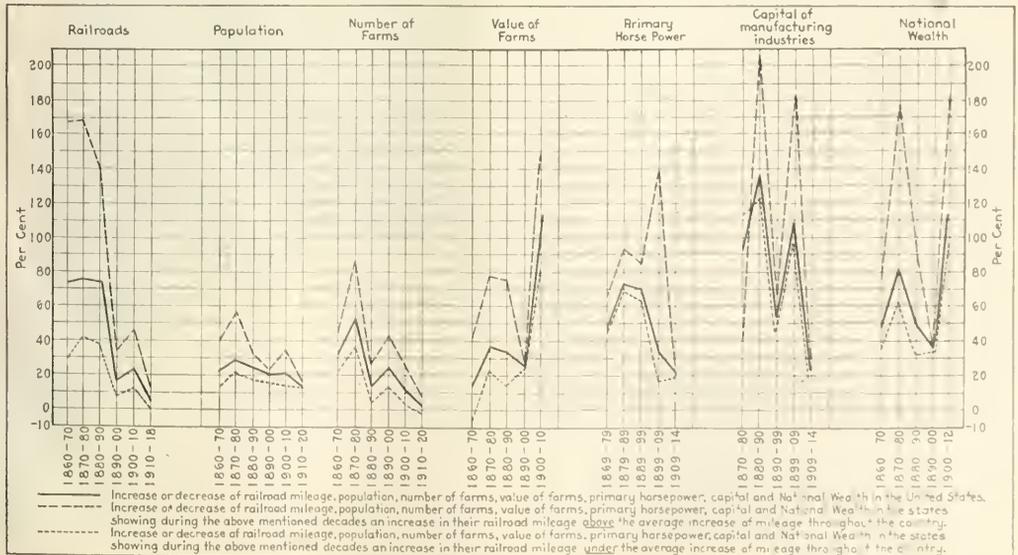


Fig. 9

the United States had not had a highly developed system of railroads, this country could, of course, never have played such a tremendous part, both in the prosecution of the war as well as in the adjustment of the world's economic life after the war.

#### Other Industries Also Benefit

No less marked has been the influence of the railroads upon the growth of the United States manufacturing industries, as will be noted from Fig. 7. In studying this diagram we will see that the value of the products of American manufacturing industries also kept pace with the increase of railroad mileage.

#### Wealth Increases Most in States

##### Where Railroads Increase Greatest

Considering this powerful influence of the railroads upon the development of agriculture, industry and trade, it is not to be wondered at if the national wealth of the country increased most rapidly in those states which had the most railroads and other means of communication. This is perfectly obvious from Fig. 8, which shows the increase in the national wealth from 1850 to 1912, in accordance with the investments made by each particular group of states in railroads, as these investments are shown by the railroad mileage per hundred square miles operated in 1912 in each state.

The states are ranked in accordance with the railroad mileage per hundred square miles of their territory in 1912. The first group embraces the following states: Wyoming, Arizona, Nevada, Utah, New Mexico and Oregon. The second group is composed of Montana, Idaho, California, South Dakota and Colorado. The third group embraces Texas, North Dakota, Maine, Washington, Nebraska, Florida and Oklahoma. The fourth group consists of Kentucky, Tennessee, Mississippi, Arkansas, Alabama, North Carolina, Minnesota, Kansas, Virginia, South Carolina, Vermont and Missouri. The fifth group embraces Georgia, Louisiana, Wisconsin, New Hampshire, Maryland, Michigan, West Virginia, Delaware, Iowa, New York, Rhode Island, Indiana, Connecticut, Illinois, Ohio, Pennsylvania, Massachusetts, New Jersey and District of Columbia. These groups were formed so as to allow each as far as possible an equal area. In dividing the states by groups, in accordance with the absolute investments in railroads, street car lines, shipping, telegraphs, telephones, etc., as well as in grouping them in accordance with the investments for these purposes per 100 square miles, or in accordance with the mileage of railroads per 100 square miles in each state, as shown in diagram 8, we obtain the same picture, although the rank of the various states will be somewhat changed. In these calculations the figures given are those for the taxable wealth of the nation.

Studying this diagram we will observe that in the first group of states, where the investments in railroads up to 1912 have been lowest, both the absolute amount of the national wealth and its increase from 1850 to 1912 have been comparatively insignificant. And, on the contrary, in each of the epochs shown, the national wealth was mainly concentrated in the fourth, and especially the fifth group, containing the states which had made the largest investments in railroad development and in the advance of other means of communication, particularly ports for foreign trade; and, moreover, most of the railroads in those states, having been operated for many decades, their influence was consequently more pronounced.

Still clearer can the close relation between the increase in the railroad net and the development of the economic life of the United States be seen from Fig. 9, drawn in such a way as to bring forward for each decade the states showing an increase in their railroad mileage, both above and below the average increase throughout the country during the given decade.

This diagram shows that in each decade that group of states which showed an increase of railroad mileage above the average increase for the entire country, had a considerably larger increase in population, number of farms, value of farms, primary horse power used in industry, capital invested in manufacturing industries and national wealth.

No matter how severely we may condemn the mistakes, abuses, corruption and even criminal acts committed by one or the other promoter or financial group standing at the head of various American railroads, we should still never overlook the undeniable fact that in spite of all such mistakes and abuses the railroads have created both the economic

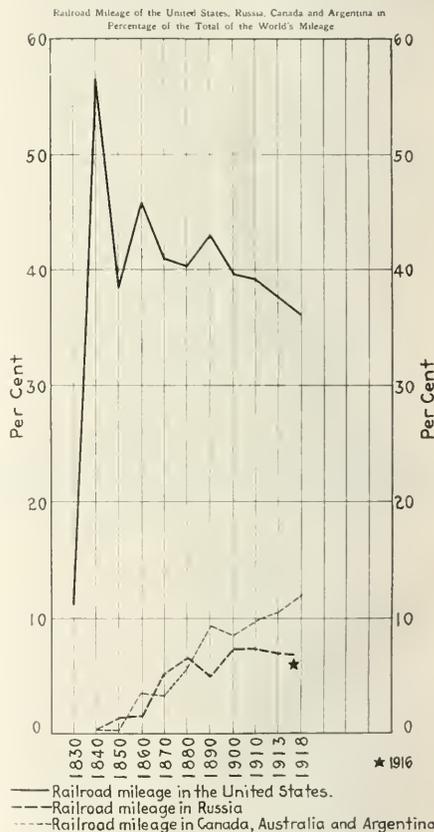


Fig. 11

wealth and political power of the United States, having made this country for many years to come the arbiter of the world's economic destinies.

#### A Comparison With Russia

As a Russian whose country has both during and after the war suffered so severely from the inefficient policy of the old regime in developing transportation facilities, I can only envy the achievements of the United States in this domain. For within a period of about five years the United States constructed a larger amount of railroad mileage than did Russia throughout more than 75 years of her railroad construction. This can be seen from the following data: A maximum increase of operated railroads was noted in the United States during the following years: 1871, 7,379 miles;

1886, 8,018 miles; 1881, 9,846 miles; 1882, 11,569 miles and 1887, 12,876 miles. The total increase in these five years was 49,688 miles. The total railroad mileage of Russia, however, equalled in 1916 only 48,955 miles.

#### A Note of Warning

Figs. 10 and 11 will, however, demonstrate that even the United States should not regard this problem as finally solved. These diagrams show quite clearly that agricultural production as well as that of all kinds of raw materials, both in the United States as well as in Russia, which were before the war the main sources of supply for such products in the world market, are in great danger from the competition of Canada, Australia and Argentina, where the railroad mileage during recent years, particularly when expressed in percentage of the total length of railways in the world, has been growing much more rapidly than the railroads of the United States.

To illustrate this fact, it will suffice here to point out that in the beginning of the forties of the nineteenth century the railroad mileage of the United States exceeded 56 per cent of that of the whole world, while the railroads of Canada, Argentina and Australia, were then almost equal to zero. In 1918, on the contrary, the railroad mileage of Canada, Argentina and Australia, growing rapidly had already reached 12 per cent of the world's total mileage and almost one-third of that of the United States, whereas the United States ratio, gradually decreasing, had fallen to 36 per cent of the world's total.

If that old famous saying "Procrastination is death" has any meaning at all, then it is undoubtedly true in the domain

of transportation, since at this epoch of sharp competition for the world markets no rapid progress is possible unless extensive and continuous improvements in transportation are made.

How slowly the railroads of the United States have been growing in recent years may be seen from the fact that from 1914 to 1918 the railroad mileage of the country increased only 686 miles, i. e., on an average of 172 miles, or 0.06 per cent annually, whereas the average annual increase of the operated railroad mileage for the period from 1900 to 1914 amounted to 4,613 miles or 2.3 per cent. From 1916 to 1918 the operated railroad mileage, as a result of discontinuance of the operation of some lines, even decreased considerably (from 266,381 miles in 1916 to 264,233 miles in 1918), so that the total mileage about the middle of 1921 was probably smaller than that of 1916.

The United States, therefore, if it wants to retain the economic and political supremacy it has won in recent years, will again have to devote a great deal of attention to the development of means of communication which have suffered severely both from the results of not always successful internal legislation as well as from the war and the terrible complications it has caused throughout the world.

As far as Russia is concerned, I hope that after a strong and really democratic government will have replaced the Soviet rule, the long and splendid experience of America in railroad construction and American skill and capital will assist my country, not only in restoring its old and now badly deteriorated railroad system but also in the building up a large new mileage—thus giving a powerful impulse to the development of Russia's tremendous natural resources.

## Railroad Securities Bill Reported to Senate

Committee Passes Favorably on Winslow Bill, Which Has Been Approved by House

WASHINGTON, D. C.

The measure has been misnamed and misapprehended both in the incidental discussions which have taken place upon the floor of the Senate and in the newspapers.

CHAIRMAN CUMMINS of the Senate committee on interstate commerce on October 27 presented to the Senate the favorable report of the committee on the bill to provide for the sale of the railroad securities held and to be acquired by the Railroad Administration (the so-called funding bill) with amendments made by the committee to the bill as passed by the House. With the report was a statement by Director General Davis estimating the amounts to be paid to the carriers as of October 1, if all the remaining settlements could have been made as of that date, as \$779,851,593.55, of which \$279,851,593.55 represents the amount that would be paid in final settlement if \$500,000,000 of the indebtedness of the roads to the government for additions and betterments were offset against the amounts owed by the government to the roads. Up to October a total of \$17,715,840 had been paid to the roads in settlements and \$60,925,000 of additions and betterments had been funded, exclusive of the \$381,000,000 equipment trust.

On July 27 Senator Townsend introduced a bill (S. 2337) substantially similar to the bill H. R. 8331. That bill was considered by the committee on interstate commerce, and on August 19 it was reported favorably with amendments. Since the report of the Senate bill, the House passed the bill (H. R. 8331) covering the same subject. It seemed wise to the committee that the Senate should act upon the House bill for the reason that there was no other practicable way in which the two houses could act upon the same bill. The committee therefore took up the House bill, and the report explains its action thereon.

It is generally referred to as the funding bill or refunding bill, and it has been treated both in debate and in the public press as a bill which proposed a plan for funding or refunding certain of the indebtedness which, during the period of federal operation of railroads, was created from the railroads to the government. Nothing could be more erroneous than this idea. The bill has nothing whatever to do with the authority to fund indebtedness of any kind or character. It neither enlarges nor diminishes the authority of the President in that regard. The matter of funding was completely covered in the Transportation Act, 1920.

This is the existing law upon the subject of funding indebtedness due from the carriers to the United States, and neither the Senate bill nor upon the calendar nor the bill which we are now reporting makes any change whatever in the present law upon the subject. The sole purpose of this bill and its only possible effect is to confer upon the President the authority to sell the securities which have come, or may hereafter come, into his hands in his dealings with the railroads, in order that he may be able to pay to the railroads whatever sums may be found to be due to them upon the final accounting which, under the Transportation Act, 1920, it is his duty to reach as speedily as possible. It is obvious that the extent to which he has funded, or may hereafter fund, indebtedness due from the railroads to the government for expenditures made for additions and betterments during federal operation and properly chargeable to capital account will affect the amount due and immediately payable to the railroads, but with respect to his discretion in funding or declining to fund within the limits of the law any such indebtedness this bill has no application.

The two questions which this bill presents are: First, shall the President be authorized to sell some or all of the securities which he has taken from the railroads, without loss to the government

and without recourse, in order to pay admitted indebtedness to the railroads; and, second, whether the War Finance Corporation shall be authorized to buy from the President a limited amount of these securities.

It is difficult to conceive any reasonable objection to these proposals. Congress has already provided for the system of accounting and the methods through which the amounts, if any, due from the government to the railroads shall be ascertained. When the amounts are thus ascertained it may be assumed they ought to be paid. If they are paid, the money must come either from the Treasury or from money derived from the disposition of the securities in the hands of the President. With these alternatives, one of which we must adopt, the propriety of raising the money by sale of the securities without loss to the government and without recourse does not admit fair difference of opinion. Before leaving this subject it may be well to remark that the President already has the authority to sell the securities referred to in paragraph (c) of section 207, Transportation Act, 1920, known as car-trust certificates, this authority having been given to him in an act approved November 19, 1919, and further to suggest that under this authority the President has already disposed of such securities to the amount of about \$100,000,000.

**Amendment Recommended**

With these general observations we proceed to the amendments which the committee recommends to the House bill (H. R. 8331).

The first amendment is as follows:

The President is hereby authorized to sell any bonds, notes, or other securities acquired by him either before or after this section takes effect, under authority of the Federal control act, the Transportation Act, 1920, or the act entitled "An act to provide for the reimbursement of the United States for motive power, cars, and other equipment ordered for railroads and systems of transportation, and for other purposes," approved November 19, 1919; and the proceeds of all bonds, notes, or other securities sold by the President shall be a fund to be used by the President for the purposes described in section 202 of the transportation act, 1920. Any balance not so required shall be paid into the Treasury of the United States as miscellaneous receipts. Any such sale or sales must be made at a price which will save the United States from loss in the transaction and without recourse.

This amendment is intended to give to the President the authority to sell the securities to any person or corporation and relieve him from the restriction of selling only to the War Finance Corporation. There can be no possible good accomplished in limiting him in making such sales to a single organization, and that is especially true when we consider that the War Finance Corporation is purely a governmental body. He has already sold \$100,000,000 of the car trust certificates under the power heretofore mentioned in the absence of any authority on the part of the War Finance Corporation to buy, and it may very well be that he will find it desirable to sell other securities in a like manner. It will be noted that this amendment specifically provides that the sales must be made at a price which will save the United States from a loss in the transaction and without recourse.

**Second Amendment**

The second amendment is as follows:

In making settlements with the carriers under the Transportation Act, 1920, no payment or allowance shall be made to any carrier on account of the so-called inefficiency of labor during the period of Federal control; and no final settlement between the United States and any carrier shall be made which does not forever bar such carrier from setting up any further claim, right, or demand of any kind or character against the United States growing out of or connected with the possession, use, or operation of such carriers' property by the United States during Federal control, except a claim specified in clauses (1), (2), or (3) of paragraph (b) of section 2 hereof.

This amendment does two things. The important differences between the House text and the amendment are that the House bill deals with the use of any fund or moneys available under any act, and declares that no payments or allowances shall be made from any fund or moneys on account of the so-called inefficiency of labor during the period of federal control. The amendment puts this prohibition immediately upon the President and the director general and declares that in making settlements with the carriers no allowance shall be made on account of the so-called inefficiency of labor. It can not be the intention of Congress to attempt to deny to any carrier its constitutional right of resorting to the courts for such relief as the laws of the country may afford them. We can impose such restrictions as are thought best upon the President and the director general in making settlements, but we ought to go no further. It is thought, also, that the effect of the House text would be to forbid the director general from making partial payments to any given railroad when the final settlement is delayed, and it is plain, from the government standpoint that something is due to it.

Second, the House text provides that no settlement shall be made between the

United States and any carrier which does not forever bar such carrier from setting up any further claim, rights, or demands of any kind or character

against the United States growing out of or connected with the possession, use, or operation of such carrier's property by the United States during the period of Federal control.

The amendment makes an exception in the following words: "except a claim specified in clauses (1), (2), or (3) paragraph (b) of section 2 hereof." It is believed that the failure on the part of the House to make these exceptions was due to an oversight. It will be remembered that the House bill provides as follows:

(b) Every claim of a carrier against the United States arising out of or incident to Federal control shall, if not filed within one year after this subdivision takes effect, be thereafter barred, and the carrier shall be considered as having waived the claim.

There are certain claims which the carriers may have against the government which can not be presented within a year, and these claims have, according to the uniform practice of the director general, been excepted from all the final settlements which he has hitherto made with the railroads, and there have been many of them. These claims may be in a general way described as claims arising in favor of third persons, some of which may finally result in liens upon the railroad property.

The third amendment is of a similar character, and excepts the claims which have been already described from the operation of paragraph (b) of section 2, which bars all claims not presented within one year.

The fourth amendment strikes from section 3 of the bill, page 3, line 2, the words: "and the President may sell to the corporation." The first amendment, already mentioned, gives to the President the authority to sell securities to any person or corporation, and therefore when we come to deal with the War Finance Corporation act it is unnecessary to provide that the President may sell to that particular corporation.

**Appendix to Report**

Appended to the report is the following:

*Statement Furnished by Director General of Railroads Showing Definitive Securities Taken and Held*

Definitive securities on hand Aug. 1, 1921, shown on page 86, Committee on Interstate Commerce, S. 2337, part 2.	\$438,577,238.08
Additional securities taken up to and including Oct. 1, 1921:	
Equipment trust certificates .....	\$11,590,800
Other securities .....	3,550,000
	15,140,800.00
Total .....	\$453,718,038.08
Less securities sold up to and including Oct. 1, 1921:	
Equipment trust certificates .....	99,662,000.00
Definitive securities on hand Oct. 1, 1921.....	\$354,056,038.08

*Claims Settled to October 1, 1921*

Total claims of carriers settled.....	\$387,017,099.12
Amount paid in settlements .....	117,715,840.43
Percentage paid in settlements .....	30.416
Mileage of roads settled .....	90.944

*Additions and Betterments*

Gross advances for additions and betterments.....	\$1,144,681,582.39
Less equipment trust (engines and cars).....	381,649,957.12
Net additions and betterments, advances not including equipment trust .....	\$763,031,625.27
Less additions and betterments funded.....	60,925,000.00

Balance .....	\$702,106,625.27
Amount to be funded not to exceed.....	500,000,000.00

*Estimated Amounts to be Paid Carriers October 1, 1921*

Final settlements, exclusive of funding.....	\$279,851,593.55
Amount to be paid by funding not to exceed.....	500,000,000.00
Total .....	\$779,851,593.55

**Amount of Money Needed**

In a letter to Senator Cummins, Director General Davis said that it is somewhat difficult to estimate the amounts to be paid carriers in final settlement. In testifying before the committee on August 9, 10, and 11, he had stated that the Railroad Administration then had cash available aggregating \$149,000,000, and that it would require \$200,000,000 in addition to complete the settlements, excluding any general funding of additions and betterments. Since that date it had paid out in final settlements, up to October 1, about \$70,000,000, so that his estimate is that it will require to complete the payment of the obligations of the Railroad Administration something in excess of \$279,000,000, to which must be added whatever amount of the additions and betterments debt is funded.

# Plan for Electrifying Sections of 11 Railroads

Superpower Report Provides for Consolidation of Power Supply  
in Region Between Boston and Washington

A REPORT called the Superpower Survey will be transmitted to the President today (November 5) by Secretary of the Interior Fall. It is the result of an investigation of the possible economy of fuel, labor and material resulting from the use of a comprehensive system for generating and distributing electricity to transportation lines and industries. The investigation was made by a staff of engineers working under the direction of W. S. Murray, consulting engineer, New York; in preparing the report they have endeavored to show how the economies of a power system on so large a scale will affect not only coal, but capi-

watts. This limit has been determined by considering on the one hand the ability to transmit energy away from the plant and on the other the hazard incident to the possibility of destruction through unusual catastrophe. A steam pressure of 300 lb. would be used at the turbine throttle with a superheat of 230 deg. F. Proposed coal delivery routes are shown in one of the illustrations and six months' storage capacity for each plant is recommended.

Hydro-electric plants will be limited in size by steam flow and storage capacity. The principal developments are located on nine rivers, but as proposed the estimates for 1925

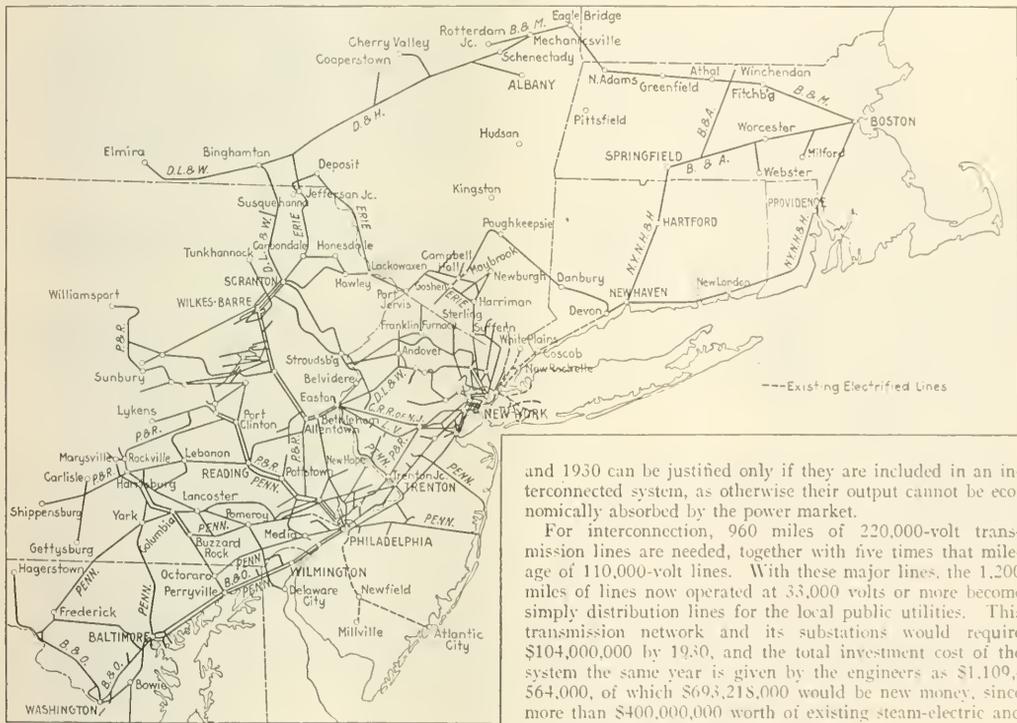


Fig. 1. Map Showing Class 1 Railroads Within the Superpower Zone for Which Electrification is Recommended

tal expenditures as well, and especially the output of human energy.

The plan provides for the interconnection of a large number of existing plants in the area shown in several of the illustrations by high voltage transmission lines. These lines would include and be extended to other points at which large power plants could be located advantageously at the mouths of mines, at tidewater, or along rivers suitable for hydro-electric developments. It would be necessary to derive more than 80 per cent of the power from coal. The maximum size of steam-electric stations has been fixed at 360,000 kilo-

and 1930 can be justified only if they are included in an interconnected system, as otherwise their output cannot be economically absorbed by the power market.

For interconnection, 960 miles of 220,000-volt transmission lines are needed, together with five times that mileage of 110,000-volt lines. With these major lines, the 1,200 miles of lines now operated at 33,000 volts or more become simply distribution lines for the local public utilities. This transmission network and its substations would require \$104,000,000 by 1930, and the total investment cost of the system the same year is given by the engineers as \$1,109,564,000, of which \$693,218,000 would be new money, since more than \$400,000,000 worth of existing steam-electric and hydro-electric plants are retained in service.

## Electrification of Heavy Traction Railroads

The section of the report devoted to the electrification of the heavy-traction railroads was compiled under the direction of Cary T. Hutchinson and N. C. McPherson; it presents results of even more general interest than the detailed analysis of the industrial use of electric power. The question of railroad electrification must be decided according to density of traffic; on this basis of the 36,000 miles of main line, yards, and sidings in this superpower zone, about 19,000 could be profitably electrified. This electrification would cost nearly half a billion dollars, but it is estimated that it would save from 11 to 19 per cent on the investment, or an average of 14 per cent per year. The following paragraphs

contain an outline of the salient points brought out in this part of the report:

A consolidation of the roads within the district in question is first suggested which would make it possible to reroute much of the traffic as now handled. Unified operation by electricity would give much better conditions than any that could possibly be attained under unified operation by steam. There would be a new motive power, in which all units or parts designed for similar service would be identical and interchangeable. There would be a pooling of all power, with great reduction of reserves. Repair shops would be consolidated, and maintenance would become a standardized manufacturing job. Track capacity would be greatly increased, and certain tracks would be allocated to freight or passenger service exclusively. All freight trains would be run on schedule; the average speed would be more nearly the same and would be increased to at least 12.5 miles an hour needed to avoid the present punitive overtime payments. Enginehouse facilities would be much simplified by consolidation.

The great expense of any large increase in trackage

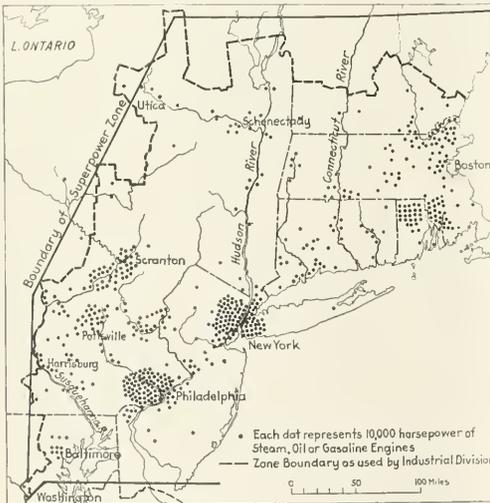


Fig. 2. Isolated Industrial Plants in the Superpower Zone

should of itself force electrification; the total cost 20 years hence will be less if electrification is begun now than the cost of the added track and terminal facilities necessary under steam operation to provide for the inevitable 100 per cent increase in traffic within that time.

**Motive Power**

The entire freight service in the superpower zone can be handled by electric freight locomotives having two articulated two-axle trucks, each carrying two motors geared to the axle, the mounting being essentially the same as that in a number of locomotives now in use and similar to the usual street-car mounting. There would be two classes of locomotives of this type—a light one carrying 80 tons on drivers and having a continuous drawbar pull of 22,000 lb. at 25 miles an hour, and a heavy one carrying 110 tons on drivers and having a continuous drawbar pull of 30,000 lb. at the same speed. These units can be combined in any reasonable number; the total load on drivers can be made equal to 80,110,160,190,220 tons, or as much more as may be desired, being limited only by the strength of the draft rigging. A train can, of course, be double-headed, and a total tractive

pull up to the maximum now in use can be obtained, with at least double the present speed.

For passenger service a similar arrangement would be used; that is, two articulated two-axle trucks, with one motor geared to each axle. The motors may be practically

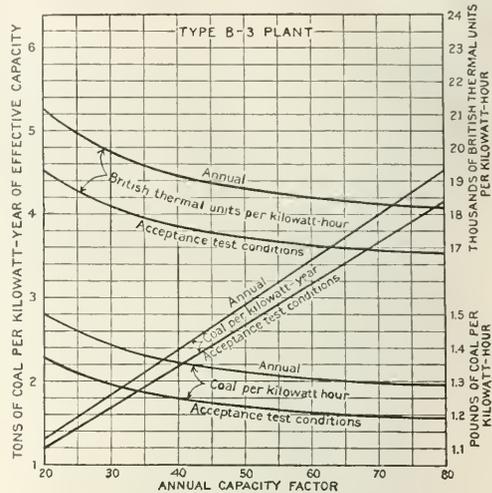


Fig. 3. Estimated Unit Performance of One of the Base-Load, Steam-Electric Plants; Plant Uses Bituminous Coal, Stokers and 20-Tube High Boilers

the same as those in the freight locomotives, the only difference being a change in gear ratio. The passenger locomotive, however, would have leading and trailing trucks, with either two or four wheels, and the total weight would be

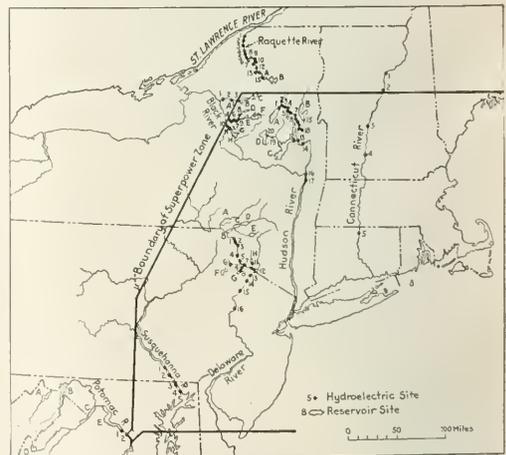


Fig. 4. Principal Hydro-Electric Resources of Superpower Zone

redistributed. This passenger locomotive would be of two weights, the light one having 60 tons on drivers, and the heavy one 90 tons. These also may be combined, like the freight locomotives.

For the switching locomotives, one size will be adequate, with 70 to 75 tons on drivers, of the same type as the freight locomotive. Substantially the same frame and running gear can be used, with motors of less capacity.

All three types of locomotives will have the usual overload

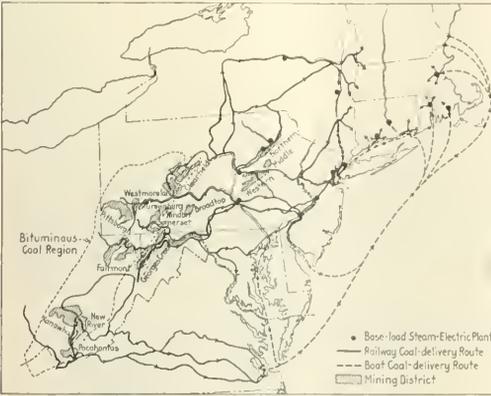


Fig. 5. Location of Principal Coal-Delivery Routes from Bituminous Regions to Base Load Steam-Electric Plants in 1930

capacity, and all will be able to operate in starting and accelerating at 25 to 30 per cent adhesion. These suggested sizes and types of locomotives can, of course, be varied

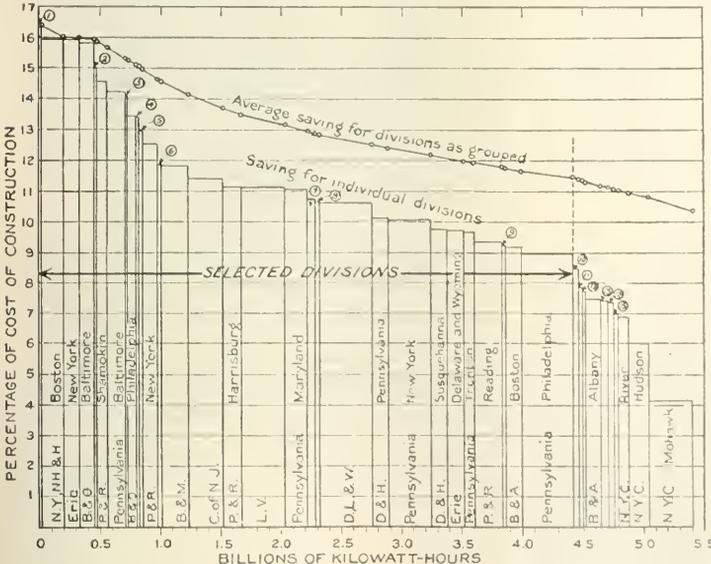


Fig. 6. Saving Effectuated by Electrification of Heavy-Traction Railroads in Percentage of Construction Costs, Not Including Saving in Wages

greatly without sacrificing the advantage of unified electric operation, but identity of types for the same service throughout the superpower zone is essential.

The only two systems that are applicable to general trac-

tion within the superpower zone are the 3,000-volt direct-current system and the 11,000-volt (or higher) alternating-current system, both with overhead distribution circuits and rail return. Both of these systems are in successful use, and both can no doubt be designed and constructed to give satisfactory service in the zone.

### Systems of Electrification

In order to avoid some uncertain elements in the estimates of the cost of the alternating-current system it was decided to base all estimates, both of operation and of construction, on the 3,000-volt direct-current overhead system. Substantially the same results in money could, however, be obtained with the alternating-current system, certain gains being offset by certain losses.

It was evident at the outset that it would not be adequate to study the roads as units, but that a study should be made

#### CLASS 1 RAILROADS WITHIN THE SUPERZONE

Boston & Maine	Erie
Boston & Albany	Delaware, Lackawanna & Western
New York, New Haven & Hartford	Lehigh Valley
New York Central	Central of New Jersey
Delaware & Hudson	Long Island
Ulster & Delaware	Pennsylvania
New York, Ontario & Western	Philadelphia & Reading
Lehigh & New England	Western Maryland
Lehigh & Hudson River	Baltimore & Ohio

of the operating divisions of the railroads. A study of a railroad system as a whole, even if it lay entirely within the zone, would yield only average results, which might make a poor showing, whereas some of the divisions treated separately might make a good showing. It was, therefore, decided to ask each of the Class 1 railroads within the superpower zone, of which a list is given below, to answer questions asking for certain fundamental data as to roadbed, equipment and traffic. This information, as with all other information sought, was to cover the year 1919.

In addition to the data from the railroads, two large companies, the General Electric and the Westinghouse, were asked to prepare estimates of cost of substation equipment, of electric locomotives, of catenary construction, and of other facilities—all as of the year 1919. Similar data were also asked of the Ohio Brass Company and one or two other companies.

### Electrical Energy Required

The electric energy required for the railroads is determined from the records of lines already electrified, with proper allowance for variations in the conditions of operation, and from calculations based on the profile and the alignment of the roads considered and the efficiency of their locomotive and distribution systems.

In fixing the units of energy for the different operating divisions much weight is given to the results of the New Haven service modified as required by profile and alinement after examination.

Other records of electric energy for locomotive and train, both freight and passenger, were obtained from the

Chicago, Milwaukee & St. Paul, New York Central and the Pennsylvania. Tables published in the report show the amount of power used on these roads for freight, passenger and switching service.

**Electrical Energy Required**

The second method of determining electric energy required consists in calculating, from profile and alinement, the work due to normal train resistance and adding to this the net work done against gravity, plus the work due to curvature, plus the work due to acceleration.

The quantity of coal burned by a steam locomotive necessary to do one kilowatt-hour of work at the rim of the drivers is estimated at 7.5 lb. Equivalent coal for electric locomotives is uniformly taken at 2 lb. per kilowatt-hour for energy delivered at the substation. All losses of energy in transmission and conversion from the power station to the substation are included in this figure. To make the costs justly comparable throughout, a unit price was adopted for railroad coal in each section: the cost per ton as thus fixed for the several sections of the zone is \$5, \$5.50 and \$6 for the south, central, and northern sections, respectively. These costs include the prorated cost of fuel and water stations.

It is assumed that the railroads will purchase electrical energy delivered at high pressure at substations on or near the railroad right-of-way at the flat rate of one cent per kilowatt-hour.

Maintenance of the electric distribution systems, is taken at \$600 per mile for main track and \$400 per mile for yard track. The cost of operation and maintenance of substations is based on \$1.50 per kilowatt per year of capacity, giving 0.7 mill per kilowatt-hour for a capacity factor of 25 per cent.

It is assumed that there will be an increase in ton-miles per electric locomotive-hour of 33 per cent and a consequent reduction in crew wages per ton-mile of 25 per cent. For passenger service no data are at hand; a general consideration of the subject does not indicate a material saving in wages necessary on account of train crews and therefore none is assumed.

It is estimated that the electric switchers will do 50 per

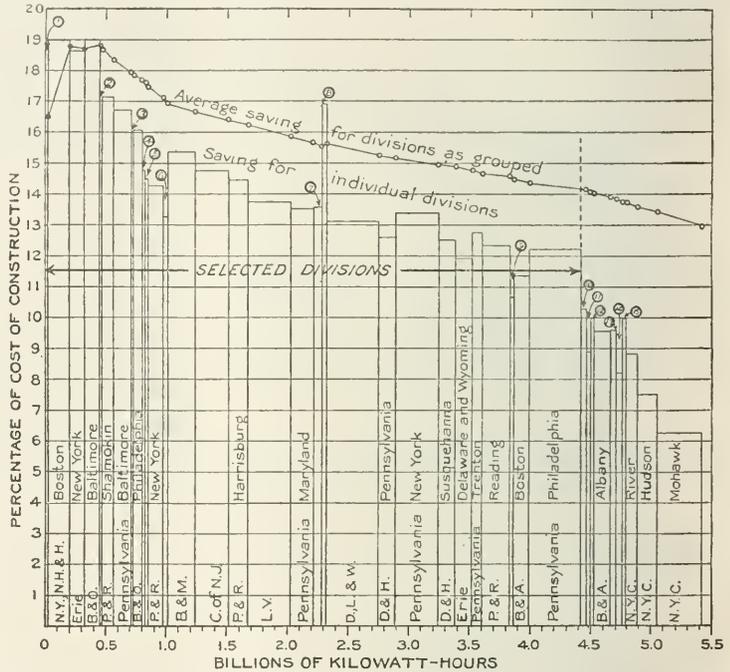


Fig. 7. Saving Effected by Electrification of Railroads, in Percentage of Construction Cost, Including Saving in Wages

TABLE NO. 1  
COST OF CATENARY SYSTEM AND ELECTRIC EQUIPMENT

(1) Catenary system:	Miles	Cost
(a) Single track.....	175	\$2,013,000
(b) Double track.....	68	1,790,000
(c) Three-track.....	9	251,000
(d) Four-track.....	42	1,625,000
(e) Yards and sidings.....	221	1,658,000
(2) Total.....		\$7,287,000
(3) Substations..... kilowatts	82,100	4,926,000
(4) Locomotives:	Number	
(a) Freight.....	43	\$3,440,000
(b) Passenger.....	55	4,576,000
(c) Switcher.....	41	2,657,000
(5) Total.....	139	10,673,000
(6) Sum of specified items.....		\$22,886,000
(7) Allowance for unspecified items, 10 per cent of (6).....		2,288,600
(8) Overhead, 20 per cent of (6).....		4,577,200
(9) Total gross cost.....		\$29,751,800
(10) Credit for released steam locomotives.....	30,300	*6,060,000
(11) Net cost.....		\$23,691,800

\*Present value.

cent more work per hour than the steam switchers, and that consequently the wage account for the same service will be reduced by 33 per cent.

In table No. 1 are listed the costs of electric equipment necessary to make the savings possible with electric operation.

Following the procedure outlined in the preceding paragraphs, a study was made for all the Class 1 railroad systems within the superpower zone except the Ulster & Delaware, the New York, Ontario & Western, and the Western Maryland. The first two were omitted after a preliminary examination because their traffic was too light to warrant electrification. The Western Maryland was omitted because only a small part of its traffic is within the zone; the preliminary examination, however, indicates that the Western Maryland traffic would justify electrification. This left a remainder of 13 railroads in the zone that were studied. The Boston & Albany was included with the New York Central and the Long Island with the Pennsylvania. It was not possible in this study to adhere strictly to the limits of every operating division reported by the railroads, and some divisions were therefore consolidated into routes. The number of divisions or routes range from one on the Boston & Maine to nine on the Pennsylvania and aggregated 40 for the 13 roads.

The results of the study are given in Figs. 6 and 7 which show for each of the 40 divisions the annual saving, in percentage of the net cost of electrification, plotted against the energy required, in kilowatt-hours per year, together with the accumulated average percentage of saving for the divisions as grouped. Fig. 6 shows the saving exclusive of the saving in crew wages, and the divisions are arranged in the order of percentages. With these results as a criterion of economical electrification the "selected divisions" are assumed to be all that show a saving of nine per cent or more. The group of divisions thus selected shows an average saving of 11.4 per cent. It includes 30 of the 40 divisions examined, comprised in 11 of the 13 systems. The saving, including the wage saving, for the 40 divisions, is shown in Fig. 7. For the "selected divisions" these savings range from 10.6 to 19 per cent and average 14.2 per cent. The total energy required annually for these 30 divisions would be 4,400 million kilowatt-hours, and the maximum demand approximately 850,000 kilowatts.

The low percentage of saving shown by the divisions not

division of the Erie to 19 per cent for the New Haven-Boston route of the New Haven.

Tables are included in the report which itemize values under headings as follows: Track mileage of selected divisions, data of steam operation on selected divisions, data of electric operation on selected divisions, coal saved by electric operation on selected divisions, energy required for electric operation on selected divisions, cost of electric track facilities and equipment of selected divisions and comparative cost of steam and electric operation on selected divisions. Another table is included which gives the comparative data for steam and electric operation for all the selected divisions within the zone, aggregated into one operating system. The growth of traffic, both freight and passenger, of track, and of tractive power for the Class 1 railroads in the superpower zone from 1900 to 1919 is shown in Fig. 8. The annual rate of growth has been 5.3 per cent in passenger-miles, 4.5 per cent in ton-miles, 0.75 per cent in all track, and 6.6 per cent in tractive power of locomotives.

The amount of money required for electrification is \$570,000,000. This figure is based on costs prevailing in 1919, but at costs as of June, 1921, it would be reduced by 18 per cent, to approximately \$467,000,000, and before this construction can be undertaken there would be further material reductions. Probably five years from now the entire work outlined could be done for not more than \$400,000,000. Good railroad authorities have stated repeatedly that more than \$1,000,000,000 a year is needed by the railroads of the United States for extensions and betterments. The part of this total to be allocated to the superpower zone, as determined by the number of locomotives, would be \$150,000,000. The amount required for normal extensions and betterments for three years would, therefore, be sufficient to electrify the 30 selected divisions of the railroads in this territory, with an annual saving of more than 14 per cent. The most valuable feature of the change, however, is not the amount saved, but the great increase in maximum capacity of existing trackage and general advantages of electric operation.

These figures indicate that with a return of normal financial conditions all these lines should be electrified before further great expenditures have been incurred to increase in a minor degree the capacity of the existing tracks and yards. Steam operation cannot satisfactorily meet the conditions of the crowded terminals herein described as the superpower zone; electric operation can easily do it

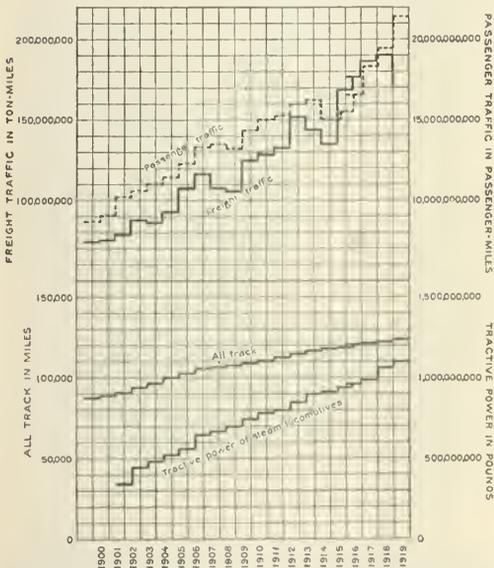


Fig. 8. Growth of Steam Railroads in the Superpower Zone, 1900 to 1919

included in the selected group, except those of the New York Central, is due to light traffic. On the New York Central the train cost of transportation, the cost of maintaining steam locomotives and the cost of coal per mile are lower than on any other system, owing in part to the fact that this is a water-level road with a large amount of through traffic; these are favorable conditions for economical steam operation and, therefore, afford less opportunity for saving by electrification.

The amount of electrification recommended includes 48 per cent of the route miles, 53 per cent of the main track miles, 64 per cent of the yard track and 58 per cent of all track owned by the 11 selected roads in the district. The net cost of electrification of all the selected divisions would be \$570,000,000, and the net annual saving in operation, including the saving in wages, \$81,000,000 equal to an average of 14.2 per cent of the entire group, ranging from 10.6 per cent for the New York, Susquehanna & Western



Photo from International

American Relief Train Entering Soviet Russia at the Latvian Frontier

## Amendments to Transportation Act Likely to be Considered in Congress

WASHINGTON, D. C.

THE SITUATION created by the threat of a railroad strike has now been added to the demand for rate reductions, the campaign of the state railroad commissioners for a restoration of their powers to reduce rates and the railroad "funding" bill as reasons which are likely to stir up Congress to consider amendments to the Transportation Act. In fact the insistence of the agricultural bloc had already made it certain that the Senate would be called upon to vote on amendments to the rate-making sections and the opening of the subject on any point is likely to be the entering wedge for the consideration of several other points. The House, which has no element corresponding to the Senate bloc, at least as far as its power is concerned, is less likely to act, and the committee on interstate and foreign commerce had decided not to take up railroad legislation at this session, but events are shaping themselves in such a way that the House will probably be brought into the discussion by the next session.

The Senate committee on interstate commerce, or a few members of it, has been holding daily hearings on the Capper bill since October 24 and one state commissioner after another has appeared to complain that the orders of the Interstate Commerce Commission requiring advances in the state rates to correspond to the interstate advances of Ex Parte 74 have practically deprived the states of power to regulate their own local rates and have also required unreasonable advance when applied to rates which for one reason or another were already higher than the ordinary level. They have objected especially to what they termed undue centralization of authority at Washington but they have also protested a good deal against the plan of directing the commission to fix rates to produce a fixed percentage return by groups.

The various state commissioners have reviewed before the committee the history of the advanced rate case proceedings affecting their states that have arisen since Ex Parte 74, and John E. Benton, solicitor for the National Association of Railway and Utilities Commissioners, has given more general testimony, laying particular stress upon the "generosity" to the railroads displayed by many of the states. The burden of the complaint was that the railroads had ignored the state authority and had shown undue haste to get the cases before the federal commission or courts and that the Interstate Commerce Commission had stretched its authority virtually to the point of extinction of state authority. Among those who testified were Carl D. Jackson of Wisconsin; L. P. Hale of New York; R. Hudson Burr of Florida and J. F. Shaughnessy of Nevada.

Senator Cummins agreed in general with the contention of the State representatives that Congress had not intended to broaden the Interstate Commerce Commission's authority over state rates beyond the principle of the Shreveport decision and that the railroads and the Interstate Commerce Commission had misconstrued the law in holding that the federal commission was authorized to act to correct discrimination against the entire body of interstate commerce. He took issue with several of the witnesses, however, on some of their statements regarding Section 15-A. He denied that this represented a guaranty, showed that it had never been operative, since the roads have never earned  $5\frac{1}{2}$  or 6 per cent under it, and also pointed out that the percentage named in the law expires on March 1. The 6 per cent rule, therefore, he said, has become "wholly immaterial" so far as its use is concerned because any further changes in rates probably will be reductions. When it was pointed out that the commission is authorized to fix the percentage of a fair return

after March 1, he said the commission had always been required to allow the roads a fair return. The railroad officers had attached considerable importance to the setting up of a specific percentage standard which should represent a legal fair return. Mr. Jackson declared that the percentage rule was unworkable, whereupon Senator Cummins said that a consolidation of the roads would represent a solution for part of the difficulty.

In reply to Mr. Shaughnessy, Senator Cummins said: "I do not agree with you that Section 15-A increased rates. They would have been increased just as much without the law and in spite of it the railroads this year probably will not earn more than enough to pay their bond interest, if they earn that much."

He said that Congress had not intended to make any change except as to procedure in the Shreveport principle, but he added: "Somebody has got to see that the railroads have enough revenues to keep running." He also said it is impossible to give the states the authority to remove discriminations against interstate commerce.

Mr. Shaughnessy said that there is a feeling in his state that "things are pretty well frozen up" because the Interstate Commerce Commission order has prevented the state commission from exercising its function of regulating local rates and the federal commission is slow to act. He said the commission's order had added the usual percentage increase to rates which were already high; for example, passenger fares of 4 and 5 cents on main lines had been increased to 4.8 and 6 cents and branch line fares of 5 and 6 cents had been increased to 6 and 7.2 cents. He said that at the recent Atlanta convention of the state commissioners' association there were many in favor of memorializing Congress to go so far as to abandon the Shreveport doctrine, but it had been finally agreed to ask only for a greater limitation of the powers of the Interstate Commerce Commission.

Mr. Benton submitted to the committee a draft of amendments to the law which the state commissioners ask. This would eliminate the provision under which railroads may file complaints with the Interstate Commerce Commission asking the removal of a discrimination caused by a state rate and it would also limit the Interstate Commerce Commission to the removal of discriminations in particular rates after an investigation of the reasonableness of both the state and interstate rates.



Copyright by Ewing Galloway, N. Y.

German-Built Station at Tsinanfu, Shantung, China

# Strike Settlement Leaves Many Issues Confused

## Necessity Seen for Improving Machinery for Dealing with Recurrence of Similar Situation

By Harold F. Lane

WASHINGTON, D. C.

WHILE THE NEWS that the strike had been called off was received with universal satisfaction in Washington, there were divergent opinions as to the method by which it was averted and as to how long it would stay settled. Gratification that a disturbance of transportation had been prevented was tempered to some extent by the question as to the effect of a postponement of the wage issue upon the campaign for further rate reductions. The policy of the administration had succeeded in preventing a strike, and it had accomplished that object without having played all of its cards, although the fact that it held some high ones up its sleeve had been allowed to become apparent. However, the fact that the Labor Board had felt it necessary to speak more softly than is the ordinary habit of one who carries a big stick, was regarded as of sufficient importance to suggest the desirability of further legislation upon a subject with which Congress has been struggling without complete success for many years; and it was recognized that the settlement left many things unsettled to bob up again in the future.

While plans have not yet become crystallized and while some of the opinions expressed within the last few days may lose some of their strength now that the crisis has been postponed, it is certain that Congress will be called upon to consider some means of defining more specifically the powers which the Supreme Court has held it possesses with a view to removing for the future some of the doubts that existed as to the efficacy of the means at its command on this occasion. It is proposed to provide some penalty for violation of orders of the Labor Board; talk of anti-strike laws is being renewed; there is much discussion in vague terms of some way to co-ordinate more closely the functions of the Board that fixes wages and the Commission that determines rates, and if nothing more is done the Labor Board is likely to be removed from Chicago, its present statutory headquarters, to Washington, where it will be in closer touch with the Interstate Commerce Commission and other government agencies, including the President.

### President Declines to Comment

President Harding, who was not apprised of the calling off of the strike until Friday morning, as his train neared Washington, expressed his gratification that the matter had been settled but declined to comment further. As he shook hands with the members of the train crews, he said: "I'm glad the strike is off and so are you, aren't you?" The men smilingly nodded assent. Later it was stated at the White House that the President was naturally pleased that there was to be no tie-up of transportation and that he had not yet received a report which was on its way to him from the Labor Board. The Board does not regularly report to the President but it had done so on this occasion because he had consulted with the members of the public group and had charged the Board with the responsibility for dealing with the situation. No effort has been made at the White House to attribute the credit for the settlement to the President. It was said that the responsibility was that of the Board.

The President would not indicate whether he considered that he had received an answer to the question as to whether the Labor Board was "a perfectly futile agency" and he

did not express his opinion as to the lessons that have been learned as a result of the experience through which the country has passed, but it was learned that he regards the subject of a modification of the present law as "a live question" and that he expects some recommendations for the future will grow out of the situation.

### Mistake to Locate Labor Board in Chicago?

It is also known that members of the Labor Board, in addition to believing the Board ought to be given some "teeth," feel that they ought to be located in Washington and that the President himself thinks it was a mistake to locate them in Chicago out of touch with the other branches of the government. The selection of Chicago as the headquarters of the Board was made by Congress at a time when its members had been besieged for weeks with a labor lobby of unusual proportions which had tried to prevent the return of the roads to private management and when there was a feeling that labor had been unduly influential in the government. In addition to the fact that Chicago is centrally located one purpose was to get them out of Washington.

Chairman Cummins of the Senate committee on interstate commerce said he was glad there was to be no strike but said he did not care to comment on the method of settlement or on the functioning of the Labor Board "as a board of mediation and conciliation."

A prominent member of the cabinet expressed the opinion that the whole question would come up again about next spring, because, he said, the situation logically calls for a reduction of railroad wages. He said the rate question had been confused and that it now probably would be necessary to await the reports of railroad earnings for a couple more months to find out more definitely their financial condition under an increased volume of business.

### Labor Board Has Recovered Prestige

The Labor Board has recovered some of the prestige which it had been gradually losing (partly because it had so far been unable to assert itself effectively in the case of violations of its orders by certain railroads and partly because it had not done more to help get rates reduced) but while the Board and particularly its vice-chairman, Mr. Hooper, achieved a reputation as a mediator, more credit for the result that has been accomplished is given to the President than to the Board. The President declined to dignify the strike leaders by inviting them to the White House for a consultation over the advisability of defying the orders of a branch of the government and he let it be known that he felt confident that public opinion was back of him in making every preparation for dealing firmly with a strike if it should occur. However, while his support gave force to the insistence of the Board that there should be no strike, it is recognized that the virtual promise of the Board not to reduce wages for several months was undoubtedly more effective than any moral influence possessed by the Board. In other words its strength on this occasion was derived from its weakness.

### Unfavorable Criticism for Board's Statement

The Labor Board statement which told the labor leaders that there was no occasion for a strike on account of the proposed new reduction in wages because it could not reach

a decision for some time, when coupled with the suggestion that no action could be looked for until next July, aroused a great deal of unfavorable criticism. It was compared to the surrender of President Wilson and Congress in 1916 when the Adamson law was passed "at the point of a gun" and it was regarded as particularly surprising in view of the uncompromising attitude that had been displayed and of the business-like activity of the Department of Commerce, the War Department and Attorney General Daugherty and his district attorneys. The statement of the Board came as a shock to many of those who have been active in seeking a way to reduce freight rates but have found the wage question a serious obstacle. This includes certain members of the Interstate Commerce Commission who recognize the need for rate reductions but also have some regard for the need of the carriers for revenue. More deliberate consideration softened the criticism, however, in view of the manifest fact that the Labor Board docket is still overloaded with questions pertaining to rules and working conditions, which involve almost as much money as a 10 per cent wage cut, and that the Board, even without any stipulation on its part, could hardly be expected to dispose of a new question ahead of the other cases on its docket, without dealing in a purely emergency way with a subject which has already been seriously complicated by the necessity for handling it as an emergency proposition so many times before.

#### Brotherhoods Win Temporarily

The fact that the Board had told the brotherhood leaders, as an inducement to call off the strike, that it would not consider a request for wage reductions in the case of any class of employees until it had first disposed of the rules and working conditions for that class appeared somewhat more reasonable than the suggestion that the railroads agree to withhold their requests for wage reductions. It sounded more like a statement of a condition than a compromise. It also made it unnecessary for the railroads to make a concession, which they undoubtedly would have been most reluctant to make in the face of the suggestion that has frequently been made, even by a former railroad president now a member of the Interstate Commerce Commission, that the railroads cannot excuse high rates by high wages unless they make every effort to get wages reduced.

#### No Complete Victory for Anybody

A truce has been made without a complete victory for any party to the controversy. The railroads are so far unscathed, because the grain rate decision would undoubtedly have come anyway, but they have not been given any additional assistance in their efforts to meet the public demand for lower rates. The government has won a point by the yielding of the labor organizations to its insistence that there should be no strike. The brotherhoods have lost the point on which their strike vote was technically based, the demand that the 12 per cent reduction be rescinded, but they have won for the time being the object for which it is well understood they were actually striving, that is to stave off another wage reduction and the modification of some of their rules and have declared that the plan constitutes "an acceptable basis of settlement." In view of the statement made by W. S. Carter that he doubted whether 20 per cent of the men had read the statement on the strike ballot and his further statement that the labor organizations were "playing a game of poker without cards" and always asked for more than they expected to get, it would appear that the kind of bluff represented by a strike threat is still about as potent as the influence of an order of the United States Railroad Labor Board.

#### Further Freight Rate Cuts

One difficulty about the situation from the viewpoint of the railroads is that the Labor Board and the Interstate

Commerce Commission are not so closely co-ordinated that the promise of the former that wages will not be reduced for at least several months may be taken to mean that the Interstate Commerce Commission will postpone consideration of its docket of petitions for rate reductions for a similar period. It is believed that the Commission will undoubtedly feel it necessary to go slow in ordering further rate cuts, because it realizes that it is charged with a degree of responsibility for the adequacy of railway revenues and no one credits it with a desire to injure the roads, but it is under a tremendous pressure and it has on several occasions prior to its recent decision in the grain rate case displayed a willingness to discount an optimistic view of the future in reaching its decisions.

The earnings of the railroads have been making a comparatively good showing for August, September and October, the three best months of the year, and while they will undoubtedly begin the usual seasonal decline about the first of November, the earnings figures for the better months will be the only ones available to the public until about the first of the year, when the November reports come out. This will afford an excuse for continued agitation for rate reductions based on the kind of reasoning that was used in 1919 when some of the advocates of government control proclaimed that the Railroad Administration was earning at the annual rate of four times the earnings of the three best months of the year, although most of the months had shown deficits.

#### Anti-Strike Legislation Considered

Many members of Congress who are getting tired of having the country stirred up by strike threats every year or two are becoming strong for anti-strike legislation, such as has been passed by the Senate on two recent occasions, but which the House has been unwilling to accept. Others more conservative feel that no law absolutely prohibiting strikes could actually be made effective in case the employees involved really felt so dissatisfied with the wages or working conditions fixed for them that they were unwilling to work under them longer. It is argued, for example, that if the decision of an impartial board really appeared to the men so intolerable that they would be willing to risk the chances of a strike there would not be jails enough to hold them, or they could bring about the practical effect of a strike by simply quitting their jobs without a tangible conspiracy to do so.

On the other hand, it is contended that an anti-strike law might not meet such a condition but that it would eliminate the potency of the strike bluff which has usually been so effective in the past. It is recognized that men cannot be forced by law, in time of peace, to work for a given wage against their will, and that if a large majority of the railroad men of the United States are actually determined to strike rather than accept the terms of employment offered them, the shippers and passengers of the country will have to pay rates sufficient to hold them, whether the roads are run by private companies or by the government. However, a law penalizing a conspiracy to strike, would tend to reduce strike threats to the irreducible minimum. Some of the patrons of the railroads recently have displayed some signs of a willingness to strike themselves rather than be bluffed into paying wages higher than they think are necessary.

The outcome of the conferences at Chicago has also suggested the possibility of enacting something like the Canadian Lemieux law, which prohibits a strike until after a tribunal has passed on the controversy and stated its view of the merits to the public. In the present case the strike threat collapsed after a public discussion of the issues had shown that the principal grievance of the brotherhoods was in anticipation of something which had not occurred, because the railroads had not filed their requests for wage reductions, the Board could not pass upon them promptly if they were filed and no one knew what its decision would be anyway.

The discussion of the case had also shown the brotherhoods that their bluff was being called and the hearing before the Labor Board gave them an opportunity to withdraw with some appearance of honor, from a position from which stubbornness might easily have made it difficult to retreat.

### Greater Co-Ordination With I. C. C.

Much is heard of the suggestion that there ought to be greater co-ordination between the Labor Board and the Interstate Commerce Commission, but there has thus far been no explanation as to how this could be accomplished except by giving the functions of the Board to the Commission and making the board itself a bureau of the Commission. It is more frequently suggested that the board be abolished and its functions conferred upon the Commission. At the time of the eight-hour basic day demand in 1916 the railroads strongly urged that the question be arbitrated by the Interstate Commerce Commission, the body that has the last word as to rates. This suggestion was inspired in part by the experience of the railroads in advancing wages or having them advanced by arbitration boards, and then finding it somewhat difficult to convince the commission without long delay that rates would have to be advanced correspondingly. In one decision written by Commissioner Prouty it was suggested that the commission would not feel called upon to recognize as reasonable rates that might be made necessary by unreasonable demands of a "labor trust" or of any "trust" that supplied materials and equipment to the roads.

### I. C. C. Does Not Want Jurisdiction Over Wages

At the time the transportation act was in the process of making, it was often suggested that if wages were to be fixed by the government they ought to be fixed by the same body that fixes the rates. The commission strongly opposed this, however, on the ground that it would be difficult to determine either one unless the other were somewhat fixed. Chairman Clark, in discussing the views of the Commission before the House Committee on Interstate and Foreign Commerce, said he knew of no reason why the Commission should be considered better qualified to exercise the functions of mediation, conciliation and arbitration than other officers of the government to whom those duties might be committed.

"But above all that," he said, "we think it would be an unsound public policy to place in one body the duty of regulating activities of the carriers and their rates and charges, from which their revenues are derived, and also the fixing of the largest item in the operating expenses of the railroads, to wit, the wages of the employees."

Mr. Clark said he believed it would be developed in a few years that this would be destructive of the influence and standing and opportunity for good of the entire plan and of the body that administers it. Applicants for increased wages would say that the Commission could give the wages and increase the rates if necessary. If that were done the tribunal would be accused of playing to popularity among labor forces and disregarding the interests of the public. If it were refused, and a strike occurred they would say, on the other hand, that the Commission was so niggardly about increasing rates that it had precipitated all the trouble. He did not question the advisability or the propriety of the government doing all it possibly can to adjust disputes affecting, or even regulating, the question of the wages of the employees of the carriers, but he urged that whatever is done in that line be placed in the hands of a tribunal that has that question to deal with and, he said, "our Commission will deal with the questions committed to it in the light of what is done in a legal way by another tribunal that considers matters without having always to bear in mind that if we do this we must do that."

It has now come about, however, that the Labor Board is unable to readjust wages rapidly enough to meet the demand

for lower rates and the Commission, impatient to perform its duty to give the shippers what it considers reasonable rates, is encountered by the obstacle of high wages, which it is powerless to change. The Commission has not indicated in any way what it thinks of the present wages. It generally refers to them only by including them in "operating costs" and when it ordered the grain rates reduced it did so by discounting further reductions in such costs without saying whether or not it expected further reductions in wages. Commissioner Potter was more explicit in his opinion in the grain case, when he said that if the question as to what the shippers can afford to pay is to be determined by the commission in fixing rates, the Labor Board must take its finding into consideration in fixing wages. If the Labor Board fails to do so, however, a deadlock results somewhat resembling the situation that might exist within the commission if it had both functions to perform, except that the Commission could reach a decision by a majority vote and having determined that wages should be at a certain level would naturally find it necessary to try at least to make rates that would support them, or having fixed rates would try to find what wages could be paid out of them.

### Western Roads Seek Modification of Grain Rate Reduction

The announcement of the Labor Board that wage reductions cannot be considered for a long time has apparently put a crimp in the efforts of many interests to induce the railroads to make voluntary rate reductions. Traffic executives of the Western roads have been in Washington this week conferring among themselves and for the purpose of seeking a conference with the Interstate Commerce Commission with a view to asking a modification of its decision in the Western grain rate case, in which the roads were told to reduce the rates on grain, hay and grain products by November 20, but in which the commission has not yet issued a formal order. A conference with the commission was planned for Wednesday but was postponed until Friday. It is understood that one proposal which was to be made to the commission was that a general 10 per cent reduction in the rates on agricultural products be substituted for the larger reductions which the commission proposed on grain. This is on the ground that there is now no prospect for an early wage reduction, although there was one at the time the commission reached its decision, and that a reduction in the grain rates would only invite demands for similar reductions in many other rates.

An informal conference between representatives of the railroads and the shippers on the rates on fish and sea foods was held under the auspices of the commission on Tuesday and a similar conference with representatives of the iron and steel shippers was proposed for Friday or Monday.

THE RESCINDING of the strike order was an impressive exemplification of the great power of enlightened public opinion, which in this instance so unmistakably demonstrated that the majority of the people throughout the country believed the threatened strike was a grave menace to business and absolutely unjustified.—*Guaranty Surveys*.

THE STATE EQUALIZATION BOARD of Tennessee has made the following reductions in tax assessments. Southern Railway, one lot in Memphis, assessed \$500,000, reduced to \$400,000; Nashville Union Terminals, assessed at \$600,000, reduced to \$500,000; Kansas City & Memphis Bridge Co., assessment fixed at \$1,250,000; Harrison City and Memphis Bridge Co., assessed at \$25,000, reduced to \$18,000; C. N. O. & T. P. Railroad, assessment fixed at \$96,000 per mile. These substituted the only changes in the assessments as set up by the board by the public utilities commission.

# The Requirements for a Modern Car Repair Shop

## Type of Building, Character of Tools and General Plan for Both Steel and Wood Equipment

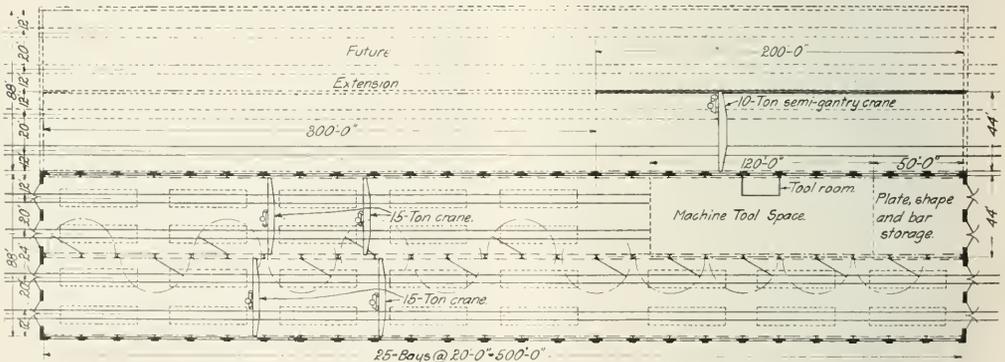
By H. H. Dickinson and Paul Schioler  
The Arnold Company, Chicago

THE INADEQUACY of facilities for the repair and maintenance of cars creates one of the most important problems which now confronts the executives of American railways. The enormous amount of capital tied up unprofitably in bad order cars is already a serious matter in railway economics and is growing worse through the increased unit costs of rolling stock. Furthermore, during repeated periods in more recent years, every railroad has been seriously hampered in its operations because the facilities for car repairs have not kept pace with the increase in equipment.

In planning a modern car repair shop the main points of consideration are the location, the site, the type, size and number of buildings, and the equipment, i. e., cranes, machinery, power, etc. Location and site are matters of local determination but in the selection and grouping of buildings

- 1—planer and matcher, motor driven.
- 1—24-in. rip saw table, motor driven.
- 1—16-in. rip saw table, motor driven.
- 1—36-in. swing cut-off saw, motor driven.
- 1—24-in. cut-off saw table, motor driven.
- 1—vertical boring and mortising machine, motor driven.
- 1—car gainer, motor driven.
- 1—12-in. mitre saw table, motor driven.
- 1—24-in. jointer, motor driven.
- 1—48-in. band saw table, motor driven.
- 1—saw gumming machine, belt driven.
- 1—vertical car tenoner, motor driven.
- 1—wood lathe, belt or motor.
- 1—three-spindle vertical and radial car borer, motor driven.
- 1—flexible single spindle post borer, belt driven.

It is recommended that this machinery be housed in a separate building, or at least segregated in a room at one



A Steel Car Repair Shop with a Longitudinal Arrangement in Two 44-ft. Aisles

and their equipment with apparatus, labor saving devices and machinery, certain specific recommendations and suggestions may be made.

The work of repairing railway cars falls naturally in two main divisions; wooden cars and steel cars, with the intermediate one of cars with steel underframes and wooden tops. For wood car repairs frame buildings will usually answer the purpose in a satisfactory manner. It is true that they are not fireproof, but this does not add to the fire hazard from within, as the contents of such a shop are inflammable anyway, and the custom of supporting the roof in mill buildings on intermediate columns will, in fact, make them more desirable in this respect than steel truss buildings, as steel trusses collapse promptly under an inside fire. If it is desired to protect against fire danger from adjacent lumber yards, storehouses, etc., a fireproof roof covering may readily be provided.

The saw and planing mill operations involved in the preparation of material for wood car repairs are in reality a separate industry from car repairing. The following list of machinery is recommended for the average requirements:

- 1—four-cylinder sill and timber dresser, motor driven.
- 1—double-cylinder surfacer, motor driven.

end of the car repair shop. The necessary system of shafting and pulleys, individual motor installations, ducts for the removal of sawdust and chips, and the whole organization of the millwork, are best handled in this manner. The efficient transportation and handling of material from car to pile and through the mill, and thence to the cars undergoing repair, is quite as important as is material handling in any industry, and it is best accomplished by properly arranged industrial tracks and yard cranes. Overhead crane service cannot be very well arranged in a mill constructed building, but for wood work only it may be dispensed with in most cases.

Work on steel cars and on cars with steel underframes as a rule compels the selection of steel frame structures, for the double reason that these are easily made fireproof throughout and they allow the proper installation of overhead crane service as well as the attachment of jib cranes in the most efficient manner. Moreover, steel trusses and steel sash, being of smaller dimensions than wood, allow a better diffusion of exterior light. Wherever climatic conditions permit, the sawtooth form of roof should be carefully considered, as it gives excellent light between cars standing on repair tracks. At any rate, the monitor sash or roof lighting should

be placed crosswise over the tracks. Monitor sash should be arranged for ventilation and the side wall sash should also be provided with ventilated sections. Factrolite glass is recommended because of its superior diffusion of light and the elimination of shadows. Artificial lighting is best obtained by using tungsten lamps with enameled steel reflectors; the distribution of lamps must provide for full illumination of the spaces between cars on tracks.

The best artificial heating system is a combination of direct radiation and indirect or fan blast heating, the direct radiation to be distributed along the building walls in proper quantity to compensate for the glass area exposure, and the fan blast outlets to provide heat for the center area of the shop and to take care of the requisite air circulation. If because of the character of the ground or for other reasons, underground ducts are undesirable, individual motor-driven fan heating units may be used to advantage.

#### Either Longitudinal or Transverse

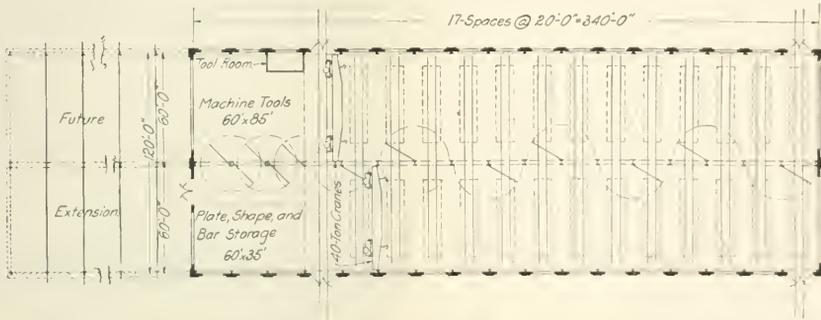
No universal choice can be made between the longitudinal and the transverse type of shop. If the former is decided upon, a unit span of about 84 ft. between crane rails permits of a good crane arrangement and allows for four through tracks, 20 ft. center to center, and a 12-ft. space between each outside track and the wall. From 60 to 65 ft.

the shop is the relative adequacy of the general stores, and it will be well to make ample provision for all materials and supplies required in overhauling all the types of cars for which the shop is intended.

To permit full use of tracks for the spotting of cars under repairs and to have the receiving and unloading of material interfere as little as possible with the car repair work in the shop proper, it is recommended that, where possible, material be received on a track outside of the walls. In such a layout a six or eight-ton crane, supported partly by yard columns and partly by the building columns and spanning the material track, is a profitable investment and should be installed.

Repairs and overhauling of cars result in the accumulation of a large amount of sheets, plates, bars, rods, etc., all partly damaged but having considerable reclamation value. It is good economy to provide, in the machinery equipment, suitable tools, such as straighteners (plate and bar), furnaces, bulldozers, bolt threading machines and nut tapping machines, in order that salvaged material may be reclaimed on the spot and either used immediately in the shop or turned over to the stores department.

The widest possible application of crane service is advocated as the most fruitful way of securing an intensive utilization of the plant as a whole. The maximum load to be handled by cranes is usually between 25 and 35 tons,



Plan for a Steel Freight Car Repair Shop with a Transverse Layout, Two 60-ft. Aisles

of track should be allotted to each car spot and the length and number of building units determined accordingly. Machine tools should be installed on one side of the shop, leaving out a portion of the through track at this point. In a transverse type of shop the cranes will have a span of about 65 ft. and the machine tools will be placed at one end of a shop unit. The height of the crane runways should be 25 ft. and the clear height under trusses 32 or 33 ft. The building should be piped for air and acetylene, a double air outlet to be provided for every car spot and an acetylene outlet for every two car spots. The building should also be wired and have a contact at each car spot for the attachment of modern electrical tools.

The best flooring for car repair shops is cross-sawn wooden blocks on a concrete base. This is usually preferred by mechanics where nothing in the industry militates against its adoption, and in work of this nature there are no objections to this floor. It is durable, sanitary, non-conducting as to heat and cold and affords a satisfactory foothold.

Adjoining the machine tool area racks for the storage of a reasonable quantity of large sheets and plates should be provided as well as storage facilities for bars and shapes. Storing this material inside the building not only permits unloading and storage by crane and provides crane conveyance to machines without extra handling, but it also eliminates deterioration from rust and other defects occasioned by continued exposure. An important factor in the efficiency of

but the average load is much lighter. Two cranes of 15-ton capacity each may readily be operated together to handle a maximum load when occasion demands, and for general purposes they serve the shop better than it is possible to do when the crane capacity is concentrated in one machine of, say, 30 tons size.

It has already been stated that truss spans giving approximately 84 ft. between crane rails are desirable in longitudinal shops. For flexibility of crane service it is best to substitute for this two bays of 44 ft. each. The use of center columns should enable the designer to lighten the steel work in the roof trusses and provide good support for jib cranes. It will be less expensive to install two 42-ft. cranes and equip each one with a 15-ton hoist and an auxiliary rapid hoist of smaller capacity, than it would be to put in one crane of 84 ft. span, and they will serve the shop more efficiently. It is recommended that the lengthwise travel of cranes be limited to 300 ft., preferably about 250 ft., so that a shop unit from 500 to 600 ft. long should have at least two cranes, or sets of cranes. Jib cranes of the portable type, or attached to steel columns are an excellent means of handling work at car spots and at certain of the machine tools. They release the overhead cranes for general transportation and material handling through the whole shop. The jibs should have about a 20-ft. swinging arm and should be of at least one ton capacity.

The painting in a modern car repair shop should be done

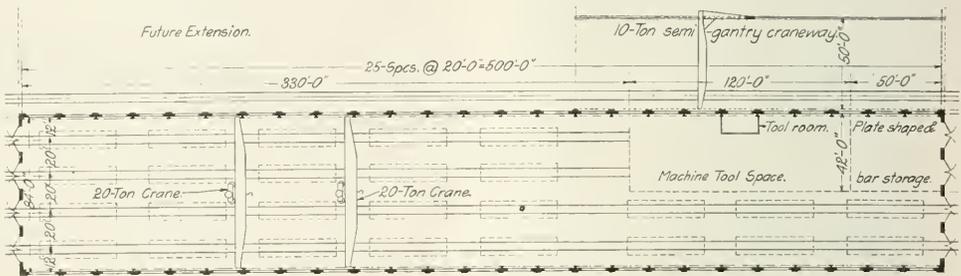
by pneumatic sprays. This applies to wood and steel work alike. It may be desirable to have the plant equipped with a sand blast outfit, so that when steel cars or underframes require thorough cleaning the work may be disposed of in the most efficient manner. However, only a fraction of the cars passing through the plant will need this treatment, and unless the capacity of the plant calls for at least 20 cars per day, a sand blast equipment can hardly be installed advantageously.

The wheel and axle work must be handled by a wheel lathe, an axle lathe, a wheel press and a wheel boring machine, and if the shop is about 84 ft. by 600 ft., or its equivalent, these tools are best placed among the other machine tools and the work organized to co-ordinate with the other shop operations. If, however, the layout provides for two or more shop units, then the work on wheels and axles is best done in a separate department located adjacent to the shops and operated in conjunction with them, leaving the shops proper to handle repairs to car bodies

ing laid out to handle principally the repairs of one type of steel cars, some of the tools mentioned may well be omitted and several others added; indeed these notes do not represent an attempt to design in detail any one particular car repair shop.

A number of railroads have experienced considerable annoyance and suffered a large aggregate loss as a result of too frequent loss of identity of freight cars undergoing repairs. A timely reform in the operation of car repair shops would be the adoption of uniform methods of checking the number on a car brought into the shops, preserving it upon the car while it is under repairs and checking it out again, but such a reform, to have the desired effect, would have to be universal in the shops of all railroads.

When a modern car repair plant is contemplated it is almost invariably the intention to provide steady employment for a number of workmen. Therefore it is advisable to provide a service building, located as conveniently as possible to the plant entrance. This building need not be elaborate,



A Steel Freight Car Repair Shop with a Longitudinal Arrangement in an 84-ft. Aisle

and underframes exclusively. One wheel and axle department will, of course, serve a steel car and a wood car shop.

### Tools for Steel Car Work

The following machine tool equipment is recommended for a car repair shop which is to handle the variety of types of steel cars used on the majority of railways:

- One single end punch (24 in. throat), motor driven.
- One double punch and shear (30 in. throat), motor driven.
- One double horizontal punch and bending machine, motor driven
- One 8-ft. gate shear (cap.  $\frac{3}{4}$  in. plate), motor driven.
- One 6-in. by 6-in. by 1-in. angle shears, motor driven.
- One alligator bar shear, motor driven.
- One plate straightening press, pneumatic.
- One 9-ft. by 14-ft. plate heating furnace, oil and gas burning.
- One 12-ft. flanging clamp, pneumatic.
- One 7-ft. by 10-ft. plate heating furnace, oil or gas.
- One heavy duty bulldozer, motor driven.
- One 5-ft. by 8-ft. furnace, oil or gas.
- One 2-in. bolt heading, upsetting and forging machine, motor driven.
- One forging furnace, oil or gas.
- One 2 $\frac{1}{2}$ -in. double head bolt cutter, motor driven.
- One 300-lb. power hammer, motor driven.
- One 30-in. by 3-ft. furnace, oil or gas.
- One 1,000-lb. steam hammer, steam.
- One 3-ft. by 4 $\frac{1}{2}$ -ft. furnace, oil or gas.
- One 6-ft. radial drill, motor driven.
- One 4-spindle drill press, belt driven.
- One 4-ft. drill press, belt driven.
- One 20-in. drill press, belt driven.
- Two heavy emery wheel stands, motor driven.

This list is in addition to any tools for reclaiming materials and does not contain the wheel and axle tools referred to in a preceding paragraph. The list is necessarily empirical and must be reviewed and compared with the individual requirements of any one shop under consideration. It is manifest that when, for instance, a shop is be-

but it should contain a requisite number of steel lockers, lavatories and toilets and also some shower baths of approved sanitary design. There should also be a room where the men can eat their lunch during cold weather.

These suggestions and recommendations, although specific and based on examination of actual conditions on the roads and in existing shops, will only be found of value when carefully considered with all the local conditions and circumstances bearing upon the individual project of any railroad.

Thus, the question of location and site, as regards labor conditions, topography of the prospective site, climatic conditions, fire protection facilities and proximity to railway terminals from which empty cars would be received must be gone into and decided upon in every instance, and the foregoing notes must be considered with the questions of the volume and class of work, frequency and season of maximum demand, average daily requirements and desirability of provisions for future extensions.

The three typical layouts shown embody some of the general desirable features mentioned. They are, of course, not intended to serve even as finished sketches of any one specific project, but they may form a basis for study and discussion and a nucleus around which layouts may be developed for particular conditions affecting car repair shops with the contiguous building for mill, wheel shop, store house and other accessory departments.

State laws already passed which deal with car repair shops and sheds give ample proof that the development of such buildings is anticipated by interests outside the railway executive offices. Such legislation is largely fostered by labor organizations and the efforts have been to provide the best working conditions and physical protection for the men employed. However, to obtain the best results the planning

should be on a broader basis than this and the matter of proper protection for workmen should be viewed simultaneously with consideration of efficiency and economy in the operation of railroads.

In conclusion, attention is drawn to the fact that in comparison with the investment in modern power repair facilities the sums expended to date in car repair shops are but small—probably less than 20 per cent of the former—and yet the annual expenditures for maintenance of rolling stock usually greatly exceed the cost of maintaining locomotives. It has been demonstrated that it has not been possible to realize the ultimate efficiency of the modern locomotive equipped with superheater and mechanical stokers, because

repair shops have not kept pace with improvements in the locomotives. It is logical to conclude that the enormous investment in cars may be made more profitable by providing the means for keeping them in shape. By planning car repair shops with some consideration for the observations made above, the results will certainly make for increased efficiency of the mechanics, whose work will, in fact, be changed from an open air occupation, with all the elements of uncertainty peculiar to such work, to modern shop employment of the highest and most satisfactory type. The roads will profit through better workmanship, less frequent delays; improved scheduling of car repairs and lower costs of maintenance.

## Freight Car Loading Continues to Increase

### Strike Talk Partly Responsible for Increase—Principal Increases in Coal and Merchandise

WASHINGTON, D. C.

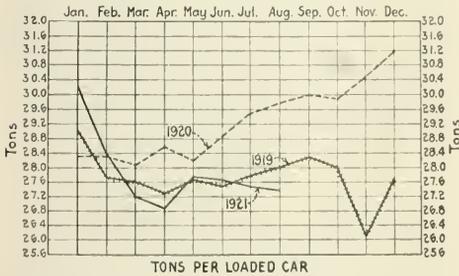
THE loading of revenue freight during the week ended on October 22 totaled 962,292 cars, or 56,258 cars more than during the previous week, according to reports received by the Car Service Division of the American Railway Association. This was within 46,526 cars or 96

was the largest since October 30, 1920, and presumably includes some increased shipments made in anticipation of a strike.

The gain over the week before was due principally to the increased movement of coal and also merchandise and miscellaneous freight, which includes manufactured products, although increases were reported in the loading of all commodities.

Loading of merchandise and miscellaneous freight amounted to 575,625 cars or 24,817 cars more than during the previous week and 15,787 cars more than were loaded during the corresponding week in 1920. Coal loading totaled 212,219 cars or 20,713 cars more than were loaded during the preceding week. It was, however, 13,731 cars under the total for the corresponding week last year.

There was an increase, compared with the week before, of 3,978 cars in the loading of live stock, the total being 40,188 cars, which was 5,000 more than the total for the corresponding week in 1920 but 1,388 below that for the corresponding week in 1919. Loading of grain and grain products was 51,001 cars, an increase of 2,629 over the week before and 11,521 cars greater than the total for the same week last year. It also was 6,980 cars in excess of the total for the same week in 1919. Ore loadings also increased



per cent of the number loaded during the corresponding week in 1920 and only 14,759 cars less than were loaded during the corresponding week in 1919. The loading for the week

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS FOR WEEK ENDED SATURDAY, OCTOBER 22, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded		Received from connections	
										This year	Corresponding year	This year	Corresponding year
Eastern	1920	3,212	3,826	4,207	4,194	4,360	2,768	64,632	95,411	238,810	254,238	240,685	246,652
Allegheny	1921	3,269	3,734	59,330	2,537	3,334	5,775	47,569	63,946	189,494	209,948	66,731	132,000
Pocahontas	1920	2,638	3,706	67,208	7,022	3,399	14,216	40,679	71,087	37,201	37,807	16,000	155,447
	1921	233	457	25,096	202	1,248	209	5,456	4,927	37,736	37,001	37,807	1,370,000
Southern	1920	82	356	23,517	1,034	1,710	1,710	209	5,456	4,927	135,237	131,733	123,297
	1921	3,584	2,339	29,289	601	17,250	481	40,574	41,139	135,237	131,733	123,297	74,600
Northwestern	1920	2,690	2,010	28,490	1,361	18,851	2,884	35,792	39,655	131,733	131,733	123,297	73,800
	1921	15,069	10,370	12,575	717	11,860	12,509	36,034	41,375	133,871	131,733	123,297	57,200
Central Western	1920	13,357	10,144	12,096	1,862	14,204	41,507	28,906	42,105	164,101	151,136	154,316	65,688
	1921	13,095	15,895	25,209	216	7,516	738	31,552	50,112	154,316	141,057	144,101	63,100
Southwestern	1920	10,668	13,324	25,043	493	6,852	3,071	31,777	49,830	141,057	144,101	144,101	63,100
	1921	4,539	3,567	5,913	180	2,658	945	16,591	33,428	77,811	77,811	77,811	50,000
Total all roads	1920	4,094	2,649	7,254	171	8,988	632	17,664	34,398	70,456	63,356	63,356	50,000
	1921	51,001	40,188	212,219	6,647	53,426	23,186	36,640	53,893	962,292	1,008,818	970,001	770,000
Increase compared 1920	1920	39,480	35,187	225,950	15,887	50,754	23,022	21,354	39,404	1,008,818	970,001	970,001	770,000
Decrease compared 1920	1921	44,021	41,576	231,972	11,344	57,007	45,580	150,348	395,004	970,001	970,001	970,001	770,000
Increase compared 1919	1920	11,821	8,001	8,940	6,328	49,826	49,826	26,286	10,499	46,526	46,526	46,526	2,000
Decrease compared 1919	1921	6,980	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decrease compared 1919	1921	48,372	36,210	191,506	6,332	53,017	19,789	21,541	318,767	984,334	1,011,533	984,334	770,000
October 15.....	1921	53,964	34,073	180,339	6,054	49,459	25,702	13,447	210,684	8,574	1,011,616	984,334	770,000
October 8.....	1921	57,890	32,868	178,005	5,615	49,466	26,393	114,212	317,448	*001,893	992,233	984,334	770,000
September 24.....	1921	53,036	32,933	171,474	4,946	48,702	30,333	232,312	300,757	*874,503	1,008,110	984,334	770,000

\*Grain and total figures revised due to correction on D. L. & W. report.

3,397 cars over the previous week, the total being 23,186, while loading of forest products amounted to 53,426 cars or an increase within a week of 409 cars. A total of 6,647 cars were loaded with coke, an increase, compared with the week before, of 315 cars.

Compared by districts, increases were reported in the loading of all commodities in all except the Northwestern district while the Pocahontas, Southern, Central Western and Southwestern districts reported increases compared with the corresponding week last year.

The summary is given in the preceding table.

The weekly information bulletin published by the Car Service Division includes the following information:

Bituminous coal moving beyond the lakes via Lake Erie docks aggregated for the season to and including October 15 the total of 20,282,948 tons. This is substantially the same as the record of 1919, a season of similar conditions, and about 1,800,000 tons in excess of the same period in 1920. The indications are that the total for the season will run about up to the record of the past two years.

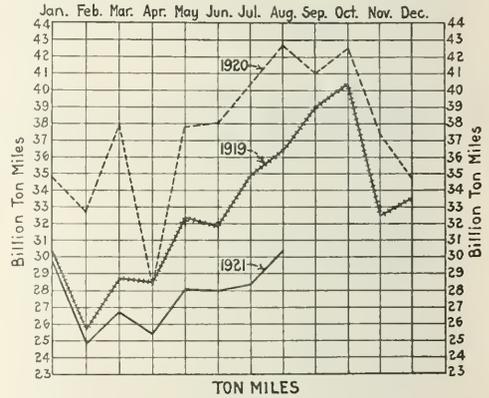
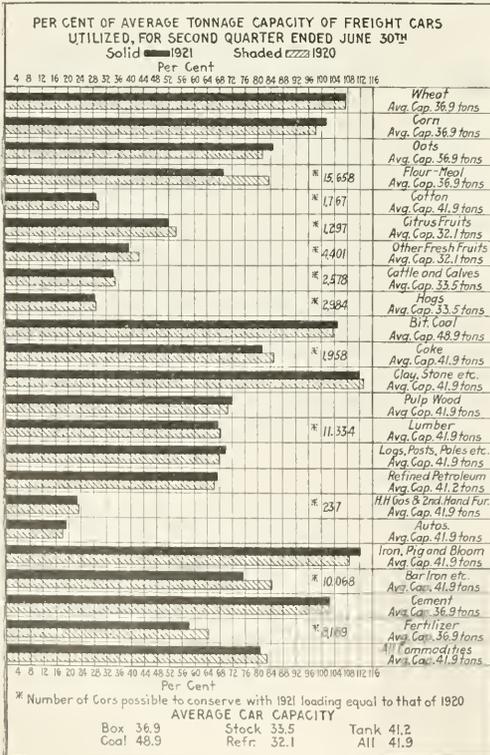
The bituminous movement via ocean to New England—a real problem if the bulk of the movement is deferred to the winter months—was 5,461,163 tons for the nine months end-

indicate that the 1921 movement is probably ample. The anthracite movement to New England is substantially normal on the basis of past years' records.

There is continued heavy demand for refrigerator cars in the West and Northwest where new records in quantity loading and movement are being made. The following comparisons of loading of perishable commodities by districts for the first nine months this year, compared with the same period last year and with the total for 1920, will be of much interest:

District	Jan. 1, 1921	Jan. 1, 1920	Year 1920
	to Oct. 1, 1921	to Oct. 1, 1920	
California	136,083	104,638	138,477
Washington & Oregon	32,987	19,946	43,666
Colorado, Utah and Idaho	20,916	13,306	19,679
Total	189,986	137,890	201,822

Box car supply is equal to current demands in all sections, although in the last two weeks there has been a further



marked reduction in the number of serviceable cars reported as surplus. Local shortages that have occurred in sections of the West and Southwest have been reduced by the distribution of cars from other sections.

There have been some shortages of equipment for coal loading caused by the increasing demands of the past few weeks and cars recently loaded not having had sufficient time as yet to be returned to the mines for further loading. Special attention is being directed to the loading, unloading and movement of open top cars, in view of the demand for coal which is in part seasonal and possibly affected to some extent by the threatened interruption of transportation.

The number of bad order freight cars on October 15 was 354,996 or 15.5 per cent, as compared with 15.8 per cent on October 1. The percentage of gondola cars in bad order was 15.6, the same as it was two weeks before. Of all freight cars 284,149, or 12.4 per cent, required heavy repairs and 70,847, or 3.1 per cent, light repairs.

The freight car surplus for the week ending October 23 was 99,971, of which 49,908 were coal cars and 26,624 were box cars.

FOUR MEN WERE KILLED and two were injured when a Canadian-Pacific freight train was caught by falling rock in a tunnel a mile east of Palliser, B. C., on the night of October 20. Heavy rains had caused a movement on the mountain above the tunnel, resulting in extreme pressure on the roof and sides of the tunnel and this is said to have caused the cave-in. The escape of oil from the tender of one of the damaged engines was followed by a fire which destroyed four freight cars. The accident made necessary the construction of a temporary line to detour trains around the tunnel.

ing September 30, 1921, as against 7,124,314 tons in the same period last year. The rail movement to October 15, 1921, was 122,517 cars as against 172,432 in the same period in 1920. It seems reasonable to assume that the much heavier movement a year ago contributed to excessive stocks on hand at the first of the year and this, with the industrial depression which has existed for much of the time since would seem to

AVERAGE CAR CAPACITY		
Box	Stock	Tank
36.9	33.5	41.2
Coal 48.9	Refr. 32.1	All 41.9

# Oldham Sponsor for New Rail Consolidation Plan

Boston Banker Presents Details to Investment Bankers' Meeting  
at New Orleans

JOHN E. OLDHAM, of the Boston banking firm of Merrill, Oldham & Co., is sponsor for a new plan of railroad consolidation. Mr. Oldham's plan was presented at the convention of the Investment Bankers' Association of America at New Orleans, La., on November 1. It has also been published by that organization in a booklet of 64 pages illustrated with 13 insert maps in colors.

The plan differs greatly from that presented in Professor W. Z. Ripley's report on consolidations to the Interstate Commerce Commission which report was abstracted in the *Railway Age* of October 1, page 609. It likewise differs to a considerable extent from the original plan presented by Mr. Oldham which was published in the Nation's Business of February, 1920 and later reproduced in pamphlet form by the Chamber of Commerce of the United States.

Mr. Oldham suggests, in his new plan, the formation of 13 systems. A distinguishing feature of his proposals is the formation of a New England system owned by the four trunk line systems which it is purposed to establish.

"Consolidations," Mr. Oldham says, "are necessary in order to establish the finances of the railroads as a whole upon a sound basis. The primary purpose of making the railroads financially sound is to enable them to obtain capital readily and economically. To accomplish this fully our requirements must be met."

"It will be of no avail," Mr. Oldham continues, "to consolidate the railroads in such a way that each road hereafter existing will be enabled to receive, under a uniform rate, its fair return in a competitive field, unless each road is assured of a credit position clearly recognized by the investing public."

Mr. Oldham further says:

## Regulation Necessary to Credit

The requisites of credit are not only financial soundness but a reputation based upon conservative financial policies and management. This reputation at present is possessed only by the strong roads. It will not be secured readily by the weak roads merely by their financial reorganization, although, logically, this is all that is needed to insure the investment integrity of their securities.

Furthermore, if capital is to be obtained upon the most advantageous terms by these roads, their securities must be made available for investment on the part of savings banks, insurance companies, and other semi-public institutions. Their securities, accordingly, must conform to the requirements governing the eligibility of such investments, and these requirements quite universally include, as an essential factor, dividend payments at given rates extending over a considerable period of time. The institutional markets will not be available for the securities of roads which have found it necessary to readjust their capitalization in order to meet sound standards of credit until these roads have established for themselves the necessary record for dividend payments; nor will they be available at any time for the securities of the smaller systems, for these institutions, either because of legislative restrictions or of investment policies, for the most part confine their investments to securities of the larger systems.

To establish the necessary credit position and to give access to the most favorable security markets the strong roads must be used as the backbones of the new systems.

## Consolidation Would Not Destroy

### Credit of Strong Roads

Much of the opposition to consolidations has been and will continue to be based on the theory that their purpose is to strengthen the weak by weakening the strong roads, and that the credit of the strong roads will thereby be impaired. If this result is to follow, it goes without saying that voluntary consolidation in a large way will never take place.

This conception of the problem, however, proceeds largely on the assumption that the weak roads generally are less favorably situated. It does not take into account the fact that approximately 25 per cent of the country's traffic is handled by systems which are weak only in their capitalization, but are similar to the strong roads both in operating conditions and in favorableness of location, and, if similarly capitalized, would have similar financial strength.

## Sound Financial Structure a Prerequisite

The contention that the credit of the so-called strong roads will be impaired by merging with the weak roads, insofar as it applies to such systems as are here referred to, can be upheld only on the theory that the amount of existing capitalization rather than property value, is to be the controlling factor in determining the basis of consolidations, and that adjustment of capitalization to conform to property value is not to be made at the time or before consolidations take place. Such readjustments, however are required by the provision of the Transportation Act which stipulates that "the bonds at par of a corporation which is to become the owner of the consolidated properties, together with the outstanding capital stock at par of such corporation, shall not exceed the value of the consolidated properties as determined by the Commission." Thus in the process of consolidation over-capitalization will be eliminated wherever it is found.

The problem of consolidations, therefore, has to do largely with the merging of roads whose main difference is a matter of capitalization, inasmuch as the remaining roads—the less favorably situated—handle not over 15 per cent of the country's traffic.

Even the absorption of these roads need not prove a burden, provided proper recognition is given to the property values and relative earning capacity of the several companies involved.

## Difficulties Overestimated

While the complexity of the problem of harmonizing the many interests concerned is fully appreciated, it is sufficient here to say that, if the public interest requires that such consolidations be made, the difficulties of making them on a basis which will fully recognize the rights of all parties appear to be no greater than those which have been met successfully many times heretofore in railroad and industrial consolidations.

## The Thirteen Systems Proposed

Mr. Oldham proposes the formation of 13 systems as follows:

### I—NEW YORK CENTRAL SYSTEM

Name	Mileage	Gross Earnings	Per Mile
New York Central	6,075	\$203,066,842	\$33.423
Cleve. Cin. Chi. & St. Louis	2,483	40,204,858	16.009
Michigan Central	1,855	41,756,671	22.512
Pittsburgh & Lake Erie	224	2,159,224	9.1545
Toledo & Ohio Central	479	5,736,686	13.078
Cincinnati Northern	246	1,850,991	7.452
Kanawha & Michigan	177	3,297,455	18.672
Lake Erie & Western	900	6,859,306	7.627
Central of New Jersey	683	32,400,917	47.586
New York, Ontario & Western	368	8,874,397	15.611
Ulster & Delaware	137	1,025,519	7.942
	13,678	\$368,354,866	\$26.932

### LINEAS AT PRESENT CONTROLLED BY TWELVE OTHER SYSTEMS

*Lehigh & Hudson	97	\$2,153,781	\$21.261
**Monongahela	92	1,690,183	18.260

### NEW ENGLAND SYSTEM

to be jointly controlled by four of the trunk line systems

Rutland	463	\$3,831,743	\$8.274
Boston & Maine	2,286	51,313,506	22.457
Maine Central	1,220	12,328,910	10.099
Bangor & Aroostook	632	3,955,358	6.258
New York, New Haven & Hartford	1,999	54,709,098	27.384
Central New England	303	4,819,110	15.911
	6,903	\$151,776,614	\$21.988

\*Also in Systems 2, 3, 4.

\*\*Also in System 3.

2—BUFFALO SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Eric	1,988	\$62,401,580	\$31,392
Chicago & Erie	269	7,453,155	27,657
New York, Susqueh. & Western	139	3,340,399	24,075
Walash*	2,519	34,270,522	13,606
Wheeling & Lake Erie	512	8,179,049	15,971
Pere Marquette	2,272	20,843,657	9,176
New York, Chicago & St. Louis	570	13,947,626	24,479
Delaware & Hudson	883	25,411,263	28,764
Delaware, Lackawanna & Western	956	48,923,528	51,161
Buffalo, Rochester & Pittsburgh	586	11,667,747	19,894
Bessemer & Lake Erie	205	10,362,886	50,642
Pittsburgh & West Virginia	63	1,080,449	17,066
Elgin, Joliet & Eastern	789	12,192,426	15,457
Buffalo & Susquehanna	253	1,604,078	6,351
	12,004	\$261,680,365	\$20,966

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*Lehigh & Hudson..... 97 \$2,053,781 \$21,261

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

\*Also in Systems 1, 3, 4.  
 \*\*Lines west of St. Louis in Gr. Northern-St. Paul System.

3—PENNSYLVANIA SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Pennsylvania Railroad	4,559	\$215,428,766	\$47,249
{ Pittsburgh, Cin. Chi. & St. Louis	2,398	67,119,283	38,206
{ Phila., Balt. & Washington	717	59,450,509	24,792
{ Grand Rapids & Indiana	573	24,001,572	33,460
{ Long Island	397	5,716,575	9,971
{ New York, Phila. & Norfolk	124	14,284,869	35,962
{ West Jersey & Seaboard	359	4,626,775	37,246
{ Cumberland Valley	164	7,355,513	20,485
{ Balt. Chesapeake & Atlantic	88	3,528,025	21,555
{ Toledo, Peoria & Western	248	1,200,911	13,707
		1,220,565	4,927
	11,384	\$403,933,363	\$35,481

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*Lehigh & Hudson..... 97 \$2,053,781 \$21,261  
 \*\*Monongahela..... 92 1,690,183 18,290  
 †Richmond, Fred. & Potomac..... 88 3,475,207 39,635  
 ††Washington Southern..... 36 1,647,852 46,327

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

\*Also in Systems 1, 2, 4.  
 \*\*Also in System 1.  
 †Also in Systems 4, 5, 6, 7.  
 ††Also in Systems 4, 5, 6, 7.

4—BALTIMORE—READING SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Baltimore & Ohio	4,540	\$108,665,110	\$23,935
Staten Island Rapid Transit	24	1,551,246	65,898
Philadelphia & Reading	1,105	55,803,929	49,614
Port Reading	21	1,818,575	85,944
Atlantic City	170	2,566,796	15,083
Coal & Coke	197	1,100,109	5,576
Ann Arbor	296	2,661,519	9,001
Cincin. Indianapolis & Western	322	2,477,850	7,703
Western Maryland	494	10,791,912	15,599
Toledo, St. Louis & Werten	454	5,560,324	12,260
Lehigh Valley	1,443	47,023,053	32,576
	9,266	\$240,020,423	\$25,904

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*Lehigh & Hudson..... 97 \$2,053,781 \$21,261  
 \*\*Washington Southern..... 36 1,647,852 46,327  
 †Richmond, Fred. & Potomac..... 88 3,475,207 39,635

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

\*Also in Systems 1, 2, 3.  
 \*\*Also in Systems 3, 5, 6, 7.  
 †Also in Systems 3, 5, 6, 7.

5—NORFOLK & WESTERN—CHESAPEAKE & OHIO

Name	Mileage	Gross Earnings	Gross Per Mile
Chesapeake & Ohio	2,375	\$46,322,284	\$19,504
Hocking Valley	351	7,632,572	21,763
Norfolk & Western	2,062	53,800,498	26,090
Virginia	507	7,570,715	14,945
Carolina, Clinchfield & Ohio	271	2,851,624	10,517
	5,566	\$118,180,293	\$21,233

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*Washington Southern..... 36 \$1,647,852 \$46,327  
 †Richmond, Fred. & Potomac..... 88 3,475,207 39,635

\*Also in Systems 3, 4, 6, 7.  
 †Also in Systems 3, 4, 6, 7.

6—ATLANTIC COAST LINE—LOUISVILLE & NASHVILLE SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Atlantic Coast Line	4,718	\$35,464,375	\$7,517
Louisville & Nashville	5,052	60,597,401	11,994
Nashville, Chattanooga & St. Louis	1,233	12,613,336	10,232
Charleston & West Carolina	342	1,925,040	5,631
Louisville, Henderson & St. Louis	290	1,655,678	8,287
Georgia	330	2,351,141	7,533
Atlanta & West Point	93	1,373,126	14,746
*Chicago, Indianapolis & Louisville	327	3,836,962	11,734
	12,295	\$120,716,949	\$9,819

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*\*Washington Southern..... 36 \$1,647,852 \$46,327  
 †Richmond, Fred. & Potomac..... 88 3,475,207 39,635  
 ††Western Railway of Alabama..... 133 1,341,130 10,061

\*\*Also in Systems 3, 4, 5, 7.  
 †Also in Systems 3, 4, 5, 7.  
 ††Also in System 13.

\*This road will be jointly controlled by the Atlantic Coast Line-Louisville & Nashville System and the Southern System, one-half of the mileage and figures being used in each system.

7—SOUTHERN SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Southern	7,018	\$71,974,418	\$10,256
Mobile & Ohio	1,135	11,903,351	10,487
Alabama Great Southern	310	5,585,318	17,986
Southern Railway in Mississippi	280	3,100,457	3,933
Cincinnati, New Orleans & Texas Pacific	337	10,983,183	32,565
New Orleans & Northeastern	204	3,859,172	18,946
*Chicago, Indianapolis & Louisville	327	3,836,962	11,734
Alabama & Vicksburg	143	3,701,714	11,924
Vicksburg, Shreveport & Pacific	171	1,667,937	9,729
Florida East Coast	741	7,206,392	9,725
Seaboard	3,446	24,926,111	7,234
Georgia Southern & Florida	400	2,486,248	6,218
	14,512	\$147,231,863	\$10,145

LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS  
 \*\*Washington Southern..... 36 \$1,647,852 \$46,327  
 †Richmond, Fred. & Potomac..... 88 3,475,207 39,635

\*\*Also in Systems 3, 4, 5, 6.  
 †Also in Systems 3, 4, 5, 6.

\*This road will be jointly controlled by the Southern System and the Atlantic Coast Line-Louisville & Nashville System, one-half of the mileage and figures being used in each system.

8—GREAT NORTHERN—ST. PAUL SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Great Northern	8,094	\$78,548,635	\$9,704
*Spokane, Portland & Seattle	277	2,569,401	9,264
Chicago, Milwaukee & St. Paul	10,222	103,164,598	10,093
Wabash	390	10,552,080	27,052
Duluth, Missabe & Northern	390	6,043,443	21,697
Duluth & Iron Range	279	4,713,030	9,917
St. Louis, San Francisco & Texas	239	1,165,568	4,869
**Chicago & Alton	526	8,318,512	15,817
	24,778	\$257,475,267	\$10,391

\*This road will be jointly controlled by the Great Northern-St. Paul System and the Northern Pacific-Burlington System, one-half of the mileage and figures being used in each system.

\*\*This road will be jointly controlled by the Gr. Northern-St. Paul System and the Union Pacific-North Western System, one-half of the mileage and figures being used in each system.

†Lines of this system west of St. Louis. Lines east of St. Louis and total figures are shown in the Buffalo System.

9—NORTHERN PACIFIC—BURLINGTON SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Northern Pacific	6,502	\$74,857,279	\$11,513
*Spokane, Portland & Seattle	277	2,569,401	9,264
Colorado & Southern	1,100	8,810,988	8,012
Fort Worth & Denver City	454	5,797,831	12,767
Chicago, Burlington & Quincy	9,360	103,814,782	11,091
Colorado Midland	338	1,615,559	4,875
Trinity & Brazos Valley	351	1,002,119	2,853
Wichita Valley	257	1,001,372	3,903
Chicago Great Western	1,460	15,157,101	10,383
Denver & Rio Grande	2,574	21,763,649	9,621
Western Pacific	945	7,458,061	7,894
Kansas City Southern	836	11,023,296	13,185
{ Texaslandia & Ft. Smith			
	24,454	\$257,872,438	\$10,545

\*This road will be jointly controlled by the Great Northern-St. Paul System and the Northern Pacific-Burlington System, one-half of the mileage and figures being used in each system.

10—UNION PACIFIC—NORTH WESTERN SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Union Pacific	3,619	\$61,986,599	\$17,126
Oregon Short Line	2,335	24,780,229	11,087
Oregon-Washington & Navajo	2,032	11,747,712	8,429
Los Angeles & Salt Lake	1,158	11,075,453	9,566

St. Joseph & Grand Island.....	260	1,908,985	7,340
*Central Pacific.....	471	4,194,169	8,389
Chicago & North Western.....	8,108	91,542,024	11,391
Chicago, St. Paul, Minneapolis & Omaha.....	1,753	19,506,801	11,129
**Chicago & Alton.....	526	3,318,512	15,817
Missouri, Kansas & Texas.....			
Mo., Kans. & Tex. of Texas.....	3,865	35,340,021	9,144
Wichita Falls & Northwestern.....			
	23,556	\$272,398,836	\$11,564

\*The Central Pacific has been placed with the Union Pacific-North Western System, but the figures of the Central Pacific are included with those of the Southern Pacific System.  
 \*\*This road will be jointly controlled by the Union Pacific-North Western System and the Great Northern-St. Paul System, one-half of the mileage and figures being used in each system.

11-ATCHISON SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Atchison, Topeka & Santa Fe.....	8,627	\$114,019,747	\$13,217
Northwestern Pacific.....	471	4,194,169	8,389
Panhandle & Santa Fe.....	709	5,387,362	7,592
Gulf, Colorado & Santa Fe.....	1,937	16,296,448	8,411
*Chicago & Eastern Illinois.....	567	8,178,620	14,415
Texas & Pacific.....	1,244	19,834,671	10,129
New Orleans, Texas & Mexico.....	234	1,803,574	6,167
St. Louis, Brownsville & Mexico.....	548	3,221,309	5,876
International & Great Northern.....	1,160	10,107,915	8,718
Missouri Pacific.....			
St. L. Iron Mt. & Southern }.....	7,348	66,076,724	8,992
	23,557	\$248,820,539	\$10,562

\*This road will be jointly controlled by the Atchison System and the Southern Pacific System, one-half of the mileage and figures being used in each system.

12-SOUTHERN PACIFIC SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
*Southern Pacific.....	6,991	\$115,870,170	\$16,575
Arizona Eastern.....	374	3,304,983	8,835
Galveston, Harbinger & San Antonio.....	1,356	14,167,759	10,430
Houston & Texas Central.....	893	7,022,858	7,863
Texas & New Orleans.....	468	4,683,962	9,998
Houston East & West Texas.....	191	1,532,556	8,027
Louisiana Western.....	208	2,580,656	12,422
Morgan's Louisiana & Texas.....	403	4,999,346	12,398
Kansas City, Mexico & Orient.....	738	2,522,892	3,420
San Antonio & Aransas Pass.....	728	4,003,622	5,500
Chicago, Rock Island & Pacific.....	7,821	74,724,444	9,554
Louisiana Western.....	208	2,580,656	12,422
El Paso & Southwestern.....	1,028	10,878,268	10,586
St. Louis Southwestern.....	943	8,500,314	9,011
St. Louis Southwestern of Tex.....	810	4,470,125	5,541
**Chicago & Eastern Illinois.....	567	8,178,620	14,415
	23,996	\$270,644,686	\$11,273

\*The Central Pacific has been placed with the Union Pacific-North Western System, but the figures of the Central Pacific are included with those of the Southern Pacific System.

\*\*This road will be jointly controlled by the Atchison System and the Southern Pacific System, one-half of the mileage and figures being used in each system.

13-ILLINOIS CENTRAL-SOO SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Illinois Central.....	4,768	\$70,595,781	\$14,807
Yazoo & Mississippi.....	1,381	14,059,523	10,187
Central of Georgia.....	1,922	13,163,150	6,847
Minneapolis & St. Louis.....	1,647	10,590,733	6,437
Minneapolis, St. Paul & Sault Ste. Marie.....	4,208	32,305,808	7,678
Duluth South Shore & Atlantic.....	610	3,506,694	5,744
Mineral Range.....	120	1,030,995	8,591
	14,656	\$145,252,684	\$9,911

LINE AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS

*Western Railway of Alabama.....	133	\$1,341,336	\$10,061
----------------------------------	-----	-------------	----------

\*Also in System 5.

Joint Control of New England System

One of the important features of the grouping of the eastern roads in Mr. Oldham's plan is the provision for the joint control of the New England railroads by the four principal eastern systems, all of which reach the New England gateways. On this point, Mr. Oldham says:

The division of the New England roads among the various trunk lines (for example, assigning the Boston & Maine to the proposed New York Central System or the Buffalo System; or the New York, New Haven & Hartford to the Pennsylvania System or the Baltimore-Reading System) would greatly restrict if not entirely eliminate competition and create a monopoly, in the respective parts of New England. To preserve and to promote competition to the fullest extent among the roads in the Eastern district west of the Hudson River, with which traffic is interchanged, as well as to maintain the existing routes and channels of trade and commerce,

which these roads offer, a common use of all railroad facilities within New England must be preserved for all these systems without discrimination. While the joint ownership or control of the New England lines is not essential in order to maintain the common use of these facilities, so far as competition is concerned, it is essential, nevertheless, to assure facilities adequate to meet the transportation requirements of the district of which they are a part, for sound credit is necessary to maintain adequate facilities, and sufficiency and stability of income are equally necessary to maintain sound credit.

The number of roads involved, the variety of the tonnage interchanged, the differences in the length of haul, and countless other factors make a satisfactory determination of the fair division of the compensation received from this traffic a problem so complex as to be impossible. To what extent the income of the New England roads falls short of an amount sufficient to provide a fair return on their property values, because of unsatisfactory division of joint rates, and to what extent this shortage is due to other factors, it is impossible to say; nor would it be a matter of consequence if there were a common ownership of these properties by all the remaining roads in the same rate-making district, for by the provisions of the Transportation Act it is not essential that all parts of each system, if commonly owned, should be equally self-sustaining, for rates are designed to meet the combined requirements of all systems in the district considered as a whole.

Control of New England Roads

No Burden to Controlling Systems

The ownership and control of the New England roads by these systems—each participating in the ownership in proportion as it benefits by including the New England roads in the district for rate making purposes—would prove no burden to these systems, for the dividends on the additional stock, which it would be necessary to issue to acquire control, would be provided by the increased income received through rates, which are higher because of the inclusion of the factors of cost and property values of the New England roads in the determination of the rates for the whole.

Such a solution of the problem would be the most effective means of preserving and of promoting competition; of maintaining the existing routes of commerce; of providing the credit necessary to assure such facilities as would enable the New England roads to perform the service required of them, not only for New England but for the country at large.

Practicability of Plan

This is not the place to discuss a detailed plan for the transfer of the control of New England roads to these systems. A brief statement will, however, show its practicability. First of all, it would be necessary to determine the equitable interest of each of the New England roads in a unified New England system, and to make such readjustments of capitalization as are necessary to establish substantial uniformity in the financial structures of each of the New England roads. The next step would be to form a holding company, whose stock would be used to acquire the stocks of the New England roads. These stocks could in turn be exchanged by the holding company for stocks of the four systems which are to participate in the joint ownership, the extent of participation of each system being determined largely by the benefit which it would receive by including the New England roads in the same rate-making district. As owners of the stocks of these four systems, the holding company would receive income with which to pay dividends to its own stockholders, the original holders of the New England railroad stocks.

This method of meeting the New England problem has been referred to as remote, inasmuch as the systems which are to purchase control exist only on paper and there is no assurance that the proposed consolidations will ever take place. Pending such consolidations a similar plan of ownership could become operative by dealing with the nine trunk line systems with which business is interchanged. The freight revenues of these nine systems are over 80 per cent of the total of the district, excluding the New England and Louisiana district. These roads are the principal ones concerned in the division of joint rates, and are also the largest beneficiaries of the higher rates which are made to cover the requirements of the New England roads. The exchange of stocks with these roads on the basis outlined would result in 20 per cent of the stocks of the New England roads in the treasury of the holding company newly exchanged, this stock could be held until such time as the remaining roads in the district were absorbed by the various systems, and then exchanged on a similar basis.

# Railway Statistics for Year Ending August 31, 1921

WASHINGTON, D. C.

STATISTICS for the 12 months ending August 31, 1921, compiled by the Bureau of Railway Economics from the returns of the Class I railways to the Interstate Commerce Commission, afford some interesting comparisons of the experience of the first full year under the increased rates put into effect by the Interstate Commerce Commission on August 26, 1920, and also the first year during which the roads operated on their own financial resources after their return by the government, with the previous 12 months, during which the roads were operated by the Railroad Administration for six months and were guaranteed at the same rate for another six months. These statistics show that while, because of the slump in traffic, the full benefits of the rate increase were not realized, the roads still earned more than they did before under the lower rates, and that while they were unable to reduce expenses in proportion to the reduction in traffic, partly because of the wage increase, the expenses were less than they were the year before.

### Public Pays Less

They also show that while the operating results were more favorable than during the preceding year (taking the figures as they stand and without considering the amount of deferred maintenance) and although freight rates were approximately 33 per cent and passenger rates 20 per cent higher, so that the earnings of the roads were greater, the public actually paid about \$558,000,000 less to the railways during the year ended August 31, 1921, than during the year before. During the previous year in addition to the rates for freight and passenger service the public was paying, largely out of the proceeds of taxation, a guaranty of some \$906,000,000 a year in addition to the \$5,725,000,000 represented by the total operating revenues of the carriers. The freight and passenger service rendered by the roads was, however, less than for the year before.

For the year ending August 31, 1921, during which there was no guaranty, the total operating revenues of the Class I roads were \$6,045,338,100 as compared with \$5,724,912,265 for the year before, an increase of \$320,425,835 or 5.6 per cent. Freight revenues were \$4,279,028,733, an increase of 9.6 per cent, and passenger revenues were \$1,258,394,376, an increase of 2.8 per cent. The railways actually earned greater revenues during the first full year in which the advanced rates were in effect than they did the year before, in spite of the decrease in traffic, although when the months of 1921 alone are taken into consideration, omitting

the heavy traffic months of August, September, October, November and December, 1920, the revenues were somewhat less than during the corresponding months of 1920.

### Operating Expenses Reduced

Total operating expenses for the year were \$5,161,760,829, a reduction of \$218,876,981 as compared with the preceding year, or 4.1 per cent. Expenditures for maintenance of way and structures decreased 12.3 per cent and for maintenance of equipment 7.1 per cent, while transportation expenses were reduced only 1.1 per cent and traffic expenses increased 33.8 per cent and general expenses increased 12.8 per cent. The net operating revenue, \$883,577,271, showed an increase of \$539,302,816, or 156 per cent, but

Month	REVENUES, EXPENSES AND NET RAILWAY OPERATING INCOME		Rate earned operating (annual basis) per cent
	Total operating revenues	Total operating expenses	
Sept., 1920....	\$616,200,796	\$311,482,960	\$75,310,311 4.1
Oct., 1920....	642,135,312	526,578,888	86,455,487 4.6
Nov., 1920....	592,130,728	510,501,352	54,534,793 3.5
Dec., 1920....	550,582,381	503,206,889	10,225,583 0.7
Jan., 1921....	470,148,124	443,700,662	Def. 958,399 Def.
Feb., 1921....	405,174,852	385,479,607	Def. 7,378,307 Def.
Mar., 1921....	459,262,510	400,429,308	30,695,192 2.2
April, 1921....	433,557,199	375,698,866	29,248,874 2.1
May, 1921....	444,875,089	380,041,234	37,080,654 2.3
June, 1921....	461,562,317	380,927,429	51,641,014 3.0
July, 1921....	462,849,446	362,849,183	69,298,521 4.5
Aug., 1921....	505,508,274	322,279,070	90,241,103 5.0
	\$6,045,338,100	\$5,161,760,829	\$530,655,927 2.9

taxes took \$283,331,368, an increase of 10.4 per cent, and the net railway operating income was \$530,655,927 as compared with only \$28,548,077 in the previous year. The operating ratio for the year was 85.38 as compared with 93.99 the year before.

Although the net railway operating income represented less than half of the 6 per cent return contemplated by the law, the results show that the relation between expenses and earnings was far better than it was in the previous year, during half of which time the roads were being operated by the government and the other half they were under the six months' guaranty provided by the Transportation Act.

The difference between the \$28,000,000 which was actually earned in the year ending August 31, 1920, and the approximately \$906,000,000 which was guaranteed by the government, or \$878,000,000, therefore has to be made up by taxation and may be added to the \$5,725,000,000 which was paid to the roads for service to ascertain what railroad service actually cost the public for that year.

### Net Return 2.9 Per Cent

The net return earned by the roads for the year ending August 31, 1921, was 2.9 per cent on the investment, as

## INCOME ACCOUNT CLASS I RAILWAYS AND LARGE SWITCHING AND TERMINAL COMPANIES

Twelve months' period ended August 31, 1921, compared with corresponding period of preceding year:

Account	For twelve months ended August 31		Increase, amount	Per cent
	1921	1920		
Total operating revenues.....	\$6,045,338,100	\$5,724,912,265	\$320,425,835	5.6
Freight .....	4,279,028,733	3,905,994,278	373,034,455	9.6
Passenger .....	1,258,394,376	1,223,979,098	34,415,278	2.8
Mail .....	97,243,960	97,243,960	44,271,318	d 30.8
Express .....	99,638,415	161,384,821	d 61,746,406	d 38.3
All other.....	311,032,616	293,038,790	17,993,826	6.1
Total operating expenses.....	5,161,760,829	5,380,637,810	d 218,876,981	d 4.1
Maintenance of way and structure.....	846,960,204	965,207,008	d 118,246,804	d 12.3
Maintenance of equipment.....	1,398,333,217	1,503,371,407	d 107,038,190	d 7.1
Traffic .....	84,344,516	62,949,723	21,294,793	33.8
Transportation .....	2,611,643,541	2,641,408,037	d 29,764,496	d 1.1
General .....	175,930,003	153,898,834	20,031,169	12.8
All other .....	48,649,348	53,802,801	d 5,153,453	d 9.6
Net operating revenue.....	883,577,271	344,274,455	539,302,816	156.6
Taxes .....	282,331,368	256,538,433	26,792,935	10.4
Uncollectible .....	1,315,144	1,180,018	135,126	11.5
Operating income.....	598,930,759	86,536,004	512,394,755	592.0
Equipment rents.....	Dr. 50,132,744	Dr. 39,446,370	d 10,686,374	d 27.1
Joint facility rents.....	Dr. 18,142,088	Dr. 18,561,557	419,469	2.3
Net railway operating income.....	530,655,927	28,548,077	502,107,850	1752.0
Operating ratio—per cent.....	85.38	93.99	.....	.....
Average mileage represented.....	235,467,499	234,563,141	844.35	0.4

a Mail revenue affected in 1920 period of approximately \$60,000,000, representing back railway mail pay. d Decrease. \*More than one thousand per cent.

compared with only a fraction of 1 per cent the year before. This was \$571,342,073 less than the amount needed to produce a 6 per cent return. For September, 1920, the first month under the new rates, the net railway operating income was on an annual basis of 4.1 per cent. For October it was 4.6 per cent but it then decreased until for January there was a deficit and in February there was a larger deficit. Since then the rate of return has been gradually increasing and for the month of August it was on a 5 per cent basis. For no month since the rates were increased has the rate of return reached a 6 per cent basis, although the volume of traffic for the last four months of 1920 was greater than it had ever been for the same period of the year.

#### Maintenance Expenditures Held Down

The net operating income for the year was, however, greater, than it was during either 1918 or 1919 while the roads were under federal control, although during those years the companies were guaranteed. The reduction in operating expenses of \$218,876,981 was made in spite of the fact that the increased wages awarded by the Railroad Labor Board in 1920 were in effect until July 1, 1921, when there was a reduction of approximately 12 per cent effective for two months of the 12 here being considered.

The lesser volume of traffic naturally tended to reduce

expenses somewhat, although the figures show that there was very little saving in transportation expenses as the percentage of increase in wages was greater than the percentage of decrease in traffic. The reduction in maintenance alone was \$225,000,000 and if this had not been made the net return would have been nearly cut in two.

Traffic and operating statistics for the year ending August 31, 1921, are not yet completely available. The train miles showed a decrease of 9.6 per cent and the total car miles a decrease of 6.4 per cent. The loaded car miles decreased 14.8 per cent and the empty car miles increased 14.8 per cent. The net ton-miles of freight, 377,873,635,000, show a reduction of 14 per cent. The average number of cars per train was 36.8 as compared with 35.6 the year before but the average train load was only 671 as compared with 705, although the net tons per loaded car showed an increase from 28.4 to 28.8. The percentage of loaded to total cars was 63.2 as compared with 70 the year before. The car miles per car day also were less than the year before, 23.5 as compared with 24.3. The passenger and passenger mile figures have not yet been compiled but the passenger train miles decreased 2.2 per cent and the passenger car miles increased 5 per cent. For the first seven months of 1921 the passengers carried one mile decreased 17.2 per cent as compared with 1920.

## Designing Locomotives for Economical Operation\*

Avoiding Waste by Reducing Fuel Consumption and Repair Costs  
and Eliminating Unnecessary Weight

By James Partington

Estimating Engineer, American Locomotive Company

IT SEEMS advisable to consider this subject from the constructive standpoint of indicating what constitutes good design as demonstrated by locomotives in actual service, rather than to attempt to point out the defects in locomotives which do not show maximum efficiency. If any power plant or engine is not properly proportioned for the work it has to do, the most expert skill in operation can reduce only in part the waste resulting from having such equipment in service.

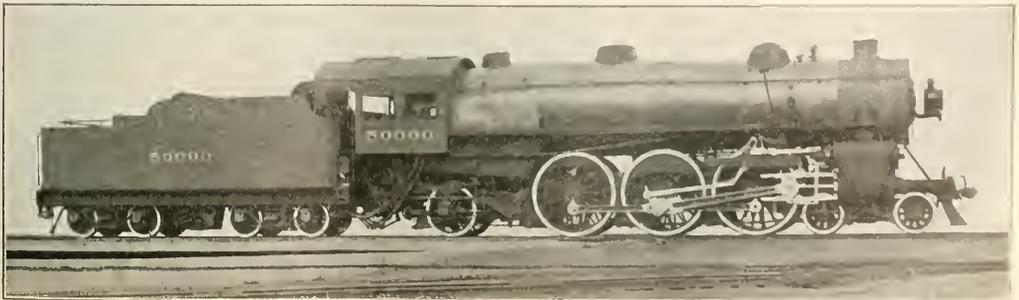
First, considering the design of steam locomotives from the standpoint of new equipment, when a railroad company is in the market for new locomotives its requirements may

be met sometimes by duplicating locomotives in service on their road, but adding newly developed attachments which make for increased efficiency and economy. More frequently, however, it will be found that increased traffic, change from wooden to steel cars, improvement in track, roadbed and bridges, etc., will justify and make advisable the adoption of locomotives of a larger and more powerful type.

Then careful consideration must be given to service requirements—maximum loads to be hauled, capacity of cars, approximate proportion of loaded to empty cars per train, grades, curves, running time over divisions, maximum allowable load per axle, location of coal chutes and water tanks, clearances, conditions under which trains must be started, and any other special requirements of the service.

Having determined the drawbar pull necessary, it remains

\*A paper to be presented at the meeting of the Railroad Division of the American Society of Mechanical Engineers at New York City on December 5, 1921.



Experimental Pacific Type No. 50,000, Which Established New Records for Power per Unit of Weight

to design a locomotive that will have the following efficiency requirements:

- 1 A drawbar horse power for the minimum amount of fuel.
- 2 A drawbar horsepower for the minimum amount of weight of locomotive and tender.
- 3 A drawbar horsepower for the minimum cost of repairs.

### Fuel Economy

As standard practice in modern locomotives, a sectional brick arch in the firebox and a fire-tube superheater should be applied as a means of saving fuel in any class of service. A sectional brick arch is low in first cost, easily applied and easily renewed. It usually accomplishes a fuel saving of from 10 to 12 per cent in coal-burning engines, and about 5 per cent in oil-burning engines.

The very general use of superheaters has gradually brought about improved conditions of cylinder lubrication which now make it possible and desirable for the greatest economy to use a high degree of superheat, 250 to 300 deg. F. now being considered the best practice. A saving of 25 to 30 per cent can be obtained.

The use of feedwater heaters will further conserve fuel, and these are now in general use in continental Europe and are gradually being applied to locomotives in the United States. The saving that can be realized is as much as 12 per cent. The initial cost is considerable, but the effect of

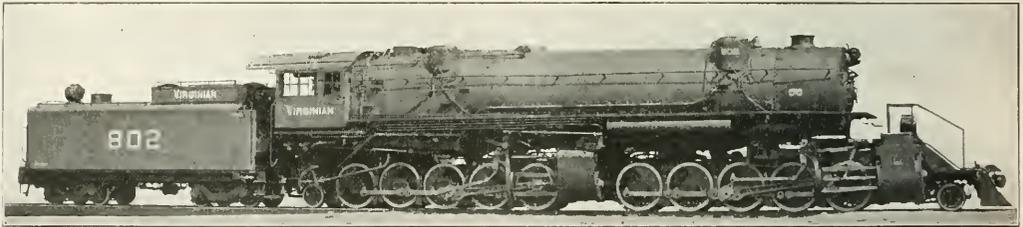
The arrangement of deflector plates and netting in the smoke-box should be carefully adapted to the fuel and combustion conditions, to provide minimum fuel waste and minimum back pressure in the cylinder-exhaust passages with proper provision against fire hazards which might obtain by the throwing of sparks.

The boiler being designed to produce steam at a minimum cost, it is now necessary to design the engine to use this steam with maximum economy.

The cylinder proportions and diameter of the drivers should be such as will develop maximum horsepower at the ruling speeds for train movements. The greatest horsepower of locomotive cylinders will usually be developed within a piston speed ranging from 700 to 1000 ft. per min. Therefore, if other traffic conditions will permit, the operation of trains within these limits should show the greatest economy.

### Minimum Weight of Motive-Power Equipment

The weight on the locomotive drivers gives an engine friction, independent of other factors, of 22 lb. per ton. The desirability of avoiding excess weight on the drivers from this standpoint alone is therefore readily apparent. When the type of engine will permit, this weight should not exceed what is necessary to give a satisfactory factor of adhesion; this is usually  $4\frac{1}{4}$  times the maximum tractive power. All weight in excess of this and all other excess weight and excess tender weight should be eliminated, as far as this can



Virginian 2-10-10-2 Type, the Most Powerful Locomotive in the World

the feedwater heater in operation, aside from fuel economy, will be to help reduce other boiler-maintenance charges.

The general proportions of the boiler should also receive careful consideration. For the best results with bituminous coal, the length of the boiler tubes should be approximately within the following limits:

Size of tube, in.	Distance over tube sheet
2	18 ft. 0 in. to 19 ft. 6 in.
$2\frac{1}{4}$	22 ft. 6 in. to 24 ft. 6 in.
$2\frac{1}{2}$	28 ft. 0 in. to 30 ft. 0 in.

For many designs of locomotives, a combustion chamber can be provided, and this will help further in the economical production of steam. A generous steam space should be provided, and the throttle designed and located to secure dry steam. The evaporative capacity of the boiler should be as nearly 100 per cent of the maximum steam requirements of the cylinders as the type of locomotive will permit. Based on 100-per cent boiler, the grate area should be sufficient to prevent the maximum coal consumption per sq. ft. of grate per hour from exceeding, for bituminous coal, 120 lb., and for anthracite coal, 55 to 70 lb., depending on size.

When the total coal consumption exceeds 6000 lb. per hr., it is generally necessary to apply an automatic stoker. These have now been so adapted to locomotive requirements that a properly designed stoker will show economy over hand firing, aside from the necessity of its use on account of the coal consumption being greater than the physical capacity of one fireman if the boiler were hand-fired.

be done without detriment to the design of engine and tender. This applies with particular force to the machinery parts of the engine, especially those parts which affect the counterbalance. All saving in weight in these parts usually produces a similar saving in counterbalance weights and a reduction in the dynamic augment, which is very desirable from the standpoint of track and roadbed maintenance.

The use of special materials to keep down weight is often amply justified if repair parts can be obtained promptly when required. This, in the past, has often been the cause of delay, but it can be guarded against by carrying a few spare parts in stock ready for renewals. High-tensile alloy steel can frequently be used to advantage for driving axles, crank pins, main and side rods, piston rods, etc.

Occasional steep grades or hard starting conditions at stations may cut down the hauling capacity of locomotives over a division to a serious extent. In such cases, the utilization of the weight on trailer trucks for additional tractive power in starting and at slow speeds may increase the capacity of the locomotive from 10 to 25 per cent, depending on the number of driving wheels and working pressure. It has been demonstrated that a separate steam engine or booster geared to the trailing axle will give this additional traction, and that it can be cut in or cut out very satisfactorily as occasion may require.

This is an item in economical operation worthy of consideration where hauling capacity is restricted by such limitations, and the use of an independent booster may often permit the satisfactory operation of considerably lighter locomotives for service of this character.

Within the limits of this paper, only the major features of design can be outlined briefly, and only such devices as have been carefully tried out and are in successful operation are cited. The writer believes the savings mentioned are well within what may be obtained in practice.

Many other improvements promising further economy in the generation and use of power in the steam locomotive are contemplated and in the experimental stage, but these do not properly come under the scope of our subject as here treated.

#### Cost of Repairs

It has been pointed out that locomotives and tenders should be designed to produce the required drawbar horsepower with as little excess weight as possible. In this connection, however, due consideration must be given to the question of repairs.

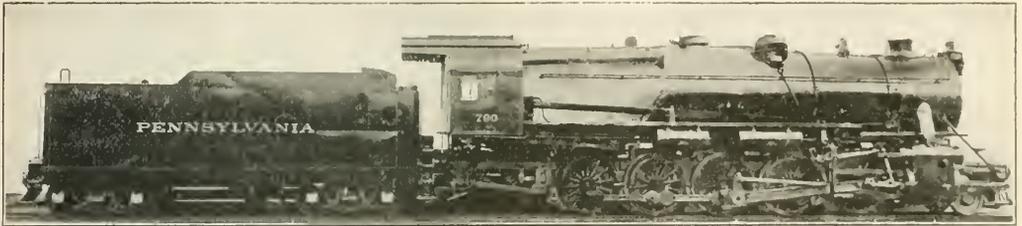
The design of boilers from the standpoint of weight is practically fixed by existing boiler regulations, which provide that locomotive boilers must be operated with a factor of safety of not less than four. Practically all boilers at the

conditions of individual railroads is necessary to secure equipment best suited to the needs of each.

#### Old Motive-Power Equipment

Much waste in locomotive operation can be avoided by making a careful survey of present motive-power equipment which is not giving as economical or efficient service as could be obtained if the engines were modernized. This applies particularly to locomotives where the service conditions demand more power than the present equipment can economically produce. All the suggestions made in regard to the design of new equipment are applicable to a greater or less degree to old equipment, providing the old equipment is not meeting the demands of the service from a power standpoint, or is not furnishing this power economically.

In making a survey of this character care should be taken to determine accurately whether the old equipment will warrant the additional cost of changes and betterments necessary to convert it into up-to-date power. This can be decided by taking the number of years the engines will be retained in



Pennsylvania Decapod with Short Maximum Cut-off, Which Shows Remarkable Economy over a Wide Range

present time are designed with a factor of safety of  $4\frac{1}{2}$ , which leaves a comfortable margin between this and the minimum allowable operating factor.

The maximum stresses in other parts of the locomotive must also be carefully considered, and the parts must be designed to keep these stresses within limits which will eliminate costly failures in service.

Aside from the consideration of stresses, much repair cost can be avoided by adopting designs which reduce the number of parts, as far as reasonably may be, especially where these parts must have bolted connections. Here, however, care must be taken to avoid construction which cannot readily be removed for repairs or renewals or repaired in place with reasonable facility.

Many roads today are giving a great deal of thought to locomotive design along these lines, having especially in mind the desirability of making the engine parts accessible for oiling and inspection; easily removable with proper shop facilities; of the minimum number of pieces and interchangeable with equipment now in service.

The repair-shop facilities must, of course, be kept abreast of the requirements; i. e., as new and larger locomotives are put in service, turntables, cranes, machine tools, etc., must be of sufficient capacity to handle the larger equipment economically.

The repairs of locomotives can often be facilitated and the necessary shop equipment kept down to the minimum by securing from the locomotive builder many parts which he is able to turn out more accurately and more economically than the average railroad shop would be equipped to do. Such parts include: flanged sheets for boiler repairs; flexible and ordinary staybolts; finished bolts and nuts; drop forgings; packing rings for pistons and piston valves and special equipment which requires special tools for its production.

Without attempting to pursue further the design of new locomotives it may be remarked that a study of the special

service and the increased net return or saving for this period as against the cost involved for changes, interest on the additional investment, increased maintenance, etc.

A comparison should also be made with the results that could be realized by the purchase of new equipment best adapted for the service, as against the cost of contemplated changes in the old equipment.

If these comparisons show a saving in favor of modernizing the old equipment or the purchase of new equipment, every month that the engines are kept in service without doing this will result in a loss that is not recoverable. A few concrete examples of what has been accomplished in service by locomotives designed to yield maximum efficiency may be of advantage. Notable designs, for which data is available, are as follows:

Pacific type passenger locomotive No. 50000 built by the American Locomotive Company; decapod type freight locomotive, Class Hs; built by the Pennsylvania Railroad and heavy Mallet special service locomotive built for the Virginian by the American Locomotive Company

#### American Locomotive Company Engine No. 50000

Locomotive 50000 was built by the American Locomotive Company in 1910. It was designed and constructed at the builder's expense to demonstrate the maximum tractive power with adequate boiler capacity that could be obtained while keeping the adhesive weight below 60,000 lb. per driving axle.

Untrammelled by any outside specifications or the necessity of conforming to any railroad's existing standards, the builders had a free hand to embody in this design their ideas of the best engineering practice. To accomplish the purpose of the design—the maximum capacity per pound of weight—the largest boiler capacity within the predetermined wheel loads was the essential feature.

This end was obtained by eliminating every pound of



of this engine, made on the testing plant at Altoona. (Bulletin 31, P. R. R. Testing Plant 1919, copyrighted.) This test shows a water rate of 15.4 lb. per i.h.p. hour with a total i.h.p. of 3,080 at 40 per cent cut off and a coal consumption of 2.9 lb. The lowest coal consumption recorded is 2.00 lb. per i.h.p. hour, obtained at an output of 1,777 i.h.p. and a cut off of 30 per cent.

The thermal efficiency of the locomotive is also high and well sustained over a large range, a maximum of 8.1 per cent being attained at an output of 1,777 i.h.p., and the range being from 6.1 per cent at 776 i.h.p. to 5.3 per cent at 3,486 i.h.p. with an average of over 7 per cent for the usual operating conditions.

The highest drawbar pull recorded in these tests is 76,211 lb. at a speed of 7.4 m.p.h., but in road service a pull of 80,640 lb. has been recorded at 7.2 m.p.h. The indicated tractive effort plotted from a card taken at 7.4 miles per hour at 55 per cent cut off is slightly over 90,000 lb.

This design gives a calculated figure of 88.9 lb. per cylinder horse power, the lowest on record. During the tests an indicated horse power of 3,486 was developed, giving a weight of 106.2 lb. per horse power. The weight per boiler horse power does not compare as favorably, however, as it is 145.4 lb. The Belpaire firebox contributes materially to this excess.

**Virginian 2-10-10-2 Type Locomotives**

The large 2-10-10-2 Mallet engines for the Virginian were designed to meet their unique conditions. This road was built as an outlet to certain bituminous coal fields of West Virginia. Practically the entire revenue business is confined to hauling coal to the shipping docks at Sewall's Point, the west-bound revenue freight being negligible in amount, as only one town of any importance, Roanoke, is located on the line. As the development of the coal fields proceeded the tonnage to be handled increased rapidly, rising from 2,141,009 in 1911 to 7,621,555 in 1920, and in order to handle the business at a profit the maximum attainable capacity in motive power was demanded. Having fixed on 100 cars as the maximum number that could safely be handled in a single train, the car capacity increased to 120 tons, it was estimated that a locomotive of 147,000 lb. tractive power would be needed to haul the train from Princeton to tidewater, a helper being used for a grade of .6 per cent ten miles long over the Alleghenies. The 2-10-10-2 Mallets were designed to meet these conditions and their operation has been very successful. They have handled trains of 16,000 tons on a .2 per cent grade with the lowest consumption of coal per ton mile ever recorded. Unfortunately, accurate tests of coal and water per dynamometer horse power are not available owing to the fact that there is no dynamometer of adequate capacity to be had at present.

However, on May 25, a train of 15,725 tons behind the tender was hauled from Princeton to Roanoke at a rate of 26.9 lb. of coal per 1,000 ton-miles, and on May 27 a 75 car train of 12,070 tons showed the same figure for coal per thousand ton-miles.

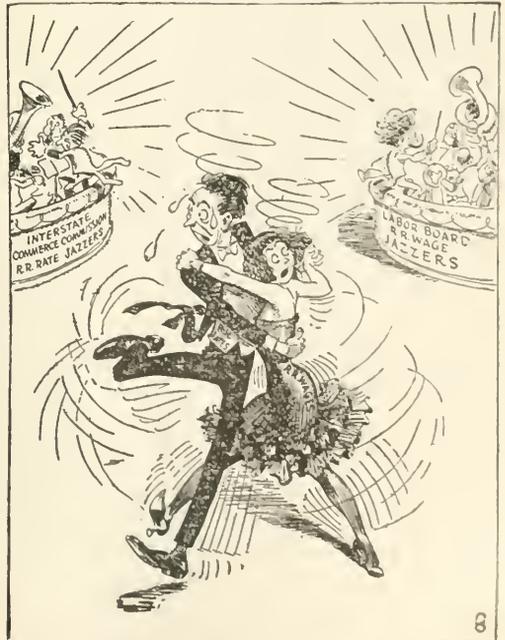
One of these engines has hauled a train of 110 cars weighing 17,250 tons from Victoria to Sewall's Point, which is believed to be the heaviest train ever handled by one engine. The ruling adverse grade was .2 per cent.

The principal dimensions of the three locomotives cited and a comparison of the horse power characteristics—calculated by the American Locomotive Company's method—are embodied in the following table:

MODERN MAXIMUM EFFICIENCY LOCOMOTIVES

Road	No. 5000	Virginian	Pennsylvania
Type	Erie	2-10-2	2-10-2
Fuel	Bituminous coal	Bituminous coal	Bituminous coal
Boiler, type	Conical connection	Extended wagon top	Conical connection
Boiler, diameter	76½ in. 87 in.	105½ in. 118½ in.	87-90% in.
Weight on drivers, lb.	172,500	617,000	342,050
Weight on truck, lb.	49,000	29,750	32,000

Road	Erie	Virginian	Pennsylvania
Type	4-6-2	2-10-10-2	2-10-2
Fuel	Bituminous coal	Bituminous coal	Bituminous coal
Boiler, type	Conical connection	Extended wagon	Conical connection
Weight on drivers, lb.	47,000	48,696	371,800
Driving wheel diam.	79 in.	56 in.	62 in.
Cylinders	27 in. by 28 in.	30 in. and 48 in. by 32 in.	30½ in. by 32 in.
Boiler pressure, lb. per sq. in.	185	215	250
Tractive power, lb.	40,600	147,260	90,000
Factor of adhesion	4.35	4.68	3.80
Cylinder horse power	2,427	5,040	4,182
Grate, length and width	114 in. by 75¼ in.	144 in. by 108½ in.	126 in. by 86 in.
Grate area, sq. ft.	59.7	108.7	70.1
Tubes, number	307	381	244
Tubes, length	22 ft. 0 in.	25 ft. 0 in.	19 ft. 1 in.
Tubes, spacing	14 in.	7 in.	5½ in.
Tubes, thickness	No. 11 B.W.G.	No. 11 B.W.G.	No. 12 B.W.G.
Tubes, diameter	2¼ in.	2¼ in.	2¼ in.
Flues, number	36	70	48
Flues, diameter	5½ in.	5½ in.	5½ in.
Flues, thickness	3/16 in.	No. 9 B.W.G.	.18
Combustion chamber—length	Nine	36 in.	42 in.
Brick arch	Security	Gaines	Security
Heating surface—firebox, sq. ft.	248	532	290
Heating surface tubes—water side, sq. ft.	2,672	5,592	2,731
Heating surface flues—water side, sq. ft.	1,136	2,511	1,313
Heating surface total, sq. ft.	4,056	8,635	4,334
Boiler horse power	2,250	4,800	2,553
Steam rate, lb. per hp. hour	20.8	19.7	20.8
Coal rate, lb. per hp. hour	3.25	3.1	3.25
Superheater, number of units	36	70	42
Superheater, diameter	1½ in.	1½ in.	1½ in.
Superheater, heating surface	879	2,120	1,418
Tender weight in running order, lb.	161,500	214,300	182,000
Tender capy. coal, ton	14	12	17½
Tender capy. water, gal.	8,000	13,000	9,000
Weight of locomotive in lb. per cylinder hp.	110.6	135.7	88.9
Weight of locomotive in lb. per boiler hp.	119.6	142.5	145.4
Steam rate—lb. per hp. hour	16.5	15.4	15.4
Coal rate—lb. per hp. hour	2.12	2.0	2.0



From the Youngstown Vindicator  
Can't Expect Much Rhythm of the Dancers Until the Orchestras Get Together

# How to Better Bad Railroad Conditions

## Do Railway Officers Spend Too Much Time Lobbying in Washington and Not Enough in Managing the Properties?

By George N. Brown

Formerly Chief Examiner of the Interstate Commerce Commission

**H**ABIT, or state of mind, is responsible for many things in the conduct of the daily lives of men. So with the railroads of the country. Their managers have acquired the habit of going to the government for everything they desire. In carrying out that state of mind railroad managers, during the past decade have stood about the street corners in the region of the Interstate Commerce Commission or the Capitol in Washington with hats in hand asking for more.

The trouble with the railroad transportation systems of the country is that the managing heads have lost their initiative. They refuse to do anything, or even to propose to do anything, to relieve a particular situation that may exist on their lines without first consulting some administrative authority. No one has ever computed the time and money that the railroads of the country have expended in the last ten years in attempts to get their Uncle Samuel to dole out to them some law which would yield them more money.

At one time, a few years ago, I counted over 100 railroad officials, from presidents down, sitting about the hearing room of the Interstate Commerce Commission for a period of 10 days listening to experts explain figures as to past and prospective railroad earnings. There is no other business in this country that would think of allowing so many of its directing officials to remain absent from business for so long a period of time. It has become the settled habit of many railroad officials to spend most of their time in Washington, or in riding to and from Washington. This habit has grown in spite of the fact that the Interstate Commerce Commission has all along insisted, and the courts of the country have repeatedly held, that the management of the railroads has not been committed by the Congress to any administrative body.

Some time ago an employee of the Interstate Commerce Commission, in a responsible position, told me that he had become, as a practical matter, traffic manager of at least three of the more important railroad systems of the country; and that the habit of many railroad officials was to come to him in person, or write him at length, with regard to substantially every tariff or transportation problem that confronted them.

It may be of interest to investigate how the habit that now controls the railroads originated. Previous to the year 1910 the Interstate Commerce Commission had very limited powers respecting the control of rate initiation by the carriers of the country. It is true that beginning July 1, 1907, the commission was given the right to employ examiners who could hear and take evidence in formal complaints, and that orders by the commission with respect to the justness and reasonableness of rates and rules were to be observed under heavy penalties. About that time complaints by shippers began to increase rapidly and the commission was continually engaged in adjusting rates and rules, and rate relationships.

It became the habit of railroad managers to advise complaining shippers that they were powerless to remedy alleged injustice because the Interstate Commerce Commission would not permit them to do so. Thus the "buck was passed" from railroad managers to the commission. When informal complaint was made to the commission, and there were untold thousands of them immediately after the passage of the amendments of 1906 to the Act, the shippers were advised,

in most instances, that the subject matter was one over which the commission had no control in the first instance. A few carriers of the country accepted the law of 1906 in its true intent and spirit, but many of them were antagonistic, and set deliberately to work to make it unpopular with shippers. They placed the blame for their own shortcomings with the Interstate Commerce Commission, and in every way possible delayed righting manifest wrong in rules, regulations, and rate adjustments.

The same attitude was assumed with respect to tariff publications. Rules issued by the commission were either misconstrued by many carriers, or their rate and tariff experts spent much time and energy in endeavors to convince the commission that rules should be modified or abrogated. It became the habit of traffic managers and rate experts of the carriers to journey to Washington to dispute a ruling or insist that a particular construction should be put upon it.

### Executives Haunt Washington

When the law of 1910 was passed, which gave the commission power to suspend a rate or schedule of rates for a maximum period to ten months the railroad managers became much concerned. The fact that they brought the law upon themselves made no difference in their consternation at its passage. The fact was that just before the Congress adjourned in the year 1910 railroad managers announced publicly that they proposed to make a general increase of freight rates throughout the country. Thereupon Congress passed the law giving the commission suspension power. When that law was passed railroad managers at once surrendered all their independence of action, and the habit of coming to Washington on every imaginable pretext that had been growing all these years became a fixed and unchanging state of mind.

"But, what else is there for us to do?" exclaimed a freight traffic manager of a western railroad when an Interstate Commerce Commissioner told him the matter he had come 2,000 miles to talk about could have been settled without any action of the commission. This commissioner replied: "I say to you that wherever your rules and regulations, or your rates, are unjust and unfair you have the undoubted right to change the same. Make the proper change and advise the commission why you did it. The commission is entitled to the presumption that it has some sense of what is right and proper."

Impetus was given to the habit of haunting Washington by railroad managers when state railroad commissions became numerous and active. It was assumed by railroad managers that the Interstate Commerce Commission was constituted as their special guardian against what they termed was unjust treatment by state commissions. The tune changed a bit but the song was the same. That is to say, the managers were in no way to blame for any situation, because they were bound, as they asserted, hand and foot by the laws of the states and the nation. They ceased to function as railroad managers. They became special pleaders before the Washington authorities. Instead of honestly making efforts to right real wrongs, or straighten out complainants who had fancied grievances, they shifted the entire burden to Washington. It presented an easy way out for them. The habit once formed has grown until it has come to govern the railroad managerial conduct. The effort has

not been to insure adequate and efficient service, but to convince some people that the Congress which passed regulatory laws was really ignorant of the true situation, and that the Interstate Commerce Commission was a parsimonious and arbitrary administrative body. One-half the time and effort spent in this mode of procedure, if expended in honest effort to conduct a good railroad, with a view to render patrons adequate and efficient service, would have brought great results. Such a thing never seems to have occurred to the railroad managers who had acquired the habit of laying all their troubles before Washington authorities.

No consistent or persistent effort seems to have been made to meet state commissions in any spirit of co-operation. Where certain railroads did not openly treat such commissions with contempt, they resorted to court proceedings before the Interstate Commerce Commission to block all orders made by them. Is it any wonder that state commissions have grown to be antagonistic in their attitude toward representations made to them by the railroads?

### Executives Have Become Expert Lobbyists

The trouble with the railroads of the country today is that the managing heads are not and have not been engaged in railroad business. They have become expert lobbyists, and put in their time seeking concessions from constituted authorities.

What is the remedy? Has the habit become so fixed that it is now impossible for our railroad managers to conduct their railroad business independently of governmental suggestion? I do not think so. Railroad managers should get back to their jobs and stay there. Continued waiting about Washington for governmental favors can lead to but one thing, and that government ownership and control. In my opinion that would end in disaster, and would be destructive of all advancement in our transportation facilities.

It rests with railroad managers whether that shall be the result of present tendencies and methods. It is true that railroad managers can not under existing law continue old methods. No sensible railroad man believes that there will ever be a return to unbridled, cut-throat competition, and midnight tariffs; and none of them desire a return to such days. The broad-minded and far-seeing managers, and there are a few of them, admit that many of the regulatory provisions of the law have resulted in good. It was only when the managers began to supinely abdicate their functions as directors of the policies of the different carrier systems that there arose a manner of doing business that has resulted in inefficiency. There must come a complete change in the state of mind of the railroad managers of this country. Their first thought should be satisfaction of patrons. As a class the shippers of the country are just and reasonable men. They know that they must depend on transportation to insure that their products shall reach markets. They stand ready to render assistance to all earnest, honest efforts of railroad managers to give them adequate facilities and service.

It is a law that pervades our entire social fabric that honest effort will be encouraged and rewarded. The man who fails in business, but who takes off his coat and goes honestly to work to retrieve his fallen fortunes will find helping hands extended to him in every direction. On the other hand, if an individual meets adversity with downcast countenance, and gives up all effort, he will be shunned by his fellows and hurried to the poorhouse.

What evidence in the past decade have our railroad managers given to the public that they were really engaged in trying in good faith to conduct efficient railroad transportation? Haunting the halls of Congress and those of the Interstate Commerce Commission is not the business of railroad managers. Many of the railroads do not reach Washington by more than a thousand miles of intervening territory. Has it ever occurred to these men that the millions of money they have spent in propaganda, and in the em-

ployment of attorneys to represent them in Washington might have been spent on the railroad systems to better advantage? As a matter of fact the energies and much of railroad money has been expended in recent years in forcing the camel's head further into the public tent. Having a taste of the food stored in the tent they divested themselves of their managerial functions, and ceased to run their railroads.

### The Alternative

The alternative is to take the public into their confidence. Convince the people of America that honest efforts are being made to serve the public and there can be no shadow of doubt of the result. The average citizen is fair-minded and just. He only needs to be shown. A fraction of the time and money that has been expended in Washington, if used to show the people the true situation, would be an effective means of changing conditions for the better. The business men, the industrial managers, the farmers, and all others who use transportation, are not railroad haters at heart. A few men prominent in political life have made considerable noise in recent years, and like the lone coyote on a hill have scared some people. They do not, and they have not represented the calm current of public opinion.

I doubt if there are many men in this country who know personally so many railroad officials, from presidents down, as I do. I count them all my friends. In saying what I have said I am only administering a jolt that I hope may help to throw railroad machinery into gear again. That it is sadly out of gear now no posted man will deny. The extent to which the loss of initiative and the failure of railroad managers to assume and perform their function is responsible for the grind in railroad machinery but the remedy is at hand. The proper spirit and the honest effort is bound to make conditions better.

I have not discussed the question whether the laws that have been passed provide too much regulation by federal power, and leave too little freedom to railroad managers. There were no need to do that. The laws are on the statute books, and must be obeyed. The only hope of their modification is in a change of public sentiment that gave them birth. Public sentiment can only be properly directed when it is apparent that our railroad managers are really at work trying in good faith to give adequate and efficient service. Neither have I mentioned the saturnalia of railroad regulation that took place during the war. It was all of it unnecessary, and much of it disastrous to the morale of railroad organization. But that state of chaos has passed into history leaving behind a long train of evil effects. Supineness on the part of those who now have our railroads in charge will not avail anything, and will inevitably lead to worse conditions to come.

Railroad managers everywhere must get back on the job. Serve the people who live along the rails the best that can be done with what facilities are at hand. Keep in close touch with the public and evince a sympathetic interest with their troubles connected with transportation. In a very short time support will come where there is now indifference or actual antagonism. Managing a railroad is a man's sized job, and it cannot be well performed in whole or in part, from Washington. Effort should be made to correct conditions at the foundation. Work from the top down is ineffective, and the results disappointing. Railroad managers everywhere will find enough to do if they will stick to the job of managing. Washington affairs can well be left for the adjustment that is bound to come from an enlightened public conscience.

Attend to the railroads as managers thereof should and treat the patrons as fellowmen of a common country should be treated, and for well directed, earnest effort the railroads are bound to experience an indulgent public sentiment which in due course will serve to secure to them as they deserve every return which they can rightfully demand.

# General News Department

The Senate on October 27 adopted an amendment to the tax bill providing for a flat 15 per cent tax on the net income of corporations as a substitute for the excess profits tax on net incomes above 8 per cent on their capital.

A bill to require 12 months' notice before a line of railroad can be abandoned has been introduced in the Senate by Senator Harris of Georgia, who said that several hundred miles of short lines in his state were being abandoned or were in danger of being junked.

The directors of the National Railway Appliances Association will meet in the office of the secretary, C. W. Kelly, Peoples' Gas building, Chicago, on Tuesday next, November 8, to assign exhibit space for the eleventh annual exhibit, which will be held in the Coliseum, Chicago, on March 13-16, 1922, at the time of the convention of the American Railway Engineering Association.

The Chicago, Rock Island & Pacific has started preparations for the celebration of its seventieth anniversary which occurs on October 10, 1922. Inquiries have recently been sent to the various employees associations and officers of the company asking that suggestions and plans be submitted for a fitting commemoration of the occasion. It has already been suggested that the first Rock Island train, which made its initial run between Chicago and Joliet, Ill., in 1852, be re-constructed.

J. E. Fairbanks, general secretary, has sent out a blank for the letter ballot under which members of the American Railway Association are to vote for members of the board of directors; and in connection therewith, by circular No. 2200, the directors recommend, for the better geographical representation of members on the board, that the number of directors be increased from 18 to 21. This involves changes in article 7 of the constitution and sections 3, 5 and 19 of the by-laws.

The Elmira Division of the Pennsylvania Railroad reports that for a period of 56 days, August 13 to October 7, there was not a single minute's detention to a passenger train on the division due to engine failures. For a period of 39 days, August 28 to October 6 inclusive, there were no delays from car failures. In making this record 752 trains were operated a total distance of 69,154 miles. Ninety-seven per cent of the trains maintained schedule time. This division is 143½ miles long, and contains many sharp curves. There are two long and steep grades of two per cent each, in both directions.

An attempt to wreck passenger train No. 5 on the Grand Trunk on October 29 near Lapeer, Mich., nearly succeeded when a section of rail was removed and but for the alertness of the engineer in slowing down a serious wreck would have occurred. All cars except the Pullmans were thrown from the track and one man was seriously injured. A car at the head of the train containing horses went over the embankment, as did two baggage cars following, the first day coach stopping on the edge of the embankment. It is believed the track was torn up shortly before the train arrived and a crazed individual taken in custody near the wreck admits attempting to ditch the train.

Samuel M. Felton, president of the Chicago Great Western, on November 1, issued a signed bulletin to farmers in the district served by the Great Western, stating that the farmers have a real grievance under present conditions of railroad transportation and at the same time are placed in a position much the same as that of the railroads. In the bulletin Mr. Felton said: "The farmer has a real grievance because the prices he receives for his products have declined more than have the prices he must pay for almost everything he buys. Some blame their troubles largely on the railroads. Freight rates, they say, are the cause of low prices for grain and live stock. The real cause lies much

deeper. The decline in the prices of farm products began before freight rates were advanced and would have occurred if rates never had been advanced. It is due to world-wide changes resulting from the transition from war to peace." Continuing, he says: "The railroads have the same grievance as the farmers. The rates the railways are getting, although they have been advanced, are much lower in proportion than the cost of almost everything the railways must buy." In closing Mr. Felton said: "The managements of the railroads are making every effort to reduce expenses so that rates can be reduced later. Some reductions of rates already are being made. There is no other way than by reductions in expenses to secure general reductions in rates that will not be ruinous to the railways and make them unable to render to the farmers the transportation service they need. Those who obstruct reduction of expenses not only hurt the railroads but the farmers as well."

## Central Railway Club's Annual Dinner

The Central Railway Club will hold its thirty-first annual dinner at 7 o'clock Thursday evening, November 10, at the Hotel Troquois, Buffalo, N. Y.

## Atlantic City for 1922 A. S. T. M. Meeting

A questionnaire recently sent out by the executive committee of the American Society for Testing Materials to ascertain the wishes of the members regarding the 1922 meeting, resulted in the selection of Atlantic City, N. J., for the place of the annual meeting, to be held sometime in the latter part of June provided suitable arrangements could be made for that time.

## September Earnings

The net railway operating income of the Class I roads for September apparently will be less than that for August, when the roads earned \$90,000,000. Returns thus far available for 183 roads show a net of \$79,484,869, an increase as compared with September, 1920, of 13.5 per cent. The total operating revenues were \$462,213,000, a decrease of 19.5 per cent, and the operating expenses were \$351,977,000, a decrease of 26.2 per cent.

## American Society of Civil Engineers' Nominees

The nominating committee of the American Society of Civil Engineers has presented the following nominations for officers to be elected at the annual meeting: President, J. R. Freeman, Providence, R. I.; vice-presidents, C. E. Grunsky, San Francisco, Cal., and Robert Ridgway, New York City; treasurer, O. E. Hovey, New York City; and directors, C. M. Holland, New York City; J. J. Yates, bridge engineer, Central of New Jersey, Jersey City, N. J.; F. E. Winsor, Providence; J. N. Chester, Pittsburgh, Pa.; A. J. Dyer, Nashville, Tenn., and W. L. Huber, San Francisco.

## Kansas City Southern Holds

### Freight Claim Prevention Conference

Approximately 125 officers and employees of the Kansas City Southern attended the fifth annual freight claim prevention conference at Sulphur Springs, Ark., on October 15, every department of the railroad being represented. Papers were presented on a wide variety of topics having to do with the reduction of claims, these papers being discussed at length. Among the topics considered were: The operation of warehouses and the proper storing of freight in cars; the detection and prevention of robberies; the co-ordination of activities of connecting line roads; defective equipment; elimination of rough handling and dealing with the public.

### Reclamation Savings on the Rock Island

The Chicago, Rock Island & Pacific has effected a saving of \$1,301,970 through its general reclamation plant at Silvis, Ill., during the three years ending with 1920. From each ton of scrap the Company was able in 1918 to reclaim \$6.75 worth of useful material, the entire saving for that year amounting to \$467,947; in 1919, \$8.10 in value was reclaimed from each ton of scrap, and the year's saving was \$473,623; in 1920, \$6.07 represented the value gained from each ton and \$360,398, the total amount saved during that year. The amount and value of the material reclaimed at the general reclamation plant is steadily decreasing, according to C. I. Lost, general storekeeper, because of the work of committees on each division; a large amount of the reclamation work is now done locally. While the savings have thus been increased, no definite figures have been compiled to show the total secured in this manner.

### A. S. M. E. to Publish Life of George Westinghouse

The American Society of Mechanical Engineers has announced that the biography of George Westinghouse, published under the auspices of the society, will be completed before the end of the year. The story of Mr. Westinghouse's rise from a modest early environment to the leadership of many great industrial enterprises and the position of acknowledged pre-eminence among American engineers is told by Colonel Henry G. Prout, a former business associate who was well acquainted with him for nearly 30 years and was an intimate friend during the last 12 years of his life. A limited number of copies of the special subscription edition will be issued early in December. Following it, the publishers will issue a popular edition that will be out about February, 1922.

### Operating Statistics for August

The Interstate Commerce Commission's monthly bulletin of operating statistics for 165 Class 1 roads for the month of August shows a total of 30,387,000,000 net ton miles of freight handled, as compared with 42,734,000,000 in August, 1920. The average miles per car per day was 22.7 as compared with 27.5, the net tons per loaded car averaged 27.4 as compared with 29.8 and the net ton miles per car day 400 as compared with 558. The net tons per train averaged 670 as compared with 762. The train speed was 11.6 miles per car as compared with 10.3. The traffic density was 4,200 net ton miles per mile of road per day as compared with 5,917 in August, 1920. For the eight months ended with August the traffic density was 3,922 as compared with 5,179.

### Gompers Criticizes Strike Settlement

Samuel Gompers, president of the American Federation of Labor, attacked bitterly the settlement of the railroad strike, declaring that "the cards had been stacked against the workers." He especially attacked Attorney General Daugherty for statements indicating that recourse would be taken to the courts if the strike order became effective. Mr. Gompers said "the strike will not take place—now." Mr. Gompers declared that the statement of the Labor Board that there are 1,300 cases still pending before it is one of the worst indictments that could be brought against the Esch-Cummins law and he contended that there should be a revival of the old system where employer and employee got together to adjust grievances without interference by a government tribunal. "Introduction of government machinery," he said, "means introduction of the element of force and compulsion, which is half the difficulty at present."

### Railroads Protest Increased Tax Rate

Seven of the nine railroad companies protesting against increased tax assessments in the state of Iowa, as noted in the *Railway Age* of September 24 (page 589), were upheld in every contention made before the Federal Court, at Des Moines, on October 28. Adjustment injunctions were denied in two cases, those of the Wabash and the Atchafalaya, Topeka & Santa Fe. The court in the seven successful complaints ruled out the entire increases in taxes ordered by the state executive council in 1921, and ordered a further reduction

of 10 per cent in the assessed valuation in force during the previous year. The reduction in the assessed valuation ordered by the court totals in excess of \$14,000,000 or equivalent to more than \$55,000,000 on the actual valuation as fixed by the executive council. The court ruled that "intentional, deliberate assessment of different classes of property at different percentages of actual valuation results in inequality of treatment." The roads' contention that land assessments, as compared with railroad assessments, are too low, was upheld. The roads which won their contentions and the maximum amounts per mile which can be assessed, are: the Chicago & North Western, \$8,730; the Chicago, Burlington & Quincy, \$7,650; the Chicago, Milwaukee & St. Paul, \$7,335; the Chicago, Rock Island & Pacific, \$6,975; the Minneapolis & St. Louis, \$4,140; and the Ft. Dodge, Des Moines & Southern, \$3,330.

### Norfolk & Western Safety Record

The Norfolk & Western reports the total number of persons killed on that road in 1920 as 84; a figure which marks a remarkable decrease from 192, when the total was 229; while at the same time there has been a steady increase in the volume of freight traffic. These data are shown in the figures below, taken from a graphic diagram issued by the Safety Commission of the road:

Year	Millions of ton miles	Persons killed
1912	9,021	229
1913	9,883	193
1914	9,508	160
1915	11,022	177
1916	12,829	152
1917	13,195	111
1918	12,889	144
1919	10,592	99
1920	11,660	84

C. H. Blakemore, chairman of the Safety Commission, in addressing this circular to employees, says: "Had the number of persons killed increased in exact proportion to the increase in the volume of business, the year 1920 alone would have seen 296 persons killed—instead of 84. Does the safety movement deserve your personal support?"

C. H. Blakemore, chairman of the Safety Commission, in addressing this circular to employees, says: "Had the number of persons killed increased in exact proportion to the increase in the volume of business, the year 1920 alone would have seen 296 persons killed instead of 84. Does the safety movement deserve your personal support?"

### Railway Development Association

#### Semi-Annual Meeting

J. F. Jackson, Savannah, Ga., secretary of the American Railway Development Association, announces the semi-annual meeting of the association, which is to be held at Hotel Sherman, Chicago, on Thursday and Friday, November 10 and 11. As in the case of former meetings, the industrial section and the agricultural section will meet separately for some of the sessions; and roundtable discussions will fill up a large part of the program. The principal speakers on Thursday morning are S. R. Guard, J. F. Jarrell and J. D. McCartney. On Thursday afternoon the industrial section will have roundtable discussions on shippers' guides; how should they be made and what is their value; and on industrial surveys, what they ought to include and whether the information should be published. The immigration and colonization specialists will listen to the "Wisconsin plan" of colonization, described by B. G. Packer, and to other papers on immigration and land settlement.

On Friday morning, Hon. C. S. Ucker will speak on government land reclamation, and the industrial section will discuss community development, with special reference to the Newsho plan, and the Hub Club plan.

The agricultural roundtable on Friday morning will be presided over by J. M. Jones. On Friday afternoon the industrial roundtable will listen to a report on conferences with the American Railway Engineering Association as to sidetrack leases, etc.; and there will be a marketing roundtable presided over by L. D. Fuller. H. B. Rogers will describe the produce market of New York City, with illustrations by motion pictures.

## Floods Damage Canadian Roads

Canadian railroads in the vicinity of Vancouver, B. C., following heavy rains during the week of October 23 in the Cascade Mountains, have suffered heavy flood damages. The most serious damage to the Canadian Pacific was at Coquitlan, B. C., 17 miles east of Vancouver, where two 80-ft. spans across the Coquitlan river were carried out. The Coquitlan terminal, which is the freight terminal for Vancouver, was entirely under water, making it impossible to use yard or engine house facilities, while slides and washouts in the Fraser river canyon held up transportation through the canyon. Other damage occurred at Yale creek, where one pier of a bridge crossing that stream was carried out, while 17 miles east of North Bend a small lake in the mountain overflowed and sent a stream down across the tracks, carrying out the fill for a distance of 200 ft. to a maximum depth of 110 ft. It was necessary to detour traffic over the Great Northern, to Huntington, B. C. With the exception of the crossing of the Coquitlan river the line should be in operation by November 2. On the Kettle Valley line washouts and slides in Coquihalla Pass held up transportation from October 28 until the night of November 2. Slides and washouts in the Fraser Valley held up operation on the Canadian National on October 29, the most serious damage being done at Lytton, B. C. Operation on this road is expected to be resumed by November 3. It is reported that serious damage to the Pacific Great Eastern between Clinton, B. C., and Squamish, will make that line impassable for from one to two weeks.

## Walker D. Hines Returns From Europe

Walker D. Hines, formerly director general of railroads, recently returned to this country after having spent over 16 months in Europe as the arbitrator to decide upon the distribution, ownership and valuation of shipping on the principal rivers which were covered by provisions of the peace treaty. Mr. Hines has rendered decisions on the shipping on the Danube, Rhine and Elbe rivers and they have been received with satisfaction by the different countries and interests involved. Most of the work has now been completed, except for some final details, and excepting the questions relative to the Oder river, on which a decision is delayed because of questions involved in the Upper Silesian controversy. Mr. Hines has opened an office in New York for the general practice of law and has left his executive assistant, Brice Claggett, in charge of the remaining work abroad, but he retains his position as arbitrator and expects to return to Europe to make the final decisions. Mr. Hines has been in Washington this week and has been familiarizing himself with the railroad situation as it has developed in his absence; but he declined to discuss the subject for publication at this time. He went to Washington to represent the Western Union Telegraph Company in the valuation case of the Kansas City Southern, but the case was postponed.

Mr. Hines said that railroad transportation conditions had been improved much more in France than in eastern Europe, where there has been much confusion resulting from the delays in allocating the rolling stock that was seized and otherwise scattered during the war. This has led to much trans-shipment at the frontiers and has resulted in stimulating the river traffic.

## Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Portius, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago.
- AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 333 So. Michigan Ave., Chicago. Next meeting, November 16-18, San Antonio, Tex.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Ilope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting,

November 14 and 15, French Lick Springs Hotel, French Lick Springs, Indiana.

- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rohlschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 23-25, 1922, Kansas City, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York.
- AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Avenue, Chicago, Ill.
- AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, Waldorf-Astoria, New York.
- Division I—Operating.
- Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.
- Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.
- Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.
- Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Next meeting, March 21-23, Richmond, Va. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.
- Safety Section. J. C. Caviston, 75 Church St., New York.
- Division II—Transportation (including former activities of the Association of C. Transportation and Car Accounting Officers). G. W. Coveri, 431 South Dearborn St., Chicago, Ill.
- Division III—Traffic. J. Gottschalk, 143 Liberty St., New York.
- Division IV—Engineering. E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next convention, March 14-16, Chicago. Exhibit of National Railway Appliances Association, March 13-16.
- Construction and Maintenance Section. E. H. Fritch.
- Electrical Section. E. H. Fritch.
- Signal Section (including former activities of the Railway Signal Association). H. S. Ballett, 75 Church St., New York, N. Y.
- Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 14-21, 1922, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.
- Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
- Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. J. Murphy, General Storekeeper, New York Central, Collinwood, Ohio.
- Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichtig, C. & N. W. Ry., 319 Waller Ave., Austin Station, Chicago. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November 10 and 11, 1921. Hotel Sherman, Chicago. Annual meeting, May 10-12, 1921, Denver, Colo.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.
- AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 4600 Prospect Ave., Cleveland, Ohio.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- Railroad Division, James Partington, American Locomotive Co., 30 Church St., New York. Next meeting, December 9, 1921, 29 W. 39th St., New York.
- AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis. Next meeting, January 24-26, Hotel Sherman, Chicago.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next meeting, May 17-19, 1922, Montreal.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreacchi, C. & N. W. Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.
- ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, 3346 S. Atlantic Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrooke St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Arion Kling, 636 North Pine Ave., Chicago. Regular meetings 2d Mondays in month, except June, July and August, New Morrison Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koenke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

**CENTRAL RAILWAY CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September. Hotel Statler, Buffalo, N. Y. Annual dinner, Thursday evening, November 10, at 7:30 p. m.

**CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.**—W. P. Elliott, Terminal Railway Association of St. Louis, East St. Louis, Ill.

**CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.**—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

**CINCINNATI RAILWAY CLUB.**—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Next meeting, November 8, Hotel Sinton, Cincinnati, Ohio.

**EASTERN RAILROAD ASSOCIATION.**—E. N. Bessling, 614 F St., N.W., Washington, D. C. Annual meeting May 11, 1922, New York Railroad Club.

**FREIGHT CLAIM ASSOCIATION.**—(See American Railway Association, Division VII.)

**GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter 321 Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

**INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

**INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.**—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

**INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1922, Chicago. Exhibit by International Railway Supply Men's Association.

**INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Win. Hall, 1061 W. Wabasha Ave., Winona, Minn.

**INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.**—C. W. Sullivan, Garlock Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

**MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.**—E. E. Martin, Union Pacific R. R. Room No. 19, Union Pacific Bldg., Kansas City, Mo. Annual convention, 1922, Buffalo, N. Y.

**MASTER BOLTER MAKERS' ASSOCIATION.**—Harry D. Vought, 26 Cortlandt St., New York, N. Y. Next convention, May 23-26, 1922, Hotel Sherman, Chicago.

**MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.**—(See A. R. A., Division V.)

**MASTER CAR BUILDERS' ASSOCIATION.**—(See A. R. A., Division V.)

**NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.**—Warren C. Nixon, Western Tie & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo. Annual meeting, January 26 and 27, Hotel Sherman, Chicago.

**NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.**—James B. Walker, 49 Lafayette St., New York.

**NATIONAL FOREIGN TRADE COUNCIL.**—O. K. Davis, 1 Hanover Square, New York.

**NATIONAL RAILWAY APPLIANCE ASSOCIATION.**—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.

**NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

**NEW YORK RAILROAD CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 20 W. 39th St., New York.

**PACIFIC RAILWAY CLUB.**—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

**RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.**—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

**RAILWAY BUSINESS ASSOCIATION.**—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

**RAILWAY CLUB OF PITTSBURGH.**—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, American Club House, Pittsburgh, Pa.

**RAILWAY DEVELOPMENT ASSOCIATION.**—(See Am. Ry. Development Assn.)

**RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

**RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.**—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

**RAILWAY FIRE PROTECTION ASSOCIATION.**—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

**RAILWAY REAL ESTATE ASSOCIATION.**—R. H. Morrison, C. & O. Ry., Richmond, Va.

**RAILWAY SIGNAL ASSOCIATION.**—(See A. R. A., Division IV, Signal Section.)

**RAILWAY STOREKEEPERS' ASSOCIATION.**—(See A. R. A., Division VI.)

**RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.**—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

**RAILWAY TELEPHONE AND TELEGRAPH APPLIANCE ASSOCIATION.**—G. A. Nelson, 30 Church St., New York.

**ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.**—P. L. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention, September, 1922, Cleveland, Ohio. Exhibit by Traveling Engineers' Association.

**ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

**SIGNAL APPLIANCE ASSOCIATION.**—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

**SOCIETY OF RAILWAY FINANCIAL OFFICERS.**—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

**SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

**SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

**SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—J. S. White, J. N. Jefferson St., Chicago.

**TRACK SUPPLY ASSOCIATION.**—W. C. Kidd, Bridgeport Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

**TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.

**WESTERN RAILWAY CLUB.**—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Regular meetings, 3d Monday each month except June, July and August.

## Traffic News

### Coal Production

Apprehension of consumers over the effects of a possible railroad strike is named by the Geological Survey in its weekly bulletin as no doubt the chief cause of sharp increase in coal production in the week ended October 22. The total output of bituminous is estimated at 10,993,000 net tons, an increase of 1,302,000 tons in a single week. A further sharp increase was indicated by telegraphic reports of loadings on October 24 and 25.

### National Industrial Traffic League's Annual Meeting

The program has now been completed for the annual meeting of the National Industrial Traffic League which will be held at the Hotel Sherman, Chicago, on November 9 and 10. Among the reports to be presented will be those by (1) the Executive Committee, on the proposed consolidation of the carriers; the railroad funding bill; the liability clause in railroad leases and sidetrack agreements and the policy of the United States Railroad Administration respecting payment of reparation awards; (2) the Car Demurrage and Storage Committee, on proposed changes in demurrage rules and uniform storage rules; (3) the Classification Committee; (4) the Bill of Lading Committee, covering changes in the proposed uniform bill of lading and the proposed through export bill of lading; (5) the Express Committee, discussing the showing of the valuation on packages, receipts for charges collected from consignees, perfect package month and the period for filing claims for loss and damage; (6) the Rate Construction and Tariffs Committee, on the simplification of tariffs, delay in receiving tariffs from the carriers and the publication of rates on net ton vs. gross ton basis; (7) the Inland Water Ways Committee; (8) the Freight Claim Committee, on the six months' provision in the bill of lading for filing loss and damage claims, uniformity in handling concealed loss and damage claims, perfect package month and (9) the Legislative Committee.

A number of regular and special committees will also present reports, in addition to which F. E. Winburn, special representative, Bureau of Claims Prevention, American Railway Association, will discuss claims prevention.

### New England Roads Request

#### Re-Argument of Division Case

Counsel for the New England roads have filed a petition with the Interstate Commerce Commission requesting an opportunity to reargue before the commission the case involving their application for an order requiring the roads west of New England to increase the divisions of through rates accruing to the New England lines. The petition says that it was never anticipated that the commission would deny the relief asked on such an interpretation of the transportation act, because it runs contrary to the broader view which the commission has always taken when similar questions have arisen in general rate advance cases. If the commission has the power to make general rate advances, although some of the individual rates may thus be made unreasonable, it is contended that the commission has the power to require a general readjustment of divisions. It is also declared that Congress has provided no method of helping weak roads to earn a living rate except by readjusting their divisions.

"The commission, through the increase of rates in the eastern rate group," the petition declares, "has taxed the public for the support of an efficient transportation system, and the public is paying the tax; but the majority of the commission finds itself helpless to make the second part of the act work; and while it has raised the necessary fund to maintain an efficient transportation system in the eastern rate group, it declares it is unable to so apply this fund as to accomplish the only result which it is raising it."

The petition says that the trunk lines will not voluntarily give up anything, and if divisions can be readjusted only one by one, then the act is unworkable; and the New England roads have failed to find the relief that Congress intended for them.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until March 1, the operation of a supplement to a New York, New Haven & Hartford tariff, which provides for the cancellation of joint through class rates between points in Connecticut, Massachusetts, New York, and Rhode Island, and points on the Long Island Railroad, within the borough of Brooklyn, N. Y., leaving combination rates applicable instead, and resulting in increasing certain rates.

The commission has further suspended until December 19, the operation of certain schedules which propose to eliminate the application of the present rates on coal from Western Maryland mines to points on the Baltimore & Ohio and its connections over the route through Cherry Run, W. Va., and Westport, Md., making applicable instead combination of locals via these routes, and establish instead, in connection with the present through rates, specific routing via Cumberland and Bellington, W. Va.

The Interstate Commerce Commission has issued a decision approving a revision of class and commodity rates in the territory west of the Cascade mountains, extending from Portland, Ore., on the south to Vancouver, B. C., on the north, except as to the proposed cancellation of carload commodity rates and certain relationships previously approved by the commission as to classes c, d, and e. The proposed rates were filed by the railroads to become effective May 27 and were suspended. Of the 7,152 class rates named in the schedules, 50.1 per cent represented increases, 34.3 per cent remained unchanged and 15.6 per cent represented reductions. Most of the class rates are for intrastate application between points in Washington. An order will be entered requiring the cancellation of the suspended schedules and discontinuing the proceeding without prejudice to the establishment on five days' notice of rates in conformity with the findings of the commission.

### Missouri Rates Increased

The Interstate Commerce Commission has issued its decision in the Missouri intrastate rate case, in which the Missouri commission, while authorizing increases in the state rates to correspond to the general advance made by the Interstate Commerce Commission last August, excepted the rates on coal, coke, brick and articles basing thereon, sand, gravel, stone, crushed rock, cherts, cluders, lime, cement plater and articles basing thereon, and petroleum oil and its products. The Missouri commission limited the increases to 70 per cent over the rates in effect on June 24, 1918. The federal commission finds this a discrimination against interstate commerce and orders the railroads to make increases to correspond with the increases in interstate rates.

### Personnel of Commissions

Theodore F. Laist, architect in the Bureau of Valuation, Central District, Interstate Commerce Commission, has resigned, and has taken a position as Chicago representative of the National Lumber Manufacturers' Association, No. 111 West Monroe street, Chicago.

A. C. Hasbrouck, head of the division of accounts and statistics of the New York State Public Service Commission, at Albany, for many years, has resigned, to take a position with H. C. Hopson, accountant, 61 Broadway, New York City. Mr. Hasbrouck has been on important committees of the National Association of Railway and Utilities Commissioners, and was chairman of the committee which prepared the uniform system of accounts for electrical and gas companies last year.

## Foreign Railway News

### Increase in Value of Exports of Electric Locomotives

During the first nine months of 1920, electric locomotives valued at \$844,130 were exported from this country, according to Commerce Reports. In 1921 for the same period the value of electric locomotives exported was \$1,506,877.

### Batignolles Tunnel at Paris to Go

The Batignolles tunnel in Paris, which is the approach to St. Lazare station, will be opened into a deep cut which will necessitate the building of walls over 50 ft. in height and ranging from 10 ft. to 14 ft. in thickness, according to *The Engineer* (London).

### Australian Railway Officers in America

Alfred D. J. Forster, assistant chief mechanical engineer of the New South Wales Government Railways, and William H. Armstrong, assistant to the locomotive superintendent of the same line, are in this country for the purpose, it is said, of arranging for the purchase of American railway supplies.

### German Rolling Stock Allocated to Danzig Territory

The following German rolling stock has recently been definitely allocated to the Danzig territory by the Interallied Commission sitting in Berlin, according to a report from Consul William Dawson: locomotives, 116; passenger cars, 172; baggage cars, 35; freight cars, 1,950; and electric locomotives, 2.

### England's Minister of Transport to Resign

LONDON.

Sir Eric Geddes, Minister of Transport of Great Britain, resigned from his position on October 15. Sir Eric is still to work as chairman of the committee charged to reduce government expenditure in all departments, which task is a heavy one under present conditions.

### A Correction

In the *Railway Age* of October 18 (page 694) some statistics of railway mileage in Spain were given, as appearing in Commerce Reports. These figures were in error, according to A. G. Goldsmith, chief of the Western European Division of the Bureau of Foreign and Domestic Commerce. The mileage, according to Mr. Goldsmith's corrected figures are:

Five ft. 6 in. gage, single track.....	6,773 miles
double track.....	243 miles
Meter (39.37 in.) gage, single track.....	2,119 miles
double track.....	16 miles

### Jamaica Railway Extension Offers Opportunity

#### For Sales of American Supplies

The government of Jamaica has, according to the American consul at Kingston, authorized the government railway to extend its line a distance of nine miles from Chapelton, exclusive of sidings. The director of the railway, it is said, will be glad to receive bids from American concerns for construction materials. Some materials needed include a steam shovel, shovels, picks, track jacks and various track tools. The Jamaica Government Railway is, it is pointed out, a standard gage line built by an American firm and much of the equipment is of American manufacture. The consul urges that a representative of any American concern interested in the contract be sent to Jamaica, as the island is relatively close to the United States. Further information can be secured by addressing Major Lewis Thomas, Director of the Jamaica Government Railway, Kingston, Jamaica.

## Equipment and Supplies

### Freight Cars

THE ILLINOIS CENTRAL is inquiring for 2,000 composite gondola cars.

THE PAULISTA RAILWAY (Brazil) is inquiring for 180 underframes for freight cars of 30 metric ton capacity and 1.60 meter gage.

THE PENNSYLVANIA TANK LINE, Sharon, Pa., has ordered 200 tank cars of 10,000 gal. capacity from the Pennsylvania Tank Car Company.

THE DENVER & RIO GRANDE, reported in the *Railway Age* of September 17 as inquiring for 1,000 70-ton gondola cars, has ordered 700 of these cars, with an option of 300 additional, from the Pressed Steel Car Company.

THE CHICAGO, MILWAUKEE & ST. PAUL, reported in the *Railway Age* of October 8, as inquiring for 2,500 gondola cars of 50-ton capacity, has ordered 1,000 of these cars from the Bettendorf Company and 1,500 from the Haskell & Barker Car Company.

THE SIAMESE STATE RAILWAYS will receive bids until 2 p. m., January 16, 1922, at the city of Bangkok, Siam, for 20 flat cars of 28 metric tons capacity. Bids are also wanted until 2 p. m., February 1, 1922, for 500 pairs of wheels and axles. Specifications and drawings may be obtained from C. P. Sandberg, 143 Liberty street, New York.

### Passenger Cars

THE NEW YORK CENTRAL is asking for prices on the repair of 100 passenger cars.

THE NEW YORK, ONTARIO & WESTERN is inquiring for from 20 to 25 steel passenger coaches, 3 baggage cars and 3 combination baggage and mail cars.

### Iron and Steel

THE SOUTHERN PACIFIC has ordered 44,600 tons of open hearth rails from the Tennessee Coal, Iron & Railroad Company, most of which is to be 90-lb. rail.

### Machinery and Tools

THE NILES-BEMENT-POND COMPANY, New York, has received an order for machine shop tools to cost about \$70,000, from the Central Railway of Brazil.

### Miscellaneous

THE NEW YORK, NEW HAVEN & HARTFORD is having 15 Mountain type and 15 Santa Fe type locomotives equipped with closed type feed water heaters made by the Superheater Company, New York.

THE JAMAICA GOVERNMENT RAILWAYS will shortly require a steam shovel of 1 or 1½ yd. capacity; shovels; picks; track jacks; rail tongs and other track tools and construction materials for a line extension involving an expenditure of some \$688,000. For further details see item under Foreign Railway News on another page of this issue.

THE EMPRESS OF JAPAN, one of the Canadian Pacific steamers, last week began her 155th voyage across the Pacific. She has covered 2,500,000 miles in the Canadian Pacific Service, equal to nearly one hundred times around the earth. This does not include her four years' war service.

## Railway Construction

AMERICAN RAILWAY EXPRESS.—This company will construct an addition to its stable at Tulsa, Okla., and remodel its present structure, at an estimated cost of \$16,000.

ATCHISON, TOPEKA & SANTA FE.—This company will accept bids until November 13, for the construction of an addition to its Alvarado Hotel at Albuquerque, N. M., to cost about \$300,000.

BOSTON & MAINE.—This company has awarded a contract to the Ogle Construction Company, Chicago, for coal handling machinery to be used in connection with a coaling station which will soon be erected at Concord, N. H., by company forces.

GALVESTON, HARRISBURG & SAN ANTONIO.—This company contemplates the enlargement of its shops at El Paso, Texas, in connection with the installation of new equipment in these shops.

GREAT NORTHERN.—This company has been petitioned by the Greater Rosebud Association, representing four counties in Southern South Dakota, known as the Rosebud Area, to extend its line from Huron, S. D., about 150 miles in a southwesterly direction, across the Missouri river, into this area.

ILLINOIS CENTRAL.—This company has applied to the city council of West Frankfort, Ill., for permission to construct a freight depot and remodel its present passenger station at that city. This work is estimated to cost about \$60,000.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to H. D. McCoy, Cleburne, Tex., for the re-construction of its freight station at Oklahoma City, Okla., which was recently destroyed by fire.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to T. L. Johnson, Sedalia, Mo., for the reconstruction of its reclamation plant at Parson, Kan., which was destroyed by fire on September 17, at an estimated loss of \$85,000.

NACOGDOCHES & SOUTHEASTERN.—This company contemplates extending its line 28 miles southwest from Nacogdoches, Texas, to a junction with the Atchison, Topeka & Santa Fe.

NEW YORK, NEW HAVEN & HARTFORD.—This company has contracted with the American Creosoting Company, New York, for the treatment of its cross-ties and other timber. The plant will be provided by the latter company adjacent to the Cedar Hill terminal of the New Haven at New Haven, Conn., and will have a capacity of about 1,500,000 ties a year.

PENNSYLVANIA.—The Eastern Coal Dock Company, Cleveland, Ohio, is building a coal thawing plant for this company at South Amboy, N. J.

PORTLAND, ASTORIA & PACIFIC.—This company, a subsidiary of the Oregon-American Lumber Company, Portland, Ore., control of which has been acquired recently by the Central Coal & Coke Company, Kansas City, Mo., is constructing, through its parent company, a railroad line 32½ miles long, extending from Wilkesboro, Ore., into a large timber tract owned by the above company. Work is expected to be completed early next year. It is estimated that the entire cost, including equipment, will be approximately \$2,000,000. The Portland, Astoria & Pacific is a corporation organized under the laws of Delaware, with a capital of \$2,500,000.

SOUTHERN PACIFIC OF MEXICO.—This company contemplates the extension of its line from Tepic, Cal., to Guadalajara, Mex., a distance of about 100 miles. This extension will afford a connection with the National Railways of Mexico.

ST. LOUIS-SAN FRANCISCO.—This company which was noted in the *Railway Age* of October 1 (page 646), as receiving bids for the construction of a one-story machine shop, 103 ft by 40 ft, at St. Louis, Mo., has awarded a contract for this structure to the Globe Construction Company, St. Louis, Mo.

TEXAS & PACIFIC.—This company, in conjunction with the Missouri Pacific and the Kansas City Southern, has prepared tentative plans for a union station at Texarkana, Ark.

## Supply Trade News

**R. A. Ogle**, president of the Ogle Construction Company, Chicago, died on November 2, at his home in Chicago from the effects of an operation.

**Ben L. Whitney**, formerly with the Byers Co., has opened an office at 528 Detroit Savings Bank building, Detroit, Mich., and will represent the **Orten & Steimbrenner Company** in that territory.

**Walter C. Carroll**, assistant general sales manager of the American Sheet & Tin Plate Company at Pittsburgh, Pa., has been appointed vice-president of the Inland Steel Company, Chicago, effective November 10.

**C. H. Hobbs** has been appointed assistant general manager of sales of the Detroit Seamless Steel Tube Company of Detroit, Michigan. Mr. Hobbs was in the service of the Lackawanna Steel Company for over 14 years and for the last five years was district representative in charge of its Detroit office.

**Morris B. Brewster** has formed a corporation under the name of **Morris B. Brewster, Inc.**, with headquarters at 332 South Michigan boulevard, Chicago, to handle metallic packing, mechanical devices, such as Edson diaphragm pumps and similar articles. Associated with Mr. Brewster in the new company are **W. B. Leach**, **J. G. Platt** and **F. M. Weymouth**, of Boston.

The **Bucyrus Company**, South Milwaukee, Wis., announces the removal of its New York City office to suite 728, 30 Church street, with **E. G. Lewis** in charge as eastern sales manager, effective December 1. **M. J. Woodhull** has been appointed Central sales manager to succeed Mr. Lewis in charge of the Chicago office, 622 McCormick building, and **E. R. Weber** has been appointed northern sales manager, at Minneapolis, 1224 McKnight building, to succeed **J. N. Gawthrop**, who will become associated with Mr. Lewis in New York.

**F. L. Kellogg**, manager of the New York branch at 25 West Forty-third street, New York City, of the **Electric Storage Battery Co.**, Philadelphia, Pa., has been appointed district manager of the North Atlantic district, with headquarters at 25 West Forty-third street, New York. **F. F. Sampson**, manager of the Exide depots and garages, succeeds Mr. Kellogg as manager of the New York branch, with **D. P. Orcutt** as assistant manager. The entire sales organization in New York City was recently consolidated and Mr. Sampson was appointed manager and Mr. Orcutt assistant manager.

## Obituary

**James B. Rider**, vice-president and general manager of the Pressed Steel Car Company, died on November 3, at Pittsburgh, Pa., after an illness of four months.

**Charles A. Lindstrom**, assistant to the president of the Pressed Steel Car Company, died at his home in Pittsburgh, Pa., on September 2. Mr. Lindstrom was born in Sweden where he received his technical and engineering education. He came to this country in 1876, and shortly thereafter entered the employ of the Pennsylvania as draftsman and subsequently became chief draftsman. About 1900 he left Altoona to go to the Chicago & Alton as mechanical engineer. In May, 1902, he was appointed chief engineer of the Pressed Steel Car Company, and in May, 1913, was made assistant to the president of that company, which position he held at the time of his death. Mr. Lindstrom served in 1917, as a member of the sub-committee on Military Equipment Standard of the Special Commission on National Defense of the American Railway Association.

## Railway Financial News

**CENTRAL OF NEW JERSEY.**—*Extends Time for Bids on L. & W. B. Coal Stock.*—The directors have extended until November 15 the time within which bids will be received for the purchase of the road's holdings of \$8,849,000 Lehigh & Wilkes-Barre Coal Company stock. The following statement was given out after the meeting of the directors on Wednesday:

The time within which proposals for the Central Railroad Company of New Jersey holdings in the stock of the Lehigh & Wilkes-Barre Coal Company will be received and considered was by action of the board of directors of the Central Railroad of New Jersey, extended to November 15, 1921, and in order that all proposals may be on a comparable basis and clearly within the provisions of the court decree, the committee, comprised of Messrs. Stotesbury, Willard and de Forest, have given notice that the proposals must be upon the basis of not less than 20 per cent payment in cash, the remainder in cash payable (in whole or in instalments) within a period of 11 months from the date of acceptance of any proposal.

**CHESAPEAKE & OHIO.**—*Authorized to Acquire Chesapeake & Ohio Northern.*—The Interstate Commerce Commission has issued an order approving and authorizing the proposed acquisition by the Chesapeake & Ohio of the railroad and property of the Chesapeake & Ohio Northern and also authorizing the Chesapeake & Ohio to assume the obligation of the Northern company to pay the principal of \$1,000,000 of its first mortgage 5 per cent 30-year gold bonds and interest thereon.

**CHICAGO, PEORIA & ST. LOUIS.**—*Court Decision on Issuance of Receivers' Certificates.*—The appellate court for the Third district of Illinois on October 25 handed down a decision disapproving a receivers' certificate order made in an inferior state court on the ground that Interstate Commerce Commission approval was not made a necessary prerequisite of the issuance and sale of receivers' certificates. The receivers had been granted authority in the lower court to issue 335,000 receivers' additional certificates of indebtedness, due in one year with interest at 7 per cent. The appeal was brought by trustees of the first and second mortgage bonds who protested against the mortgage liens being made subordinate to the receivers' certificates.

The appellate court said in its decision:

The order appealed from was an unconditional grant of authority to the receivers to issue and sell the certificates and did not require them to first obtain the approval and consent of the Interstate Commerce Commission, and, in so doing, was erroneous.

The rules of the commission, however, require that there shall be filed with the application for authority to issue securities an opinion of counsel that the issue or assumption in respect to which authority is applied for under said section 20-a, is or will be legally authorized and valid if approved by the commission.

This opinion of counsel must have some existing basis in fact, and the only valid basis for such an opinion in case like the present would be an order of the court authorizing the issuance and sale of the certificates provided such issuance and sale shall thereafter be authorized by the Interstate Commerce Commission in accordance with the provisions of said Section 20-a.

The order is, therefore, reversed and remanded with directions to the circuit court to modify said order in conformity with the views expressed in this opinion.

**DELTA SOUTHERN.**—*Authorized to Abandon Lines.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon three branch lines, in Mississippi, from Percy to Richey, 10.45 miles; from Elizabeth to Kergs Junction, and Angosta, 14.47 miles, and from Itta Bena to Belzoni, 27.19 miles.

**HAWKINSVILLE & FLORIDA SOUTHERN.**—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the receiver to abandon the line of this company extending from Hawkinsville, Ga., to Worth, Ga., 42.32 miles, and from Ashburn to Camilla, Ga., 50.67 miles. The Georgia Railroad Commission has asked that the application be denied. The federal commission expressed the opinion that the receiver should first offer for sale the entire railroad as a going concern and if no satisfactory bid is received he should offer the road for sale in sections for continued operation. If no satisfactory bid is received then he should offer any unsold sections as scrap or junk. At competitive points opportunity should be afforded shippers and connecting carriers to purchase the spur tracks and other terminal facilities.

**TENNESSEE, ALABAMA & GEORGIA.**—*Application to Scrap.*—Executors of the Russell Sage Estate, owners of this road, filed an application in the Federal Court at Chattanooga, Tenn., on

October 28, for permission to scrap the line. The road has been a losing venture since its organization and has never paid interest on its bonds since their creation in 1911. It owns 88 miles of track, all in Alabama. The date of sale of the road was postponed three times, the next date being fixed as November 15.

**TOLEDO, ST. LOUIS & WESTERN.—Bond Suit Settled.**—J. S. Bache, chairman of the Stockholders' Protective Committee, announced on October 31 that the litigation involving the legality of the company's A and B bonds had been settled. A report of the committee was mailed to the depositors under the protective agreement.

Mr. Bache's statement outlining the settlement was as follows:

The litigation involving the Toledo, St. Louis & Western Railroad Company, commonly called the "Clover Leaf," has been pending for seven years in the United States District Court at Toledo.

The controversy in the litigation was with reference to the legality of \$11,527,000 par value of what are known as the A and B bonds issued by the Clover Leaf in payment for the controlling stock of the Chicago & Alton Company acquired by the Clover Leaf in the year 1907.

The bonds were contested by the stockholders' protective committee on the grounds, first, that the bonds were given for the purchase of the controlling stock of a competing road, and, second, that fraud was practiced by the parties concerned in the transaction, so that all of the bonds were tainted. A very large amount of testimony was taken and this testimony was filed in the court in August last.

A settlement has been effected which results in the surrender and cancellation of the entire issue of A and B bonds with all of the interest coupons.

The A and B bondholders take back all of the Chicago & Alton stock and the Clover Leaf pays in cash \$1,130,000 to the bondholders' committee, and the stockholders turn over to the bondholders' committee 10 per cent of the common and preferred stock of the Clover Leaf. The total stock of the Clover Leaf outstanding is \$10,000,000 of common and \$10,000,000 of preferred.

The result of the transaction is that the property is restored to the Clover Leaf stockholders free of A and B bonds which at this time with interest amount to practically \$16,000,000. The only funded indebtedness against the Clover Leaf is \$10,000,000 of prior lien 3½ per cent bonds and \$6,500,000 4 per cent bonds, making a total mortgage indebtedness of \$16,500,000. This funded debt is the only debt of the Clover Leaf excepting equipment trust obligations which are being paid out of the current earnings, and receivers' indebtedness of approximately \$1,000,000 which it is expected will be paid from the sale of some treasury assets or from the operations of the property.

The settlement leaves the company in substantially the same financial condition that it was prior to its unfortunate purchase of the Chicago & Alton stock and the physical condition of the property has been greatly improved during the receivership.

**UTAH RAILWAY.—Asks Authority to Acquire Utah Terminal Railway.**—This company has applied to the Interstate Commerce Commission for authority to acquire by lease the property of the Utah Terminal Railway.

### Treasury Payments to Railroads

The United States Treasury Department announces the payment of a loan of \$50,000 to the Norfolk Southern from the revolving fund on a certificate of the Interstate Commerce Commission. A total of \$21,105,033 loaned to 12 railroads from the revolving fund has been repaid by the companies.

### Dividends Declared

Cleveland & Pittsburgh.—Guaranteed, \$.87½, quarterly; special guaranteed, \$.50; both payable December 1 to holders of record November 10.  
Elmhurst & Williamsport.—Common, 2.26 per cent, payable November 1 to holders of record October 20.  
Nashua & Lowell.—4½ per cent, payable November 1 to holders of record October 15.

UPON THE COMPLETION of a timber treating plant at New Haven, Conn., the New York, New Haven & Hartford will take up extensively the use of treated cross-ties, switch ties, lumber and piling. The plant which is to be provided by the American Creosoting Company, New York, will be erected adjacent to the north end of the Cedar Hill freight terminal, will form a part of it and have a capacity of 1,500,000 ties annually. The requirements of the New Haven in the past have averaged about 2,000,000 annually but with the disappearance of chestnut and other desirable woods, the annual needs were tending to increase to about 3,000,000. Heretofore, it has been necessary to ship ties and timber which were produced locally and which it was desired to treat, to distant points for that treatment. With the inauguration of a treating plant at New Haven it will become possible to utilize many of the cheaper grades of timber now easily available locally with the result that it probably will not be necessary to ship in any ties from outside territories.

## Railway Officers

### Executive

**J. M. Herbert**, president of the St. Louis-Southwestern, has also been elected president of the Dallas Terminal Railway & Union Depot Company, with headquarters at Dallas, Tex.

**H. B. Hull**, general claim agent of the Illinois Central, with headquarters at Chicago, has been promoted to assistant to the president with the same headquarters. Mr. Hull was

born on March 11, 1870, at Chamois, Mo. He entered railroad service in 1895 in the passenger traffic department of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo. On November 1, 1898, he left that road to become claim agent of the Louisiana division of the Illinois Central, with headquarters at McComb, Miss., and four years later he was transferred to the Springfield division, with headquarters at Springfield, Illinois. On August 1, 1904, he was promoted to district claim agent, with headquarters at Memphis, Tenn., which position he held until May 1, 1909, when he was promoted to assistant chief claim agent of lines South of the Ohio River and the Yazoo & Mississippi Valley, with the same headquarters. On July 1, 1911, he was transferred to Chicago and placed in charge of claims on the Northern lines. On March 13, 1913, he was made chief claim agent of the entire system, which position he was holding at the time of his recent promotion.



H. B. Hull

born on March 11, 1870, at Chamois, Mo. He entered railroad service in 1895 in the passenger traffic department of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo. On November 1, 1898, he left that road to become claim agent of the Louisiana division of the Illinois Central, with headquarters at McComb, Miss., and four years later he was transferred to the Springfield division, with headquarters at Springfield, Illinois. On August 1, 1904, he was promoted to district claim agent, with headquarters at Memphis, Tenn., which position he held until May 1, 1909, when he was promoted to assistant chief claim agent of lines South of the Ohio River and the Yazoo & Mississippi Valley, with the same headquarters. On July 1, 1911, he was transferred to Chicago and placed in charge of claims on the Northern lines. On March 13, 1913, he was made chief claim agent of the entire system, which position he was holding at the time of his recent promotion.

### Financial, Legal and Accounting

**W. E. Fitzgerald**, whose appointment as auditor of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex., was announced in the *Railway Age* of September 24 (page 600), was born at New Orleans, La., on June 11, 1870. He entered railroad service with the Galveston, Harrisburg & San Antonio on June 1, 1885 and remained with that company until October 1 of the same year, when he left to become a clerk in the Southern Pacific's office at New Orleans. On October 1, 1890, he entered the service of the San Antonio & Aransas Pass as a clerk in the general offices at San Antonio. He was appointed chief clerk in charge of disbursements of the Houston & Texas Central on October 1, 1894, and held this position until June, 1909, when he was appointed auditor of the Railroad Commission of Texas. In June, 1920, he was appointed assistant auditor of the San Antonio & Aransas Pass, which position he was holding at the time of his recent promotion.

### Traffic

**W. I. Chudleigh** has been appointed import freight agent of the Canadian Pacific; the Duluth, South Shore & Atlantic, and the Minneapolis, St. Paul & Sault Ste Marie, with headquarters at Chicago.

**J. T. Wray**, division freight agent of the Pennsylvania, with headquarters at Erie, Pa., has been transferred to Louisville, Ky., succeeding F. G. Maus, who has been transferred

to the Central region, with headquarters at Cleveland, Ohio. G. Berg will succeed Mr. Wray at Erie.

F. L. Hanna has been appointed assistant general freight and passenger agent of the Atchison, Topeka & Santa Fe with headquarters at Phoenix, Ariz., succeeding F. P. Cruice, assigned to other duties. N. H. Asp has succeeded Mr. Hanna as division freight and passenger agent with headquarters at Fresno, Cal. W. J. Shattuck has been appointed division freight agent with headquarters at Oakland, Cal., succeeding Mr. Asp. These changes were effective November 1.

A. S. Edmonds, whose appointment as traffic manager of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore., was announced in the *Railway Age* of September 24 (page 600), was born at Louisville, Ky., on July 7, 1881. He entered railroad service in July, 1899, as a messenger boy on the Southern at Louisville and until 1903 served successively as correspondence clerk, assistant rate clerk, rate clerk, and assistant chief rate clerk. He left the Southern in September, 1903, to become traveling freight agent of the Mallory Steamship Company, with headquarters at Atlanta, Ga. He re-entered railroad service in June, 1908, as general agent of the Missouri Pacific, with headquarters at Birmingham, Ala. In February, 1911, he was transferred to Philadelphia, Pa., where he remained until May, 1915, when he left the Missouri Pacific to become traffic manager of the Chesapeake Steamship Company, with headquarters at Baltimore, Md. He returned to the Missouri Pacific in July, 1917, as assistant freight traffic manager, with headquarters at St. Louis, Mo., which position he held until August, 1918, when he was appointed assistant chief of the inland traffic service of the war department at Atlanta, Ga. From January, 1919, to March, 1920, he was an assistant in the division of traffic of the Railroad Administration, with headquarters at Washington, D. C. On March 1, 1920, he was appointed general traffic manager of the Los Angeles & Salt Lake, which position he held at the time of his recent appointment.

### Operating

J. O. Jones has been appointed supervising agent of the Bessemer & Lake Erie. He will exercise supervision over all employees in station and transfer service.

### Mechanical

A. H. Powell has been appointed superintendent of the Jeffery Shops of the Western Pacific, with headquarters at Sacramento, California, effective November 1.

C. M. Hatch has been appointed mechanical engineer of the Missouri, Kansas & Texas with headquarters at Parsons, Kansas, succeeding W. H. Maddocks, retired, effective October 1.

F. M. Mozley, roundhouse foreman of the Gulf, Colorado & Santa Fe at Gainesville, Tex., has been appointed master mechanic of the Southern division with headquarters at Temple, Tex.

M. B. McPartland has been appointed superintendent of motive power of the Western Pacific with headquarters at Sacramento, California, and the position of general master mechanic has been abolished. These changes were effective November 1.

L. E. Fletcher has been appointed acting master mechanic of the New Mexico division of the Atchison, Topeka & Santa Fe with headquarters at Raton, N. M., succeeding T. T. Ryan, who has been granted a leave of absence on account of illness.

J. McKenzie has been appointed shop superintendent of the Pere Marquette at Ionia, Mich., succeeding J. Speckin, assigned to other duties. W. F. Crowder has succeeded Mr. McKenzie as general car inspector. These changes were effective November 1.

C. E. Brooks, traveling engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Miles City, Mont., has been promoted to master mechanic of the Bellingham division, with headquarters at Bellingham, Wash., succeeding C. E. Cessford, assigned to other duties on account of ill health. W. M. Anderson has been appointed master mechanic of the Northern Montana division, with headquarters at Lewistown, Mont., succeeding O. A. Coltrin, who has been assigned to other duties.

### Engineering, Maintenance of Way and Signaling

Z. A. Green has been appointed division engineer of the Gulf, Colorado & Santa Fe with headquarters at Galveston, Tex., succeeding W. W. Wilson, who has been transferred to the Southern division with headquarters at Temple, Texas.

K. F. Wakeman, assistant supervisor of the Toledo signal district of the New York Central, Western Lines, with headquarters at Toledo, Ohio, has been promoted to signal supervisor of the Franklin signal district, with headquarters at Ashtabula, Ohio.

A. Craine, whose appointment as district engineer, maintenance of way, of Missouri district of the Chicago, Burlington & Quincy, was announced in the *Railway Age* of October 15 (page 774), was born in England in 1883. He entered railroad service in 1905, as a rodman on the Missouri Pacific. In 1908, he left to become a rodman on the Chicago, Burlington & Quincy and, through various promotions, he became division engineer, with headquarters at St. Joseph, Mo., which position he was holding at the time of his recent appointment.

### Purchasing and Stores

A. Ross has been appointed division storekeeper of the Erie with headquarters at Jersey City, N. J., and M. H. Keyes has been appointed to a similar position with headquarters at Buffalo, N. Y., effective October 1.

### Obituary

L. F. Timmerman, secretary and treasurer of the Western Maryland, died on October 31 at Paris, France.

D. J. McCoy, formerly resident engineer of the Atchison, Topeka & Santa Fe at Willard, N. M., died recently at Los Angeles, Cal.

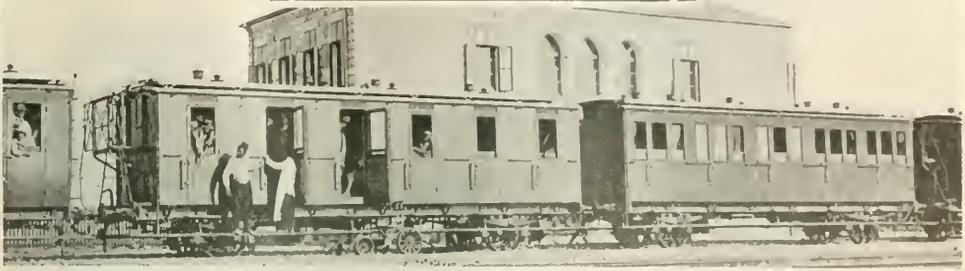
A. Jackson, agricultural agent of the Chicago, Rock Island & Pacific, with headquarters at Chicago, died at his home in that city on October 30.

Charles E. Oakes, shop superintendent of the Kansas City Southern, with headquarters at Pittsburg, Kansas, died on October 13, as a result of injuries received in an automobile accident on October 8.

Frank T. Dolan, formerly general superintendent of the Southwestern district of the Chicago, Rock Island and Pacific, with headquarters at Topeka, Kansas, died at his home in that city on October 25. Mr. Dolan was born in Illinois in 1867 and entered railroad service in 1882 as an agent with the Chicago, Burlington & Quincy. In 1884, he entered the employ of the Atchison, Topeka & Santa Fe as a dispatcher, which position he held for six years. From 1890 to 1892 he was chief dispatcher of the Union Pacific, and from 1892 to 1897, chief dispatcher and train master of the Atchison, Topeka & Santa Fe. From the later date until 1903, he was superintendent of different divisions of that road, and from August 1, 1903, to August 1, 1905, he was general superintendent of the Colorado & Southern and the Fort Worth & Denver City, resigning to become general superintendent of the Southwestern district of the Chicago, Rock Island & Pacific. He was granted an indefinite leave of absence, due to ill health, on Sept. 10, 1906, and since that time he has been inactive in railroad work.

# Railway Age

Vol. 71 November 12, 1921 No. 20



Train in Syria, on the Bagdad Railway—Photo by Ewing Galloway

## Contents

Central Europe's Roads Need Fuel and Equipment .....	Page 924
Political Considerations Greatest Obstacle to Transportation Revival, but Rolling Stock and Fuel Are Inadequate, by W. B. Causey.	
Labor Board Hands Down Significant Decision .....	929
Carriers' "Ability to Pay" Recognized as "Secondary" Factor in Fixing Wage Scales.	
Delivering Train Orders Without Getting Signatures .....	933
Personal Experience of a Veteran Dispatcher in the South, the Middle States and the Far West. By H. W. Forman.	

### EDITORIALS

Unions Considering Acceptance of Piecework .....	916
When the Employee Becomes Employer .....	916
Isolated Plants Electrically Operated .....	916
Keep the Shops and Premises Clean .....	916
Better Equipment Business .....	918
The Public Utility Commissioners .....	918
"When Doctors Disagree" .....	917
Too Much Regulation of Railway Labor .....	918
Boiler Compounds and Treating Plants .....	918
Nashville, Chattanooga & St. Louis .....	919

### LETTERS TO THE EDITOR

From a Conservative Fireman .....	920
Train Dispatcher Takes Exception to Locomotive Engineer .....	920
A Comptroller on the Wage Question .....	920
Mr. Ford's Methods of Operating a Railroad .....	921
Do the Railroads Really Want College Men? .....	922
What Makes a Good Chief Clerk? .....	922
A Plea for the Senior Clerks .....	922
Objects to Being Classed as an "Official Goat" .....	923
Convention Reforms Suggested .....	923

### GENERAL ARTICLES

Central Europe's Railways Need Fuel and Equipment, by W. B. Causey .....	924
Automobile Freight Carriers in New England .....	927
Timber Preservation Statistics for 1920 .....	928
Correction .....	928
Labor Board Hands Down Significant Decision .....	929
Ben W. Hooper Talks On Relation of Wages to Freight Rates .....	932
Ford's Railroad Must Report Statistics of Employers .....	932
Delivering Train Orders Without Getting Signatures, by H. W. Forman .....	933
The Interior Treatment of Boiler Waters, by C. B. Knowles .....	935
New Motive Power for the Railways of Mexico .....	937
If Ford Ran the Railroads .....	939
Illinois Central Steel Suburban Coaches .....	941
Telephone Train Dispatching in Canada .....	942
C. P. R. Turntable Departs From Usual Practice .....	943
Railroad Bill Taken Up in Senate .....	944
L. C. C. Accident Bulletin No. 78—Annual Report .....	945
Northern Pacific Illuminated Highway Signs .....	948
Freight Car Loading Shows Slight Decrease .....	947
Shipping Board Asks Conference With Railroads on Foreign Contracts .....	948
Changes Ordered in Panama Railroad Operation .....	949
Amendment of Rate Law Urged .....	950
A New Type Crawling Tractor Crane .....	950
GENERAL NEWS DEPARTMENT .....	951

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON, England: 34, Victoria St., Westminster, S. W. 1.  
Cable address: Uraaimco, London.  
NEW ORLEANS: Maison Blanche Annex

WASHINGTON: Home Life Bldg.

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
B. B. ADAMS  
H. P. LANE  
R. E. THAYER  
C. B. PECK  
W. S. LACHIE  
J. G. LITTLE

A. F. STUEBING  
C. W. FOSS  
K. E. KEILBERGER  
ALFRED G. OEHLER  
P. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINSTON

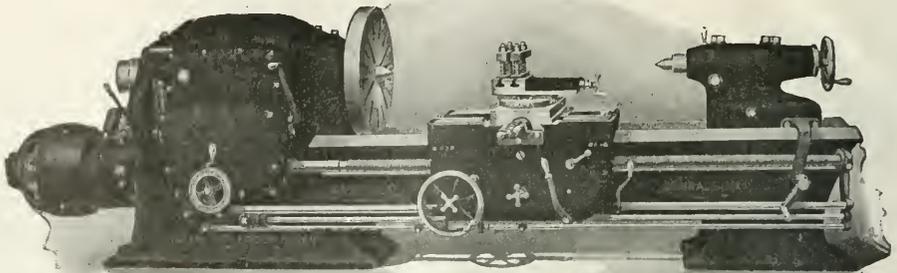
MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LYNE  
J. H. DUNN  
D. A. STEEL  
K. H. ROACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 8,750 copies were printed; that of these 8,550 copies 7,881 were mailed to regular paid subscribers, 52 were provided for counter and news company sales, 137 were mailed to advertisers, 65 were mailed to employees and correspondents, and 416 were provided for new subscriptions, same as copies lost in the mail and office use; that the total copies printed this year to date were 426,700, an average of 9,482 copies a week.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)



Wherever accuracy must be the first consideration rely on the Ryerson-Conradson Lathe to do the job without sacrificing production.

## Boring Air Cylinders

*"Well done is twice done."*

This applies most forcibly to locomotive repairs.

Many roads are decreasing maintenance costs by the better workmanship made possible by Ryerson-Conradson Machine Tools.

"The air cylinders bored on the Ryerson-Conradson Lathe have stood up a great deal longer than similar cylinders bored on other lathes. With a cylinder bored absolutely straight, the wear on the piston rings is practically imperceptible."

—General Shop Foreman

Accuracy with rapid production for emergency or regular work is characteristic of Ryerson Railroad Lathes.

Herringbone gear drive to the spindle, extra large bearing surfaces and broad ways combine to provide a foundation for accurate work.

Jobs done on Ryerson-Conradson Lathes stay done. This means lower maintenance costs.

Send for Bulletin 1,301

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The discontinuance of the piecework system of payment by the Railroad Administration was brought about principally through the opposition of the unions.

**Unions Consider- ing Acceptance of Piecework** The direct result was a serious reduction in the output of many shops and an increase in the cost of repairs. Perhaps the leaders of the organizations convinced the workers that this action would be beneficial for the employees. If so, they were soon undeceived. Many roads found the cost of work in their own shops was higher than if performed under contract and consequently sent the work elsewhere. The unions offered bitter opposition to every proposal to restore piecework, but the Labor Board has now changed the working rules to permit it. Apparently the unions are learning that they cannot work contrary to economic laws and are ready to conform to the spirit of the order issued by the board. On at least one road representatives of the shop crafts organizations have approached the management to learn what proposal the road had to offer for the re-establishment of piecework. Now that negotiations have been opened, it is to be hoped that they can be brought to a successful conclusion, for an equitable system for payment according to the output of the individual would benefit both the railroads and the employees.

The promotion of business ventures by labor organizations is neither novel nor unusual. The path of unionism is lined with the wreckage of one such project after another. Most recent is the fiasco of the maintenance of way brotherhood which sunk large sums in the purchase of knitting mills a couple years ago to make garments for its members "at cost." In spite of all these experiences of the past, new projects continue to present themselves. The latest development of this kind is a coal mining project promoted by officers of the Brotherhood of Locomotive Engineers. A letter addressed "to all railroad men" under date of September 15, 1921, and over the signature of Warren S. Stone, "chairman, Board of Directors" urges railroad men to buy stock in this new venture, (maximum subscription \$5,000). The affiliation of the Brotherhood of Locomotive Engineers is shown further by Mr. Stone's statement that they "will be glad to have the Board of Directors authorize the Brotherhood of Locomotive Engineers' Co-operative National Bank to act as depository for all subscriptions for stock and also the funds of the corporation." An accompanying statement expresses the "hope for a giant corporation with a big soul full of human interest, for the benefit of our stockholders, and welfare of our employees." A further appeal for popular support of the brotherhood members is made in the statement, "No financial pirates, no preferred stock, no bonds—All common stock and non-assessable." Thus, Mr. Stone appears in a dual capacity, as a representative of the employees, charged with the responsibility of protecting their interests, as opposed to those of their employers on the one hand, and a representative employer in his duty to his stockholders on the other hand. It remains to be seen whether he can lead his followers in railway service into the broader field

of financial speculation and promotion; and if so whether they will be different from other employers in their new role. The experience workingmen will get as capitalists and employers is bound to make more tolerant their attitude toward capitalists and employees.

It is frequently possible to effect economies through the application of automatically-controlled, electrically-driven machinery to air compressors, coal chutes, pumping stations and isolated plants that have long aggravated the problem of reducing the expenses and forces of the railroads. As an example of what can be accomplished, one road recently replaced a steam-driven air compressor plant with modern electric equipment which made it possible to dispense with the services of three licensed stationary engineers and two firemen. The cost of the electric power used is about one-half as much as the cost of the coal formerly required. It is conservatively estimated that the saving produced will pay for the new installation in three years. Another road has investigated the cost of the fuel and labor used in the operation of its water pumping plants as a result of which it has determined that whenever power is available at or below a certain figure, automatic electrical machinery is to be installed. At one pumping station alone the services of two men were eliminated recently. Since automatic control will reduce the labor necessary for the operation of isolated plants, it would appear advisable for the railroads to investigate thoroughly the possibilities of the application of such equipment to outlying stations where the large part of the operating expense is for the wages of the attendant.

### When the Employee Becomes Employer

Why has the impression become so general that railroad shops and enginehouses are dirty, dangerous and undesirable places

### Keep the Shops and Premises Clean

in which to work? Is not this due to the fact that everything about locomotives, and to a lesser degree cars, is more or less covered with grease, dirt and dust and unless exceptional care is taken the repair shops and enginehouses soon reach a condition for which "dirty" is too mild a term? Fortunately not all shops are in this condition, because someone in authority makes a hobby of shop cleanliness and sees to it that both the shops and premises are kept properly cleaned. It is undoubtedly true, however, that the visitor at far too many shops receives a distinctly unfavorable impression. Greasy, dirty locomotive and car parts are everywhere in evidence; the floors have acquired several thicknesses of grease; windows are smoky; and soot-covered ceilings strive in vain to reflect light. Corners are filled with debris and passage ways are blocked with all sorts of material. It is impossible to touch a bench, machine or article of any kind without getting dirty, and darkness and congestion make passage through the shop dangerous. Is it any wonder that men do not like to work in such a place and, when compelled through dire circumstances to labor there, find little incentive for "hard-fulness and efficiency"? It may be that the picture painted is

an extreme case but, in varying degrees, it is all too common. The remedy for the situation has already been worked out in certain modern shops. The first essential is to clean locomotive and car parts thoroughly in lye vats or by washing before going into the shop. Shop floors and premises are kept clean by an adequate force of sweepers under the direction of someone who sees to it that the work is properly done. Passageways between departments, also track safety zones, are indicated by lines painted on the floor within which no material may be placed. Windows are washed periodically; walls and ceilings are white-washed and machinery is kept scrupulously clean. And what is the result? Men employed in a shop of this kind no longer need work in overalls which will stand alone; there is ample light to see the work, increase production and avoid danger; and there is quite an appreciable improvement in morale due to the natural pride which men take in working in a clean, up-to-date production shop.

Hale Holden, president of the Chicago, Burlington & Quincy announced on Monday that the directors of his company had authorized the expenditure of \$15,000,000 for new equipment. The understanding was given that immediate arrangement was to be made for the purchase of 7,300 freight cars, 55 locomotives and 127 passenger cars. This announcement is the most encouraging thing that has been evident in the railway supply field for a long series of months. It follows closely enough upon the Baltimore & Ohio's recent order for 2,000 freight car bodies and the Chicago, Milwaukee & St. Paul's recent order for 2,500 cars to indicate that there is very much of a changed feeling insofar as the purchase of cars and locomotives is concerned. The equipment companies, even with the large amount of repair work which they have been called upon to do, have found 1921 a rather meagre year. This will be borne out by the following table which shows the orders for new cars and locomotives as they have been reported in the Equipment and Supplies column of the *Railway Age*. It will be seen that in the first 10 months of 1920 only 143 locomotives were reported as ordered for domestic service and only 62 passenger cars. The freight car orders in the first 10 months totaled 9,320. The change which has come over the equipment market is apparent from the fact that of the 9,320 in the 10 months, 3,720 are credited to October. In addition, November is credited with 3,400 cars—those reported in last week's issue. Besides the new feeling which has made itself apparent, attention should be paid to the orders for export locomotives. The total is 388, of which 95 were reported as ordered in October. The orders—domestic and export alike—are not yet large, but it is quite plainly evident that a marked change has been made for the better.

ORDERS FOR CARS AND LOCOMOTIVES

	Locomotives		Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
January	10	...	...	50	3	...
February	2	2	2,945	20	...	...
March	76	33	...	399	14	...
April	50	14	1,320	52	22	...
May	13	55	10	...	...	...
June	...	23	800	40	...	...
July	6	69	125	950	10	...
August	2	67	...	101	6	53
September	5	30	400	4	3	...
October	19	95	3,720	2,300	4	...
Total ten months	143	388	9,320	3,907	62	53
November, first week only	...	...	3,400	...	...	...

## The Public Utility Commissioners

THE APPEARANCE of John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, before the Senate Committee on Interstate Commerce recently, follows closely upon the successful annual meeting of the important organization which he represents, held at Atlanta, beginning October 11. Mr. Benton expressed his objection to the centralization of regulatory authority in Washington. He contended that the Interstate Commerce Commission had misinterpreted the Transportation Act and that "chaos" in regulation had resulted. He further read the resolutions which were adopted after a lively discussion at the state commissioners' convention. These resolutions were reproduced in the *Railway Age* of October 22, page 777. They urged the immediate enactment of legislation amending the Transportation Act so as to define and limit the powers of the Interstate Commerce Commission over intrastate rates. They also condemned the rate making provisions of section 15-a of the Interstate Commerce Act and urged the repeal of the provisions whereby the Interstate Commerce Commission is required to establish rates which will yield 5½ per cent on the aggregate value of the property of the carriers used in the service of transportation.

It is not necessary to repeat Mr. Benton's argument as it will be found in the reports of the hearings which have appeared in recent issues of the *Railway Age*. Several of the state commissioners have also appeared before the committee. They have presented similar points of view. Reference to their testimony will be found in the *Railway Age* of November 5, page 886.

The state railway and utility commissioners are in the somewhat unhappy position in arguing in favor of states rights. This is an issue which has existed since our federal idea of government was formulated in our constitution. It is an issue which, in many ways, is a losing one, for the reason that the tendency towards which our form of government has always worked is centralization of power in the federal government. The state commissioners are further confronted with the argument that regulation of commerce by some 49 or 50 commissions has hardly justified itself. The unfairness and severity of such divided regulation and responsibility was recognized before the Transportation Act was passed. The recognition of it was one of the causes for the passage of the Transportation Act in the form in which it was passed.

One can, however, readily appreciate what must be in the minds of the state regulatory commissioners. The Interstate Commerce Commission has so construed the Transportation Act as to mean that state rates which are lower than interstate rates are a discrimination against interstate rates, which construction of the act we believe to be the proper one. The state commissioners, however, have fought the Interstate Commission's decisions raising intrastate rates to interstate levels and have thus far come out very much second best, particularly in view of the restraining court injunctions. The matter is now in the courts but in view of the Supreme Court's recent decision, that there should be a rehearing in the Wisconsin case, final decision is still in the future.

It is natural for any man and equally natural for any organization not to desire to give up power and prestige which it already has. The feeling of the state commissioners against giving up their jurisdiction over railroad regulation to the federal commission is exactly a case in point. We feel that in this case the state commissioners are being governed too much by their pride and too little by a real desire to see justice done to the railway carriers. Yet one cannot but feel that the commissioners are very much influenced by a desire to treat the utilities they regulate fairly. The

unpopularity which they have secured for themselves in raising street car fares, gas and electric light rates, etc., should be an indication of that.

The point might also well be made that the state regulatory commissions have a large task before them. The regulation of the electric light companies, the gas companies, the street railway companies, etc., of a state would seem to be a sufficiently large task for any body of men. The competition of the jitney, the new task of regulating motor truck transportation and similar like developments do not seem to represent a group of duties that may be regarded lightly.

But, it is also true that even if the regulation of railroad rates is taken away from the state commissioners and put in the hands of the Interstate Commerce Commission, the duties of the state commissions in the matter of railroad regulation will not cease. The state commissions must still be called upon to assist the federal commission in matters relating to their individual states. They should, it would seem, be prepared to watch out for their state interests in hearings before the federal body. At any rate, it would appear that the duties which would remain to the state commissioners should be great enough in volume and complexity so that the state regulatory bodies would be required to play a busy part and one of great importance in the general scheme of railway regulation.

The present attitude of the state commissioners, it may be said in conclusion, is a natural attitude for men or organizations in their position to take. One cannot help but feel, however, that they are presenting themselves in a wrong light. Besides failing to realize that they should be able to play a real part in the present scheme of things, they are acting the part of reactionaries and opposing progress that it has taken many years to bring about.

## “When Doctors Disagree”

THE RAILWAYS ARE SICK. Their sickness is infectious. It has spread disease through general business. Continuance of it will do more harm to general business in the future than it has in the past.

The railways are being treated by two doctors. They did not choose them. The doctors were assigned to them by the federal government. These doctors are the Interstate Commerce Commission and the Railroad Labor Board. If the doctors long disagree, and one gives the patient one kind of treatment and the other an exactly opposite kind of treatment, the patient is sure to get sicker and sicker.

Certain statements made by Ben W. Hooper, a public member of the Labor Board, in an address before the Traffic Club of Chicago, on November 3, when contrasted with statements which have been made by members of the Interstate Commerce Commission, show that the two doctors do wholly disagree as to how the patient should be treated. In his address Mr. Hooper said: “It may be and doubtless is true to some extent that the fixing of freight rates is partially controlled by the carriers’ operating expenses, but the converse of this proposition is by no means correct. *The fixing of wages cannot be made to depend upon freight rates.* . . . . The wages of the employees must be just and reasonable based upon the elements set out in the statute. When these matters have been properly considered by the Labor Board, and the wages fixed, *then the Interstate Commerce Commission will know as well what the railways are paying in wages as if they established the wages.*”

The purport of this seems clear. Mr. Hooper’s position apparently is that the Labor Board should determine what are reasonable wages, and that the Interstate Commerce Commission must accept the wages fixed by the Labor Board as a basis in regulating rates.

We now quote the following from the concurring opinion of Commissioner Potter of the Interstate Commerce Commission

in the recent decision in the grain rate case: “Some urge that we must take wage conditions as we find them, and not contemplate further wage reductions in dealing with rates. *On the argument it was pointed out to us by the representatives of the petitioners that such is not the law.* They urged upon us that it was the duty of the Commission to consider the broad economic question as to what rates the industry of the country could stand, and that our finding in this regard should be taken into consideration in the fixing of wages. . . . I am inclined to the view that the opinion thus urged upon us by counsel for the petitioners is sound. . . . *In considering what railway employees should receive, regard should be had for what the shippers can afford to pay. . . . If the broad economic question as to how much shippers can afford to pay is a question to be determined by us when we fix fair and reasonable rates, it will follow that the Labor Board, in considering wages, would regard our finding as one of the relevant circumstances to be taken into consideration in fixing wages.*”

The purport of this also is quite clear. It means, unless we entirely misinterpret it, that Commissioner Potter believes it is the duty of the Commission to fix rates which will be reasonable for the shippers to pay, and that the Labor Board must accept the finding of the Commission as one of the “relevant circumstances which the Transportation Act requires the Labor Board to consider in fixing wages.

In other words, Mr. Hooper says that the Commission should accept the findings of the Labor Board regarding wages as reasonable, and make rates accordingly, while Commissioner Potter says that the Labor Board should accept the findings of the Commission regarding rates as reasonable, and make wages accordingly.

Now, suppose that the Interstate Commerce Commission refuses to accept as reasonable the wages fixed by the Labor Board, and the Labor Board refuses to accept as reasonable the rates fixed by the Commission. The Commission puts the rates down to where it thinks they will be reasonable for the shipper, the Labor Board keeps the wages up to where it thinks they will be reasonable for the employees, and, in consequence, the railways are deprived of opportunity to earn a “fair return.” But the law under which both bodies act says that the railways must be given opportunity to earn a “fair return.” The result of each body so interpreting the law as to make it paramount in its own field is disregard and defeat of plain provisions of the very law from which both derive their authority.

This is not mere conjecture. It is what is actually occurring, and has been for months. The railways never have earned the net return the Transportation Act says they should be allowed to earn until March 1, 1922, and yet we now have presented the spectacle of the Commission ordering reductions of rates in anticipation of reduction of wages, and a member of the Labor Board plainly indicating that the Labor Board will give little or no weight to rates fixed by the Commission in fixing wages.

Mr. Hooper, in his address, said that advocacy of the policy of uniting the regulation of rates and the regulation of wages in the same body “involved a glaring fallacy.” He could not, however, have used language which would have made clearer than that he did use, the “glaring fallacy” and danger of the present plan of regulation. Whether any other changes ought to be made in the Transportation Act or not, it certainly has become plain that it ought to be so amended as specifically to provide either that the Labor Board, in fixing wages, shall accept as binding upon it all findings of the Interstate Commerce Commission regarding rates, or that the Commission, in fixing rates, shall accept as reasonable the wages paid in accordance with orders of the Labor Board.

Doctors that disagree should not be allowed to give a patient two kinds of treatment so different that, whatever might be the effects of either alone, the two are sure to kill him sooner or later.

## Too Much Regulation of Railway Labor

ONE OF THE WORST mistakes made in framing the Transportation Act was that of subjecting to government regulation the wages and working conditions of railway employees who are not directly concerned with the operation of trains.

The Newlands mediation and arbitration act, which was in effect prior to government control, applied only to controversies between the railways and employees directly concerned with the operation of trains. There was sound reason for the distinction thus drawn between employees directly concerned with the operation of trains and all other classes of employees. This reason was that employees directly concerned with the operation of trains, and they alone, could, by a strike, immediately and seriously interrupt transportation.

There is still, and always will be, adequate ground for subjecting the wages and working conditions of employees directly concerned with train operation to government regulation, and even for absolutely prohibiting strikes by them. The public should not be subjected to the suffering and loss of an actual interruption of transportation. To prevent this special means should be provided by the government for settling controversies arising between railways and employees directly concerned with train operation. The right to strike should be entirely taken away from such employees, and there should be maintained some government tribunal to which all controversies arising between them and the railways should be carried.

As to other classes of railway employees, there is no more reason why their wages and working conditions should be subject to regulation by the Railroad Labor Board, or any other government body, than why the wages and working conditions of mechanics in factories, or clerks in stores, or laborers on farms should be subjected to such regulation. The only ground upon which special regulation of the wages and working conditions of any class of railway employees can be defended is that a strike by them would seriously interrupt transportation; and such effect would not be produced by a strike of any class or classes of employees except those directly concerned with the operation of trains. A strike of employees in the shops would be embarrassing and expensive; but it would not cause an immediate interruption of transportation, and would not seriously interfere with transportation unless quite protracted. It would not bring about an actual interruption of transportation as soon as a general strike of the coal miners, who are not railway employees at all, and whose wages and working conditions are not regulated by the government. No conceivable strike of other classes of employees, such as those employed in maintenance of tracks, would cause an interruption of transportation.

The application of government regulation to the wages and working conditions of employees not directly concerned with the operation of trains has been harmful, and will become more harmful if it is continued. It is practically impossible for a single body, such as the Railroad Labor Board, to fix the wages and working conditions of all classes of railway employees throughout the country without standardizing their wages and working conditions on all the important railroads throughout the country. This is inequitable to the employees and imposes undue burdens on the railways and the public. Employees doing similar work, but living in different parts of the country under different conditions, should not be paid the same wages.

Standardization of the wages and working conditions of each class of employees throughout the country renders it impossible to make their wages conform to those of men doing similar work in other industries, although this is one of the requirements of the Transportation Act. We believe the railways in each community should pay for any given class of labor as high wages, if not higher, as are paid by any

other industry in the same community. But why should the railways be subjected to a system, as they are now, under which in some communities they cannot get the best labor of certain kinds because the wages paid by them are not as high as the wages paid by other industries for the same kinds of labor, while in other communities they are required to pay twice as much for certain kinds of labor as are being paid by other industries?

It may be contended that the wages and working conditions of all railway employees should be regulated for broad social reasons. But if the wages and working conditions of all railway employees should be regulated, not for reasons peculiar to the transportation industry, but for broad social reasons, then so should the wages and working conditions of men employed in all other kinds of industries. If the wages and working conditions of mechanics employed by railways should be regulated for broad social reasons, then for the same reasons the wages and working conditions of mechanics in all manufactories should be regulated. If the wages and working conditions of common laborers on railways should be regulated for broad social reasons, then so should the wages and working conditions of all common laborers employed by other industries. There is no peculiarity, either legal or economic, of the railroad business which justifies special regulation of the wages and working conditions of any of its employees except those directly concerned with the operation of trains.

All employees of railways except these should have the same right to make demands upon their employers, and even to strike, that employees of other industries have. Likewise, the railways should have the same right to deal, without government interference, with all their employees except those directly concerned with the operation of trains that any other employers have.

The labor organizations unanimously opposed the adoption of the present labor provisions of the Transportation Act, and therefore it seems reasonable to assume that they would gladly see these provisions so amended that they would cease to apply to most classes of railway employees. The employees directly concerned with the operation of trains are only about 25 per cent of all railway employees, and the entire problem of useful government regulation and efficient management of railways would be greatly simplified by withdrawing all regulation from the wages and working conditions of the other 75 per cent of the employees.

## Boiler Compounds and Treating Plants

ELSEWHERE in this issue will be found an article entitled "Interior Treatment of Boiler Waters" to which the attention of railway officers, having occasion to interest themselves in the subject of locomotive water supplies, may well be directed. Specifically, this article concerns itself with boiler compounds and points out the possibilities of this much applauded and berated and withal too little understood method of improving locomotive performance in bad water areas.

Because of the decided views that obtain among railway men on the subject of boiler compounds, it is but reasonable to suppose that the author's ideas will not meet with universal approval, and it is possible even that criticisms will be voiced which will not be entirely wanting in justification. But it is not this feature of the article as much as the fact that it has been written by an advocate of exterior treatment that constitutes the primary point of interest in it, for it is an indication of the growing tendency of advocates of treating plants on the one hand to see merit in boiler compounds and of advocates of boiler compounds on the other hand to see justification in treating plants.

This change of attitude places the boiler water problem

where it should always have been, on a purely scientific basis, and the effects of this are bound to be salutary. It will do much to dispel that skepticism regarding water treatment in general which many executive officers have entertained as a natural result of the controversial attitude which one school of thought has manifested towards the other and will prepare the way for programs of water treatment more nearly in keeping with the possibilities for savings that lie in them for many roads. It will also cause water service engineers to give more thought to finding the best solution of the problem instead of limiting their efforts to the promotion and maintenance of one method of treatment.

The problem of improving boiler waters, in short, is no longer one of arbitrarily installing a treating plant or of prescribing a preparation for locomotive boiler or tender treatment, but rather that of choosing that method which is best adapted to solve a particular problem, whether it be a particular kind of interior treatment alone, a special kind of exterior treatment alone, or a combination of the two.

While a roadside installation designed and operated to meet the conditions of a particular water should afford the best accurate treatment possible, as pointed out in the article referred to, there are many places where the water is not sufficiently bad or the consumption great enough to warrant the investment necessary for such a plant. There are many other points where the quality and consumption of the water are such as to warrant the expenditure for a treating plant, but the funds are not available. It is in such places that Mr. Knowles advocates the use of boiler compounds rather than continuing without relief until a treating plant may be secured. This policy rather than being prejudicial to the interests of the one school or the other is beneficial to both.

## Nashville, Chattanooga & St. Louis

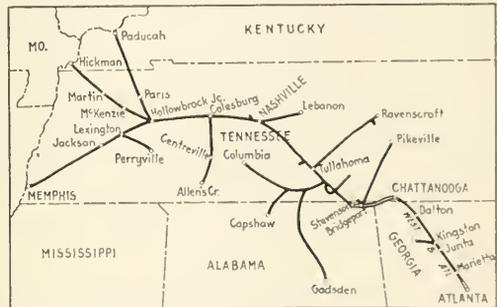
IN AN ARTICLE on another page of this issue entitled, "Delivering Train Orders Without Getting Signatures," Harry W. Forman devotes several paragraphs to the Nashville, Chattanooga & St. Louis. He refers to the efficient manner in which train operation is conducted on that road with the use of No. 19 train orders. Among other things, he says: "The many fast freight trains which are run daily between St. Louis and Atlanta, as well as numerous pineapple and peach specials between Atlanta and Nashville have always made remarkable records for expedition movement. This is so well known that the fact is generally commented upon by dispatchers throughout the country."

In the perishable fruit season of 1921, the Nashville, Chattanooga & St. Louis moved north from Atlanta some 10,000 cars of fruits and vegetables. This total included about 4,800 cars of watermelons, 2,000 cars of pineapples, 1,400 cars of fresh vegetables, 25 cars of cantaloupes and about 1,800 cars of citrus fruits. The manner in which the pineapples were moved over the road approaches the spectacular. There were run 61 solid trains of pineapples, a total of 1,756 cars being handled on these trains. The trains averaged 29 cars each, of which an average of 16 cars were delivered to the Illinois Central at Martin, Tenn. These trains averaged 23 hours and one minute from Atlanta to Martin, a distance of 430 miles and passed through three terminals. The average time the cars were on the N. C. & St. L. rails was but 25 hours and 10 minutes. In the distance of 430 miles, there are but about 40 miles of double track. The trains, however, were moved over the road at a speed which would do credit to a double track road.

One of the busiest sections of the N. C. & St. L. is the district between Atlanta and Chattanooga. This line, 137 miles in length, is known as the Western & Atlantic. It is owned, incidentally, by the state of Georgia and leased to

the Nashville, Chattanooga & St. Louis. Between Junta, Ga., and Atlanta, 48 miles, the rails are used also by the Louisville & Nashville. This section is understood to be probably the busiest stretch of single track in the Southeast. In rush periods some 10 passenger trains are handled each way daily and a total of about 60 passenger and freight trains in all in both directions. Operation between Atlanta and Junta is controlled by manual block signalling.

The Nashville, Chattanooga & St. Louis is controlled by the Louisville & Nashville, through majority stock ownership. The road, for the past several years, has been paying  $3\frac{1}{2}$  per cent dividends semi-annually on its common stock. Its total mileage is 1,247, of which 856 is owned and 391 is leased. There is a total of 59 miles of double track, of which the most important part is the 38 miles from Chattanooga north to Stevenson. The road's traffic is rather diversified. In 1920 products of agriculture made up 22 per cent of the total tonnage; products of animals, 3.4 per cent; products of mines, 31.8 per cent; products of forests, 13.1 per cent, and manufactures, 21.7 per cent. Bituminous coal in 1920 made up 1,293,557 tons or 17.8 per cent of the total. Of this, 925,809 originated on the N. C. & St.



The Nashville, Chattanooga & St. Louis

L's own lines in the Tennessee fields. The total tonnage of all freight handled in 1920 was 7,254,047, which compared with a total for 1919 of 5,808,714 tons, or for 1918, of 7,050,961 tons.

The Nashville, Chattanooga & St. Louis' standard return for operation by the government was \$3,163,576. In 1918 the road had a net railway operating income of slightly over \$4,000,000. In 1919 it earned about \$1,000,000 and in 1920 the net railway operating income was but \$20,000, there being in that year several months in which the road operated at a deficit. The year 1921 has been characterized by the small amount of business handled as compared with last year. In the first seven months of 1921, the latest figures at present available, there were handled 600,298,000 net ton-miles of freight, including revenue and non-revenue, as compared with 869,044,000 net ton-miles in the first seven months of 1920. In March, April and May, 1921, operations resulted in a deficit, but there has since been a progressive improvement. In August the net railway operating was \$372,397. The net railway operating income for the first eight months of 1921 was \$441,685. In the first eight months of 1920 operation showed a deficit of \$154,840, this being the result of poor earnings in July and August of that year.

The road's average revenue train load in 1920 was 352, as compared with 345 in 1919 and 344 in 1918. The average revenue tons per loaded car in 1920 were 21.45. The miles per car per day were 26.6 and the net ton-miles per car per day were 456. What must be a disconcerting feature to the officers of the road at present is its percentage of bad order cars, which was 30.9 on October 15.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### From a Conservative Fireman

DELAWARE, Ohio.

TO THE EDITOR:

A reading of the letters which have been published from railroad trainmen in connection with the strike agitation prompts me to give my experience. During the war, though several years over age, I was employed as fireman on one of our railroads having a heavy coal traffic together with mixed freight.

Where train crews are made up by call in turn and a fireman seldom runs twice a month with the same engineer, one soon learns the varied dispositions and habits of the men. I found that the worst howlers and complainers were also the roughest handlers of their trains. The safe and steady engineer, who made trip after trip without damaging a drawbar, no matter how heavy the train, invariably was the man who had the best disposition towards the management and towards the people at large. A fireman was sure to find these men congenial cab mates, not constantly primed to jump on him for trifles. The impetuous engineer who was always damaging drawbars was the same who quarreled with his fireman and kicked at the management or the public.

G. P. WILLIAMS.

### Train Dispatcher Takes Exception To Locomotive Engineer

TEXAS.

TO THE EDITOR:

Your October 22 number has an article signed "A Locomotive Engineer" that reeks with vituperation against all railroads and employees, especially train dispatchers. No doubt he is a good engineer and deserves all the money he earns, but the way he expresses himself reminds me of a story about a boy and a dog. The little boy was sitting by the side of the road when an engineer came by, stopped and asked the dog's name. The boy replied, "Engineer." When asked why he gave the dog such a name, he replied, "Well, he is just like an engineer, just sits around and growls all the time."

As a train dispatcher of 12 years' experience on single-track lines with divisions of from 100 miles to 180 miles in length, I wish to take exception to the statement that "the poorest brakeman on the division could have handled the situation better than the dispatchers did."

There must have been several contributing causes for the excessive delays over which no one man had control, such as congested terminals, which we had in Texas about two years ago during the oil boom that came unexpectedly upon the Texas roads when their terminal facilities were inadequate to handle the enormous business that was dumped upon them at a time when they were not prepared to care for it.

Every man on our division made every effort to get trains over the road but there were times when we had to hold them out of terminals or set them out. I have seen four and five trains set out in passing tracks because of having to get power into terminals and get a train out before we could take the trains in; we had redball or important trains held out and would have sent relief crews out to get them rather than set

them out, owing to the fact that they were high-class trains.

There is no man on the division who likes to see trains get over the road any better than a train dispatcher, but delays frequently occur which are beyond his control. Successful operation of a division requires hearty co-operation and teamwork on the part of all concerned.

A TRAIN DISPATCHER.

### A Comptroller on the Wage Question

OUT-WEST.

TO THE EDITOR:

I have noted with interest the letter in your issue of October 22 by "Locomotive Engineer." It contains many points of value but is chiefly noticeable for the half truths, or what it leaves unsaid.

It is not my purpose to launch an attack against labor organizations, as they could, if they would get the right perspective, become valuable allies to the management and by proper co-operation materially reduce the operating expenses without reducing the rates of pay. The accounting officer is rather in the position of an umpire analyzing the results by the cold facts at hand rather than argumentative premises.

Consider "Locomotive Engineer's" remarks relative to propaganda. The writer follows both sides of the question, reading the various labor organization journals, and it is hard to find more insidious propaganda than is contained therein. Much of it is written by men of such apparent intelligence that we can only conclude that the statements made are deliberately misleading, such as many of the comments made during the time that the "Plumb plan" was to the forefront, or figures given out as facts relative to the cost of overhauling equipment in outside shops, etc.

The most glaring example of misleading information given the public is the rates of pay for men in train service. The statement is often made, quoting from the schedules, that the rate of pay for a freight brakeman is only \$4.68 for a day's run, or for a locomotive engineer is \$7.20, and so on. As a matter of fact the published rate of pay has very little to do with the amount of remuneration received. The so-called "working conditions" are not working conditions at all for the most part, but are pay additions that add about 100 per cent to the rate of pay. There is no possible condition in actual practice under which an engineer could draw only the day's rate of pay; if he made a run in four hours he would get the rate for eight hours and in addition would get 45 minutes preparatory time before starting the run and quite likely 30 minutes' detention at the end of the run, although the entire time on duty was less than six hours. This is only one instance of perhaps 25 different situations that daily arise that add to the rate of pay. On the road with which the writer is connected the schedule rates of pay for passenger engineers vary from \$5.56 to \$6.29, or theoretically something less than 60 cents per hour; the amount actually paid was \$1.33 per hour for the year 1920. It is possible under many conditions for an engineer to draw two days' pay for six hours work under existing schedules.

Why not in a straightforward manner make the "rates of pay" state the compensation actually and entirely paid for given services rendered so that no one would be misinformed; why not have the "working conditions" deal with working conditions only, such as the various provisions now in effect that engineers shall be furnished places to sleep at distant terminals with ample blankets, bedding, etc., and the various other conveniences that the railways are glad to provide but which travelling employees in other lines of work do not get the benefit of.

Another point brought out by "Locomotive Engineer" with reference to delays and getting over the road was good as far as he went, but the question as to the cause and prevention of

these delays should have been gone into further. He charges that the delays *per se* to the management, but let us follow one of these freight trains through a typical run. It arrives at a station about noon and stops for 30 minutes to unload way freight; it goes on a few miles and the engine crew stops 40 minutes to eat at a station where there is no work to do. This time is absolutely lost whereas with a little co-operation between the conductor and engineer the engine crew could have eaten while the way freight was being worked a few miles back. The conductor with running rights between two stations is for the time being practically general manager of this territory and by handling the situation in co-operation with his engine crew, as if it was his own business in which he was vital and financially interested, about all of this delay could be avoided. There are many times when a conductor can anticipate closely how much time will be required for several stations ahead and likewise an engineer can reasonably figure ahead where he will require water, coal, meals, etc. If the dispatcher is advised well in advance he can arrange movements without delay, but if he expects a train to make usual running time, and it is suddenly held up somewhere 30 minutes there may be several trains following it and superior class trains meeting it, and there is bound to be some time lost on single track mileage.

If "Locomotive Engineer" could just reverse the sentiment expressed in the next to the last paragraph of his letter and instead of saying that a bunch of railroad men can "gyp" a railroad more ways than a farmer can come to town, state and follow up the statement by example, that a bunch of railroad men by hearty co-operation can eliminate half the delays to trains, so that it would not be necessary to reduce wages to make both ends meet.

COMPTROLLER.

## Mr. Ford's Methods of Operating a Railroad

BUFFALO, N. Y.

TO THE EDITOR:

The numerous contributions which have recently appeared in the *Railway Age* commenting on Henry Ford's operation of the Detroit, Toledo & Ironton are interesting, but as Goldberg would say, "They don't mean anything." It is unfortunate for purposes of analysis of Ford's railway methods that as a shipper he has been able to so greatly increase the gross volume of business done by his railroad. It was a well-known fact that it never had been worked anywhere near capacity and the increased business has totally obscured any net results which his rather radical departure from the usual methods of running a railroad may have produced. As the *Railway Age* suggests, it would be fortunate if his methods could be tried out on a larger and more typical railroad system, and one on which his ability as a shipper to divert traffic would not be a controlling factor.

It must be admitted that the railroads are a fertile field for trying out some of the methods of operation, handling and developing personnel, etc., which have proved so successful in his automobile factory, as well as in many other progressive industrial concerns. On the other hand, granted that a new broom sweeps clean, it seems a little far-fetched that he should claim that factory executives with absolutely no practical knowledge of railroading would be preferable for his purposes on the D. T. & I. Surely, in an industry as large as transportation, there must be a few trained railroad officers thoroughly grounded in the fundamentals of their calling who are not so perfectly satisfied with themselves, or so steeped in tradition, as not to be willing to try new methods which give promise of greater operating efficiency.

There is, of course, nothing new in Ford's methods of diverting traffic, securing a larger percentage of the through

rate, etc. Industries have operated railroads as a part of their plant facilities for many years, but just why it is legal for an industry to control a railroad, but illegal for a railroad to own a coal mine, is one of the vagaries of the law.

When we turn to Ford's operating policies, we find much to commend. His insistence on the prompt movement of traffic from interchange connections, prompt movement over his own road, and a full day's work from each employee for a day's pay, are all features in which many railroads could follow him to advantage. His side tracking the ridiculous train service agreements and putting that service on a straight hourly basis is a healthy development, and while the monthly rates he established for men in train service appear on the surface unduly high, it is my opinion that they will be found on investigation to be not far out of line with the earnings of train and enginemen on other railroads for the same service rendered.

But probably Mr. Ford's greatest contribution to the service of railroading to date is a demonstration of the fact that it is possible to operate a railroad without having any of the employees work an excessive number of hours. Several years ago, while in charge of a construction gang, the writer made an interesting discovery: The gang had been working every day for three months when the policy was inaugurated of not working Sundays. It was discovered, however, that the men continued to do practically as much work in six days as they had been doing in seven, due to the fact that they were in better condition from having proper relaxation and rest. In other words, so far as the railroad company was concerned, the pay for Sunday work had been simply money thrown away.

On the other hand, there seems to be considerable ground to play about Ford's operation of the D. T. & I. A minimum wage of \$6 a day for all classes of railroad labor is certainly unjustified and unfair to railroad workers having the greater responsibilities. I have particular reference to inexperienced junior clerks and section and shop laborers. Just how Ford expects to induce a likely section hand to assume the responsibility of a foreman for 50 cents more a day is one of the things not explained.

On the other hand, it is evident that Mr. Ford intends to give attention to the building up of personnel and that no slackers will be tolerated. It must be said in criticism of some of the old line railroad managements that they number many men in their employ that no up-to-date industrial organization would tolerate. It seems sometimes that if a man hasn't brains or common-sense enough to get a position elsewhere, he has no trouble in attaching himself to the payroll of a railroad, where his tenure of employment seems to be in inverse ratio to his ability and the interest he takes in his job.

As a former railroad supply representative calling on railroad officers in all parts of this country, the writer used to stop at times to wonder just where we were heading, because of the attitude which seemed to be held in common from some of our highest executives down to the most lowly employees, that the railroads were run for their special benefit, rather than to make money for their stockholders and serve the public. If Mr. Ford can secure the good will and whole-hearted co-operation of his employees on the D. T. & I. and show us the way out of the present position of stagnation—somewhere between army regulations and civil service practice—into which our railroads have fallen he can at least be considered enough of a public benefactor to counteract his inflicting us with his infernal divver.

In this connection it seems only right to give credit where it is due. The Erie Railroad has apparently secured a remarkably strong organization under the regional plan of operation it adopted some months ago, and while none of the regional managers are personally known to the writer, it is refreshing to note with what marked success they have been able to secure the interest of their subordinates in the well-

fare of the railroad. The remarkable spirit of co-operation existing on this particular railroad between officers and employees of every grade, and between the various departments of the railroad is in sharp contrast to conditions existing on that particular railroad a decade ago, or for that matter on many other railroads today, where they seem to be entirely lacking in a knowledge of the fact that successful railroad-ing requires first of all a well developed spirit of team work.

CHARLES C. HENKEL.

## Do the Railroads Really Want College Men?

GREENVILLE, Pa.

TO THE EDITOR:

I have been following with considerable interest the discussion created by my letter in the *Railway Age* of June 17, 1921, on the subject "Do the Railroads Want College Men." The subsequent articles and letters showed more interest in the subject than I had expected or hoped for. The article by Mr. Hanson, *Railway Age*, September 10, 1921, and the one by Mr. Ennes, *Railway Age*, August 20, 1921, brought out a number of points that should be considered by both the railroads and the colleges. I have also received several personal letters that bring up points that were not discussed in any of the letters or articles published in the *Railway Age*. It is evident that both the railroads and the colleges are anxious to do something. The question in my mind now is, how are the two interested parties going to get together, and who is going to do it?

If no action is taken by someone in authority, all the discussion on the subject will avail us nothing. It appears to me, after all the interest that has been shown, that it is the business of the American Railway Association to see that some step is taken towards the proper solution of the problem. In my previous letter I proposed some possible solutions. Perhaps they are not feasible. Before any college can introduce such a course as proposed by Mr. Ennes, for example, it is essential that the railroads and the college have a thorough understanding of each other's requirements and also the problems involved in the successful maintenance of such a course. Is not now the proper time for the American Railway Association to make the settlement of this important question a part of its program?

MARION B. RICHARDSON.

## What Makes a Good Chief Clerk?

DALLAS, TEXAS.

TO THE EDITOR:

After nearly 15 years' service, 10 of which have been in transportation work and with the same road (M. K. & T.), I want to express an opinion as to what makes a good chief clerk, based on experience as a chief clerk in division and general offices.

The essential prerequisites of a 100 per cent chief clerk are many, and among them I consider experience, relationship and appearance paramount.

Experience means having a thorough working knowledge of office details, both in the immediate office and in the offices under his jurisdiction; this necessarily is gained by "working up."

Relationship comprises several qualities—the ability to keep in personal contact with subordinates and at the same time maintain proper discipline, to be on a cordial footing with other offices, to do business in such a way as to leave no question of doubt in the minds of those concerned of one's good intentions, creating thereby a feeling of reliance. The relationship between a chief clerk and his "boss" must

be close and there must exist a mutual friendly feeling if the chief clerk is to perform his duties and look after the interests of his boss 100 per cent.

Appearance, in my opinion, comprises the ability to meet the public and transact business in a manner that will leave a kindly feeling for the road and the man he is working for, regardless of the action involved, be it favorable or unfavorable.

These qualities are essential and must be supported by the ability to profit by criticism from superior officers.

K. WILLIAMSON,

Chief Clerk to General Manager, M. K. & T. Ry. of Texas.

## A Plea for the Senior Clerks

ALTOONA, Pa.

TO THE EDITOR:

Your editorial in the *Railway Age* for October 29, entitled, "How Railroad Wages Should Be Readjusted," has struck a responsive chord in the hearts of many employees. It states in general terms facts that are so unfair and so harmful, not only to the affected employees themselves but to the railroads as well, that wide publicity, embodying actual cases and figures for comparison, is fully justified.

One does not have to go to the conductors and engineers only to find a class of men who fared poorly at the hands of the Railroad Administration and the Labor Board. There are to be found even more flagrant cases among the experienced salaried clerks. Many of them have served longer periods of training to qualify for the positions they now hold than did these roadmen and, like the roadmen, would be in many cases unsuited for any other vocation in life. Yet these experienced clerks in general received but two increases during government control, and these were the same, and in some cases even less, than those granted the newest and most inexperienced clerks in the service.

From the present payrolls, as compared to those of December, 1917, one would believe that these senior clerks were intentionally singled out for neglect. To make this unfortunate condition even worse the first meager increase given to the clerks was made so that the major portion of it took effect eight months after the vast majority had received theirs.

These employees were, prior to government control, paid in proportion to the responsibility of their work, their salaries comparing very favorably with the recognized supervisory classes. For example, they were being paid approximately \$100 to \$120 per month and, with the addition of the last award by the Labor Board, were boosted to approximately \$150 and \$170 per month, or an average of 47 per cent. To readily see how glaring this comparison of increases is with other classes of shop employees, study the following table:

PERCENTAGE OF INCREASES GRANTED JANUARY 1, 1918, TO MAY 1, 1920

Shop craftsmen .....	96 per cent
Shop laborers .....	94 per cent
Junior clerks .....	88 per cent
Assistant foremen .....	83 per cent
Gang foremen .....	75 per cent
Foremen .....	72 per cent
Senior clerks .....	47 per cent

As will be seen, the experienced clerk received less than half the percentage the craftsmen received, and a goodly portion of that, as stated, eight months after the said craftsman had his! The human power of expression is utterly inadequate to give anything but a vague idea of the depth of feeling which permeates the hearts of these particular clerks because of this unfair treatment. The blame for this cannot be placed on any man or any set of men but against a huge, top-heavy and unwieldy system, totally incapable of dealing in general rules with such complex conditions.

How now are these inequalities to be smoothed out? How can not only this experienced clerk, but in some cases the minor chief clerk, the roadman, the telephone operator and

many other classes who have fallen behind in momentary recognition, have this recognition restored? How are they to be recompensed for the money lost because of this lack of recognition? As you state, "some are overpaid, some not much overpaid and some very much underpaid." Those in the first class profited, those in the second kept even and those in the third lost.

The period of deflation is at hand and underway. This is necessary if our country and the world wants to resume business so that all persons can work and earn a living. In this deflation in wages and salaries it could hardly be called fair to deflate all alike—"those who were overpaid, those who were not much overpaid and those who were underpaid." Surely the wisdom of the railroad managements will assert itself and speedily remedy the grave injury done to a class of employees than whom there is none more loyal, more faithful nor more efficient.

A. C. MYERS.

## Objects to Being Classed As an "Official Goat"

SOUTHWESTERN DISTRICT, U. S. A.

TO THE EDITOR:

I have read with interest the indictment against executive officers of our railroads in your issue of September 24, entitled "The Official Goats" and written by one presumably a secretary to a general manager.

I have been a secretary for the past nine years, part of it in railroad work. During my railroad experience I have yet to be "bawled out" by the GM or any other official, at the breakfast table or any other place, either for my own failures (and there have been a few, I admit) or for the failure of any of my fellow employees to "deliver the goods." It is true that sometimes things do not go just right (and this applies to other lines of endeavor than the railroads) and the boss gets sore at things in general, and I imagine, myself included. I have never, however, been unfortunate enough to meet or work with one who took it out on his secretary, or heard of one on this railroad (and I believe we have officials who might be termed "hard guys" at that—they have to be). As a matter of fact, had I been the recipient of some of the remarks attributed to the crank in question, I would probably have felt much less chagrin and embarrassment than I did (and do) at the silence which greets a mistake or failure which I may happen to make.

A successful secretary to any high railroad official must be enough of a student of human nature to know and understand the mood of the man he is working with and for, and cater to him as much as does the chef on the car who likes and wants to make a success in his line of work. If a secretary is unfortunate enough to be continually in the position which our friend describes, I blame the secretary as much, or more, than I condemn the man who puts it over on him; if the secretary had not, at some time or other, and probably frequently placed himself in position to merit the remarks in question, he would not have received them as a part of his daily menu. It is up to the secretary to see that there is good ham and coffee and to see that it is correctly served; to see that the mail is there; to see that the car is placed in a quiet place at night, for a secretary likes to sleep just as much as does the GM; and, if possible to do so—subject, of course, to the facilities and work to be done—see that the car is not switched at inopportune times.

You wouldn't throw ashes on the floor in your own home, why do it on the car—it's your home when you are on the road. I have been on the road many times when the "morning reports" failed to arrive; in some instances, when possible to do so, I have planted myself at the elbow of an operator and have seen to it that the report was received.

Another thing which our friend takes exception to is not having the mail ready. Why not have it ready and not let the boss have to ask for it. True, sometimes files are not at hand when wanted; if there is time, wire for them, and if not, take the blame for the failure if you were told beforehand to have the files with you. I have always found it to be a good rule not to leave the vicinity of the car until I see the GM leave; then I feel free to go uptown or anywhere else my fancy may dictate without having to ask him and risk a refusal in the terms quoted.

This letter is not meant as a defense for the railroad official, but as a defense for the secretaries who are classed involuntarily as "The Official Goats." There are none of us on this railroad, and we number considerably more than a score, who are forced to put up with this abuse.

It is true that present-day railroading offers little future for the secretary. He must be a little above the average or he could not hold the position he does. Too generally, this above the average does not mean in railroad knowledge, practical or theoretical, but in the profession of stenography. To the railroad executive who has worked his way from the ranks, a man who understands only stenography does not mean much as a possible future railway executive. It is discouraging to a secretary to spend, as our friend recites, years on the road, in the office, up at all and any hours of the day or night, and who must understand all phases of railroading from maintenance to operation and accounting, to see when there is an opening which he might, by reason of his experience and knowledge fill to entire satisfaction, a man appointed who is probably not and never has been an employee of the road in question. However, there is such a thing as going out and getting the place you want, and if I did not think that being a secretary would enable me to reach a higher step in railroad life much quicker, I am frank to say I would not spend nine years finding it out.

A SECRETARY

## Convention Reforms Suggested

TO THE EDITOR:

On page 355 of your issue of August 20 you quote a resolution of the Association of Railway Executives as follows: "Whereas, in view of the imperative need for the exercise of all possible economy, it is

"Resolved, that annual or special meetings or conventions of all organizations under the supervision of this body be indefinitely postponed or curtailed in every possible way."

It is logical to deduce from this, for example, that the meetings of the American Railway Master Mechanics' Association and the Master Car Builders' Association and their successor were not profitable to the railway companies. Such is, of course, far from the fact. In my opinion, however, a number of changes are needed in the attitude of the railroads and of association members toward these meetings. These are:

First, a broader representation by most roads.

Second, see that representatives are instructed to give freely all information at their command and to enter into the discussions with vigor. Representatives should be instructed to attend each session, whether or not they think they will be interested in a particular part of certain sessions.

Third, all entertainment should be paid for personally by the representatives, not by the companies they represent, and should be in charge of a committee of railroad men exclusively. It can, of course, be accepted as axiomatic that the Atlantic City expenses ultimately are paid by the roads at the purchase price of materials and while this does not amount to much to an individual road, the principal's had.

ONE WITH CONVENTION EXPERIENCE.



New Coal Cars for the Austrian State Railways

# Central Europe's Roads Need Fuel and Equipment

Political Considerations the Greatest Obstacle, but Rolling Stock and Fuel Are Inadequate

By W. B. Causey  
Technical Advisor to Austria

THE RAILWAY LINES of what was formerly the Austro-Hungarian empire are all intact and are in the main in excellent physical condition, but, as was emphasized in a previous article (*Railway Age*, October 15, page 705) normal traffic will never be resumed until the new states which were formed out of the former Austro-Hungarian empire are willing to co-ordinate their resources and facilities. Naturally there is a shortage of rolling stock, both motive power and cars, but, for the present, it would not be necessary to build a single new locomotive or a single new car if the bad order locomotives and cars which have been standing around for three years were repaired and put in service. It is not necessary to state that these bad order locomotives and cars could be available for service at a fraction of the cost of purchasing new equipment.

In 1919 and the first half of 1920 shortage of coal was a bad handicap to railroad operation in all the succession states. During the past six months there has been a considerable increase in coal production, or at least in the allocation of coal for transportation purposes, and now the principal trouble is shortage of locomotives and cars.

Since the dissolution of the old monarchy the rolling stock of the Austrian State Railways has been known as "common" or "pool" stock. The peace treaties provide that this common stock shall be divided among the new states by a commission composed of representatives of each of the new states, presided over by an Allied official. This commission was duly organized late in 1919 and has been presided over by an English railroad manager, a man well known to the railroad world in the United States, Sir Francis Dent, but up to the present time repartition of rolling stock has been only partially made. The failure to repair and put in service more of the bad order locomotives and cars has been largely due to the deferred action of the Repartition Commission, as the

various states did not want to repair rolling stock until its ownership had been settled. Sir Francis Dent probably has had one of the most trying assignments made by the Peace Conference.

## What Co-ordination Can Do

What centralization of authority and co-ordination of resources and facilities can accomplish in the movement of



Bridge and Tunnel on the Tauern Railway

traffic was shown in the early spring of 1919 when the first foodstuffs were sent from America for the relief of Czechoslovakia and the other states. The ships were discharged at Trieste and, owing to the lack of co-operation of the Italians, Jugoslavs, Austrians and Czechs, only 250 tons of flour were

being moved daily out of Trieste until the Allied Railway Mission was brought into existence by the Supreme War Council in Paris and a mandate given the president of the mission to disregard political boundaries, to use the railroad personnel of one country in another country if necessary, to mark locomotives and cars for relief work only and to give the relief traffic priority over all other except that for military operations.

The Allied Railway Mission was organized about March 20 and within 10 days 1,000 tons of flour were being moved daily out of Trieste and at the end of 30 days this movement had increased to 3,000 tons daily. During the 10 months' life of the Allied Railway Mission something like 500,000 tons of relief traffic was moved. This illustrates what can be done by co-operation and properly exercised authority.

There is no lack of technical skill or intelligent personnel on these railways. Dr. Burger, minister of railways in Czechoslovakia; Dr. Pesta, minister of railways in Austria and his general manager, Bruna von Enderes, and President Kelety of the Hungarian State Railways were the technical directors of the old Imperial Austrian State Railways and Hungarian State Railways and they are experienced, practical railroad men. The State Railways of the Kingdom of the Serbs, Croates and Slovenes—Serbski, Hrvatski, Slovenski or S. H. S. as it is usually called—also have thoroughly competent technical directors. These Yugoslav railroad men have a most difficult task in co-ordinating and re-arranging the railroad lines of the territory constituting the new kingdom. The closing of Fiume to all traffic during the past 18 months has been a serious handicap to Yugoslav commerce and has greatly retarded the work of the railway administration.

#### Rumania Needs Assistance

In Rumania railroad administration seems to have broken down entirely, and it is very evident that the Rumanians



In the Semmering Alps

must secure foreign talent to re-organize their transportation system, and especially to organize and operate their repair shops. Because of the entire breakdown of the Rumanian railroad organization, the 2,000 locomotives and the 50,000 cars which the Rumanians took out of Hungary in 1919 have not only been of no service to them, but have actually

proved a liability because they clog their side-tracks and yards and interfere with even the partial operation of some of their main lines.

The locomotives and about 70 per cent of the cars were owned by the Hungarian State Railways and about 30 per cent were owned by the Austrian State Railways, and,



In Upper Austria

therefore, all of this equipment was the common and undivided property of the succession states. Notwithstanding this common ownership, the Rumanians have paid no attention to the demands of the Paris conference or of the other succession states for the return of this equipment and for its proper division and, notwithstanding the vast number of locomotives and cars in Rumania, practically all of this equipment has become unserviceable by reason of Rumanian inefficiency. The Rumanians are buying new locomotives instead of reorganizing their shops and repairing the equipment already in their possession.

In Poland it was necessary to organize the railroad administration. The Poles have worked under great difficulties but they are gradually bringing their railroad system into efficient working condition.

A definite settlement between the Germans and the Allies will immediately go a long way towards stabilizing not only political but economic conditions in Central Europe, and until the German question is settled but little improvement in the Central European situation can be expected. Moreover, unless the issues with Germany and with Central Europe are settled soon there will be danger of much greater social disorder than has yet been seen in Europe. If this state of affairs should come about, it is hard to see how America could hope to escape contamination.

The lack of coal has been one of the most serious obstacles to the proper functioning of the railroads in practically all the territory of the old empire since the revolution. The

lack of coal has been one of the most serious obstacles to the proper functioning of the railroads in practically all the territory of the old empire since the revolution. The

principal supply of railroad coal was obtained from the mines in Upper Silesia and from the mines in the Ostrau-Karwin (Teschen) District. The new state of Austria produces only about 10 per cent of its fuel requirements and this in the form of lignite of low calorific value. Austria has been, therefore, entirely dependent on importation of transportation coal. Programs for distribution of the Upper Silesian and Teschen coal have been under consideration by the Paris conference for more than a year and a half and still no solution has been reached. This has resulted not only in making it impossible to run enough trains to take care of the needs of the country, but it has more than once been necessary to suspend all passenger traffic for more than 10 days at a time and to suspend all freight traffic except coal and the necessities of life.

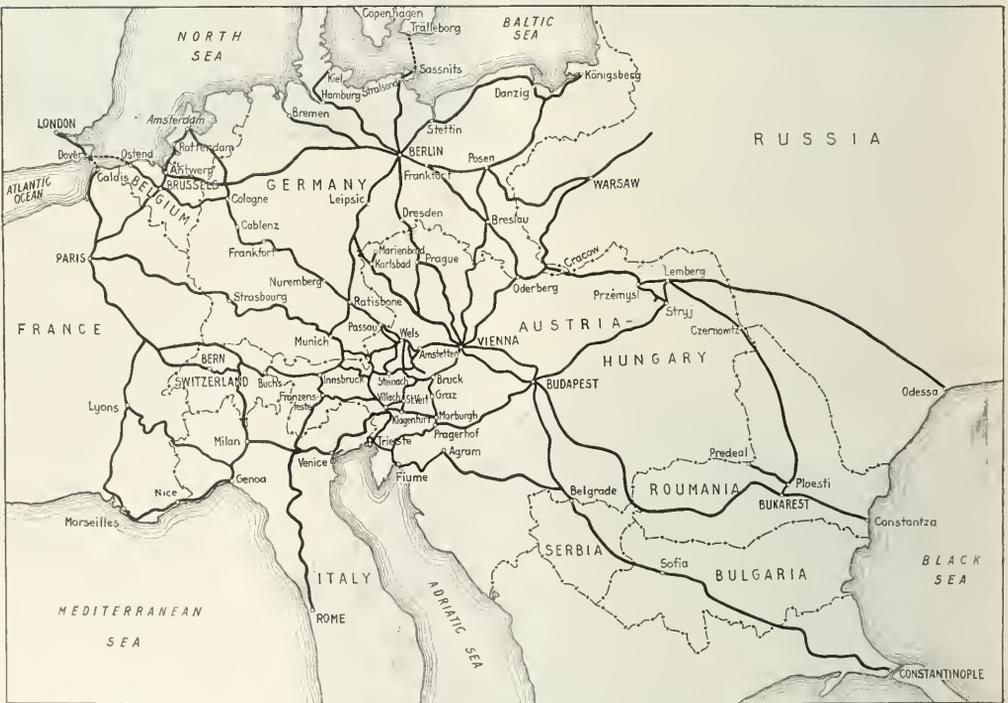
**Increasing Traffic**

Hungary produces a much larger quantity of fuel but practically all of it is also a poor grade of lignite. Neither

senger tonnage during the past 12 months and this increase would have been much greater had more coal, more locomotives and more cars been available. In a general way the freight traffic is about 60 per cent and the passenger traffic about 40 per cent of that of pre-war days. Business conditions have improved slowly and are continuing to improve, and as these conditions improve there is a great demand for more and better transportation facilities and until it is possible to meet these demands there cannot be a return to normal trade conditions. In some of the states, especially in S. H. S., considerable new construction is necessary and has been planned. In most of the states, however, very little new construction will be needed.

**The Future of Vienna**

There has been some talk of Vienna losing its commercial and transportation prominence as well as its political supremacy. But, notwithstanding the dismemberment of the Austro-Hungarian Empire, Vienna will always retain its im-



Principal Railways of Central Europe Before the War, Showing Importance of Vienna as Railway Center

Austria nor Hungary produces gas coal or coking coal. In Hungary the operation of the lignite mines has been badly handicapped at times by the inability of the Hungarians to provide themselves with props and other mine timbers. When the new frontier of Hungary was established the timberlands were given to Czechoslovakia and Rumania. There must be a definite and equitable distribution of coal by authority of the Allied governments in order that the railroads may properly function and this control must continue until return of normal interchange of business makes it possible for the new states to enter into agreements with the coal producing districts for the direct purchase of coal in the open market.

There has been a large increase in both freight and pas-

portance as a transportation and commercial center. Railroads as a rule, follow the lines of least resistance. Consequently, because of its geographical location as well as because of its importance as a great capital and a great financial and industrial administrative center, Vienna is the axis to which railroads from all directions converge and from which they radiate.

Even though Vienna has lost its political supremacy, it will probably continue to be the gateway to the East. It is not even among the probabilities that the traffic of the Channel ports and the Baltic en route to the Black Sea and Southeastern Europe will ever be diverted from Vienna by the building of new railroad lines across country, which,

speaking from an engineering point of view, is almost impossible. Nor is it likely that new railroad lines will be built to handle the traffic from the Galician oil fields and from the immense coal fields of Upper Silesia and the Ostrau-Karwin district in Czechoslovakia, which traffic now moves over the double-track railway system from those great producing centres to and through Vienna. Neither is it probable that another line of railroad will be built to compete with the double-track Southern Railway from Vienna to Trieste, with its well constructed branch lines to Jugoslavia, to Hungary and to Italy.

The topography of the country is such that the great railroad lines from west to east must pass through Vienna, Budapest, Belgrade, Sofia and Constantinople to the southeast, and Vienna and Budapest to the east and northeast. It does not require an expert engineer to verify these statements. A glance at a topographical map would at once convince even an unpracticed eye of the impracticability of building new railroads to divert traffic from Vienna.

Besides having these well-built lines of travel, Vienna has all the commercial and physical facilities for handling the



A Scene in Vienna

traffic and the trained official and clerical personnel for its administration and manipulation. It is not likely that sane business men would throw away such assets to build new routes of travel, simply for the purpose of avoiding Vienna.

The interested reader is invited to make a careful inspection of the railroad map of Central Europe and compare the statements herein contained with the railroad lines now in existence which connect the great commercial centers. An intelligent inspection of the map will corroborate the statements.

In addition to its importance as a railroad center Vienna is also an important river port. The trans-shipment from rail to river and vice versa in 1912 was 1,460,000 metric tons. The port is excellently equipped with both locomotive and stationary cranes for transferring freight from cars to barges and steamers, and the most important inland navigation company in Central Europe has its headquarters in Vienna. The extensive port facilities attract traffic from the interior for the territory served by the Lower Danube and the most excellent railroad facilities bring to Vienna return traffic from the agricultural country between Budapest and the mouth of the river. The trans-shipment traffic at the port of Vienna was increasing at the rate of about 10 per cent per year when the war came. British business men have purchased a large interest in Danube river shipping and the return of normal conditions in this part of the world will give a great impetus to river traffic and will thus add to Vienna's importance as a transportation center.

## Automobile Freight Carriers In New England

GERRIT FORT, vice-president of the Boston & Maine, in an address before the Associated Industries of Massachusetts in Boston, October 27, reviewed the whole question of automobile truck competition, as affecting the railroads, and told his hearers that the recent action of his road in reducing freight rates to meet automobile competition had thus far proved encouraging. He said, in part:

Local express companies operating in freight service have been working on the Boston & Maine for more than 30 years and their service has come to be regarded as a useful public facility. They furnish door-to-door service comparable with that provided by the motor trucks, and the railroad is relieved of all station expense. Our commodity rates applicable to this local freight have been increased from time to time in the same measure as all other rates, and as a consequence a substantial part of the traffic they formerly handled has been diverted to the motor trucks. Believing that if we removed a part of the more recent increases we could recover some of the traffic which had gone to the highways, we reduced rates about sixty days ago.

About the same time we reduced our ferry car minimum from 12,000 lb. to 8,000 lb. The business depression, as well as motor truck competition, had made it very difficult to load ferry cars to the 12,000 lb. minimum. We found that shippers who were unable to furnish 12,000 lb. at one time put their shipments on trucks, and instead of taking them to the freight house, moved them through to short-haul destinations, saving the loading and unloading expense at the freight terminals. We discussed the matter frankly with the representatives of organized industry, and, before reducing the minimum, secured an understanding, so far as it was possible to arrive at an understanding in advance, that if and when business increased to such an extent as to result in a shortage of cars, the ferry car minimum would be increased without the opposition of these organizations. The results under this plan have been entirely satisfactory.

We also established rates on sand, gravel and crushed stone to meet truck competition, and thereby materially increased our tonnage in these commodities. Great quantities of wood were moving over the highways from Boston to the mills in outlying manufacturing towns, and in the hope of reclaiming a part of this traffic we restored the rates which were in effect prior to the 40 per cent increase of August, 1920. This arrangement has been in effect but a brief time and we cannot say whether it will accomplish the hoped for result. We have made, and will continue to make, other rate reductions on specific traffic where it appears that we can successfully compete with the trucks and get back a new dollar for an old one.

Today terminal expense constitutes the most important item in the cost of handling traffic on the Boston & Maine, and there is some doubt whether the burden of transportation charges is equitably distributed between carload freight. If the truck can furnish better transportation than that provided by the railroad at the same cost, or as good at less cost, it is bound to get the business. Service and rates being fairly equal, I think the shipper ought to prefer, and I believe will prefer, the railroad, for the sphere of the truck is, after all, limited, while the railroads will continue to be a vital necessity, and in order to function must be supported.

The astonishing development of the use of motor trucks has been so rapid that its history is hard to trace. As the demand for raw material and finished products multiplied during the war on a constantly ascending scale, the traffic followed the line of least resistance, and the use of motor trucks was stimulated to a remarkable degree and was accelerated by the increases in freight rates. In Massachusetts in 1915 were 12,053 trucks and in 1920 there were

52,968. In little Knod Island the number of truck registrations increased from 1,629 in 1916 to 9,768 in 1920. The other New England states have had a corresponding increase in registrations.

Today there are plenty of idle trucks in New England and plenty of idle men to man them. Many of the operators regard as profitable any earnings which will pay the cost of gasoline and labor, and little attention is given to depreciation or interest on the investment. Most truck operators are making their rates strictly on their conception of what the traffic will bear, and are changing them at will to meet situations as they find them. Contrast, for a moment, the different situation of the railroads; in a recent case in Massachusetts, where we proposed to reduce our local express rates on short notice, the Commission declined to give the necessary authority, and we had to wait 30 days before making the reduction effective. In this rigidity of railroad rates lies one of the most important reasons why the railroads cannot at this time successfully meet motor truck competition. Let me compare the registration fees which the trucks pay and the taxes which the owners of homes are required to pay. In seven selected towns in the suburban district of Boston the tax rate on real estate averages \$27 per \$1,000. The man who owns a modest home, assessed at \$5,000, is subject to an annual tax of \$135. A 3½-ton truck, delivered in Boston, would cost approximately \$5,000, and the present annual registration fee for such a vehicle would be \$40.

The state generously maintains excellent highways, practically free to the use of trucks. It cannot be said that this is fair to the taxpayers, including the railroad which bears its fair share, and a large one, of the burden of taxation. However, suitable laws will, no doubt, soon be enacted by the various states.

The truck has come to stay. There is no use fighting it. What railroad men should study is the best way to co-ordinate their own facilities with those afforded by this new factor.

## Statistics on the Preservation of Timber for 1920

**D**URING 1920 so decided an advance was made in the amount of timber preservation carried on in the United States as to more than wipe out the lead which had been maintained by the pre-war record, according to statistics prepared by the United States Forest Products Service in co-operation with the American Wood Preservers' Association and published in the annual proceedings of the latter organization. As shown by the report, a total of 173,309,505 cu. ft. of wood was subjected to preservative treatment. This figure is larger than that reported for 1919 by 27,248,511 cu. ft., or 18 per cent, and 13,726,866 cu. ft. larger than the figure for the banner year of 1914. Consistent with the record of previous years, cross ties again constituted the bulk of all the wood treated, the number reported for 1920 being 44,987,532. This is 7,419,605 more than were treated in 1919 and represents 80 per cent of all the wood treated in 1920. The remaining 20 per cent treated includes 11,965,912 lin. ft. of piling, which is a decrease of 1,591,607 ft. over the quantity in 1919; 585,781 poles, which is an increase of 207,300 over the number for 1919; and 2,568,156 sq. yd. of wood blocks, which is an increase of 772,469 yd. over the number in 1919.

This preservative work was done by 112 treating plants as compared with 108 for 1919. The number of treating plants in the country is now 124 of which 27 are railway owned, 80 commercially owned, and 17 privately owned. The majority of all of these plants and all of the railroad

plants are of the pressure cylinder type. Only one railroad plant was reported idle during the year.

With reference to the amount of preservatives used by the plants during the year, the report shows a consumption of 68,757,508 gal. of creosote, 1,084,911 gal. of paving oil, 1,772,084 gal. of miscellaneous preservatives and 49,717,920 lb. of zinc chloride. The quantity of creosote used represents an increase of 3,201,261 gal. over the quantity used during 1919, but is still much less than that consumed in 1913 when the consumption exceeded 108,000,000 gal.

As of the total amount used during 1920, 9,575,680 gal. was imported, a considerable increase having taken place in the importation of oils with the resumption of ocean transportation.

In contrast with creosote the zinc chloride figure not only shows an increase of 6,234,795 lb. over the figure for 1919, but represents the largest amount of this preservative thus far used by the industry.

The report is particularly interesting with respect to cross tie preservation. Of the number of cross ties treated during the year 33,300,339 were hewed and 11,687,193 sawed and the total number treated for the steam railroads was 42,676,739. Yellow pine ties again rank first, the number treated being 16,621,773, while oak ties and Douglas fir rank second and third, the number of these ties which were treated being 14,531,848 and 3,861,514 respectively. Of the total number of ties treated for the railroads 1,579,552 were reported as having been adzed before treatment, 295,577 bored, 8,249,591 both adzed and bored and 32,552,019 neither adzed nor bored. The number of cross ties treated with zinc chloride in 1920 was 29,132,720 while less than half as many or 13,371,517 were treated with creosote. The number of cross ties now being treated exceeds the number of any previous year.

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS OF THE UNITED STATES, 1909 TO 1919

Year	Active plants	Creosote (a), gallons	Zinc chloride, pounds	Other Preservatives (b), gallons
1909.....	64	51,431,212	16,215,107	
1910.....	71	63,266,271	16,802,532	2,333,707
1911.....	80	73,027,335	16,359,797	1,000,000
1912.....	84	83,666,490	20,751,711	3,072,469
1913.....	93	108,373,359	26,466,803	3,885,738
1914.....	94	79,334,606	27,232,259	{ 9,429,444d 2,486,637
1915.....	102	80,859,442	33,269,604	{ 3,205,563d 1,693,544
1916.....	117	90,404,749	26,746,577	{ 5,675,095d 582,754
1917.....	115	75,541,737	26,444,689	{ 7,579,819d 137,361
1918.....	107	52,776,386	31,101,111	{ 4,057,862d 28,013
1919.....	108	65,556,247	43,484,134	{ 2,412,592d 102,011
1920.....	112	68,757,508	49,717,929	{ 1,848,911d 1,772,084

(a) Includes coal-tar creosote and water-gas tar.  
 (b) Includes refined coal-tar, corrosive sublimate, and carbolineum oils.  
 (c) Statistics not available.  
 (d) Paving oil.

## Correction

**I**N THE ARTICLE on "Railway Statistics for Year Ending August 31, 1921," published in last week's issue, page 898, it was erroneously stated that the net operating income of the railroads for that year, \$530,000,000, was greater than it was during either 1918 or 1919, while the roads were under federal control. The statement was true as to 1919, when the net operating income was \$5,600,000, but not for 1918, when it was \$690,000,000.

# Labor Board Hands Down Significant Decision

## Carriers "Ability to Pay" Recognized as "Secondary" Factor in Fixing Wage Scales

A significant decision accompanied by two highly significant dissenting opinions was handed down by the Railroad Labor Board recently in a dispute between the New Orleans Great Northern and its train and engine service and maintenance of equipment employees, station agents, assistant station agents and telegraph operators. The majority decision of the Board recognizes for the first time that "the ability of the carrier to pay" is even a "secondary consideration" in determining wage scales. The two accompanying dissenting opinions are significant in that they are both filed by members of the labor group on the board. A. O. Wharton, formerly connected with the Railway Employees' Department of the American Federation of Labor, filed a long dissenting opinion having particular reference to "the manifestly unjust and unreasonable treatment accorded shop employees in this decision and the indefensibly low rate established for labor." W. L. McMenimen, formerly connected with the Brotherhood of Railroad Trainmen, stated briefly that he could not accord with the majority decision and would not concur in the dissenting opinion of Mr. Wharton because "it contains many misleading and greatly exaggerated statements." Referring to this brief statement of Mr. McMenimen, Mr. Wharton said: "A mere declaration without supporting data or facts represents nothing and needs no other reply."

The statements contained in this decision and the dissenting opinions indicate, first, that the Board, despite its previous stand that the "ability of the carrier to pay" is not a factor in determining just and reasonable wage scales, is now of the opinion that this condition is at least a factor of "secondary consideration," and furthermore that testimony regarding the ability of the carrier to pay cannot be considered henceforth as irrelevant testimony; second, that there has been a definite break in the ranks of the labor representatives on the Board similar to the break between the train service and other organizations formerly included within the "associated standard recognized railroad labor organizations."

### History of the Controversy

The New Orleans Great Northern was not a party to Decision 147, which ordered decreases in rates of pay last July, and upon the request of this carrier hearings were held before the Board on September 15 at which it presented data and arguments in support of its requests for wage decreases and revisions of rules and working conditions. This decision deals only with wages and reserves the question of rules and working conditions for further hearings.

The carrier testified at the September hearings on an operating deficit of \$500,000 for the year 1920, a further operating deficit of \$95,000 for the first half of 1921, together with deferred maintenance totaling \$400,000 accumulated since the end of federal control. The testimony presented by both sides in this controversy is summarized by the Board in part as follows:

The carrier's presentation showed in detail the effect of the various wage increases upon this situation since December, 1917, and also a comparison of existing rates of wages with lower rates paid similar positions in outside industries.

The exhibits filed by the carrier show that generally speaking the carrier is without through traffic and its local traffic is at a low ebb due to commercial inactivity in the territory it serves; that the train service provided is only that necessary to meet actual needs and the requirements of the various state public service commissions exercising jurisdiction; that

the property is being economically administered as far as may possibly be done under existing conditions; and that the cost of substantial necessities, i. e., groceries, meats, dry goods, and wearing apparel, March, 1921, as compared with July, 1920, shows an average decrease of 35 per cent. It is a matter of common knowledge that in the territory served by this carrier the question of rent does not bear the same excessive relation to the living budget as is evidenced in large centers, and it is worthy of note that none of the employees here involved are required to live in large centers.

Notwithstanding that there were present at the hearing of this application local representatives of some of the organizations involved, who might reasonably have been expected to be thoroughly familiar with the existing local questions presented, no submission was made by them taking issue with the statements made by the carrier's representative.

The Board is sympathetic with the principle that "the ability of the carrier to pay" is not a controlling factor in fixing wages, but recognizes that it is entitled to secondary consideration with a certain type of carrier dependent almost entirely on local business, or whose principal function in the final analysis is the development and upbuilding of a new or comparatively new country.

### Labor Board Reduces Wages

The Board then ruled that, effective November 1, 1921, the following rates are authorized on this carrier:

- (1) Agents and telegraphers—from \$115 to \$120 per month, depending upon duties, stations and usual differentials.
- (2) Train and Engine Service Employees—the rates in effect 12:01 a. m. March 1, 1920.
- (3) Shop Crafts and Roundhouse Labor—here the Labor Board says:

"Special consideration has been given to the rates paid for similar service in other industries in the centers where the carrier's men are employed and the following rates are authorized which, though substantially higher than those paid in outside industries, are felt, under all surrounding conditions, to be fair, just and reasonable."

	Rates per month
Roundhouse foreman .....	\$250 00
Night watchman .....	90 00
	Rates per hour
Machinist .....	\$0.60
Machinist helper .....	.62
Boilermaker foreman .....	.65
Boilermaker .....	.60
Boilermaker helper .....	.42
Boilerwasher .....	.30
Blacksmith foreman .....	.65
Blacksmith .....	.60
Blacksmith helper .....	.42
Hammersmith .....	.60
Heavy fire blacksmith helper .....	.45
Pipefitter .....	.60
Pipefitter helper .....	.45
Tinner .....	.60
Engine inspector .....	.60
Welders .....	.65
Carpenter .....	.60
Painter foreman .....	.65
Painter .....	.60
Electrician .....	.60
Car inspector .....	.50
Car repairer .....	.50
Car repairer helper .....	.35
Foreman car department .....	.65
Workshop .....	.60
Foreman coach carpenter .....	.65
Milium .....	.55
Engine wiper .....	.50
Cinder-pit laborer .....	.50
Machinist apprentices .....	
First six months .....	.32
Second six months .....	.31
Third six months .....	.31
Fourth six months .....	.33
Fifth six months .....	.36
Sixth six months .....	.38
Seventh six months .....	.41
Eighth six months .....	.43

Boilermaker apprentices:	
First six months...	.26
Second six months...	.28%
Third six months...	.31
Fourth six months...	.33%
Fifth six months...	.36
Sixth six months...	.38%
Seventh six months...	.41
Eighth six months...	.43%

Mr. McMenimen's dissenting opinion said in full: "I am not in accord with the majority decision and cannot concur in the dissenting opinion as it contains many misleading and exaggerated statements."

#### Dissenting Opinion of A. O. Wharton

The dissenting opinion of Mr. Wharton, longer than the Board's decision, says in part:

"It is to be noted that the majority decision states that 'the inability of the carrier to pay is not a controlling factor in fixing wages but recognizes that it is most persuasive, etc.' (After this dissenting opinion was filed, the majority decided to strike out the words 'most persuasive' referred to above, inserting in lieu thereof the words, 'entitled to secondary consideration.' In the opinion of the undersigned the change in language represents no change in the principle involved, neither did it affect the decision as promulgated by the majority.)"

Mr. Wharton then launches into an argument on the validity of the "carrier's ability to pay" as a factor in determining wage scales, citing the statement of the Board in denying the petition of the Association of Railway Executives on January 31, in which the request was made for an immediate reduction in the wages of common labor. The Board at that time said: "All questions involving the expense of operation on necessities of railroads and the amount of money necessary to secure the successful operation thereof are under the jurisdiction not of this Board but of the Interstate Commerce Commission." Mr. Wharton also said that "numerous opinions of courts and boards of arbitration specifically excluding 'financial ability' of the carrier from consideration as a 'relevant circumstance' in wage fixing are filed with this board."

Mr. Wharton then attacked the data presented by the carrier relative to the rates of pay in outside industries along its lines as compared with those which the carrier is compelled to pay. Regarding these data, he said: "The rates paid employees in the service of the lumber company (the Great Southern Lumber Company, Bogalusa, La., whose rates of pay were cited by the carrier) are not rates established by organized employees in negotiation with the employer.

No unbiased mind would consider or use the wages and working conditions of unorganized workers as the basis for fixing wages and working conditions of organized workers, who by organized efforts established the right of collective bargaining and who by years of constant effort and the expenditure of substantial portions of their earnings reached a level approximating decent wages and working conditions."

#### Mr. Wharton Attacks Cost of Living Data

Regarding the cost of living data submitted by the carrier, Mr. Wharton said: "The cost of living data submitted by the carrier is very similar to the mass of data filed with the Board preceding its wage reduction Decision 147, and under no circumstances is it entitled to greater consideration." He then pointed out that "the most authentic and uniformly accepted authority on living costs, i.e., the Bureau of Labor Statistics, United States Department of Labor," states that living costs have decreased 18.1 per cent during the period from June, 1920, to September, 1921, and but 1.7 per cent from May, 1921, to September, 1921.

"It is worthy of note," Mr. Wharton adds, "that there has been but 1.7 per cent reduction in the cost of living from May to September, 1921, the period during which the Board

had under consideration the general request for wage reductions, and its findings are set out in Decision 147."

The exact effect of this decision upon the pay of the employees involved was pointed out by Mr. Wharton with a series of tables and analyses which show in general that the minimum daily wages under this decision of machinists, machinist inspectors, boilermakers, boilermaker inspectors, blacksmiths, hammersmiths, electricians and oxy-acetylene welders and carmen will be from \$2.00 to \$2.80 less per day than they were under the rates in effect under Decision No. 2. Likewise, he shows the minimum daily wages of helpers and apprentices will be decreased from \$1.28 to \$2.16 below Decision No. 2 levels.

"It is generally known and recognized that the wages of these skilled workers," Mr. Wharton continues, "practically all of whom are required to serve an apprenticeship of four years prior to receiving the rate of a journeyman, were, prior to January 1, 1918, unjustifiably low. This proposed decision establishes a daily rate for journeymen mechanics that is only 18.5 per cent above the daily wage effective as of December, 1917.

"The majority of the Board, on the same evidence and affecting employees living in the same town, have decided that the employees who receive the highest compensation and who have received the largest money increase, shall be paid the wage rates that were in effect immediately prior to the effective date of Decision No. 2; in other words, one class of employees is to retain all of the increases accruing to them during the entire period of federal control, while another class, admittedly underpaid prior to federal control, are expected to accept a decision that takes from them practically all the increases received during that period. Is it just or reasonable that a journeyman mechanic who is required to serve a four year apprenticeship before receiving the journeyman rate, shall have his earnings for a full month's service (25½ eight-hour days) cut from \$173.40 to \$122.40 or just \$19.12 per month more than he would have earned at his December, 1917, rate, while certain other classes of employees, some of whom are unquestionably less skilled, retain all of the increases granted them during the period of federal control, and which in some cases represent a monthly wage increase approximating 50 per cent greater than that granted journeymen mechanics by this Board's decision?"

Mr. Wharton's next table shows that in the case of train service employees in passenger service, the reductions in the daily rates of pay range between \$.80 and \$1.00.

Other conditions established by this decision and termed "unwarrantable" by Mr. Wharton are, in his words:

1. Hammersmiths, heavy-fire blacksmiths and other blacksmiths are placed on the same rate. There is not an employer of blacksmiths in this country who has not always recognized and paid higher rates for hammersmiths and heavy fire blacksmiths than that paid other blacksmiths.

2. Practically every railroad in this country has established a rate higher than the minimum boilermakers' rate to men assigned as boiler inspectors or flangers and layers-out.

3. Differentials have been established for mechanics in the car department that are not justified; for instance—

- (a) The Board says it is just and reasonable that a car inspector formerly paid the same rate as the passenger-car men is now not entitled to the higher rate; his rate is cut from 85 cents to 50 cents per hour, or 10 cents per hour less than the rate established for the carpenter. No man can be a competent inspector unless he first learns the trade and becomes competent to determine whether or not a car is in a safe and suitable condition to make a trip.

- (b) A millman who has heretofore generally received the same rate as that of the passenger-car men and car inspectors now finds himself defined as not being quite so valuable as that portion of his fellow craftsmen designated as carpenters, and yet by the same authority he is considered more valuable than the car inspector; and the car inspector who, if he is anything, must be competent to judge whether the work of his fellow craftsmen is properly and safely constructed, is decided to be less important than either of his associates.

4. This Board now establishes a rate of pay for these mechanics which in some instances is less than the rate it has established for mechanics' helpers of these crafts in this same territory.

5. By this decision the Board, charged with the solemn duty of establishing just and reasonable wages and working conditions, has decreed that a laborer who has heretofore generally received a rate higher than that paid section labor, shall now be paid a rate of 20 cents per hour. On an eight-hour basis, these men, practically all of whom are able-bodied adults, many of them men of family, are now awarded a rate that will net them, barring accidents, lay-offs, sickness, etc., a wage of \$9.30 per full-time week—a wage that is below the minimum established by various agencies and tribunals as being sufficient to support one worker.

In closing, Mr. Wharton said: "In answer to the reference made to the dissenting opinion by Board Member McMenimen, it is sufficient to say that a mere declaration without supporting data or facts represents nothing and needs no other reply."

### Board Disposes of Several Cases

Comparative quiet in the railroad labor situation has been the order of the past week. Since the settlement of the recent strike issue the Railroad Labor Board has been continuously either in executive session or occupied in hearing testimony in several cases involving individual roads and particular classes of their employees. As evidence of the work which is now being done by the Board, it was announced recently that consideration of the shop crafts' rules would be completed in three weeks. This means that the Board will promulgate such additional general rules as it may deem just and reasonable to be included in all of the individual agreements between the carriers and their own shop crafts' employees, and that the disputes which have been certified to the board as a result of the recent negotiation of new agreements will be decided. In this connection, it was announced that 15 disputed rules have been disposed of by the Board since October 30, the date of the strike crisis. On November 4 the Board disposed of 50 grievance cases in two sessions. The majority of these cases, however, were disposed of by the simple expedient of citing that the Board had no jurisdiction over the subject matter or by referring the dispute back to the interested parties with recommendations.

Three members of the board, G. W. W. Hanger of the public group, J. H. Elliott of the railroad group and W. L. McMenimen of the labor group, began hearings on November 7 at Nashville, Tenn., in a dispute between the Brotherhood of Railway and Steamship Clerks and the Nashville, Chattanooga & St. Louis Railway Clerks' Association, both organizations claiming the right to represent the clerks on the Nashville, Chattanooga & St. Louis in negotiating wages, rules and working conditions with the company. After the Nashville hearings the Board members will go to Chattanooga, Tenn.; Atlanta, Ga.; Dalton, Memphis, Tenn.; Paducah, Ky., and possibly to St. Louis, Mo., to conduct further hearings.

### Brotherhoods Revive Strike Talk

From Cleveland comes the statement that the train service brotherhoods will revive the strike vote and use it if necessary if the "promises" of the Labor Board which led to the recent recall of strike orders are not carried out. The threat is contained in a memorandum mailed to the general and local chairmen and members of the five organizations involved.

The threatened strike was called off, the memorandum asserts, when it became known that unless that action was taken, not only the executive officers of the brotherhoods but the general chairmen and local chairmen would be arrested on charges of conspiracy.

"Due to the memorandum of the Labor Board (abstracted in the *Railway Age* of October 29, page 821) and the further fact of the imminent arrest of the leaders, it was deemed best that the strike be called off," says the circular.

"We think you can readily understand what the effect would be if a strike were put on and all the executive officers, general chairmen and local chairmen were arrested and no one left to direct the movements of the men nor to advise them.

"It may be claimed by some that the promises made by the Labor Board will not be carried out," the circular continues, "due to coercive influence, and, in case this should come to pass, we would be in exactly the same position that we were in after the enactment of the Adamson law in 1916, and the strike vote which is called off at the present time will be revived and used if necessary."

Members of the Board, commenting on the press reports of this circular, pointed out that the Board had made no "promises" officially to the train service employees. No notice would be taken of this latest threat, it was added.

One member of the Board, in discussing the brotherhoods' latest move, deplored the continuance of strike talk on the grounds, not only of its effect upon the transportation industry, but upon business conditions in the country generally. In discussing this point, he emphasized the uncertainty and hesitancy of general business conditions today, attributing this condition largely to such statements as those of the labor leaders in this case.

Speaking more specifically of the Board's memorandum, this member said that every railway executive with whom he had talked since its announcement had heartily agreed in the principle outlined therein, namely, that the disputes over rules and working conditions should be disposed of before the hearings on a further wage decrease are held. In this connection he pointed out that the carriers had variously estimated the savings which might be derived from the abrogation of the National Agreements at from \$300,000,000 to \$500,000,000, and it was furthermore pointed out that the Labor Board's statistician recently estimated that the savings to the carriers from the application of nine of the new rules promulgated by the board would result in a saving of at least \$25,000,000 per year. These estimates indicate the importance of disposing of controversies over rules and working conditions, he said.

### I. & G. N. Trainmen to Return

The United States District Court, at Houston, Tex., in an order issued by Judge J. C. Hutcheson, Jr., on November 2, has authorized J. A. Baker, receiver of the International & Great Northern, to take back the trainmen who recently struck, provided he needs them, up to November 25. After that date all of them, except the four members of the General Committee who called the strike, "shall be permitted to return to the service of the receiver on probation for a period of 30 days." Full reinstatement, with former seniority and contract rights, will be dependent on satisfactory behavior during the probationary period.

Judge Hutcheson finds that the strike was called on October 22, eight days before the intended general railroad strike, when the I. & G. N. general committee knew that the larger strike had been ordered; and that they (the committee) ought to have changed the date of their local strike. For mismanagement in this connection the court excepts the four committeemen from this general order of amnesty; the receiver may do with them as he pleases; but if they are taken back they should not again be allowed to represent the trainmen. The judge thinks that the rank and file of the members of the brotherhood did not realize the illegality of their action; but they have applied for reinstatement, coming before the court in an attitude of supplication, and they promise to give good service. New employees who have been taken on should be kept until November 25, at least. If any disputes or disagreements arise in the reinstatement of the strikers, each individual may have the privilege of appealing directly to the court, and individuals may be represented by the brotherhood.

## Ben W. Hooper Talks On Relation of Wages to Freight Rates

THE FIXING OF WAGES cannot be made to depend upon freight rates and the proposal to transfer the functions of the Railroad Labor Board to the Interstate Commerce Commission involves "a glaring fallacy" according to Ben W. Hooper, member of the public group on the Labor Board. In the course of a recent address before the Traffic Club of Chicago, Mr. Hooper said:

"Occasionally it is suggested that the functions of the Railroad Labor Board should be transferred to the Interstate Commerce Commission. The advocacy of such an idea involves a most glaring fallacy. The line of argument brought to bear is that the adjustment of freight rates and the adjustment of wages are mutually dependent upon each other, and that the jurisdiction over both matters should be vested in the same body.

"The unsoundness of this position is easily discernible. It may be and doubtless is true to some extent, that the fixing of freight rates is partially controlled by the carriers' operating expenses, but the converse of this proposition is by no means correct. The fixing of wages cannot be made to depend upon freight rates. Because there has been a reduction in wages, it necessarily follows that the carrier is thereby enabled to stand a reduction in rates. It does not necessarily follow that a reduction in rates justifies a reduction in wages. It may or it may not.

"It must be remembered that the carrier gets the direct benefit of every cent of a wage reduction. But the carrier's employees do not get the direct benefit of a rate reduction. This is not given to them. It is given to the public. The only benefit the employees get from a rate reduction is the indirect benefit derivable from such decreases in the cost of living as may result from the rate reduction.

"The wages of the employees must be just and reasonable, based upon the elements set out in the statute. When these matters have been properly considered by the Labor Board, and the wages fixed, then the Interstate Commerce Commission will know as well what the railroads are paying in wages as if they established the wages. If the Interstate Commerce Commission were empowered to fix wages, it would have to do it on the same basis upon which it is now done by the Labor Board, and not upon the basis of freight rates."

Touching on the recent strike threats, Mr. Hooper said: "Upon the theory that the railways are public utilities, enjoying under their franchises a practical monopoly, the right of eminent domain and other great powers, the government has assumed the right to regulate the carriers in numerous particulars. It seems to me that this theory is just as applicable to the employee of the railway as it is to the railway itself. Does he not share with the railway executive the great responsibility of public service?

"While the government has granted to the carrier immense powers and privileges, it has also in the Transportation Act, bestowed upon the employees the highest dignity and power ever conferred upon labor in any land. The old common law doctrine of master and servant has been wiped out by the Transportation Act in so far as railway employees are concerned. That statute places the carrier and its employees in a contractual relationship. The representatives of the employer now sit down at a table and negotiate with their employees their wages and working conditions, with the right of an appeal to an impartial governmental tribunal.

"It is this recognition of the rights of railroad labor, coupled with a guaranty of judicial protection against arbitrary and unfair treatment, which, in my judgment, makes it as morally obligatory upon the employees to give the public efficient and uninterrupted service as it is upon the railway management."

## Ford's Railroad Must Report Statistics of Employees

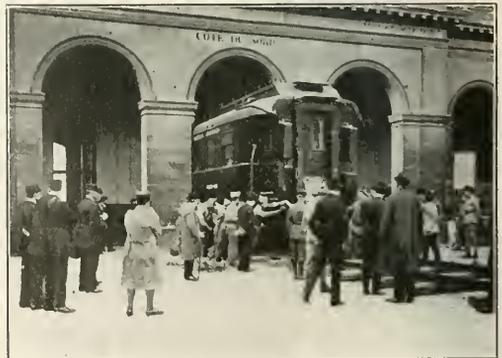
WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has declined to allow the Detroit, Toledo & Ironton to simplify the work of its accounting department by omitting monthly reports to the commission showing the number of employees, the hours or days worked and their compensation. In his recent interview Henry Ford said that "the bookkeeping of railroads is complicated far beyond all necessity" and that "the amount of unnecessary work you can find in the accounting system of even a little railroad is almost beyond belief." W. C. Cowling, of the executive department of the D., T. & I., wrote to the commission suggesting a way to reduce some of the "unnecessary work" which elicited a reply from M. O. Lorenz, director of the Commission's Bureau of Statistics, as follows:

Your letter of October 24 requesting that you be relieved from furnishing the monthly report of employees' service and compensation has been considered by the Commission. I am directed to say that there does not appear to be good grounds for relieving the Detroit, Toledo & Ironton Railroad Company from the requirements applicable to Class I roads generally. The very fact that you adopted a method of payment different from that prevailing on other roads makes the Detroit, Toledo & Ironton report all the more instructive. It is important that your statistics be comparable with those of other roads. Under the Transportation Act, 1920, public opinion is relied upon to enforce the findings of the United States Railroad Labor Board. A full and unquestioned statement of facts regarding wages and hours of service should assist in forming an enlightened public opinion.

I may add that a plan has been under consideration for reducing the cost of compiling these statistics for possible adoption beginning with 1922, although it has not yet been determined whether this can be done without impairing the usefulness of the report. I should be pleased to have you indicate what part of the report you consider most troublesome. I assume that you would in any case keep some record of the number of employees by classes and the compensation paid each class. The Interstate Commerce Act specifies that such information shall be contained in annual reports to the Commission.

Mr. Cowling has also written other letters to the commission, which have not yet been answered, asking to be relieved from filing other information which the commission requires of the Class I railroads. For instance, it is understood that he has suggested that a number of items might be omitted from the monthly report of revenues and expenses. Reports for the six months during which the Ford management had had charge of the road up to August showed a constantly decreasing net operating income each month after the large increase shown in April.



Car in Which the Armistice Was Signed Being Placed in the Invalides Museum at Paris



# Delivering Train Orders Without Getting Signatures

Personal Experiences of a Veteran Dispatcher in the South,  
the Middle States and the Far West

By Harry W. Forman  
Assistant to General Manager, Western Pacific

IN TWO PRECEDING articles I have made suggestions as to the use of the 19 order, with some explanation of how to go about installing a somewhat more liberal train dispatching system without risk of collision or criticism. Responding to the further requests of the editor, I will give a few of my personal experiences with the unsigned order, dating from 1875, when I began dispatching trains in a small way.

At that time, on the Atchison & Nebraska Railroad, now a part of the Burlington System, an order was first given to hold the ruling train, No. 4, for example, for orders; then at the meeting point the operator was ordered to display a red flag

"Hold Nos. 3 and 4 for each other." This was followed by "Repeated" orders to Nos. 3 and 4 (such orders being so designated because signatures were not required). This method of handling the orders was continued in effect until 1889, when the Standard Code was adopted; then the 19 form was authorized. From that time on, meeting points were fixed by addressing a 19 to the operator at the place of meeting and to the trains concerned so that they would get it before arrival at such point. In repeating the order the operator at the meeting point would first repeat, next the operator who held the order for the ruling train, after which "Complete" was given to these two simultaneously; then the operator holding the order for the inferior train repeated, and he was given complete last. There were no accidents chargeable to this method of handling.

About 1894 a faster mail service was inaugurated, trains No. 7 and No. 8 being used. This service was everything that the name implies, the trains being scheduled in places at 60 miles an hour. In order to keep on time they often ran, on favorable stretches, at a much higher rate, as there were grades where a speed of even 40 miles an hour was too much for the engines. These trains were made superior to everything, including first-class trains, except that No. 7 was inferior to No. 8. Therefore, every train order delivered to them had to be of a restrictive nature. At first No. 7 did not do very well, and it was necessary to issue numerous train orders to it. It never occurred to me to address a 31 order to this train, as this would have delayed it too seriously; and it was handled for five or more years between Chariton and Pacific Junction, with only the 19 form of order. So fast and important were these trains that they were allowed only two minutes to change engines; and at some stops a switch engine was used as a booster for No. 7, to push until it could no longer keep up.

The record-breaking Mayham Special, which averaged nearly 60 miles an hour from Chicago to Denver, 1,034 miles, was moved entirely under 19 orders on the division where I was working at the time. There was an engine failure which required changing their orders; this was done by the use of the 19 form.

## Lively Work on the Burlington

Many of the incidents of that period cannot be recalled, but three somewhat exceptional cases occur to me which should convince anyone that to undertake the expeditious handling of heavy business under a system which would require stopping all superior trains to secure signatures to

No 94 Eng 270 weee  
Hold main track and  
meet no 97 Eng 139  
at Vinings. Hold  
Main track and meet  
No 93 Eng 234 at Lena.  
Hold main track and  
meet No 93 Eng 265  
at Hales.

Sample of N. C. & St. L. 19 Order, Reduced One-Half in  
Width and Height

for Nos. 3 and 4 to meet at his station. After this, instructions were sent to Nos. 3 and 4 to meet. All of these orders were signed by the conductor, the numeral "12" being used to inquire how the conductor and the engineman understood. In signing such orders the conductor endorsed the symbol "13," meaning "I (or we) understand;" then, this having been sent to the dispatcher, O. K. was given.

In 1882 I entered the service of the Burlington as dispatcher at Ottumwa, Iowa. This was on a single track line having many heavy grades; and as the engines were largely of the "quill-wheel" type, a great many freight trains were run, the average being about sixty a day, although a maximum of 75 was not exceptional; nor was it unheard of to run 90.

There were operators at every siding, and the middle order was invariably used. The train dispatching art had by that time so far advanced that the middle order was worded,

orders, would be altogether impracticable. On one occasion because of unusual detentions the operator at Afton within 40 minutes reported 12 westward freight trains passing his station, each of which was handed a 19 order as it passed. At another time, for a similar cause, there were 14 freight trains to be moved ahead of passenger train No. 4, from Afton to Osceola, a distance of 24 miles, with no place to get out of the way because all sidings were full of opposing trains; and to meet these the 14 freights were given orders in 19 form. No. 4 was delayed 20 minutes.

On another occasion when I "sat in" there were wrecks and water failures which blocked things so that every siding was full of trains between Creston and Chariton, a distance of 60 miles; and there were others on the main track. The moment the track was cleared, Form 19 was let loose and many of these trains got under way immediately. What chance would a dispatcher have had of raising this blockade and moving trains that night had he been compelled to get signatures for his orders?

On the Burlington, on one occasion, a check was made which showed 50 orders of Form 19 had been issued before finding it necessary to use a Form 31.

During these years the destinies of the Burlington were in the hands of such able and farsighted men as T. J. Potter, C. M. Levey, W. F. Merrill, W. C. Brown and F. C. Rice, who were always on the lookout for more efficient means whereby traffic could be handled with greater celerity without any sacrifice of safety. It has never been my practice to use other than the 19 form at dispatcher's headquarters when orders were delivered in person by the dispatcher on duty.

In 1901 I entered the service of the Union Pacific, and assisted in preparing a book of rules which provided for the "middle order." At that time there was some doubt in the minds of a few of the officers of that company as to the feasibility and safety of this method of handling; but with the help of such broad-minded men as W. L. Park and R. W. Baxter, a fairly liberal use of the 19 form was secured. However, no one was entirely satisfied with the immediate results. In time this form of order became more popular and was extensively used. I feel warranted in saying that in the light of past experience the present officers of that company would not think of curtailing its present field of usefulness.

My next undertaking was to install a book of rules on the Colorado & Southern, which book provided for the liberal use of the 19 order. Incidentally, this was the first book of rules ever printed in this country, so far as I know, which recognized the present Code principle that unless work trains were directed not to protect against extra trains they must do so at all times.

Later, two years' experience as a dispatcher on the Denver & Rio Grande only strengthened my faith in the 19 order. It was while I was working for this road that "Rights of Trains on Single Track" was written. While the book contains several regrettable errors, the chapter recommending the use of the 19 order has never been challenged.

With J. W. Thomas, Jr.

In 1905 I entered the service of the Nashville, Chattanooga & St. Louis for the purpose of installing the Standard Code. This, at the time, was a single track road with a main line 460 miles long, from Hickman, Ky., to Atlanta, Ga. Here one met with every possible obstacle in the matter of grades, heavy traffic and limited knowledge of code principles, as up to that time the trains were being handled on the greater part of the main line under a so-called single-order system, dating back a quarter of a century. It may have been intended at the beginning to secure signatures, but when I went there it was found that most of the divisions had been successfully handled for many years by the exclusive use of unsigned orders.

If, as was true, this method of handling could be made successful on that road, no other road need have a fear of the 19 order, as the N. C. & St. L. was an extremely busy single track line. In addition to its own heavy freight and passenger traffic, it handled the trains of the Southern, the Louisville & Nashville and the Alabama Great Southern on two districts. It was not uncommon to start from five to ten extras in one bunch from Atlanta or Chattanooga. The coal trains from the L. & N., particularly on Monday morning, were delivered in groups of from 10 to 15. (In Georgia non-perishable freight could not be moved on Sunday.) Notwithstanding these handicaps the 19 order was and is now used there much the same as on the Burlington, and with a high degree of success.

It would be interesting to see anyone attempt to handle trains on this road under these conditions, by a system making it necessary to stop a majority of them to secure signatures to orders. The many fast freight trains which are run daily between St. Louis and Atlanta, as well as numerous pineapple and peach specials between Atlanta and Nashville, have always made remarkable records for expeditious movement. This is so well known that the fact is generally commented upon by dispatchers throughout the country. No one would claim that the record made by these trains could have been accomplished had they been hampered by train orders requiring signatures. On certain parts of the main line there were thirty regular trains, the freight schedules being represented by several sections, this in addition to a great number of extra trains which were run daily.

Six sets of main line dispatchers were required between Nashville and Atlanta, a distance of 280 miles.

No one claims to accomplish the impossible by the use of train orders or by any other system. While the records of the N. C. & St. L. here referred to are made under the best available train dispatching plan, it must be remembered that written orders are not the last word in train operation. On the first district north of Chattanooga, from 80 to 100 trains were run daily under the "Thomas semi-manual block system." It would not have been possible to keep these trains moving on single track under written train orders, and therefore the orders were dispensed with and the trains were moved under the supervision of a train dispatcher who instructed operators to "hold for," "head in," or "clear" trains. There was a bell in each tower by which to give warning in case the operator attempted to clear a train without proper authority. In the dispatcher's office an instrument made a Morse record of all instructions issued. So successful was this method of handling trains that there was only one collision during a period of twenty years; and in this the damage (to the engine pilot) amounted to \$6.25.

I have often wondered what the ultra-conservative element among railroad officers, who so strenuously object to a reasonable use of the 19 form of order, would have said had they been given an opportunity to note the manner in which trains were moved on this section of single track.

### A Constructive Suggestion

One would seem to be warranted in contending that any system as relatively imperfect as this and which was found to be so successful on six miles of unbonded track, might, with the later modernizations, be made use of profitably on a much more extensive scale. J. W. Thomas, Jr., who was the chief operating officer of this road until 1914, was both fearless and progressive. When convinced that a proposition had merit and was safe, some of the so-called safety theories of long standing were often ignored by him; and latter discoveries were given painstaking tryouts.

Since 1916 it has been a part of my duty to look after the dispatching on the Western Pacific. This company has adopted a number of short cuts, principally in wording of orders, and everything is running as smoothly here as on

other lines where the 19 order is sensibly but liberally used.

The Western Pacific has had some peculiar problems. Up to the time that dispatching by telephone was installed, there was an atmospheric condition across the Great Salt Lake and on the 30-mile salt bed west of there, which would at times cause all wires to stop working. No one, so far as I know, has ever discovered the actual cause of these failures. Had we been forced there to always use 31 orders, many trains would have been seriously delayed at times. When necessary to so handle, the trains were kept moving by the use of 19 orders. A period of six years has passed without a collision which could be charged to the 19 order. I have been allowed to handle matters of this kind somewhat more liberally on this road than on some others and naturally have not forgotten my old friend the 19 order; neither has it risen up to mock me.

In summing up I may say: Use the 19 order in a reasonable, sensible manner. The main points have been outlined in the several articles which have appeared in the *Railway Age*. This will facilitate the movement of traffic. In other words, why stop or delay a train unnecessarily on your road through fear, or out of respect for a long standing custom, when it has been demonstrated to you that others have not found this to be necessary, and their immunity from collision has clearly proved that they have not erred.

On a road where there is enough traffic to justify having 24-hour offices at all sidings at which trains must meet or pass, why should their movements be hampered by written train orders at all? Why not look beyond this and perfect a system which would amply safeguard operation by the exclusive use of home, distant, and "take siding" signals, placed at each station?

## The Interior Treatment of Boiler Waters

### Proper Supervision in Use of Compounds Results in Large Economies in Locomotive Operation

By C. R. Knowles

Superintendent Water Service, Illinois Central, Chicago

IT IS NOT THE INTENT of this article to advocate any specific remedy for boiler troubles caused by objectionable waters, or any particular method of treatment to the exclusion of others. The object is rather to point out the possibilities of boiler water treatment through treating the water as it enters the boiler by what may be termed interior treatment as distinguished from exterior treatment.

Interior treatment involves the introduction of substances into the boiler for the purpose of preventing scale, corrosion, foaming or other ill effects of bad water. This method is probably as old as boilers themselves and has included many different substances, some of which were designed to work mechanically and others chemically.

Exterior treatment involves the treatment of the water before it enters the boiler. This treatment, as applied to locomotive boiler waters, usually consists of adding lime and soda ash to the water, which is then allowed to stand until chemical reaction has taken place and the substances acted upon by the lime and soda ash have been precipitated.

Some of the advocates of exterior treatment have shown little tolerance for the interior method of treating boiler waters, insisting that proper results can be obtained only by complete treatment of the water before it enters the boiler. The expressions commonly used in offering objections to interior treatment are: "A boiler is designed to produce steam, not to produce chemical reactions," and "The only thing that should be put into a boiler is pure water." While these statements are true, they can rarely be followed in practice as it is almost impossible to obtain a pure water for boiler purposes, in the fullest sense of the word "pure," since, even with the best treated water, some chemical reaction is bound to take place within the boiler.

Well designed treating plants using lime and soda ash for the thorough treatment of water, followed by sedimentation and filtration, are highly desirable and many such plants are giving satisfactory results. An increased tendency to cause foaming is characteristic of all water treated with soda ash, and nearly every railroad using the lime and soda treatment finds it also necessary to apply interior treatment to the softened water to prevent foaming. It follows therefore that certain waters cannot be used successfully after exterior

treatment without interior treatment to prevent foaming.

Many have accepted the erroneous view that all interior treatment is a hit-and-miss proposition, this impression evidently having been gained from experience with some of the many so-called "boiler compounds" that do not take into consideration the character of water to be treated but consist of one standard compound designed to fit any and all water conditions. As stated before, a great many different substances have been used as compounds in boilers, a few of which have shown good results but the majority of which have been ridiculous and some of which have been actually dangerous remedies. It is characteristic of interior treatment that the incrustants are not actually removed from the water before it enters the boiler. Chemical reaction takes place in the boiler between the ingredients in the interior water treatment and the salts carried in the raw water. These salts are precipitated, forming a sludge which is blown out with the judicious use of the blow-off cocks.

The same objection applies to exterior treatment to a certain extent, for while exact treatment to remove the carbonates will leave no dissolved residue treatment for sulphates, nitrates and chlorides leaves sodium sulphate and other sodium salts. Consequently if the raw water contains a large amount of sulphate hardness with or without considerable quantities of alkaline salts, it can be used after treatment only by blowing off the boiler frequently or by additional interior treatment to prevent foaming. Less solids will, of course, be introduced into the boiler if the water is properly treated outside on account of the removal of the carbonate hardness but it is apparent that the same methods must be followed ultimately in the use of water treated by either method, namely, the removal of these solids by blowing down the boilers. The correct application of either form of treatment is of course essential to its success. There is no doubt that much of the existing prejudice to interior treatment has arisen because of neglect to apply it properly rather than to the failure of the treatment itself.

If the same supervision were given interior treatment that is devoted to exterior treatment there is no doubt that the results obtained would prove quite as successful as exterior treatment within the limits of the field of each treatment.

The following examples are quoted as typical of results that it is possible to obtain when the interior treatment is applied strictly in accordance with instructions.

In one case an increase of 428 miles per boiler washout was secured, effecting a saving of 450 lb. of fuel, 8 locomotive hours and \$6.86 in labor for boiler washing, the cost for treatment being \$2.50. The record of another engine showed 872 miles increase between washouts with 1,770 lb. of fuel, 12 locomotive hours and \$9.80 in boiler washing expense saved, all accomplished at a cost of \$2 for treatment.

On one railway, in a bad foaming district, before using anti-foaming treatment it was necessary to do so much blowing out to keep the concentration below the foaming point, that it amounted to changing the water in the boiler several times over the division. The use of the anti-foaming treatment entirely overcame the foaming, and the blowing out was reduced to a point where the quantity of water used in this way was negligible.

On a freight division 103 miles long on another railway, it was necessary to wash out the engines at each end of the division to handle a tonnage train over the road. Through the use of the anti-foaming treatment five round trips were possible without a washout, and the blowing off was reduced to three times over the division, the blow-off cocks being open only five to ten seconds each time.

As another illustration of what anti-foaming treatment will do in lessening the amount of blowing off, a test was made on a district where treated water caused excessive foaming trouble. An engine was run for 24 days, making 3,960 miles without washout or water change, and no blowing out was done on the road, and only three to six inches at terminals. The compound cost 80 cents per round trip, whereas washing the boiler each round trip would have cost \$3.10.

The excessive blowing out of boilers necessary when using soda ash alone, leads to a great waste of fuel. With proper treatment, this excessive blowing out can be eliminated and a consequent saving in fuel effected. On one road where the proper interior treatment superseded soda ash, records were kept at two roundhouses, each blowing out about 100 engines every hour. With the interior treatment it was necessary to blow off a much smaller quantity of water to relieve the mud and sludge, so that there was a saving over the use of soda ash of from 8 to 10 in. of water on each engine blown out, while the coal saved amounted to approximately 150 lb. for each operation. At these two roundhouses alone this equaled a saving of 5,500 tons of coal per year. The saving in water was also a considerable item, the supply being obtained from the city. When using soda ash trouble was also experienced with foaming while after changing the treatment foaming trouble was almost entirely eliminated.

In another test as against the use of soda ash alone for scale removal, the advantage in fuel saving amounted to \$12.18 per 1,000 locomotive miles. On a road averaging 6,000,000 locomotive miles, this item alone would amount to over \$70,000. The saving in roundhouse repairs also showed a large percentage in favor of the interior treatment. There was a 65 per cent decrease in the item of valve stem packing, 73 per cent in the number of checks ground, 50 per cent in packing necessary to be done to steam rams and cocks, 46 per cent in the grinding of cocks, and 84 per cent in cylinder packing. There was a decrease of 26 per cent in the number of flues leaking and caulked. There was also a benefit in that there was less trouble from foaming. At another terminal approximately the same benefits were shown. In the handling of 1,487 switch engines and 719 road engines the coal saving amounted to over 242 tons per month.

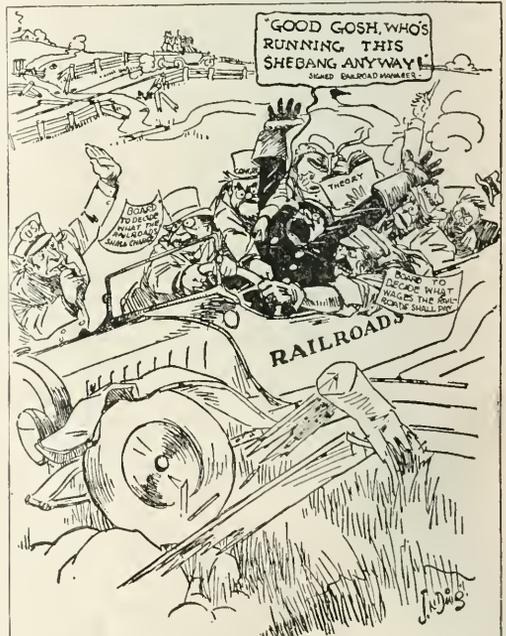
As an example of the results obtained from the interior treatment of water in stationary plants the life of the flues in a tubular boiler used for heating a large passenger station and coach yard was increased from two years to six years while the fuel saving amounted to about 15 per cent.

In another instance an accumulation of scale averaging 3/16 in. in thickness was removed from the flues of a battery of two 100 hp. boilers in a pumping station, resulting in a saving of 20 per cent in fuel and greatly increased life of flues. The treatment of water within the boiler is not a hit-and-miss proposition by any means if carried out intelligently, but is based upon scientific principles and takes into account the objectionable matter carried by the water as determined by an analysis of each water so treated.

It is not the purpose of this article to in any way oppose the treatment of water outside the boiler in properly designed treating plants or to discourage the construction of additional plants as the success of such treatment is too well established to permit of any argument against it.

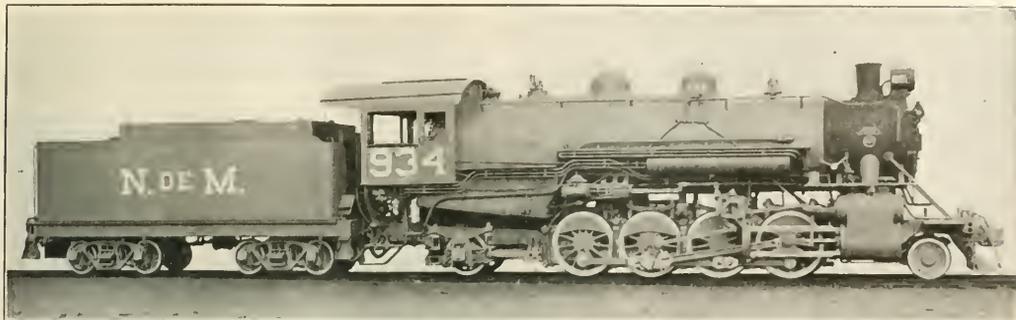
It has been estimated that 50 per cent of the boiler water used on American railroads is of such quality that treatment would show economy in locomotive operation and that of this amount only 6 per cent is being treated by exterior method. There would appear to be no reason why the other 94 per cent should not be treated by the interior method, as even with the most intensive construction of treating plants for the purpose of treating the water before it enters the boiler, it would be years before sufficient plants could be constructed to treat all water requiring treatment.

With the present financial condition of the railroads the construction of water softening plants is going to be slow and more attention should be given to the interior method of treatment as no initial investment is necessary other than the cost of the treatment. Probably many of the waters are of such a nature that the interior treatment will prove more economical and at the same time just as satisfactory as exterior treatment, as, for example, waters of too high purity containing but very small quantities of solids. Such waters often induce corrosion and in many cases the trouble may be corrected more economically by interior treatment.



Darling, in the Chicago Post

The Owner of the Car Pauses to Remark—



Mikado Type Locomotive for National Railways of Mexico

## New Motive Power for Railways of Mexico

Large Order for Pacific, Mikado and Consolidation Locomotives—  
Interchangeable Parts to Facilitate Maintenance

THE BALDWIN LOCOMOTIVE WORKS has recently completed a group of locomotives of various types for the railways of Mexico, which are of interest not only from an engineering standpoint but also because their construction represents an important item in the plans now being carried out for the rehabilitation of these lines. The locomotives referred to include 83 for the National Railways of Mexico and 11 for the Mexican Railway, besides a number of others built for industrial companies.

The locomotives for the National Railways are of three types: 20 Pacific (4-6-2) for passenger service, 23 Mikados

per cent. Ten of the Pacific type locomotives and 15 of the Mikados are equipped with the Young valve gear, and the remaining 10 Pacifics and 8 Mikados with the Baker valve gear. Ragonnet power reverse mechanism is used on all these locomotives.

With the exception of such changes as are necessitated by the differences in wheel arrangement, the Pacific and Mikado types are practically duplicates. The following are among the parts that interchange: The boilers, with principal internal and external fittings, including oil burning equipment and firepans. Machinery details, including cylinders, piston



Pacific Type Locomotive for National Railways of Mexico

(2-8-2) for heavy freight service and 40 Consolidations (2-8-0) for lighter freight service. These locomotives all use a heavy grade of Mexican oil for fuel, and are of standard gage with the exception of 20 of the Consolidations, which are of 3 ft. gage.

### Pacific and Mikado Types

The Pacific and Mikado type locomotives are of special interest because of their weight and capacity, and also because they have been designed with an exceptionally large number of interchangeable detail parts. The passenger locomotives are operating on curves of 16 deg. (10 deg. metric) and grades of 2.2 per cent; and the freight locomotives on curves of approximately 23 deg. (14.3 deg. metric), and grades of 3

valves, valve rods and valve-rod crossheads, pistons and piston rods, crossheads, main rod straps, keys and brasses and valve gear details, excepting the lengths of certain members. Running gear and frame details, including driving axles, boxes, shoes and wedges, driving and engine truck wheel hub liners, front engine truck boxes, wheels and axles, trailer trucks complete, frame pedestal binders and crossies, frame filling pieces for brake hangers, back foot plates, back equalizing beams, front bumpers and pilots, driving springs and spring saddles. Other parts, including cabs, running boards and brackets, air reservoirs and supports, air pumps and supports, handrails and columns, steps and step hangers, cab fittings, furniture and tenders complete.

The boilers are of the extended wagon-top type, having a

outside diameter of 76 in. at the front end and 86 in. at the dome ring. The firebox is of the radial stay type, with flexible bolts in the breaking zones and three rows of Baldwin expansion stays supporting the front end of the crown. All the tubes are welded into the back tube sheet, and the crown-bolts are flush on the inside of the firebox, in view of the use of oil for fuel.

The tractive effort of the Pacific type is 40,000 lb. and of the Mikado type 53,000 lb., the ratio of adhesion being practically 4 in each case; the average load per pair of driving wheels is nearly the same in the two designs. The trailing trucks are of the Hodges type, with cast steel boxes, the

The light Consolidation type locomotives are 3 ft. gage and develop a tractive effort of 26,600 lb., with a ratio of adhesion of very nearly four. They operate on grades as steep as 4.53 per cent and curves of approximately 21 deg. (13 deg. 40 min. metric).

These locomotives are so designed that they can, if desired, be subsequently rebuilt for standard gage track; with this end in view, and also to provide sufficient stability in a narrow gage locomotive of this size, the frames are placed outside the wheels. Each main frame is cast in one piece with a slabbed rear section, and has double front rails bolted to it. The equalization is arranged in the usual manner, the front



Standard Gage Consolidation Locomotive for National Railways of Mexico

wheels having cast steel centers, fitted with bronze hub liners. The front truck wheels are of rolled steel. The similarity of these two types shows the extent to which interchangeable details can be used in certain types carrying approximately equal wheel loads.

#### Standard and Narrow-Gage Consolidations

The standard gage Consolidation locomotives develop a tractive effort of 34,300 lb. and carry an average weight of 39,500 lb. per pair of driving wheels, the ratio of adhesion being 4.6. These locomotives are specified for operation on

pair of drivers being equalized with the leading truck, while the remaining pairs are equalized together on each side of the locomotive. The frames are braced transversely between adjacent pairs of drivers.

The boiler has a straight top and a wide firebox, which is placed back of the drivers and over the slab frames. This construction necessarily involves a considerable overhang, which, however, is kept within a reasonable length by placing the cab forward over the firebox. The latter is supported on each side by a sliding bearing of ample length.

Saturated steam is used, and the steam distribution is con-



Narrow Gage Consolidation Locomotive for National Railways of Mexico

the same grades and curves as the Mikado type. They have straight top, wide firebox boilers and are equipped with superheaters. The firebox is stayed with flexible bolts in the breakage zones, and the tubes are welded in the back tube-sheet. The steam distribution is controlled by 11-in. piston valves, and the valve motion is of the Baker type, controlled by Ragonnet power reverse mechanism. The tenders, as far as trucks and frames are concerned, are practically duplicates of those used with the Pacific and Mikado type locomotives, although the tank capacity is less.

trolled by balanced slide valves operated by Walschaert motion. The links are placed outside the second pair of driving wheels and are supported on longitudinal bearers of cast steel, which also serve to strengthen the frame bracing. Each driving crank has a counterbalance weight cast in one piece with it.

Should it be necessary at any time to rebuild these locomotives for standard gage, the wheels will be mounted on longer axles, thus bringing them outside the frames, which are so spaced transversely as to make this possible. As now

built, the locomotives have a maximum width of 9 ft. 11 in. and a height over-all of 12 ft. 9½ in. In view of the severe grades on which they operate, they are fitted with the Le Chatelier cylinder water brake in addition to air-brake equipment.

**Consolidations for Mexican Railway**

The Consolidation locomotives for the Mexican Railway are of standard gage and of special interest because of the character of the line on which they are used. The main line of this railway extends from Vera Cruz, on the coast, to Mexico City, a distance of 264 miles, and abounds in curves and grades. One of the most difficult sections occurs in a tunnel, where there is a curve of 100 meters radius (328 ft. or 17½ deg.) in combination with a grade of 3 per cent. uncompensated; the maximum grades on which the locomotives are used are 4½ per cent. To facilitate free curving, the two middle pairs of driving wheels have plain tires. The Le Chatelier water brake is applied to supplement the air brakes when operating on steep grades.

These locomotives develop a tractive effort of 43,000 lb.,

the Western Maryland which were built early in 1921 by the Baldwin Locomotive Works.

These locomotives were urgently needed and were built in a remarkably short space of time, as the order was received on May 23, 1921, and the last of the 11 engines was shipped on July 1.

The table at the bottom of this page contains further particulars of the locomotives described above.

**If Ford Ran the Railroads**

WASHINGTON, D. C.

**H**OW HENRY FORD would operate a large railroad system such as the Pennsylvania or the New York Central is outlined in an authorized interview with the flivver magnate and new-ledged president of the Detroit, Toledo & Ironton published in the current number of The Nation's Business. If he were the president of a large railroad instead of only a little one, Mr. Ford says that he would immediately set about accomplishing four things, although



Standard Gage Consolidation Locomotive for Mexican Railway

with a ratio of adhesion of very nearly four. They have straight top, wide firebox boilers and are equipped with superheaters. The piston valves are 14 in. in diameter, and are operated by Walschaert motion. The cab fittings include a "breather pipe" which is connected with the air brake system and has several outlets for the purpose of supplying air to the crew when passing through tunnels. A similar device was applied to the heavy Consolidation type locomotives for

only in the most general way does he illustrate his points by examples from his eight months' experience with the D. T. & I. He would "reorganize to get rid of the unproductive stockholder" whom he also refers to as a "parasite," and get the ownership into "the proper hands." After removing this "dividend drain" his second step would be to redesign the rolling stock, "the great physical burden of the railroads." Then he would "expedite the delivery of

**COMPARISON OF THE NEW LOCOMOTIVES FOR THE MEXICAN RAILWAYS**

	National Railways of Mexico			Mexican Railway
Roaf	4-6-2	2-8-2	2-8-0	2-8-0
Type	4 ft. 8½ in.	4 ft. 8½ in.	4 ft. 8 in.	4 ft. 8 in.
Gage	40,000 lb.	53,000 lb.	34,000 lb.	26,000 lb.
Tractive effort (85 per cent)	25 in. by 28 in	25 in. by 30 in.	21 in. by 28 in	18 in. by 22 in
Cylinders, diameter and stroke	10 in. piston	14 in. piston	11 in. piston	Hal. slide
Valves	159,280 lb.	210,000 lb.	158,100 lb.	103,000 lb.
Weight in working order	46,770 lb.	20,400 lb.	10,800 lb.	10,200 lb.
On drivers	44,820 lb.	40,000 lb.	40,000 lb.	2,740 lb.
On front truck	56,870 lb.	270,000 lb.	174,060 lb.	103,000 lb.
On trailing truck	56,870 lb.	270,000 lb.	174,060 lb.	103,000 lb.
Total engine	420,000 lb.	439,000 lb.	329,200 lb.	192,500 lb.
Total engine and tender	12 ft. 0 in.	15 ft. 0 in.	15 ft. 0 in.	11 ft. 6 in.
Wheel base, driving	33 ft. 2 in.	33 ft. 7 in.	33 ft. 7 in.	38 ft. 11 in.
Total engine	60 ft. 4½ in.	66 ft. 9½ in.	58 ft. 5 in.	47 ft. 6¼ in.
Total engine and tender	67 in.	57 in.	55 in.	41 in.
Driving wheels, diameter over tires	Ext. W. T.	Ext. W. T.	Straight	Straight
Boiler style	76 in.	76 in.	98½ in.	60 in.
Diameter, outside first ring	190 lb.	190 lb.	180 lb.	180 lb.
Steam pressure	114½ in. by 84½ in.	114½ in. by 84½ in.	95 in. by 75 in.	53½ in. by 49½ in.
Firebox, length and width	66.6 sq. ft.	66.6 sq. ft.	49.8 sq. ft.	18.7 sq. ft.
Grate area	231-2 in.	231-2 in.	156-2 in.	180-2 in.
Tubes, number and diameter	36-5½ in.	36-5½ in.	24-5½ in.	24-5½ in.
Flues, number and diameter	19 ft. 3 in.	19 ft. 3 in.	14 ft. 6 in.	15 ft. 6 in.
Tubes and flues, length	228 sq. ft.	228 sq. ft.	144 sq. ft.	77 sq. ft.
Heating surface, firebox	3,289 sq. ft.	3,289 sq. ft.	1,064 sq. ft.	1,582 sq. ft.
Heating surface, tubes and flues	3,517 sq. ft.	3,517 sq. ft.	1,808 sq. ft.	1,661 sq. ft.
Heating surface, total evaporative	828 sq. ft.	828 sq. ft.	409 sq. ft.	243 sq. ft.
Superheating surface	8,500	8,500	7,000	3,600
Water capacity, U. S. gallons	3,500	3,500	3,500	1,510
Oil capacity, U. S. gallons	6,000	6,000	6,000	2,000

freight" by keeping the men, cars and locomotives moving.

He does not explain in detail just how, but on the D. T. & I., he says, no idle men, idle cars or idle engines are tolerated and by speeding up the freight on the preliminary part of its journey he claims to have shortened the time of its delivery by periods ranging from 7 to 14 days, making it possible for the Ford Motor Company to carry on its books \$30,000,000 less undelivered product. He would also discharge the surplus and inefficient employees, paying particular attention to the legal and accounting forces. To illustrate this point he says: "When we acquired the D. T. & I. there were 2,600 people on its payroll. We found almost immediately that by cutting out the lost motion we could reduce that number to 1,500." The reports show that in September, 1920, when the road handled 48,000,000 ton-miles of freight, the number of employees was 2,599 and that in February, when the traffic had fallen off to 9,789,000 ton-miles, the number of employees was 1,328. Mr. Ford was the owner of the road during this time but he was elected president and put his new organization in charge in March, 1921. By June the ton-mileage had again increased to 38,589,000 and the number of employees to 1,649 and in July it was 1,822.

Mr. Ford in the interview does not make this comparison between tonnage and the number of employees but when asked his answer to the argument that his success was due to his ability to divert Ford traffic to his railroad, he is quoted as saying: "How can that be true when the road handled more tonnage the year we took it over than it has hauled since we have had it? The figures are all at Washington, why doesn't someone look them up?" The Nation's Business also publishes an article by a railroad president quoting the figures which had been looked up in Washington to show how coal and other low grade traffic had been replaced with automobiles, trucks and other manufactures that take a much higher rate per ton-mile, thus increasing the revenues of the road, while the expenses had been reduced in proportion to the decrease in tonnage.

### Why the Stockholder?

"The real purpose of a railroad," Ford says, "is to serve the public. There is no reason why it should be diverted from that service and set to doing an entirely different thing—putting money into the pockets of stockholders who make no contribution to the road's actual operation. Paying dividends to these people is a burden which should be lifted from the railroads. The greater the overcapitalization, the heavier the overcapitalization, the heavier the burden. It bears them down and prevents them from serving their purpose. In the end the public pays these dividends. They are a tax on the whole people.

"There is a possible and practicable system of financing railroads by which those contributing the money will be in position to aid directly to the success of the undertaking. If the brakeman on a railroad owns stock in it, he has an additional inducement to competent service. Better service is a valuable by-product which will come from his ownership of stock. If the railroad is a success, it is due to him and his fellow-workmen, and they are entitled to the profit.

"Railroads should not have to go to banks for money. They can be otherwise financed. In fact, finance is the wrong term to use. We talk too much about finance. The first thing is to make a railroad work. Make it possible for people to use it as much as they want to. Then there will be no trouble about finances. The trouble is that we start with finance and expect finance to make the road go. Finance can't do that. Finance is a failure.

"Of course, if such a course were attempted, we could expect a great outcry for the protection of invested capital. It would be said that people had bought these stocks for the financial protection of their families, their children. Pro-

tection from what? From the necessity of earning their living.

"Proper financing would, of course, be easier on new roads. On the old ones, however, it should be possible to retire the parasite, the non-contributing stockholder and get the ownership into the proper hands.

### Lighter Cars and Locomotives

"Overweight of rolling stock is the prime mistake on the mechanical side of railroading. Engines and cars are four or five times as heavy as they should be. A freight train is several times the weight of the load it carries, and a passenger train is 20 times as heavy. This dead weight must be moved whether a train is loaded or empty. The cost of pulling empty trains is needlessly large. Contrast this with the efficiency of the bicycle which weighs 20 lb. and will carry a man who weighs 200 lb.

"On the Detroit, Toledo & Ironton we are using up the old types of engine and car, but they will be displaced by better types. We will patent our new designs where they are patentable, but we will do this only to prevent someone else from doing so. We will never proceed against anybody for infringement of our patents.

"If a car takes more time than it should to deliver its load at its destination it is not, of course, earning as much as it should for the road. It is just as much waste as it would be for a man to take two days on a one-day job. It is more so, because that car is likely to hold another car back. But here is another point. It is lengthening the time of the turnover of the shipper—and that, too, is a waste of money and everything else.

"Our experience illustrates this excellently. The road we have acquired runs north and south and crosses most of the transcontinental lines. By speeding up our freight on this preliminary part of its journey our product gets to the people to whom we sell it from 7 to 14 days quicker than it used to.

"Most railroads have enough lawyers working for them to operate them if they were engaged in useful work. One of the first things is to dispense with the legal staff. We did just this on the Detroit, Toledo & Ironton. The lawyers are mostly in the claims department, which is one of the most wasteful branches of railroad operation.

### Simplify Accounting

"The bookkeeping of railroads is complicated far beyond all necessity. I don't want to go into detail, but the amount of unnecessary work you can find in the accounting system of even a little railroad, the amount of duplication and red tape, is almost beyond belief. We have simplified this department, reduced its cost, and have transformed it into an actual help to the railroad instead of a vexation and a burden. How did we do it? By viewing the whole proposition as a service to the users of railroads and making everything fit into that, instead of having the fear of stockholders and dividends before our eyes.

"We don't claim to have done anything new in railroading—yet. We have only taken the old system of operation and cut off its obvious absurdities. Even the old system of railroading, brought up to efficiency, would be an immense change for this country. We have simply cut out the loafing of men, the loafing of engines and the loafing of cars. The result seems to have surprised many people. But there is no mystery or magic about it. Anyone can do it.

"I don't like to appear as criticizing any railroad manager, for I have never done so. With their stockholders on their backs and their banker bosses who don't know anything about railroading, what can they do? They must be liberated from the present system. And you can't do that by giving them \$500,000,000 to perpetuate the present bad system, either."



Illinois Central Suburban Cars, Adapted for Electric Operation

## Illinois Central Steel Suburban Coaches

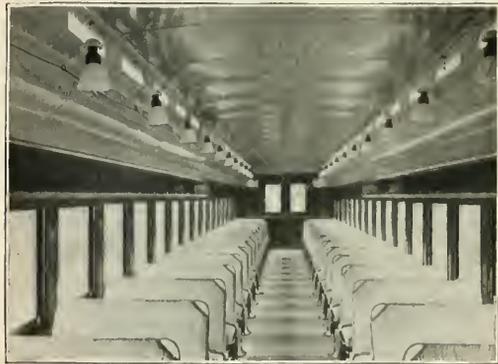
Designed for Future Electrification—Doors Electrically Controlled  
—Total Weight 92,100 Pounds

THE ILLINOIS CENTRAL has recently received from the Pullman Company 20 new steel suburban coaches which have been placed in service in Chicago, the design of which has been influenced in numerous details by the prospective electrification of this road within the Chicago terminal district. The cars are completely equipped for

axle generator and battery equipment for electric lighting; this equipment in both cases follows the standard of the road for passenger coaches in main line service. The conversion for electric service will consist of the substitution of electric heaters for the present steam heat equipment and the removal of the axle generator equipment, the current for lighting then being obtained from the power source. The vestibules have been arranged to facilitate the installation of multiple unit control apparatus, brake valve, gages, etc., and with this in view the hand brake, staff and handle have been placed on the left side instead of the right side of the vestibule platform.

The cars have a coupled length overall of 72 ft. 2 in. and are 60 ft. 6½ in. long over the body and sills. A seating capacity of 84 is provided for by 17 transverse seats on either side of the car and four longitudinal seats 4 ft. 9 in. long, one on either side at each end of the car. Sliding doors are used throughout. Those at the ends of the seating compartment close from either side toward the center, while the end and side vestibule doors are each single units, the former opening toward the left while the latter slide back into the side walls of the car body. The end doors of the car and the vestibule side doors provide a clear opening of 4 ft. in each case, while the vestibule trap doors are 3 ft. 4 in. in width. The floor plan shows the proposed arrangement of the control apparatus for electric operation and the way in which the right side of the vestibule will be closed off to form the motorman's compartment.

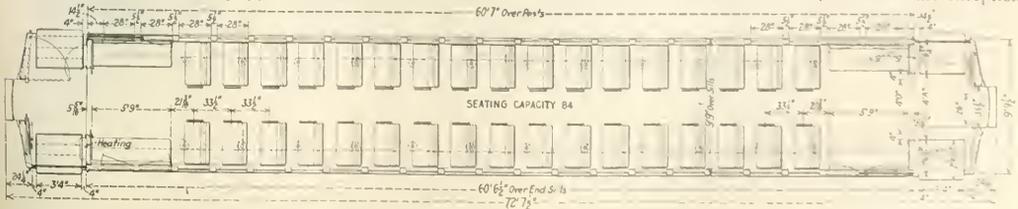
In working out the seating arrangement, particular attention has been given to provide ample room between the seat and ample height of back for the comfort of passengers. No ends are provided on the seats, in order that the passengers may enter quickly and leave them quickly and conveniently. The width of the aisle at the seat end is about 31 in., increasing to 36 in. at the edges of the seat backs. The interior finish is steel throughout, with the exception



Interior View, Showing Open-End Seats

steam train service, in which they are now operating, and have been designed primarily for trailer service after electrification has been completed, although the car bodies are of sufficient strength to be equipped with motor trucks, and other electrical apparatus should this later seem desirable. The weight of the cars equipped for steam operation is about 92,000 lb.

At present the cars are equipped with steam heat and with



Floor Plan, Showing Provision for Motorman's Compartment

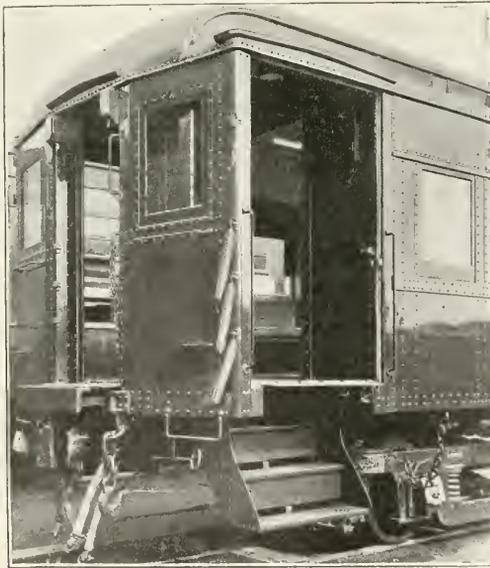
of the single sash, which are of mahogany. Above the side lights the finish is in white, including the fixtures. The sides and the seat ends are finished in mahogany color.

With the exception of the longitudinal sills and a few details of the vestibule ceiling construction, the frame members are practically all of pressed steel. The cars are carried on four wheel trucks with cast steel frames and the usual type of equalizing arrangement, fitted with 33-in. rolled steel wheels mounted on axles with 5-in. by 9-in. journals.

#### Door Operating Mechanism

All doors on these cars are of steel construction. The double doors at the ends of the car body are geared so that they operate together. They are arranged to lock both in the open and closed position.

The vestibule side doors are operated by air engines, one for each door, taking air from a reservoir under the car maintained at main reservoir pressure by direct connection with the locomotive. Each end of the car is fitted with one of these reservoirs, which has sufficient storage capacity to



Air-Operated Sliding Doors Are a Feature of the Vestibule Design

permit the operation of the doors 10 or 12 times after the locomotive has been cut off. These reservoirs are directly connected to the main reservoir of the locomotive by a  $\frac{3}{4}$ -in. train line. No signal air line is used in suburban service.

The door operating engines are located under the longitudinal seats at the ends of the car. The operation of the air valves of this mechanism is electrically controlled by double lever switches which are mounted in cast iron boxes, secured to the outer faces of the vestibule door posts at both ends of the car. There are two levers, both arranged to lock in the neutral position, one for opening and closing the door and one neutral. As a further safety feature there is a collapsible arm on the engine shaft so that the door can be opened about 6 in. from its closed position. Each switch box controls both of the doors on one side of the coach, an arrangement which permits one guard to operate all of the doors on two cars. In event of an electrical failure the air valve may be operated by hand. In case a door is closed on an obstruction

which prevents further movement it automatically opens about 36 in. then reverses and moves toward the closed position again. This movement is kept up automatically until the obstruction is removed.

A feature of considerable interest in connection with steam operation is an electric starting signal operated automatically by the closing of the doors. A green light mounted in the cab of the locomotive is connected to a series circuit carried back through the train by electrical connectors between the cars. This circuit is broken by the opening of any vestibule side door in the train and is closed only when all of the doors are closed. Closing the doors thus causes the lighting of the green lamp in the locomotive cab, which serves as a starting signal following station stops. This circuit receives its energy from the headlight generator of the locomotive.

### Telephone Train Dispatching in Canada

ON THE RAILWAYS of Canada the telephone is used for the transmission of train orders on 15,956 miles of road, or about 45 per cent of the whole mileage. This includes the following: Canadian Pacific, 7,522 miles; Grand Trunk, 1,447 miles; Canadian National, 6,365 miles; Michigan Central, 298 miles; Temiskaming & Northern Ontario, 324 miles. These and other interesting facts concerning the telegraph and telephone were given by W. J. Camp, assistant manager of telegraphs of the Canadian Pacific, in a paper read before the Canadian Railway Club at Montreal, in September. Mr. Hulatt, of the Grand Trunk, in the discussion of the paper, gave additional data; and these speakers, with others, agreed that the telephone is 50 per cent faster than the telegraph for the work of the train dispatcher. The telephone was at first introduced, in most cases, because of the increased facility of securing operators, as compared with the Morse telegraph; for with the latter it is essential to have operators of long experience; but substantially all railroads now use the telephone because of better speed and efficiency, regardless of the labor question.

Mr. Camp gave a brief historical sketch of the telegraph from 1815, when Ronalds was able to send a message some distance by using 24 wires, one wire for each letter of the alphabet. One wire of the Canadian Pacific, between Halifax, N. S., and Bamfield, B. C., 4,404 miles, on which the automatic printing telegraph is now in use, is believed to be the longest commercial telegraph circuit in the world. This circuit is leased to the British Pacific Cable Board. In the through traffic between Australia and Great Britain messages are repeated without being written out; the receiving tape at the relay station is gummed on blanks and the sending operator at that station punches another transmitting tape by reading from the one received. On this 4,400-mile land line the average speed is 125 letters a minute; good work has been done at 300 letters a minute.

The Canadian Pacific has printer apparatus in use in all parts of Canada on long circuits and also on many short circuits. All of these are worked duplex.

The first regular telephone train dispatching circuit of importance was that of the New York Central (October, 1907), between Albany and Fonda, 44 miles. The Burlington road installed a circuit of 106 miles, single track, a few months later; the Canadian Pacific opened a circuit in June, 1908.

Marconi's wireless telegraph was used between a Grand Trunk train and a station in October, 1902; and the wireless telegraph stations of the Delaware, Lackawanna & Western were established in 1913. Mr. Hulatt expects great things from the wireless carrier system of General Squirer.

Telephones for messages, as distinguished from train orders, are now in use over long distances by the most enterprising railroads; the printing telegraph is also used on the large railroads both in the United States and Canada.

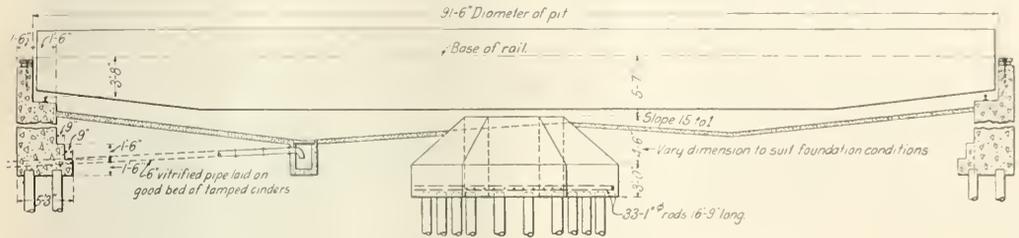
# C. P. R. Turntable Departs From Usual Practice

Design Is Lighter and Shallow Pit Lessens Danger of Running Engines Into It

THE RAILWAY TURNTABLE is probably subject to more variations in practice and differences of opinion than any other phase of the bridge engineer's work. Some authorities favor the deck turntable; others the through table. Those who prefer roller bearing centers are just as positive in their views as those who believe that a disc center gives the best results. For this reason the 90-ft. Canadian

stated that a shelf angle properly supported on stiffeners forms an effective bearing for the ties and gives no trouble in maintenance. The girders are 7 ft. 6½ in. deep, back to back of angles at the center, this depth being reduced at the ends to 5 ft. 8¼ in. The backs of the upper flange angles are 2 ft. 6½ in. above the base of rail.

The turntable is well braced by a double system of later-

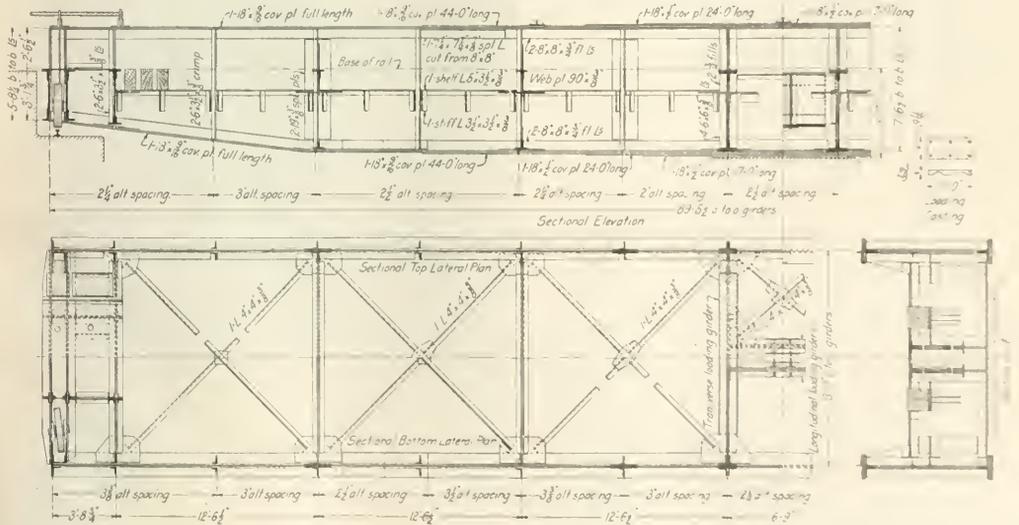


Section of a Typical Turntable Pit

Pacific turntable, which embodies a number of variations from current practice, will be found worthy of study.

This turntable is of the half-deck type with 8-in. by 16-in. ties supported on 5-in. by 3½-in. by ¾-in. shelf angles at about the mid-height of two girders, spaced 13 ft. center to

als, one in the plane of the shelf angles and another in the plane of the bottom flanges. Cross frames are provided at alternate stiffeners and by arranging to have them come up between the ties they have been made almost five feet deep. To stiffen the ends of the table and provide for the applica-



center. Preference for this design is based on two considerations. It is lighter than the through type with a beam and stringer floor and it permits of a shallower pit and affords much less opportunity for running a locomotive into the pit in case of derailment than does a deck-table.

Long experience with this form of construction has demon-

stration of the load to the end wheels, end loading girders are provided, these being protected from derailed wheels by a deck plate 4 ft. wide riveted to their top flanges.

The loading arrangement at the center consists of two cross girders spaced 6 ft. 9 in. center to center, carrying two longitudinal loading beams between them, spaced one foot

each side of the center line of the table. These loading beams are equipped on their lower flanges with cast steel bearings. The center used is of the conical roller type.

These turntables are commonly turned by a tractor operated by compressed air. The air is supplied in a pipe line suspended from a steel cable to a point directly over the center of the table and thence through an overhead U-frame to an air drum supported outside one of the girders. From this a pipe line runs to the tractor.

The turntable pit also presents some details of interest. The center pedestal and circle wall are made entirely of concrete with an eight-inch coping of oak or Douglas fir on top of the circle wall. The timbers in this coping are made in segments, in two layers with joints lapped. Wrought iron cramps for dogs are used to hold the timbers in place, supplemented by anchor bolts one inch in diameter and 60 d wire nails. The circle rail rests directly on the concrete and is held in place by anchor bolts imbedded in the concrete and fitted with bolts and eccentric washers that permit of a variation of  $\frac{3}{4}$  in. in the width of the rail base.

Special attention is given to drainage of the turntable pit. In all cases where the ground requires drainage, the pit is paved with 4 in. of concrete or brick laid in mortar on broken stone, cinders or porous material and this paving is sloped to a catch basin at the end of a line of drain pipe.

We are indebted for the above information to J. M. R. Fairbairn, chief engineer, Canadian Pacific, Montreal, Que. P. B. Motley, engineer of bridges, was responsible for the design.

## Railroad Bill Taken Up in Senate

WASHINGTON, D. C.

**T**HE railroad bill to provide for the disposition by the government of the securities accepted from the railroads for indebtedness to the government for additions and betterments made during the period of federal control was made the unfinished business of the Senate on November 8 on motion of Senator Cummins, and on November 9 Senator Cummins made a speech explaining the bill, after which its consideration was postponed until Monday, November 14.

Senator Cummins said that his experience had led him to the conclusion that the Senate was able to deal adequately with any subject on which senators would take the trouble to familiarize themselves, but that unfortunately many were not willing to devote the time and labor to informing themselves on many of the subjects they were called to vote upon and that he knew of no question on which there had been more misunderstanding both in the press and in the Senate than on this bill. He began by pointing out what the bill does not contain, saying it does not extend the President's power to fund the railroad indebtedness as provided by the transportation act; it does not involve any appropriation or any future demand upon the treasury; rather it is intended to make such an appropriation unnecessary; it does not affect the settlements made by the Railroad Administration except to provide money with which to make them by selling railroad securities held or to be acquired by the government; it does not represent a gift, gratuity or loan to the railroads and it does not in any way affect rates. The only authority given to the President by this bill, he said, is to sell the railroad securities. Senator King asked if it does not provide for paying the government indebtedness to the railroads in cash while allowing the roads credit for their indebtedness. Senator Cummins said that is provided for in the transportation act. He also said in reply to Senator King that it in no way provides for a guarantee of the railroad securities by the government. He said he could not conceive why anyone who understood the bill and its purpose could possibly object

to it, because if it is desired to withdraw from the President the power to fund the railroad indebtedness it would be necessary to repeal parts of the former act rather than oppose the bill. Senator Cummins then entered upon a detailed explanation of the accounts between the Railroad Administration and the railroads, during which he was frequently interrupted by questions from senators who had difficulty in following the figures.

A large amount of opposition to the bill is developing in the Senate. In addition to the members of the agricultural bloc, who are objecting to the bill with the general purpose of doing anything to embarrass the railroads until or unless they can obtain legislation to repeal the rate-making sections of the transportation act, there is also much opposition on the part of those who believe, or profess to believe, that the bill provides for additional aid to the railroads from the federal Treasury, whereas the purpose of the bill is to enable the Railroad Administration to pay what it admittedly owes the railroads without the necessity for another appropriation from the Treasury. It is proposed to sell the securities offered by the railroads as evidence of their indebtedness to the government in order to provide the funds with which the government may pay the railroads. While it is proposed to sell some of the securities to the War Finance Corporation, it is only for the purpose of having that corporation hold them temporarily until market conditions are such that they may be sold to private investors, and the President is also authorized to sell securities directly to private investors in the way that \$109,000,000 of the equipment trust certificates have been sold. The result of the plan would be that the government would settle its accounts with the railroads and the railroads' ten-year notes for the additions and betterments would be held by private investors rather than by the government.

But the Railroad Administration accounts are so complicated that it is difficult for anyone to understand them and many speeches have been made on the subject. And those whose political purpose is suited thereby much prefer to describe all payments made by the government to the railroads as gifts whether they consist of payments of rental for the period of federal control, the guaranty for the six months following federal control or loans from the revolving fund. Except the loans from the revolving fund, the payments made by the government to the roads during the past year have been on account of the 26 months period of federal control or the six months guaranty, which expired a year ago, but all of which has not yet been paid. But the issuance of cumulative statements by the Treasury Department from time to time gives rise to many newspaper articles which give an impression that the government is still paying out large sums to the railroads. Moreover, the provisions of the bill, while in themselves comparatively simple, are somewhat complicated by the frequent reference in the bill to provisions of the federal control act, the transportation act and the War Finance Corporation act.

**CRUCIFIXION OPPOSED.**—Edgar E. Clark, former chairman of the Interstate Commerce Commission, speaking at the dinner of the Boston Chamber of Commerce on November 7, on the railroad problem, and referring to the unwise and indefensible things that have been done by railroad managements in the past, said "But are those of today to be crucified because of the shortcomings of their predecessors? The people have made it manifest that they have had enough of government operation. There are those who desire and hope for governmental ownership and operation. They are working earnestly and industriously to that end, seeking in every way to embarrass and discredit the existing status. The selfish interests of most of them are apparent. Their success will be prevented only if those who do not accept their theories bestir themselves to live interest and helpful activity in the matter."

# I. C. C. Accident Bulletin No. 78—Annual Report

## Persons Killed in Train Accidents Total Same as 1919—Train Accident Losses Increase

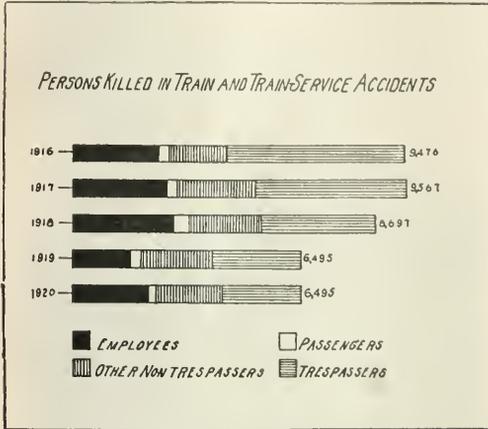
THE INTERSTATE COMMERCE COMMISSION has issued Accident Bulletin No. 78, containing the record of collisions, derailments and other accidents on the railroads of the United States for the last quarter of 1920, and also for the 12 months ending with December. The number of passengers killed in train accidents in the twelve

comparisons shown in the present table are not specially striking; and the number of persons killed in train accidents and train-service accidents, a total of 6,495, is exactly the same as the total for the same items in 1919.

The number of trespassers killed, 2,166, it will be seen, is 387 less than the number in 1919; for 14 years this item ran about 5,000 a year; but since 1916 there has been a steady diminution to the number here shown.

The bulletin contains tables showing some of the principal totals for each year back to 1889, with others of varying value. As in the preceding annual bulletin, the causes of train accidents and of train service accidents are classified in extreme detail. Twenty-three pages are given to tables showing total casualties, classified, for each road (but confined to roads of Class I); and the casualties resulting from different classes of accidents are shown also in tables giving the total for each state in the Union.

The total number of train accidents during the year was 36,313 and the damage to cars, engines and roadways was \$34,129,860, divided as follows: Collisions, 10,110,



months was 95, as compared with 110 in the preceding year; and of employees, 430 as compared with 366. These and other figures from the principal table in the yearly section

CASUALTIES TO PERSONS IN RAILROAD ACCIDENTS: TWO YEARS

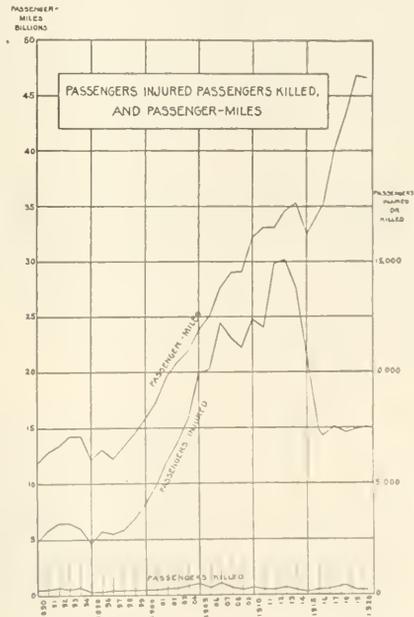
Passengers	1920		1919	
	Killed	Injured	Killed	Injured
In train accidents.....	95	4,631	110	4,549
In train service accidents.....	169	3,825	191	3,598
Total.....	264	8,456	301	8,147
Employees on Duty.....	422	3,385	359	2,955
In train accidents.....	1,685	43,535	1,334	33,325
In train service accidents.....	2,107	46,920	1,693	36,280
Total.....	2,371	55,376	1,994	44,427
Employees not on duty.....	91	314	66	321
Other Persons, not Trespassing.....	11	86	9	61
In train accidents.....	1,856	5,044	1,873	5,134
In train service accidents*.....	1,867	5,728	1,882	5,195
Total.....	48	77	32	63
Trespassers†.....	2,118	2,291	2,521	2,595
In train accidents.....	2,166	3,368	2,553	2,658
In train service accidents.....	6,495	63,786	6,495	52,601
Total of the above.....	463	104,522	483	96,452
Non-train accidents.....	6,958	168,308	6,978	149,053
Grand total.....				

\*Includes persons struck by trains at highway crossings, of whom, in 1920, there were 1,790 killed, including 100 classed as trespassers. The total in the year preceding was almost the same—1,784.

†A small percentage of the persons classed as trespassers represents employees.

‡Of the 63,786 persons here recorded as injured, 529 were reported by the railroads as having subsequently died.

of the Bulletin, are shown in the table given below. It will be recalled that in 1919, the record of which was given in the *Railway Age* of November 19, 1920, page 894, there were many remarkable decreases, as compared with 1918. The



damage, \$9,078,110; derailments, 22,477, damage, \$22,987,790; others, 3,726, damage, \$2,063,960. The total damage in 1919 was \$22,675,820. Thus it appears that in 1920 the damages under this head, from derailments alone, amounted to more than the total from all classes of train accidents in 1919.

The totals of some of the annual tables are shown in graphs, two of which we reproduce. That which shows the total number of persons killed in train and train service accidents is accompanied in the bulletin by a similar one

showing the number of persons injured, but the drawing is on a different scale.

The graph comparing the number of casualties to passengers with the number of passenger miles is of interest mainly as showing the considerable decrease in non-fatal injuries since 1912, while at the same time the number of passengers carried has increased from about 35 billion (passenger miles) to upward of 45 billion.

Another diagram shows the percentage of automobile casualties at grade crossings as compared with the total casualties including those to pedestrians and occupants of other vehicles. The data contained in this diagram, showing large increases in four years, are condensed below:

CASUALTIES AT GRADE CROSSINGS OF RAILROADS IN THE UNITED STATES—TOTALS FOR FOUR YEARS

Year	Total casualties			Occupants of automobiles	
	Killed	Injured	Total	Casualties	Percentage of total
1920.....	1,791	5,077	6,868	5,250	76
1919.....	1,784	4,616	6,400	4,790	73
1918.....	1,852	4,683	6,535	4,240	63
1917.....	1,969	4,764	6,733	4,083	59

It will be noted that the total number of persons killed, all causes, on crossings, has decreased steadily since 1917. This would seem to indicate that some of the persons who risk their lives at crossings by reckless management of automobiles, would perhaps have found some other way to indulge their habit of recklessness if the automobile had never been invented.

The statistics of trainmen include tables showing the proportion of persons killed or injured to the total number employed; and other tables show casualties, per thousand hours worked, for shopmen, trackmen, etc. For example, of enginemen of passenger trains there were, in 1920, a total of 190 men employed to each one killed; and 16 employed to each one injured; on freight trains the proportion was 538 employed to each one killed and 16 employed to each one injured; in yard service there were 2,547 employed to each one killed and 22 employed to each one injured. Similar statements are shown for firemen, conductors and brakemen; and for all these classes the tables cover five years, 1916-1920. In the fourth quarter of 1920 there was one shopman injured for every 27,000 hours worked, and one killed for every 14,549,000 hours worked.

## Northern Pacific

### Illuminated Highway Signs

THE NORTHERN PACIFIC has placed in service to date about 100 illuminated highway crossing signs of special construction and type which give a continuous illuminated warning, day and night. These signs consist of two red lights in a horizontal line and an illuminated word, "Stop," and are designed to be attached to the post of the ordinary highway crossing sign.

The new sign consists of two oil lamps with large founts and long time burners, spaced 27 in. center to center of lenses and connected with a square sheet-iron box, on the front side of which the letters S-T-O-P are cut out. These letters are 6 in. high. Back of them is placed a translucent glass on which light is thrown from the two lamps by mirrors, set at an angle, which make the word STOP visible about 200 ft. away, both day and night. The lamps are supported on two standard R. S. A. lamp brackets. These are mounted on a casting which is designed to be placed on either a wooden or an iron post. The casting is attached to the round iron post by U-bolts. It consists of two pieces which fit together

on a slightly curved surface to provide proper adjustment of the rays of the lamps in the vertical plane. Adjustment in the horizontal plane is obtained by loosening the U-bolts and shifting the entire sign the desired distance to line it up properly with the highway. The centers of the lenses on the sign are 7 ft. 6 in. above the base casting of the post. The lenses are hooded so that the red lights will not be visible to any train approaching from either direction on the



Illuminated Highway Crossing Signals at Livingston, Montana

railroad. The oil containers hold a gallon of oil and the lamps will burn continuously for about a month with a long-time burning oil. The lamps are cared for by the section men in the course of their daily work.

The idea back of the use of this sign, which was developed by C. A. Christofferson, signal engineer of the Northern Pacific and is made by Adams & Westlake, Chicago, is to warn the traveler that he is approaching a railroad crossing, by reinforcing the present sign with the red lights.

An installation of two of these signs at a crossing costs about \$100.

ABOUT A YEAR AGO five foundries which specialize in the manufacture of small steel castings established a plan for co-operative research and obtained the services of Major R. A. Bull, Sewickley, Pa., to carry on the work. The companies represented include the Lebanon Steel Foundry, Lebanon, Pa.; Fort Pitt Steel Casting Company, McKeesport, Pa.; Michigan Steel Casting Company, Detroit; Electric Steel Company, Chicago, and the Sivyer Steel Casting Company, Milwaukee, Wis. Under the co-operative plan uniform standards of inspection were established by these companies and investigations of operating practices were delegated to the individual plants. At a recent meeting of the co-operating companies, the plan for obtaining uniform and satisfactory products was approved unanimously. The standards were revised in the light of experience gained during the past year, reports of investigations were received and plans laid for continuation of the policies established.

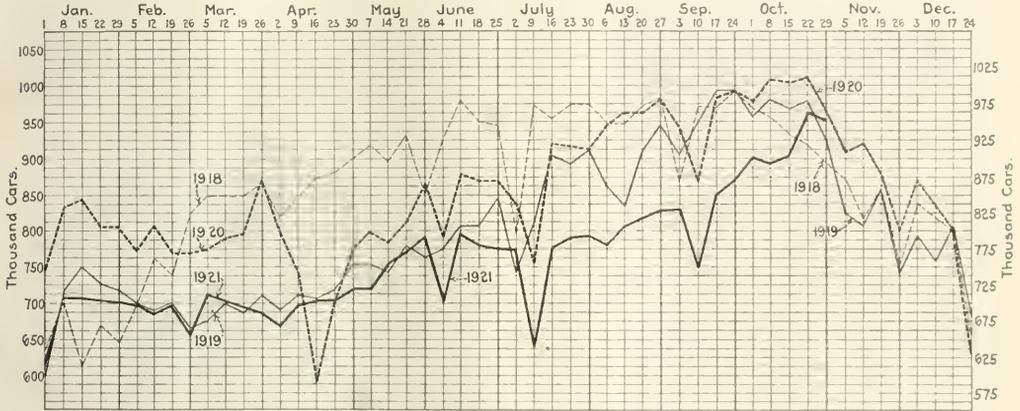
# Freight Car Loading Shows Slight Decrease

Decrease More Apparent Than Real—Heavy Loadings of Previous Week Due to Strike Threat

WASHINGTON, D. C.

**F**REIGHT car loading during the week ended October 29 was the largest that has been reported in a year with the exception of the week before, when there was a sudden increase of over 50,000 cars due to preparations for an anticipated railroad strike. Also, for almost the first time

expected, and in the past two years the seasonal drop after the peak of the fall traffic has occurred about October 22. Whether the peak has been reached for this year, however, remains to be seen. There were decreases as compared with the week of October 22 in the loading of grain and grain

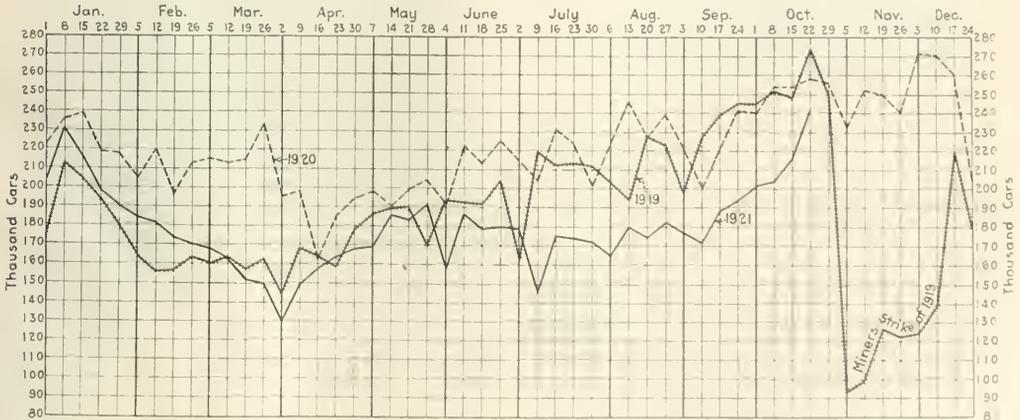


Revenue Freight Car Loadings for the Past Four Years

this year the loading exceeded that for the corresponding week of 1919, although about 3 per cent below that for 1920. The number of cars loaded with revenue freight, according to the weekly report of the Car Service Division of the American Railway Association, was 952,621, as compared

products, livestock, coal, ore and miscellaneous freight, but increases in coke, forest products and merchandise.

There were 578,578 cars loaded with merchandise and miscellaneous freight, including manufactured products, which not only exceeded the total for the preceding week by



Total Cars Loaded at Mines, Including Bituminous, Lignite, Anthracite, Commercial and Railroad Fuel

with 962,292 the week before, 981,242 during the corresponding week of 1920 and 955,479 during the corresponding week of 1920. A slight drop as compared with the week before, which was abnormal because of the strike threat, was

2,953 cars, but was 34,682 cars more than were loaded during the corresponding week in 1920 and 49,274 cars above that for the corresponding week in 1919. Loading of coke increased 692 cars, compared with the previous week, the

total being 7,539, while forest products amounted to 54,348 cars, compared with 53,426 cars the week before.

Coal loadings were 207,693 cars or 4,526 cars less than the week before and 15,293 cars under that for the corresponding week in 1920. Reports showed 37,505 cars loaded with live stock, which was a decrease of 2,683 cars compared with the total for the preceding week, but an increase of 4,638 cars compared with the corresponding week last year.

Loading of grain and grain products was 48,949 cars, 2,052 cars under the week before, but 11,453 cars more than

## Shipping Board Asks Conference with Railroads on Foreign Contracts

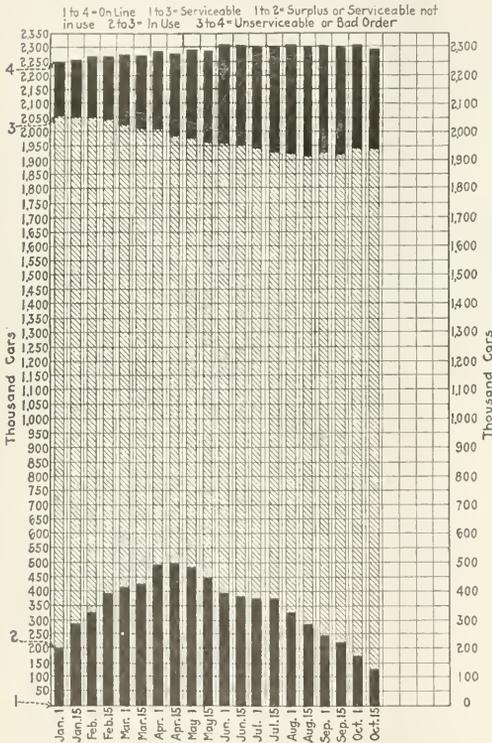
WASHINGTON, D. C.

THE UNITED STATES SHIPPING BOARD has announced that all railroads having traffic contracts with foreign steamship lines will be invited to a conference with members of the board at Washington on December 1 to discuss the nature of the contracts and their abrogation if they are found to be detrimental to the development of an American merchant marine. The Interstate Commerce Commission recently called upon the railroads to file with it copies of such contracts, and this was done by some 28 railroads. There has been much criticism of the contracts by certain members of Congress because in them the railroads frequently made exclusive traffic agreements and extended various privileges to foreign lines which are now regarded as prejudicial to American shipping, although most of the contracts were made many years ago at a time when there was little American shipping.

While some of the speeches regarding these contracts have accused the railroads of alining themselves with foreign interests as against the American shipping, the members of the board, in making the announcement, were careful to refrain from criticizing the roads and stated that the roads were to be "invited" to the conference and approached in a spirit of co-operation. It was recognized that the contracts were entered into before this government had adopted a policy of building up a merchant marine and it was stated that it was not expected there would be any difficulty in getting together with the railroads upon a plan for co-ordinating American ocean and rail transportation. If it is found that the contracts are detrimental to American interests an effort will be made to substitute contracts with American ships. The Shipping Board will be represented at the conference by Commissioners Thompson, Plummer and Lissner, who are members of the joint committee on interstate commerce and railroad relations of which members of the Interstate Commerce Commission are also members. Commissioner Thompson proposes to consult with Chairman McChord of the Interstate Commerce Commission and the members of the commission will be invited to attend the conference if they desire. Chairman Lasker of the Shipping Board has conferred on the subject with the President.

Now that there are plenty of American vessels it is hoped to evolve a policy by which a greater proportion of the country's foreign commerce may be carried in American bottoms. The question of enforcing Section 28 of the Jones act, under which the Interstate Commerce Commission is authorized to confine preferential export or import rail rates to traffic carried in American-owned ships when requested to do so by the Shipping Board, is also involved.

A discussion of the railroad contracts was precipitated in the Senate on November 8 by the introduction of a resolution by Senator Jones requesting the commission to furnish the Senate with copies of the railroad contracts with foreign steamship lines. The resolution was adopted after Senator Jones had charged that the railroads have conspired with foreign interests that are hampering and seeking to cripple the American merchant marine. Senator La Follette also announced that he hoped to call up at once his pending resolution for an investigation of the Shipping Board. Senator Jones said he had not had time to examine the contracts personally, but he read a letter from the National Merchant Marine Association purporting to describe the principal features of the contracts, by which the railroads agreed to co-operate with the foreign shipping lines. Among the features in the various agreements are free wharfage and dockage, special piers set aside for foreign lines, exclusive use of facilities without charge, reduced rates, special demurrage agreements, pledges to work together against competitors, etc.



The Freight Car Situation, Showing Surpluses, Bad Order Cars, Total Cars in Use and Total on Line

were loaded during the same week in 1920 and 9,165 more than during the same week in 1919.

A decrease of 4,977 cars was reported for ore, the total for the week being 18,209 cars.

Compared by districts, the Eastern and Allegheny regions were the only ones to report increases in the loading of all commodities compared with the week before, but the Eastern, Southern, Central-Western and Southwestern reported increases over the corresponding week last year.

THE PARAMOUNT PROBLEM, however, for the public, is not whether the railway employees are justified—although it is essential that justice be accorded to both sides in every such dispute—but how to prevent the periodic recurrence of the threat against the economic life of the nation which has characterized the differences between railroad labor and the railway managers for a number of years.—*Guaranty Survey*.

# Changes Ordered in Panama Railroad Operation

## Changes in Direction of Open Shop, Reduced Wages, Fewer Passes and Revised Train Schedules

WASHINGTON, D. C.

**A**CTING upon recommendations made by the Special Panama Canal Commission, with some modifications, the Secretary of War has recently issued a series of directions to the governor of the Canal Zone providing for numerous changes in the administration of the canal and the operation of the Panama Railroad, intended to place the affairs on a more business-like basis. In some cases to carry the directions into effect will require the issuance of executive orders by the President. Among the changes ordered are the following:

A careful study shall be made of the cost of the canal, in order to establish, if possible, a capitalization to determine a fair commercial value for the canal and its various allied activities. When this has been arrived at the actual cost of the canal and its activities be written down to this figure, which should thereafter be used in the operation and official reports as capital account upon which returns and expenditures should be justified. Having arrived at this figure, it will be subdivided and an allocation be made to each auxiliary activity under the canal administration, and thereafter the sum allotted to each of these activities shall be the one that must be used in justifying the continued existence of the activity concerned. By capitalizing the canal and its various subdivisions, as recommended, it is believed that many desirable results will obtain, for thereafter not only the canal as a whole but each of its auxiliary activities will be given a measure by which the efficiency of its operations should be determined.

The rates of pay, fixed by law, of not to exceed by 25 per cent the rates paid for similar service in the government service in the United States, will be used for both canal and railroad employees. There are certain rates (notably bases fixed for railroad employees, for building trade rates, and for rates derived from the latter) which are now too high, and for which a new rate should be fixed.

The bases upon which wages are determined shall be gone over carefully and be readjusted along the lines above indicated.

Hereafter no agreement will be entered into which cannot be terminated at any time upon 30 days' notice by the governor when in his judgment considered advisable.

The so-called union rate in the United States shall not necessarily be followed in fixing the wage scales, but the wage scale, when not fixed on a government rate, shall be derived from the wage actually paid for similar services in various representative parts of the United States, whether it be a union rate or a non-union rate.

The employees, whether union or non-union, shall be dealt with openly, through committees or representatives composed of employees, whether representatives of labor organizations or not.

It is the intent to give the employees the right to lay all proper claims or complaints before the governor or the agencies he may constitute for wage or complaint adjustments, through their representatives, and to accord to all employees fair and equitable treatment, whether they be members or non-members of a labor organization.

All steam railroad tracks on the Isthmus shall be transferred to the railroad company and be included in its assets, operation and maintenance.

The tracks put in and owned by the Army, for its own convenience, shall be regarded as industrial tracks, built by the Army for its own convenience, but operated by the rail-

road, the actual cost of maintenance if done by the railroad to be billed against the Army.

About 35 miles of side tracks shall be taken up and salvaged.

One of the bridge and building gangs shall be abolished, the remaining one to be placed in boarding cars if advisable to avoid unnecessary expense.

Section forces shall be immediately furnished with track motor cars.

Many cars of all types in storage at the present time, as well as all other stored equipment which requires other than the lightest repairs, shall immediately be scrapped and salvaged, and equipment in use, reaching the stage of major repairs, shall be retired and scrapped, until the number of cars required for service has been reached.

The motor car shop shall be turned over to the supply department.

All the railroad employees on the Isthmus shall be rated in accordance with the decisions of the United States Railway Labor Board. In case that average earnings of a class in the United States be used in determination of a base rate, additional earnings made for overtime shall not be used in the base to any greater extent than overtime is made on the Isthmus.

There shall be a revision of the passenger service, three trains to be run in each direction each day, and the Saturday and Sunday night passenger service shall be discontinued.

The amount of passenger equipment being used shall be reduced, and the parlor cars carried only on steamer trains.

A revised freight train scheduled, substantially as outlined, shall be installed.

Four of the silver men at the station at Colon, six of the silver men at the station at Panama, and six of the silver men employed by the local freight agent at Panama should be dispensed with.

A rearrangement of the relief service shall be effected enabling the railroad to discontinue one of the relief agents.

The helper employed at Balboa Heights shall also act as porter, thereby eliminating one job.

The crossing watchman at Pedro Miguel shall be taken off, and the crossing protected for trains by one of the two station helpers.

In rearranging the rates for station employees, difference shall be made in the wages paid agents at the larger and more important stations.

Whatever action necessary to authorize the establishment of a warehouse for goods in transit in Cristobal shall be taken.

The indiscriminate use of the pass privilege should be called to the attention of the administration with a view of placing a reasonable restriction upon the issuance of passes, and the practice of giving canal employees and their families monthly passes should be modified.

Serious consideration should be given to the practicability of the operation of the Cristobal and Balboa plants on an eight-hour per day basis, and making the price of coal the same at Balboa as at Cristobal, northbound ships being permitted to transit the canal and coal at the northern terminus (Cristobal), and, likewise, southbound ships proceeding through the canal and coaling at the Pacific terminus (Balboa).

The stables should be contracted or leased out to individuals from whom sufficient rental can be realized to pay

the management of the railroad completely from stable operations.

The baggage transfer operated in Colon and Panama should be dispensed with as soon as a responsible transfer company undertakes business in either or both of these cities.

## Amendment of Rate Law Urged

WASHINGTON, D. C.

HEARINGS before the Senate committee on interstate commerce on the Capper bill to amend the Transportation Act have been continued during the past week. Following the testimony of the state commissioners, the committee allowed a half hour to Benjamin C. Marsh, managing director of the Farmers' National Council, who said the only solution for the transportation problem is the immediate restoration of the railroads to unified government operation. He was shut off rather abruptly after declaring that the committee had suspended its general railroad investigation in July after hearing the representatives of the railroads and of the security owners and had refused to hear other witnesses. Senator Cummins told him he was making untrue statements regarding the reason for the suspension of the hearings and said that the brotherhood witnesses had asked for a postponement of their testimony.

S. W. Cowan, representing the Texas cattle raisers, appeared before the committee on November 3 and made a lengthy argument against the whole theory of the Transportation Act, urging a repeal of the rate-making and labor provisions. He said the act was intended to give the roads a 6 per cent return after having the wages fixed by the Labor Board but that it had failed because it contemplated that the money should be taken from "Jones" and Jones' pocket was not deep enough. He urged a return to the principle that rates shall be just and reasonable for the service performed, while not confiscatory to the railroads. He said the passage of the Esch-Cummins act was the "worst crime ever committed in public." On November 4 Mr. Cowan declined to continue with his statement because there were only four members of the committee present and an adjournment was taken to November 7, when Clifford Thorne was heard.

Mr. Thorne, as counsel for the American Farm Federation, urged that Congress should restore the full powers of the state commissions and should strike from the act those clauses which direct the Interstate Commerce Commission to make rates sufficient to produce any given percentage. Section 15-a, he said, has greatly retarded the readjustment of railroad rates in conformity with the reductions in prices which have been effected in practically all other lines of industry. A proviso in the section may warrant reductions on a few commodities, he said, but many have a grave doubt whether the commission has authority to make general reductions unless the railroads should earn their statutory rate of return and this doubt should be removed by an immediate repeal of the section. He said that during the last 30 years the commission has allowed the railroads to build up a sufficient surplus to tide them over the emergency and that they added to their surplus last year \$129,000,000.

Mr. Cowan completed his statement on November 9 and Alfred P. Thorn, counsel of the Association of Railway Executives, was expected to appear before the committee on November 14.

THE MOBILE & OHIO has opened a passenger and ticket office in the Battle House, at the southeast corner of Royal and St. Francis streets, Mobile, Ala. H. E. Jones is division passenger agent; G. W. King, city ticket agent, and C. W. Smith, assistant ticket agent. The office of the Southeastern Express Company will be at the same place.

## A New Type of Crawling Tractor Crane

THE INDUSTRIAL WORKS, Bay City, Mich., has recently enlarged its line of industrial cranes by the development of a crawling tractor type of machine. As the name implies, this machine is equipped with revolving treads, and as such finds its field of service on railroads in the handling of rail, ties, spikes, lumber, etc., around storage yards and similar locations inaccessible to the railroad type crane or where power equipment capable of operating independently of rails is more to be desired.

This crane has a lifting capacity of 20,000 lb. at a 12-ft radius and can be equipped to handle a hook and block, grab bucket, drag scraper bucket, wood grapple, electric lifting magnet, shovel dipper, or pile driver lead with drop hammer. It is operated by means of an internal combustion engine which is said to have the advantages of constant readiness for immediate use, together with the means it affords of saving fuel and of dispensing with the licensed engineer.

The propelling mechanism is powerful, allowing it to travel up steep grades and over heavy going. The large tractor belts distribute the weight so that it travels with equal facility over



The New "Industrial" Crane

city pavements, ordinary dirt roads and industrial storage yards. These belts allow the crane to pass over railroad tracks and large obstructions, and to propel itself up an inclined skidway onto a flat car on which it may be transported without dismantling further than to remove the boom and the projecting muffler. The overall height of the crane with muffler removed is 12 ft. 6 in. The width over tractor belts is 9 ft. 9 $\frac{3}{8}$  in. The rear end will slew within a circle of a 9 ft. 6 in. radius from the center of revolution.

The crane beam is a structure 30 ft. long, consisting of two channels latticed with angles and tie plates, and the entire machine is designed to operate in a complete circle. The steering of the crane is controlled from the revolving platform by manipulating friction clutches and brakes which control the motion of each tractor belt. By means of these clutches and brakes either tractor belt may be disconnected from the motor while the other belt continues traveling. Also the tractor belt when disconnected may be held stationary by applying the brake or may be allowed to coast, an arrangement which permits an operator to turn sharply or otherwise as he sees fit. This propelling and steering mechanism enables the operator to propel and steer the crane independently of the machine operation. For this reason work may be performed while it is in motion or stationary. The crane is said to afford a means of handling bulky materials speedily and economically and to afford any combination of slewing and hoisting of loads up to the capacity of the machine.

# General News Department

A fire at Mobile, Ala., on October 26, destroyed 21 cars in the Mobile & Ohio yard. Estimated loss, \$25,000. Sparks from a locomotive are given as the cause.

The House Committee on Interstate and Foreign Commerce is to hold a hearing on Tuesday, November 15, on the bill to strike out of the railroad valuation act the requirement that the Interstate Commerce Commission ascertain and report the cost of acquisition of land in excess of the original cost of present value of the land itself.

## C. M. & St. P. Officers Fined

H. E. Byran, president of the Chicago, Milwaukee & St. Paul and three other officers were fined one hundred dollars on November 8 on each of 25 charges brought by employees who claimed that their wages were docked when they left work in order to vote. The officers were granted sixty days to file a bill of exception and make an appeal. The execution of the fine will be postponed pending the outcome of the appeal.

## Revised Interchange Rules Effective January First

The General Committee of the Mechanical Division, A. R. A., in Circular No. D. V.-219, announces its intention to re-print the Rules of Interchange as revised this year, including recent interpretations, and issue them to go into effect on January 1, 1922. Until then the 1920 rules with supplement No. 1 will continue in effect. The revised rules will be printed and ready for distribution about December 10.

## Hoover Studies Coal Situation

Secretary Hoover of the Department of Commerce is making a survey of coal stocks as of November 1 with the co-operation of the Geological Survey in order that the country may be better informed as to the situation and consumers and producers alike may make intelligent plans. It is hoped to complete the canvass and publish a preliminary report within 30 days; and the survey will probably be repeated from time to time as the situation requires.

## Tentative Valuations

The Interstate Commerce Commission has issued tentative valuations of the property of the following carriers:

	Date	Amount
Angola Transfer Company.....	1917	\$160,000
Augusta Union Station Company.....	1916	245,331
Cape Charles.....	1915	143,412
Chesapeake Western.....	1916	758,837
Mussey & Western.....	1916	42,500
Rosslyn Connecting.....	1915	264,245

New York, Philadelphia & Norfolk, 1915, \$10,976,927; Sandy River & Rangeley Lakes, 1916, \$1,359,427; Union Point & White Plains 1916, \$100,500.

## New York Railroad Club Meeting

Howard Elliott, editor-in-chief of the Traffic Club Bulletin, will speak on Passing the Buck—Perhaps the Dividend—at the meeting of the New York Railroad Club in the Engineering Societies building, New York, on Friday evening, November 18. Incidentally, the first clause of the subject refers to the passing of the buck from the railways to the commissions and boards, a procedure authorized by law, which is in part responsible for the passing of the dividend. There is also much buck-passing between officers and employees in matters over which the railways have full and exclusive control, and particularly in the matter of cultivating better relations with the public and with the government.

## American Society for Testing Materials Development

An analysis of the replies to a questionnaire conducted recently by the Executive Committee of the American Society for Testing Materials showed the preference of the membership for Atlantic City as the location and the latter part of June as the date for the annual meeting. The Executive Committee is now endeavoring to carry out the expressed wish of the membership.

A committee has been appointed to conduct an investigation of the physical properties of plain and deformed concrete reinforcement bars, the committee consisting of: E. E. Hughes, Franklin Steel Company; R. L. Humphrey, consulting engineer; A. E. Lindau, Corrugated Bar Company; C. F. W. Rys, Carnegie Steel Company; W. A. Slater, United States Bureau of Standards, and J. J. Yates, bridge engineer, Central Railroad of New Jersey.

As announced recently the United States Department of Commerce has translated and published English-Spanish and English-French editions of some 61 specifications of the society, particularly applicable to export trade, and these are now available for distribution by interested organizations.

## Short Lines Present Compensation Case to I. C. C.

Bird M. Robinson, president, and Ben B. Cain, general counsel, of the American Short Line Railroad Association, presented arguments before the Interstate Commerce Commission on November 4 in opposition to the construction placed on Section 204 of the transportation act by the commission, that the short lines taken over and later relinquished by the government are not entitled to reimbursement for the federal control period unless they sustained an actual deficit during that portion of the control period during which they operated their own railroads. The hearing was called to determine the proper meaning of the use of the word "deficit" in Paragraph A of the section, which was intended to provide for the losses sustained by the short lines by reason of federal control after they had been relinquished. The representatives of the short lines argued that Congress could not have intended by the use of the word "deficit" to limit the reimbursement to those roads which had no net operating income, but that it intended, as indicated in other paragraphs, to pay the carrier the amount of its losses as compared with what it had earned during the test period.

## Plumb Plan Has a Rival

A rival of the Plumb plan for operating the railroads has appeared in the bill introduced in the House of Representatives on November 2, by Speaker Gillett by request of Conrad Reno of Springfield, Mass. It is entitled: "A Bill to Keep the Railroads in Operation" and provides "that the capital and labor engaged in each interstate railroad corporation or system are hereby constituted a capital and labor partnership with limited liability, composed of the stockholders as capital partners and of all of the hand workers and brain workers engaged in the business, except the executive officers, as labor partners." It also provides that the "joint earnings" shall be divided between the labor partners and the capital partners in the ratio of 50 to 50 in the following manner: The labor partners shall receive living wages as the work progresses, as a first charge upon the industry. If the joint earnings for the quarter amount to more than the aggregate of living wages for the same quarter, the capital partners shall be entitled to the excess up to an amount equal to the total living wages as living dividends for the capital partners. If the joint earnings exceed the sum of living wages plus living dividends, the excess or good-will earnings shall be equally divided between the two sets of partners.

The rates of wages fixed by the Railroad Labor Board are declared to be living wages within the meaning of the bill, but the Labor Board would be empowered to fix the rates of living wages without any previous conferences between the parties

themselves. The bill would also direct the Interstate Commerce Commission to lower the rates on all farm products, coal, lumber, building materials and other necessities of life. The chairman of the Interstate Commerce Commission, the chairman of the Railroad Labor Board and a third person to be appointed by the President would constitute a board of examiners to determine the amounts of the joint earnings, the living wages and the living dividends, to regulate the accounts kept by the carriers, and otherwise to exercise a general superintendence over the capital and labor partnerships.

**Disastrous Fire at Weehawken, N. J.**

The freight piers of the Erie Railroad, on the Hudson river, at Weehawken, N. J., about a half mile south of the West Shore Railroad passenger terminal, were damaged by fire on November 3 to the extent of about \$2,000,000, the loss including 15 freight cars and great quantities of merchandise



Photo by International

**Fighting the Flames Twelve Hours After Fire Started**

in the storehouses and in the cars. Of the seven piers at this place, only three are left standing. The fire started on pier D and this with piers A, B and C was destroyed with its contents; also a four-story brick warehouse. The freight destroyed consisted largely of oil, salt, lumber and flour. Eleven lighters and barges lying close to the piers were damaged, some of them badly.

**House Approves Alaska Railroad Appropriation**

The House of Representatives on November 2 passed a bill authorizing an additional appropriation of \$4,000,000 to complete the construction of the Alaska railroad. The original appropriation for the road, based on estimates made before the war, was \$35,000,000. Later an additional appropriation of \$17,000,000 was made to meet the increased costs and the additional authorization would bring the total up to \$56,000,000. An estimate made last December by the Alaskan Engineering Commission was that \$3,110,210 would be required, but before the bill could be passed it was found necessary to increase the figure to \$4,000,000.

The bill was only passed after considerable debate, during which many remarks were made, particularly by those who had opposed the bill for the construction of this road in the first place, regarding the necessity for additional appropriations. Many, however, took the position, that in any event, after \$52,000,000 has been expended the additional appropriation should be made to complete the work.

The \$4,000,000 is to standardize 57 miles of narrow gage road, using 70-pound rail; for the construction of two steel and concrete bridges, for certain additional rolling stock and to complete certain terminals. It is now estimated that the road will be completed some time in 1923. The bill was passed by a vote of 198 to 78.

**Railroad Earnings for September**

The net operating income of the Class I railroads for the month of September as reported to the Interstate Commerce Commission was less than that reported for August. Returns for all the Class I roads except the Detroit, Toledo & Ironton, whose report has been delayed, show a net operating income for the month of \$87,174,064. This is an increase of 9.4 per cent as compared with September, 1921, and is on the basis of an annual return of 4.6 per cent. The net operating income for August was \$90,000,000, or at the rate of 5 per cent on the value. The exclusion of the Detroit, Toledo & Ironton does not materially affect the result. Its net operating income for August was only \$70,000.

The total operating revenues of the 200 Class I roads for September was \$497,653,746, a decrease of 19.6 per cent, and the operating expenses were \$377,106,272, a decrease of 26 per cent as compared with September, 1920. A summary of the reports of the 200 roads is as follows:

District	1921	1920	Per cent of increase 1921 over 1920
<b>Total operating revenues:</b>			
Eastern District	\$216,588,515	\$286,366,686	d 24.4
Southern District	72,160,836	89,304,631	d 19.2
Western District	208,504,395	243,256,449	d 14.1
United States	497,653,746	618,927,766	d 19.6
<b>Total operating expenses:</b>			
Eastern District	170,720,518	243,107,204	d 29.8
Southern District	58,385,692	77,576,414	d 24.7
Western District	347,999,862	189,028,996	d 51.7
United States	377,106,272	509,708,614	d 26.0
<b>Net railway operating income:</b>			
Eastern District	31,425,613	28,726,388	9.4
Southern District	10,251,415	9,878,311	3.8
Western District	45,497,036	41,085,822	10.7
United States	87,174,064	79,689,521	9.4

**An Epidemic of Train Robberies**

Six daring robberies, were committed on western trunk lines during the three days following November 4. Of the six hold-ups three occurred on the Illinois Central. The most notable robbery occurred on the night of November 7, at Paxton, Ill., on the Illinois Central, 20 miles north of Champaign, when six bandits shot three members of the train crew and one passenger, slugged two other men, dynamited and burned the mail car, and then made their escape. The train was the New Orleans Limited, No. 3, which left Chicago at 6.15 p. m., and the robbery occurred shortly after 9 o'clock. At Paxton, two men boarded the tender, unseen by the train men. Crawling over the tender they ordered the engineman to stop the train with the passenger coaches standing on a bridge. As the train came to a stop four accomplices immediately took charge of the engine crew as they were ordered from the cab. Two of the robbers were refused admittance to the mail car, whereupon they resorted to dynamite and stink bombs, driving the clerks from the car and slugging them as they came out. In the meantime a running battle was taking place between the train crew and two of the bandits standing on a high bank. Gaining admittance to the mail coach, the robbers blew open the safe and immediately gathered up all the registered and first class mail matter they could find and made their escape in a waiting automobile. The robbers injured six of the train crew, one of whom, a Pullman porter, died the next day. The burning of the mail car seems to have disconcerted the robbers, and it is believed that they carried away little property of value; but much may have been destroyed in the burning car.

Of the other robberies which occurred on the Illinois Central, one was the looting of a mail car of pouches containing parcel post and second class mail matter and the other the robbing of a dining car conductor of \$300 and other valuables by two negroes who boarded the dining car of a train from the south as it arrived at the 43rd Street station, Chicago.

The three other robberies occurred on the Oregon Short Line, the Chicago & North Western and the Atchison, Topeka & Santa Fe. In the first, a lone masked bandit held up west-bound passenger train No. 17, near American Falls, Idaho, robbing the passengers in the observation car of \$434 and considerable jewelry. On the Chicago & North Western, a merchandise express car en route between Chicago and Milwaukee, Wis., was entered as the train left Chicago and valuable merchandise was seized. The robbery was not discovered until the train reached Milwaukee. The sixth robbery occurred on an Atchison, Topeka & Santa Fe passenger train near Ottawa Junction, Kan., on November 5, when a masked man looted the mail car of the train,

after compelling one of the mail clerks to bind six of his fellow workers. Eight sacks of mail were split open and the contents rifled, no estimate of the loot having as yet been reported.

### Bureau of Explosives—Quarterly Accident Bulletin

Colonel B. W. Dunn, chief inspector of the Bureau of Explosives, 30 Vesey street, New York City, has issued Accident Bulletin No. 53, dated October 1, and giving various instructive notes concerning accidents in which explosives were involved, occurring on the railroads of the United States within the three months past.

The most prominent item is the report of an explosion of dynamite that occurred on June 14, 1921, which wrecked two locomotives and nine cars and caused an estimated total loss of \$141,625. This item refers, evidently, to the collision of freight trains on the St. Louis-San Francisco, near New Albany, Miss., on the date mentioned, when a northbound and a southbound freight collided, because of misunderstanding of orders on the part of train No. 135. One trainman was killed and three were injured. The accounts published at the time indicated that the explosion was caused by the collision; but Colonel Dunn's bulletin says that the explosion did not occur until about ten minutes after the collision, and that it was due to hot coals from the firebox of one of the locomotives. The explosive was in the car next to the locomotive; 600 cases of gelatin dynamite, 35 per cent. The car was badly splintered and the damaged cases of dynamite, with loose dynamite cartridges, were thrown about on the ground; yet there was no immediate explosion. The underlying cause was the improper position of the car next to the locomotive, the men who were in charge of making up and running the train having neglected four important rules about placarding and inspecting, and placing the car in the train as far from the locomotive as practicable.

The bulletin's summary of items for the quarter contains the following:

Trespassers fared badly in their proximity to tank cars of inflammable liquids. Six men were burned to death in two tank-car derailments that were followed by fire.

Twelve tank car wrecks and derailments involving gasoline and petroleum oils were immediately followed by fire.

Leakage of inflammable liquids from tank car bottom outlet valves occurred in 27 instances.

Lighted lanterns used near tank cars of gasoline caused two fires.

Strike-anywhere matches caused 21 fires. Fortunately, most were of a minor character.

Charcoal shipments caused 10 fires, principally of spontaneous origin due to shippers' violations.

Six persons were injured in connection with the handling of acid shipments.

Four fires occurred in shipments of nitric acid, three of which were in improperly packed express shipments.



Photo by International

### Marshal Foch and General Pershing

On the Rear Platform of Their Special Train on the Way to the Convention of the American Legion at Kansas City. Photograph taken at Altoona on the Pennsylvania.

## Traffic News

The Canadian Pacific recently sent east from Winnipeg, Man., in a period of 24 hours, 41 train-loads of grain, 1,579 cars.

The Yazoo & Mississippi Valley announces reductions in the freight rate on Louisiana sugar from stations on its line between Baton Rouge and New Orleans to Mobile.

The Baltimore & Ohio has re-opened its Memphis (Tenn.), commercial office, with temporary quarters in the Exchange Building. Louis T. Smith has been appointed district freight representative in charge.

The Erie Railroad has reduced the price of meals in its dining cars. Special combinations are served, breakfast for 60 cents; others for 75 cents and one dollar. For luncheon or dinner, there is a combination for a dollar.

P. C. Sprague, heretofore general freight agent of the Southwestern region of the Pennsylvania, with headquarters at St. Louis, has been appointed manager of the traffic department of M. A. Hanna & Company, Cleveland, Ohio, effective November 15.

The Detroit, Toledo & Ironton filed an application with the Ohio Public Utilities Commission on November 8, seeking to reduce passenger rates by 0.5 cents a mile. The rates would affect both interstate and intrastate traffic and become effective on November 20.

Through freight train service has been established from Chicago to Atlanta, Macon and Albany, Ga., Jacksonville and Tampa, Fla., and to Havana, Cuba, over the Illinois Central, the Nashville, Chattanooga & St. Louis, the Central of Georgia, the Atlantic Coast Line and the Florida East Coast.

The Oklahoma State Agricultural College, in conjunction with the Chicago, Rock Island & Pacific, will conduct an extensive educational campaign for the purpose of increasing the number and improving the quality of poultry, dairy cattle, hogs and sheep. Five meetings are to be held during the week which began on November 7.

The Louisville & Nashville announces reductions in the freight rates on oranges from stations between Venedicta and Grand Bay to Ohio river cities beginning November 28. The following reductions will be effective: St. Louis, from 99 to 87½ cents; Cincinnati, from 96 to 84½ cents; Louisville, from 89½ to 78 cents. Other cities in that territory are included in the reduction.

At the annual meeting of the Oklahoma Industrial Traffic League at Oklahoma City, Okla., on October 17, E. N. Adams, secretary and traffic manager of the Tulsa Traffic Association, was elected president and F. J. Wright, assistant to the manager of the Oklahoma City Traffic Association, was elected secretary-treasurer.

Eighty-six box cars, carrying 345 automobiles, together with parts sufficient to build 50 additional machines, were shipped on October 20 from the plant of the Willys-Overland Company, Toledo, Ohio, to Los Angeles, Cal. West of Chicago these cars went over the Chicago, Rock Island & Pacific, the El Paso & Southwestern and the Southern Pacific.

Existing rules governing the furnishing of free transportation for care-takers in charge of live stock returning to their starting point after having accompanied stock to its destination, will be revised by the Southern Pacific, beginning with January, 1922, so as to permit the drovers to remain five days at the market points before returning, instead of only 72 hours as at present.

An informal conference was held before Traffic Director Hardie of the Interstate Commerce Commission at Washington on November 7, between representatives of the railroads and of iron and steel shippers, at which representatives of the blast furnaces in the Buffalo district urged a reduction in the rates on coal and coke to their furnaces to meet the advantage given to their com-

petitors, the inland furnaces, by the reduction in the rates on ex-lake iron ore. The reduction in coal and coke rates was urged on the ground that it was necessary to equalize the assembling costs of the competing furnaces.

The privilege of stopping over at Philadelphia, recently restored by the Pennsylvania and the Baltimore & Ohio, in connection with tickets for passage through that city (after suspension during the period of the war), has resulted already in a marked increase in the business of that city, more than 10,000 visitors having stopped off there. This information is given out by the Chamber of Commerce, based in part on data received from the railroad companies.

Steamers operating on the Sacramento and San Joaquin rivers, were authorized by the Railroad Commission of the state of California, on November 1, to make immediate reductions in rates on many commodities including beans, flour, grain, rice and hay. The reductions range from 27½ cents to \$1 a ton and follow the suggestion made by the commission in its decision of October 6, stipulating that the carriers make a voluntary reduction of 20 per cent on the chief commodities handled. The present reductions do not carry out the recommendations of the commission fully but it is expected that lower rates will be extended to other articles to meet economic conditions.

The Senate on November 4, rejected an amendment to the tax bill proposed by Senator McKellar, of Tennessee, to require railroads to issue interchangeable 2,000-mile mileage books at the rate of 2½ cents a mile. The senator contended that this was germane to the bill because he added it to the section relating to the transportation tax on mileage books. There was some debate, during which several senators expressed their belief that the railroads should issue mileage books at a reduced rate, but they objected to the consideration of the subject as a part of the tax bill; and there were also objections by Senator Cummins, Senator Pomerene and others to Congress definitely fixing the rate.

At the annual election of the Traffic Club of Wichita, Kan., held on October 6, the following officers were elected: president, J. H. Wilcox, traffic manager, Johnston-Larimer D. G. Company; first vice-president, F. E. Walling, district freight and passenger agent of the Missouri Pacific; second vice-president, George R. Graves, traffic manager of the Dold Packing Company; directors, G. P. Nissen, traffic manager Sterling Oil & Refining Company, C. M. Morrison, traffic manager, Arkansas Valley Interurban Ry., H. L. Reynolds, traffic manager, White Eagle Oil & Refining Company; secretary H. G. Watts, Wichita Freight Audit Company; treasurer, F. L. Partridge, traffic manager Otto Weiss Milling Company.

A special communication has been sent to more than 3,000 employees of the Chicago, Rock Island & Pacific, directly interested in the handling of l. c. l. freight, by T. H. Beacom, vice-president and general manager of the road, urging each employe to suggest to the management better and more economical methods of handling this kind of freight. Mr. Beacom points out that a saving of only 5 cents a ton on this traffic will be of material benefit to the railroad, saying: "The man who can quickly find and then practice the most efficient way of doing a thing is invaluable to the railroad and his good work will be recognized. Find a quicker and better way to handle the freight than you have in the past or better than the other fellow is doing now."

At the annual meeting of the Traffic Club of St. Louis, Mo., the following officers were elected: president, S. S. Butler, freight traffic manager, St. Louis-San Francisco; secretary, Sherman E. Wilson, assistant traffic manager, W. C. Ferguson Lumber Company; treasurer, George S. Siddons, general western agent, Atlanta, Birmingham & Atlantic; vice-presidents, John C. Iselin, traffic manager, The Blackmer Post Pipe Company; O. Van Brunt, traffic manager, Certainated Products Corporation; C. W. Clarke, general agent, Erie; B. H. Dally, assistant general freight agent, Pennsylvania, and H. C. Mitchell, treasurer, Bolz Cooperaage Corporation. Board of directors for two years: A. F. Versen, J. L. Power, E. W. Shrimpf, C. P. Bowsher, and A. L. Browne. The new officers will be installed at a meeting to be held on December 6.

## Coal Production

Coal produced decreased slightly during the week ended October 29, after having shown a large increase during the previous week, which was attributed to apprehension of a railroad strike. The output for the week was 10,951,000 tons, a decrease of 107,000 tons, as compared with the previous week. The daily loading reports show that the production started downward even before the news that the strike had been averted was definitely received. Production began to slacken on Tuesday and Wednesday instead of keeping up late into the week as it had done before and the strike was called off late on Thursday. The decline apparently continued into the first of the week ending November 5

## Annual Meeting of National Industrial Traffic League

The National Industrial Traffic League opened its two-day annual meeting at the Hotel Sherman, Chicago, on November 9, with a registration of approximately 450 members and guests. After J. H. Beek, executive secretary of the League, had reviewed the work of the executive committee, work was started on the general docket of the business session. At the start of the afternoon session on Wednesday all of the general officers, with the exception of a few regional vice-presidents, were re-elected for the ensuing year. The report of the special committee on legislation was discussed on Thursday morning and will be submitted to Congress in the form of constructive suggestions. The suggestion for a three-dollar flat rate for demurrage was tabled.

## Perfect Package Month

The Buffalo, Rochester & Pittsburgh, announcing to shippers the plans for "Perfect Package Month" emphasizes especially the importance of full and correct marking and billing. Its circular says:

A "Perfect Package" may not reach destination unless the billing thereof is likewise perfect, and this applies to the billing department of the shipper as well as to that of the carrier. Illegible billing usually results from speed; speed usually results in abbreviations; abbreviations usually end in trouble. Shipping clerks can hardly be blamed for having impressed on their minds the trade name of the article they are handling, but it is very difficult for the railroad man in checking such freight. A case of "Fairy" may mean a box of soap to one railroad man and almost anything to another. If it is soap, bill it so. Show street address at all times. Show initials of destination road if certain delivery is required. Show "FROM" or "MANUFACTURED BY" preceding shipper's name and address. Name and address of shipper and that of consignee on inside of package will insure delivery in case outer markings become obliterated or removed. Use marking pot and brush for packages having uneven surfaces. *Do Your Best: the Carriers Will Do the Rest!*

## Chicago Shippers' Conference

At the annual meeting of the Chicago Shippers' Conference Association, held at Chicago on the afternoon of November 2, J. J. Wait, retiring president of the association, opened the conference with a review of the work accomplished by the several committees of the association. He told of the work of the express committee in trying to obtain the adoption of a uniform express receipt, and of the legislation committee which has been working for the railroad passage of the funding bill in Congress, also giving attention to the work of the legislature of the state of Illinois. Other committees reviewed were the rate committee and the service committee. The switching committee, Mr. Wait said, had discovered a movement on the part of some of the carriers to require \$50 per car minimum revenue before allowing any switching absorption and to apply plus rates to goods delivered within the Chicago switching district.

The principal speaker of the conference was H. R. Kurrie, president of the Chicago, Indianapolis & Louisville, who spoke on "The Present Railroad Situation." Mr. Kurrie said that in his belief the solution of the wage problem on the roads would be the education of the employees to see the needs of the carriers, that is, the relation between income and outgo, and realize it to the extent of co-operation. "Shippers," he said, "have come to a clearer understanding that the railroads are merely industries like their own and they have helped in the emergency by putting

the carriers on their feet." Continuing, he said, "As I view it, it is largely up to the shipper, the user of transportation, whether he wants service or lower freight rates. He can't have both. The reduced revenues with continued high operating costs have put the railroads in a situation where they cannot stand the loss of revenue which would follow a general reduction in freight rates. I think that as a result of the recent strike order, the men have more thoroughly calculated their situation in the light of other industries around them and I think that after taking stock of their particular situation, they are persuaded that the reduction was justified and that they are in a frame of mind more disposed to listen to reason than they have been since before federal control."

The following officers were elected by the association for the ensuing year: president, J. A. Brough, traffic manager, Crane Company; vice-president, Robert C. Ross, general traffic manager, Joseph T. Ryerson & Sons; secretary, W. M. Lahl, traffic manager, American Seating Company; treasurer, J. A. Ronan, traffic manager, American Meat Packers Supply Company. The following were elected directors for three years: J. J. Wait, manager traffic department, Hibbard Spencer, Bartlett & Company, and E. L. Dalton, traffic manager, American Radiator Company.

**Further Reduction in Livestock Rates Asked**

The Interstate Commerce Commission heard oral arguments at Washington on November 8 on the application of the American Farm Bureau Federation and other agricultural interests for a reopening of the case in which the Interstate Commerce Commission recently recommended to the railroads a 20 per cent reduction in livestock rates on the western roads, applicable to the longer hauls where the rates exceed 50 cents. The application seeks a like reduction on the shorter hauls and, whereas the railroads put into effect the rates recommended by the commission with the understanding that the reduction remain in effect only until January 1, the shippers desire the reduction made permanent. Clifford Thorne, who appeared for the Farm Bureau Federation, said that the former reduction aggregated approximately \$10,000,000 a year and if the additional application is granted it will mean an additional reduction of approximately \$24,000,000 a year. He made much of the point that the prices of agricultural products have come down and argued that there was no reason for protecting the railroads against reductions in their revenues. He said the reduction in rates exceeding 50 cents has no significance to the states of Illinois or Iowa and has very little significance to the entire states of Nebraska or Kansas, he said. He also said that as the rates were increased on a percentage basis, they should be decreased on a percentage basis so that the same percentage should apply to all the rates. He called attention to a publicity bulletin issued by the railroads listing a large number of reductions in rates in the eastern territory and asked why it was not as important to reduce the western livestock rates. In reply to the suggestion that Mr. Thorne was now advocating the policy of making the rates in accordance with what the traffic will bear, he said the commission has always considered this principle in classification cases in which the rate is made to depend in part on the value and also in other cases.

S. H. Cowan, representing the Texas cattle raisers, said that 75 per cent of the livestock men in the country are "broke."

Kenneth F. Burgess, general solicitor of the Chicago, Burlington & Quincy, presented the argument for the railroads, opposing any further reduction in the livestock rates. He said that in the presentation of the original case the railroads thought they had proved beyond a doubt that if there was any traffic on which a reduction in rates was not justified by transportation conditions it was livestock. The commission, however, recommended a reduction on account of economic conditions and the needs of the agricultural industry, and he thought that if the commission intended to take so many million dollars from the railroads to give to the farmers they had chosen the proper rates on which to make the reduction when they selected the long haul rates, but now the shippers ask for further reductions on the same record and without any new testimony. The commission, he said,

has gone so far as it is proper to go, whether from a transportation or an economic standpoint. Mr. Burgess also contended that any possible reduction in the short haul livestock rates would not be of material benefit to the livestock industry because to carry livestock free from Missouri river points to Chicago would make a difference of less than one-half a cent per pound in the wholesale price. The average freight rate on livestock in the western district, he said, is less than \$60 a car, while the average value of a carload at the market is \$1,500 or more.

He said that the livestock industry is suffering from the curtailment of foreign credits and a decrease in meat eating in the United States, neither of which can be relieved by reducing freight rates. On the other hand, a freight rate reduction will further curtail the buying power of the railroads and add to a further stoppage of industry. He said that during the first nine months of 1921 the western railroads were forced to reduce their expenditures for maintenance by \$183,000,000 and that during these nine months their net operating income was \$188,000,000, or \$156,000,000 below the amount expected to be earned under the rates fixed by the commission. Mr. Burgess said that the railroads are facing a serious situation and are obliged to oppose any extensive reductions in rates. They have made many reductions where conditions justified it and they are trying to go on and do the best they can without doing any serious injustice to anyone.

**Reductions in Transcontinental Rates**

Transcontinental carriers, following conferences of traffic officers at Chicago, stated on November 3, that freight rate reductions ranging from 20 to 50 per cent on shipments from Chicago to the Pacific Coast, would become effective as soon as tariffs can be printed. Action of a similar nature by roads east of Chicago is predicted in the near future. The proposed rate cuts require but a few formal actions and approvals and the tariffs are expected to become effective in the order of their release. R. B. Robertson, assistant freight traffic manager of the Union Pacific, has prepared the following tabulation of changes to be made in transcontinental east and west bound rates per 100 lb. between Chicago and points taking the same rates and north and south coast and intermediate points which are being recommended by the carriers:

TO THE PACIFIC COAST			
	Present	Proposed	
Glucose, etc.	\$1.50	\$1.30	
Mach., taking class "A"	2.95 1/2	2.53	
Hardwood lumber	1.06 1/2	.80	
Dowel pins	1.92	1.58 1/2	
Fore froth	3.08	2.50	
Fire fighting apparatus	5.00	4.16	
Paper filler	1.83 1/2	1.68	
Cereal, beverages non-intoxicating, etc.	1.85 1/2	1.50	
Lime, phosphate of	2.25 1/2	1.82	
Talc, to California only	1.50	1.25	
Pianos, organs, etc.	3.83 1/2	3.58	
Automobile wreking trucks, California	3.66 1/2	2.75 1/2	
Intermediate	5.66 1/2	2.58 1/2	
Lard in tank cars	2.42	2.33 1/2	
Wooden kegs	2.75 1/2	2.55 1/2	
Blacksmithing coal	16.20	12.50	
Counters, heels, soles or taps, etc.	3.65 1/2	2.33 1/2	
Paper cups, dishes, etc.	2.33 1/2	2.25	
Malted milk	2.50	2.25	
Cyanamid	2.92	1.16 1/2	
Fertilizer	8.65	1.82 1/2	
Oyster, clam shells, etc.	.62	.75	
Cash registers	4.08 1/2	3.63 1/2	
Motor truck seat exbs	2.95 1/2	2.66 1/2	
FROM PACIFIC COAST			
Fruit syrup and juices	1.83 1/2	\$1.42	
Pickled herring	1.42	.35	
Chocolate creams	4.80 1/2	3.50 1/2	
Honey, strained	1.55 1/2	1.35	
Honey, creamed	1.33 1/2	.85	
Feldspar (crists tons)	58.40	12.50	
Plugs (wooden), etc.	2.95 1/2	1.6	
Sugar coated peanuts	4.08 1/2	2.85	
Empty ammonia cylinders	1.83 1/2	1.75 1/2	
Lumber for sound boards for pianos	8.65	.75	
Sugar	1.00	.92	
Wooden crates	1.53	1.00	
Tractors	5.00	4.16 1/2	
Cddn stock	1.92	.80	
Stone, natural taking class "C" or "D"	1.83 1/2	1.05	
Fruit, vegetables waste	1.25 1/2	.90	
Cement, oxy-chloride or sarel	1.48 1/2	.65	

\*Per net ton. \$60.00 minimum, \$1.05.  
 †To McGill, Nevada.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until March 1, the operation of schedules which provide increases and reductions in rates on Lumber from Morehead, Ky., to eastern cities and interior eastern points, all rail.

The commission has further suspended until December 17, the operation of certain schedules published in supplements to Atchison, Topeka & Santa Fe tariffs which propose increased freight rates between El Paso, Texas, and stations in New Mexico and Arizona.

The commission has further suspended until December 12, the operation of certain schedules which propose to reduce the free time allowance for unloading certain carload traffic destined to go by water from California ports, originating in California, from five days to 48 hours.

The commission has suspended until March 1, the operation of certain schedules which propose reductions in the proportional all rail, rail-lake and rail, and rail-lake and canal rates on grain from Minneapolis, St. Paul, etc., to Eastern Seaboard and interior eastern points.

The commission has suspended until March 1 the operation of certain paragraphs published in a supplement to the American Railway Express Company's tariff which require that when a shipper requests goods stopped in transit he shall execute an agreement to indemnify the carrier.

The commission has further suspended until December 12, the operation of certain schedules published in a Chicago & Eastern Illinois tariff which propose to increase switching rates between junctions with connecting lines and team tracks at stations between Dolton & Chicago, inclusive.

The commission has further suspended until December 30, the operation of certain schedules published in a Michigan Central tariff which propose to increase from \$3.40 to \$4.06 per net ton the rates on sand and gravel from Michigan City, Ind., to Blairsville, Connellsville and other points in Pennsylvania.

The commission has suspended until March 27, the operation of certain schedules published in a supplement to a Missouri, Kansas & Texas tariff which propose reductions of 28½ cents a ton on bituminous coal from mines in Missouri, Kansas, Arkansas and Oklahoma to Kansas City, Mo., and contiguous points.

The commission has further suspended until December 27, the operation of schedules which provide for the cancellation of the existing commodity rates on woolen yarn from Skowhegan, Maine, to Boston, North Andover and Lawrence, Mass., and other points in New England and Trunk Line territory, leaving class rates applicable instead by an order previously entered.

The Kansas Utilities Commission and a number of other western state commissions have filed petitions with the Interstate Commerce Commission asking it to reopen and amend its orders in the intrastate rate cases to authorize the reduction of intrastate freight rates on grain, grain products and hay to correspond with the reductions prescribed by the commission in the interstate grain rate case.

The commission has further suspended until January 7, 1922, the operation of certain schedules published in Agent W. J. Kelly's Exception to the Official Classification which propose to change the rules applicable at primary markets in central and trunk line territories governing the substitution of single-deck cars for double-deck cars ordered by shippers for loading with hogs to provide that if more than 20 double-deck live stock cars are ordered, sufficient number of single-deck cars will be furnished to take care of the stock that could be loaded in the double-deck cars ordered, the operation of which was suspended until December 8, 1921, by an order previously entered.

The commission has suspended until March 8, the operation of certain schedules published in a Wabash tariff which proposes to make a rate of 98 cents a ton on sand and gravel from Wolcottville, Ind., to Chicago, for Wabash Ry., deliveries only, 126 cents for delivery to industries on connecting lines, and 140 cents for delivery on team tracks of connecting lines, in lieu of the existing rate of 112 cents a ton, now indicated as applicable to Wabash deliveries only.

A petition has been filed with the Interstate Commerce Commission by the Southern Pine Association, the Georgia-Florida Saw Mill Association and the North Carolina Pine Association, asking that in any action which may at this time or in the immediate future be taken by the commission as to the reduction of freight rates on so-called basic commodities the rates on lumber originating in the territory represented by the petitioners be given consideration.

### State Commissions

The Wisconsin Railroad Commission has ordered a hearing to determine whether or not freight rates on coal within the state are excessive.

The Bingham & Garfield on October 30 filed an application with the Public Utilities Commission of the State of Utah seeking permission to discontinue passenger service on its lines, asserting that it is operating one coach over its line daily at a loss of \$1,000 a month. The copper mines in the Bingham district are not expected to resume operations for several months.

The Corporation Commission of Oklahoma on October 20, 1921, authorized the carriers in that state to re-establish the increase in rates, with certain modifications, which was granted by the Interstate Commerce Commission on July 29, 1921. The state commission on June 7, 1921, had withdrawn its permission for the carriers to maintain the increase in rates, feeling that the rates were a discrimination against the state of Oklahoma and its shippers.

The first general order regarding milling in transit in the state of California was made by the State Railroad Commission of that state on October 29, following an investigation of the subject on the commission's own motion. Under the decision a mileage scale of 100 miles for out-of-line haul with graduated rates is established as follows: 45 miles and under, 2 cents per 100 lb.; over 45 under 60 miles, 3 cents; 60 to 80 miles, 4 cents; 80 to 100 miles, 5 cents. Prior to federal control the carriers opposed the milling in transit privilege in California, but recently the railroads voluntarily granted these privileges at out-of-line points to South Vallejo, Colusa, Stockton and Los Angeles. The commission held that the transit privilege is a service that the carrier may establish voluntarily but when once established the commission has jurisdiction to prevent discrimination.

### Court News

#### Grant of Easement Held to Include Railroad's Successors and Assigns

The California Supreme Court holds that the provision, in a grant of an easement for railroad purposes, "so long as the said company shall actually maintain, use and operate its road upon the premises aforesaid, but not longer," means so long as the company, its successors and assigns, shall operate its road upon the premises.—*Northwestern Pacific v. Humboldt Milling Co.* (Cal.) 200 Pac. 9.

#### Shipper's Contract to Feed and Care for Stock Defense to Action for Lost Stock

In an action for damages claimed to have resulted from the railroad's negligence in leaving open the gates of its feed lots at Shoshone and permitting plaintiff's sheep to escape and be lost, the Idaho Supreme Court holds that the following contract was a sufficient defense: "The shipper will, at his own risk and expense, load, unload, care for, feed and water the stock until delivery of same to consignee at destination, and will furnish to go with the stock for that purpose one or more attendants."—*Crabill v. Oregon Short Line* (Idaho) 200 Pac. 121.

# Foreign Railway News

## Rates Increased in Germany

LONDON.

The German Minister of Transport announces a 30 per cent increase in railway rates to be applied on November 1 to merchandise and on December 1 to passengers.

## Jugoslavia to Build Railways

Bids have been called for by the ministry of communications of the Kingdom of the Serbs, Croats, and Slovenes for the construction of five short railway lines to link up existing roads in that kingdom, for which purpose an internal loan of 500,000,000 dinars (roughly, \$2,000,000) has been floated, according to Commerce reports. Three of these projects are for narrow-gage lines and two for standard gage, and the total length is 94 miles.

## Reduced Freight Rates in Great Britain

LONDON.

The railways of Great Britain have decided to assist the iron and steel industry of Great Britain by granting a temporary reduction in rates for raw materials used in the iron making trade. It is reported that the reduction amounts to 25 per cent on iron-ore and limestone, coke rates being left untouched. It is, apparently, a well accepted fact in England that freight rates must come down before industry can progress.

## Nigerian Railways Need Cars and Locomotives

LONDON.

In the Times' (London) Trade Supplement, E. M. Bland, general manager of the Nigerian Railways, in his administration report for 1920, calls attention to the fact that the railways are under-equipped in both locomotives and freight cars. Orders were placed with an English locomotive builder for 42 locomotives in May, 1919, but in May of this year, only five had been received. The builders have charged this default on their part to labor troubles.

## Japan's Railways

The program for Japan's government railways calls for an expenditure of \$278,000,000 for new construction and \$432,500,000 for improvements during the next ten years, according to the British Board of Trade Journal. During the past year some 200 miles of new line were built and during the present fiscal year it is estimated that an additional 260 miles will be built.

On January 1 of this year freight rates were increased by 28 per cent. The gross revenue for the fiscal year 1920 totaled some \$102,500,000 from passenger traffic and \$66,000,000 from freight traffic. Privately owned railways have increased greatly. In June of this year 2,021 miles were in operation, while the government has granted permits for the construction of some 3,000 miles.

## Proposed That Italy Take German

### Indemnity in Railway Electrification Material

Reports forwarded by Assistant Commercial Attaché Osborne, of Rome, and made public in Commerce Reports indicate that the director general of the Italian State Railways is suggesting that the government have the reparations account settled in part by requiring the Germans to hand over material which could be used in electrifying government railways. The office of the auditor general is said to oppose this means of settlement and to consider it preferable to have the adjustment of reparations made on a strictly money basis.

The reports state that plans have been completed for the electrification of the Bologna-Verona-Brenner, Pisa-Leghorn, and Venezia Giulia lines, as well as for a shortened route between Rome and Naples. Studies are being made for the possible electrification of the Naples-Reggio, Calabria, and Paola Cosenza lines.

In order to carry out this extensive program the director of railways is negotiating with the ministry of the treasury in order to obtain the necessary funds. According to information just received from Commercial Attaché H. C. MacLean, of Rome, the Official Gazette of October 1 published law decree Number 1298, whereby the state railways administration is authorized to expend the sum of 160,000,000 lire (about \$6,400,000 at present exchange) for the purchase of 120 electric locomotives.

## Exports of Car Wheels and Axles in September

In August the value of exports of these materials was \$255,752. In September this figure slumped to \$90,575. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Dollars	Countries	Dollars
Canada .....	51,842	China .....	6,329
Costa Rica .....	553	Chosen .....	3,390
Honduras .....	318	Japan .....	13,744
Mexico .....	2,869	Australia .....	586
Jamaica .....	40	Philippine Islands .....	7,114
Cuba .....	3,044		
Argentina .....	320	Total .....	90,575
Colombia .....	426		

## Exports of Steam Locomotives in September

Thirty-six steam locomotives valued at \$1,493,050 were exported from this country in September, as compared with 66, valued at \$2,334,737, in August. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Number	Dollars
Canada .....	1	4,500
Mexico .....	19	793,250
Argentina .....	2	108,400
Colombia .....	2	74,000
Peru .....	1	30,900
China .....	11	482,000
Total .....	36	1,493,050

## Service Resumed on Hedjaz Railway

Announcement has been made of the reopening of service on the Hedjaz Railway between Haifa, an important port on the Mediterranean, and Amman, the capital of Transjordan, 162 miles distant, according to Consul A. E. Southard, Jerusalem. Trains are now running for the first time since the beginning of the war. The reopened line passes through an important grain-producing territory, and will open up a profitable market for goods of foreign manufacture, particularly agricultural hardware and textiles. Haifa itself, besides being a port of call, is the terminus of five railways, and is being considered as the terminus of a proposed oil pipe line from Mesopotamia.

## New South Wales Railways

### Overburdened by Unfinished Lines

The railways of New South Wales, Australia, according to the Times' (London) Trade Supplement, suffered a deficit of some \$2,600,000 last year. Practically all of this deficit can be charged to interest on capital sunk in additions and betterments, which have not yet been brought into use and are, consequently, not bringing in any revenue. It is estimated that about \$15,000,000 will have to be spent in order to complete these projects already begun and, as a matter of fact, the expenditure of about half of this sum is contemplated at an early date. Large orders for rails, bridge steel and other construction materials can, therefore, be expected soon.

## English Road's New "Articulated" Train

The Great Northern (England) has recently placed an "articulated" train in its London-Leeds service, according to the Railway Gazette (London). The train consists of five cars. At the head end of the first car there is a truck as well as at the rear end of the last car. Each remaining truck is provided as to carry the weight of the ends of two cars and a heavy truck is provided at such places. Consequently the cars are carried on six four-wheel trucks and the train is really pulling more than a long car in five movable segments which can run

be uncoupled. Additional cars can be added at the head or rear ends in the usual fashion.

The advantages claimed for this style of construction are: easy riding because of practically complete avoidance of oscillation; considerable reduction in weight; permanent connections between cars can be made weatherproof; absence of noise and clatter of ordinary couplings.

This is not the first articulated train on the Great Northern, it is said, but it is the newest and best equipped. The middle "car" of this train is a kitchen car, with a dining car at either end of it. The head and rear cars are coaches.

**Germany Considering Denationalization of Railways**

LONDON.

Brig.-General Sir Henry W. Thornton, general manager of the Great Eastern Railway, has recently returned from a trip to Germany and brings the information that whereas the Germans found it possible to operate the railways economically as a nationalized system under the monarchy, it has been found impossible under the present form of government to approach anywhere near the satisfactory results previously obtained. Serious consideration is therefore being given to turning the railways over to private interests for operation. Various press dispatches have indicated the likelihood of Hugo Stinnes, Germany's great industrial magnate, taking over the entire railway system.

**August Car Exports**

In August freight car exports totaled 360, valued at \$470,001, showing a decline from the July total. The totals by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger		Freight and other		Parts of
	Number		Number		
France	.....		.....		\$550
Germany	.....		.....		348
Spain	.....		.....		1,100
Sweden	.....		.....		584
England	.....		.....		963
British Honduras	.....		.....		54
Canada	2	\$11,922	19	\$24,300	25,515
Costa Rica	.....		.....		80
Guatemala	.....		.....		2,022
Honduras	3	12,600	13	11,300	7,500
Panama	.....		.....		319
Mexico	.....		56	94,645	1,864
Newfoundland and Labrador	.....		.....		18
Jamaica	.....		.....		1,924
Trinidad and Tobago	.....		.....		950
Other British West Indies	.....		.....		36
Cuba	.....		145	256,675	19,521
Dominican Republic	.....		115	81,938	2,233
Bolivia	.....		.....		61
Brazil	.....		12	1,143	9,402
Chile	.....		.....		11,228
Colombia	.....		.....		4,511
Peru	.....		.....		3,824
Venezuela	.....		.....		4,536
China	.....		.....		46
Kwantung leased territory	.....		.....		55,125
Dutch East Indies	.....		.....		943
Japan	.....		.....		140,056
Siam	.....		.....		570
Australia	.....		.....		8,053
New Zealand	.....		.....		33,154
Philippine Islands	.....		.....		15,152
Portuguese Africa	.....		.....		6,453
Total	5	\$24,522	360	\$470,001	\$358,495

**British Roads in Argentina**

**Have An Unsatisfactory Year**

The Railway Gazette (London) has published in one of its recent issues editorial reviews of the operations of four British railway companies doing business in Argentina for the fiscal year ended June 30, 1921. The result on none of them was highly satisfactory.

Of the Buenos Ayres Great Southern and the Buenos Ayres Western it was said that the year was the most unsatisfactory in the history of the companies. The former company was forced to draw some \$2,500,000 from reserve to pay its 4 per cent dividends on its common stock and the latter drew approximately \$2,000,000 for the same purpose. Gross receipts of both companies fell off compared with the previous year while expenses such as fuel, taxes and wages increased. The operating ratio of the former company was 84.3 and of the latter company 90.8.

The Buenos Ayres & Pacific earned only enough to pay operating expenses, fixed charges, 5 per cent on its first preferred stock

and some \$125,000 for reserve. For the previous year earnings were sufficient to pay all these charges and 5 per cent on the common stock as well. The operating ratio was 85.7.

The Central Argentina fared somewhat better. Its gross receipts were practically the same as the previous year. Expenses, however, such as labor and fuel, mounted. Net earnings were 38 per cent less than those of the previous year. Dividends on the consolidated common stock were reduced from 6 per cent to 4 per cent and holders of deferred common shares who last year received 6 per cent of this year received nothing.

**English Railway Union's Finances**

LONDON.

The National Union of Railwaymen of Great Britain is suffering a loss in membership and heavy drains on its capital according to a report published in the Railway Review, the official organ of that union. Before the war the society was able to meet its obligations mainly out of the interest from its invested capital. At the present time its capital has been reduced by £262,000 (\$1,310,000) from £1,221,000 (\$6,105,000) to £958,000 (\$4,790,000). In donation benefit alone no less than £481,000 (\$2,405,000) was paid out between February 1 and September 1 of the present year. "Unless we do something now to meet the exceptional strain upon our finances," says the report, "another couple of years will find us heading for bankruptcy."

**Canadian Tank Cars for Soviet Russia**

Five hundred tank cars built in Canada will immediately be placed on Canadian steamers for transportation to Novorossiisk, a Russian port on the Black Sea, according to a report from Consul Felix S. S. Johnson, at Kingston, Ontario. Four of the largest Canadian government freighters will be employed to carry the cars to Russia, and it is expected that the final shipment will be made before the close of navigation.

The contract for the manufacture of the tank cars was



Photo by Kadel & Herbert

**Canadian Tank Cars Being Loaded for Shipment to Soviet Russia**

secured through the Soviet Trade Commission, London, at a price of \$2,000,000. The cars, which are being built to the Russian gage of 5 feet, will be used in Russia's extensive oil fields. A technical expert representing the Soviet government is now in Canada testing the completed cars, and as these are approved they are placed on board the two government ships which will carry the first shipment to Russia. The remainder of the cars will follow aboard two other government vessels before the close of navigation.

THE SELF-CONFESSED WRECKER of the Grand Trunk passenger train near Lapeer, Mich., on October 29, who gave the name of Henry W. Gates, 59 years old, of Huntington, Ind., was sentenced to life imprisonment on November 3.

## Equipment and Supplies

### Burlington Authorizes Equipment

The Chicago, Burlington & Quincy, on November 7, authorized the expenditure of \$15,000,000 for the purchase of 7,000 freight cars, 55 heavy freight and passenger locomotives and 127 all-steel passenger cars, to be used on the three lines operated by the company.

### Locomotives

THE SEWELL VALLEY is inquiring for 1 Mikado type locomotive, to weigh about 120 tons.

THE CUMBERLAND & MANCHESTER has ordered 2 locomotives, from the American Locomotive Company.

THE SOUTHERN PACIFIC has ordered 50 Santa Fe type locomotives from the Baldwin Locomotive Works.

THE ALABAMA, TENNESSEE & NORTHERN has ordered two 2-8-0 type locomotives from the Lima Locomotive Works, Inc.

R. C. HARRIS, commissioner of works, Toronto, Ont., will receive bids until 12 o'clock, noon, November 15, for 3 locomotives.

THE YEUI HAN RAILWAY (China) reported in the *Railway Age* of October 22, as expecting to order 2 Mogul type locomotives through Mitsui & Co., New York, has ordered these locomotives from the American Locomotive Company.

### Freight Cars

THE LONG ISLAND is inquiring for prices on 10 caboose cars.

THE DIERKS LUMBER & COAL COMPANY, De Queen, Ark., is inquiring for 10 flat cars.

THE H. C. FRICK COKE COMPANY, Pittsburgh, Pa., is asking for repairs on 1,200 hopper cars.

THE WABASH is asking for prices on the repair of 500, 50-ton all steel drop bottom gondola cars.

THE LIVE POULTRY TRANSIT COMPANY, Chicago, is inquiring for prices on from 100 to 300 poultry cars.

THE ERIE will have repairs made to 100 50-ton steel coal cars at the shops of the Pennsylvania Tank Car Company.

R. C. HARRIS, Commissioner of Works, Toronto, Ont., will receive bids until 12 o'clock noon, November 15, for 20 dump cars.

THE BENGAL & NORTH WESTERN (India) is inquiring for prices through the car builders on 250, 4-wheel, covered goods wagons.

THE CHICAGO & ALTON has awarded a contract for the repair of 200 gondola cars to the Mount Vernon Car Company, Mt. Vernon, Ill.

THE ATCHISON, TOPEKA & SANTA FE has awarded a contract for the conversion of 50 box cars into cabooses to the American Car & Foundry Company.

THE CHESAPEAKE & OHIO is inquiring for 500 70-ton hopper cars and 500 50-ton hopper cars, and is also asking figures on the repair of 1,000 hopper cars.

THE ATCHISON, TOPEKA & SANTA FE has awarded a contract for 1,250 refrigerator cars to the American Car & Foundry Company and 1,250 of the same type to the Haskell & Barker Car Company.

THE ILLINOIS CENTRAL, in addition to the inquiry for 2,000 gondola cars, noted in the *Railway Age* of November 5 (page 911),

has under consideration a possible inquiry for 500 convertible cars and 500 flat cars.

THE ILLINOIS CENTRAL has awarded a contract for 350 40-ton refrigerator cars to the General American Tank Car Company and for 650 of the same type to the Haskell & Barker Car Company, inquiry for which was reported in the *Railway Age* of October 29 (page 854). Delivery is to be started by February 1, 1922, and is to be completed not later than March 10, 1922.

### Passenger Cars

THE SALT LAKE, GARFIELD & WESTERN is inquiring for from 10 to 12 passenger coaches.

THE MISSOURI, KANSAS & TEXAS is inquiring for 20 passenger cars and 10 baggage cars.

### Iron and Steel

THE CHICAGO & ALTON has ordered 10,000 tons of rail from the Illinois Steel Company.

THE CHICAGO, BURLINGTON & QUINCY has awarded a contract for girder I-beam spans for bridges at Wichita Falls, Tex., and Denver, Colo., aggregating 126 tons, to the American Bridge Company.

### Miscellaneous

THE GREAT NORTHERN has ordered 30 complete steel dining car underframes from the Commonwealth Steel Company, St. Louis, Mo., which inquiry was reported in the *Railway Age* of October 8 (p. 695).

THE GREAT NORTHERN is inquiring for 1, 40-ton steam locomotive crane mounted upon a 24 ft. car having telescopic outrigger system and equipped with 40 ft. radius straight boom, pile driver truss and leaders, special horizontal fire box type boiler double acting steam hammer, and 2,750 lb. drop hammer.

### Railway Construction

ALASKA ANTHRACITE RAILROAD.—This company has asked for permission to extend its main line from its present terminus on Canyon Creek to a point  $1\frac{3}{4}$  miles in a northeasterly direction, now designated by the Alaska Pacific Coal Company as a loading point.

ATCHISON, TOPEKA & SANTA FE.—This company has awarded a contract to Jerome Moss, Chicago, for alterations and repairs to its grain elevators at Chicago.

BELT RAILROAD (INDIANAPOLIS).—This company, in conjunction with the city of Indianapolis, contemplates elevating its tracks from the White river on the northwest side of that city to Michigan street, on the east side of the city.

CANADIAN NATIONAL.—This company contemplates the construction of the tracks of the Canadian National and the Grand Trunk Pacific on a common level entering Edmonton, Alta. If this work is undertaken, the Grand Trunk's tracks are to be lowered 16 ft. from the east end of the trestle at 58th Street to 74th Street, and the Canadian Northern's tracks will be raised 7 ft. for a distance of 2,000 ft. Subways will be provided at Fort Trail and Norton streets. The estimated cost of this work is about \$250,000. The company also contemplates the construction of a new station at Edmonton, Alta. The tentative plans provide for a site east of 101st Street, extending for two blocks giving a three-way approach. Freight sheds will be located west of 101st Street. This will mean the closing of three streets and the construction of two subways.

CHESAPEAKE & OHIO.—This company will construct an embankment and track, 1,695 ft. long at Huntington, W. Va., for the storage of steel car parts. This company also contemplates the erection of a steel shed and platform for the storage of material at Huntington.

**CHICAGO & ALTON.**—This company which was noted in the *Railway Age* of October 29 (page 854), as building a second track from Godfrey, Ill., to Brighton, a distance of 6 miles, at an estimated cost of \$256,000, and from Roodhouse, Ill., to Manchester, a distance of 5 miles, at an estimated cost of \$96,000, awarded the contracts to Mulville Bros., Alton, Ill.

**DALLAS-TERRELL.**—This company has awarded a contract to Allhands & Davis, Kansas City, Mo., for grading and bridge work on its new line between Dallas and Terrell, Tex., a distance of about 34 miles.

**FARMINGTON-GALLUP LINE.**—A Los Angeles syndicate contemplates the construction of a railroad line between Farmington, N. M. and Gallup. Citizens in this territory, known as the San Juan Basin, are to furnish land amounting in value to \$2,500,000, while the syndicate will contribute \$1,500,000 in cash, all of which is in return for stock in the new road. The agent of this company at Durango, Colo., the principal city to be benefited by this new line, reports that 60 per cent of the required land has already been pledged and the balance is expected within a short period of time. Mr. Chandler, managing editor of the *Los Angeles Times*, Los Angeles, Cal., and General Sherman of that city, are members of this syndicate.

**GRAND TRUNK PACIFIC.**—This company will construct an earth dam at Rivers, Manitoba, and a water reservoir at Edson, Alberta.

**ILLINOIS CENTRAL.**—This company will enlarge the drying facilities of its elevator E at New Orleans, La., at an estimated cost of \$20,000, the work to be done by company forces.

**ILLINOIS TERMINAL.**—It has been recommended by an examiner in his report to the Interstate Commerce Commission that this company be permitted to extend its line from Formosa, Ill., to O'Fallon, a distance of 14 miles.

**MINNEAPOLIS & ST. LOUIS.**—This company contemplates the construction of a one story repair shop at its Cedar Lake shops, Minneapolis, Minn.

**MISSOURI, KANSAS & TEXAS.**—This company has awarded a contract to H. D. McCoy, Cleburne, Tex., for the construction of a one-story machine shop, 30 ft. in width by 50 ft. long, at Houston, Texas.

**MONTANA, WYOMING & SOUTHERN.**—This company has awarded a contract to the W. L. Johnson Company, St. Paul, Minn., for a 50-ton single track reinforced concrete coaling station to be equipped with Howlett Construction Co. machinery.

**SAN ANTONIO & ARANSAS PASS.**—This company which was noted in the *Railway Age* of October 1 (page 646) as contemplating the erection of a freight and passenger station at Poth, Tex., has awarded a contract for this work to W. H. Orth, San Antonio, Tex.

**SEWELL VALLEY.**—This company, reported in the *Railway Age* of October 1, as contemplating the erection of a shop building at Rainelle, W. Va., has placed an order for this building with the Truscon Steel Company, Youngstown, O.

**ST. LOUIS-SAN FRANCISCO.**—This company, through its Employees' Hospital Association, contemplates the construction of a new hospital at Springfield, Mo. The plans under consideration provide for a three-story brick, stone and reinforced concrete building, to cost about \$200,000.

**ST. LOUIS-SAN FRANCISCO.**—This company will receive bids until November 19, for the remodeling of its Harvey Eating House at Sapulpa, Okla.

**ST. LOUIS-SAN FRANCISCO.**—This company has awarded a contract to the Howlett Construction Company, Moline, Illinois, for a 300-ton reinforced concrete coaling station to be erected at Newburg, Mo.

**WASHINGTON, BRANDYWINE & POINT LOOKOUT.**—This company will begin at once the construction of a 12-mile line from Mechanicsville, Maryland, to Hollywood. The new line will be laid with 80-lb. steel and the work will be done by company forces.

## Supply Trade News

The **United Railway Signal Company**, formerly of East Providence, R. I., is rebuilding a new track torpedo plant and locating at Woodbridge, N. J. Five small buildings have already been completed and as many more planned.

**G. H. Jones**, vice-president and one of the founders of the **Inland Steel Company**, Chicago, will retire from active service in the company about Jan. 1, 1922. Mr. Jones will retain his interest in the company and will continue as a director and a member of the executive committee.

The **Decatur Bridge Company**, Decatur, Ill., have moved its Chicago office from 110 South Dearborn street to the Continental & Commercial Bank building, 208 South La Salle street. **Carl R. Dick** is district sales engineer at the Chicago office and **H. H. Cosley** is contracting engineer.

**M. E. Gregg** has been appointed district sales manager for the **Lackawanna Steel Company** at Detroit, Mich., succeeding **C. H. Hobbs**. Mr. Gregg has been connected with the general sales department of the Lackawanna for the past two years, prior to which time he was Buffalo district manager for the Republic Iron & Steel Company.

The **Virginia Car Corporation**, Alexandria, Va., has been organized in Virginia with a capital of \$100,000. The officers are **E. A. Morse**, president, Washington, D. C.; **L. D. Christie**, treasurer, Alexandria, Va.; **S. A. Aplin**, secretary, Washington. The company will build and repair railroad cars and will lease part of the Virginia Shipbuilding Corporation's plant at Alexandria.

## Obituary

**Robert A. Ogle**, president of the Ogle Construction Company, who died on November 2, as noted in the *Railway Age* of November 5, was born at Spalding Springs, Mo., on



R. A. Ogle

November 16, 1865. He was engaged in general building contracting at Monroe City, Mo., until 1898, when he organized and became director of the Safety Fund Life Association, subsequently the Missouri State Life Insurance Company. In 1903 he became affiliated with an engineering and construction company at St. Louis, Mo., specializing in the railroad construction field. He left that company in 1906 to enter the service of the Otto Gas Engine Works with headquarters in Chicago. While with this company he was mostly engaged in water service and coaling station construction. In 1911 he organized the Ogle Construction Company at Chicago, and since that time he has been actively identified with the development of coaling station construction and equipment.

**Frank P. Smith** for over 20 years identified with the Hancock Inspirator Company, sales department of Manning, Maxwell & Moore, Inc., New York, died on November 3, at his home at Manhattan Beach, N. Y., at the age of 66 years. Mr. Smith was in railroad service previous to entering the railway supply field.

**William E. Baker**, a civil and electrical engineer and member of the firm of W. E. Baker & Co., consulting engineers, New York City, died on November 7, at his home in New York, at the age of 65. Mr. Baker was born on October 18, 1857, at Springfield, Mass., and graduated from Lafayette College, Easton, Pa. He entered railway service in 1877, and served consecutively as engineer of the St. Paul & Pacific, civil engineer of the St. Paul, Minneapolis & Manitoba and the Canadian Pacific. In 1884 he became resident engineer of the International & Great Northern and from 1889 to 1892 was superintendent of the Thomson-Houston Electric Company. From 1895 to 1899 he served as general superintendent of the Metropolitan West Side Elevated of Chicago and then became general superintendent of the Manhattan Elevated, New York. In 1902 he resigned to become a consulting engineer.

**Trade Publications**

**HAMMER-WELDED STEEL PIPE.**—The National Tube Company, Pittsburgh, Pa., has recently issued Bulletin No. 13, 36 pages illustrated, descriptive of the hammer-welded pipe manufactured by this company. The method by which the steel plate is bent to tubular form with overlapping edges which are welded by hammer forging is described in detail in the text as well as by numerous diagrams and illustrations. The bulletin also contains views of actual installations and data, formulæ, curves and tables dealing with the flow of water and the strength of materials.

**TIPS FOR THE TOOL HARDENER.**—A handy reference card entitled, "Tips for the Tool Hardener—Suggestions of a Practical Man of Long Experience," has recently been issued by the Vanadium Steel Company, Latrobe, Pa. It is 8½ in. by 11 in., is made of heavy cardboard provided with a cord for hanging on the wall of the hardening room or the tool room, and is printed on both sides. On one side of the card the various grades of tool steel made by the company are shown, while on the other side, thirty-seven practical points for the tool hardener are given.

**Railway Financial News**

**CAROLINA, CLINCHFIELD & OHIO.**—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$7,000,000 of 7½ per cent, 30-year first and consolidated mortgage gold bonds, series A, and also \$7,369,000 or 6 per cent, 50-year, first and consolidated mortgage gold bonds, series B, for which the series A bonds are to be interchangeable. This company proposes to sell \$6,000,000 of the series A bonds at 92¼ to Blair & Co., and to issue \$1,000,000 in exchange for an equal amount of first mortgage, 5 per cent, 30-year gold bonds and to deposit the bonds so received as additional security under the mortgage securing the series A bonds. The series A bonds are to be held in the Treasury for sale from time to time. The proceeds of the \$6,000,000 of bonds to be sold are to be used to refund a similar amount of 5 per cent Elkhorn first mortgage gold bonds.

**CENTRAL OF GEORGIA. Annual Report.**—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Railway operating revenues (March 1 December 31)	\$20,676,551	.....
Railway operating expenses (March 1-December 31)	21,102,368	\$52,859
Net revenue from railway operations.....	Def. \$425,817	Def. \$52,859
Railway tax accruals.....	473,324	126,930
Railway operating income.....	Def. 1,236,553	Def. 179,789
Net revenue from miscellaneous operations.....	8,768	13,118
Total operating income.....	Def. 1,217,785	166,671
Communication from U. S. R. A. (January and February, 1920; full year 1919)	732,803	3,408,809
Dividend income.....	1,477,826	446,171
Miscellaneous income.....	3,112,368	3,307
Total non-operating income.....	5,849,809	4,219,740
Gross income.....	4,632,024	4,073,078
Interest on funded debt.....	2,286,334	2,004,954
Total deductions from gross income.....	3,115,317	2,290,428
Net corporate income.....	1,516,707	1,265,650

\*Government guaranty.—The amount accrued to your company by the government under the six months' guaranty given by the Transportation Act has not yet been ascertained and certified by the Interstate Commerce Commission; but, pending final audit and approval of the accounts submitted, substantial advances and partial payments have been collected. Income account as submitted includes an estimated credit of the amount payable under the terms of the guaranty.

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

	1920	1919
<b>OPERATING REVENUES</b>		
Freight.....	\$15,485,718	\$13,136,534
Passenger.....	6,794,338	6,489,095
Total operating revenues.....	\$25,082,288	\$21,606,511
<b>OPERATING EXPENSES</b>		
Maintenance of way and structures.....	\$4,942,898	\$4,769,741
Maintenance of equipment.....	6,163,736	4,417,773
Traffic.....	673,247	4,945
Transportation.....	12,908,730	9,742,111
General.....	990,234	765,800
Total operating expenses.....	\$25,733,367	\$19,910,428
Net revenue from railway operations.....	Def. 651,079	2,407,888
Railway tax accruals including war taxes.....	935,109	947,650
Total operating income.....	Def. 1,578,980	1,460,038
Non-operating income.....	5,150,851	773,453
Gross income.....	3,557,777	2,234,548
Deductions from gross income.....	3,187,677	2,776,738
Net income.....	365,966	Def. 542,190
<b>PASSENGER TRAFFIC</b>		
Number of revenue passengers carried.....	6,064,343	6,803,442
Revenue passengers carried one mile.....	241,047,880	249,376,003
Average distance carried—in miles.....	39,755	36,379
Average revenue per passenger per mile—in cents.....	2.82	2.63
<b>FREIGHT TRAFFIC</b>		
Tons of revenue freight carried.....	7,517,312	6,046,425
Tons of revenue freight carried one mile.....	1,283,847.6	980,105.5
Tons of revenue freight carried one mile per mile of road.....	66,849	51,550
Average distance revenue freight carried in miles.....	17.71	18.10
Average revenue per ton per mile—in cents.....	1.21	1.11

**CHICAGO & ALTON.**—"Clover Leaf" Settlement.—See Toledo, S. Louis & Western.

**CHICAGO & NORTH WESTERN.**—Asks Authority for Trustee to Deliver Bonds.—This company has asked the Interstate Com-



F. G. Cooper in the Chicago Post.

You Know, Mother, That Sort of Thing Can Be Overdone

merce Commission to authorize the trustees under various mortgages to authenticate and deliver to the company bonds to reimburse the treasury on account of expenditures in 1921 and previous years.

CHICAGO, BURLINGTON & QUINCY.—*New Director.*—Charles I. Sturgis, secretary and treasurer, has been elected vice-president and director.

CHICAGO, MILWAUKEE & ST. PAUL.—*Authorized to Assume Liability of C. T. H. & S. E.*—This company has been authorized by the Interstate Commerce Commission to assume as lessee the obligation or liability of the Chicago, Terre Haute & Southeastern in respect of the payment of the principal and interest for \$310,571 of first and refunding mortgage gold bonds, the issue which the Commission has also authorized in accordance with the terms of a lease of that road by the C. M. & St. P. The bonds are to be issued to the St. Paul to reimburse it for the payment of certain other obligations of the C., T. H. & S. E.

CHICAGO, NEW YORK & BOSTON REFRIGERATOR COMPANY.—*Not Entitled to Guaranty.*—The Interstate Commerce Commission has issued a decision holding that this company, whose stock is owned by the Grand Trunk, is not a carrier by railroad and is, therefore, not entitled to the six months' guaranty provided by the Transportation Act, although its property was under federal control.

EL PASO & SOUTHWESTERN.—*Asks Authority to Acquire Arizona & New Mexico.*—This company has applied to the Interstate Commerce Commission for authority for the acquisition of control of the Arizona & New Mexico by the purchase of stock and otherwise, also to issue \$3,500,000 of short term notes which with \$1,000,000 in cash are to be used to purchase the stock and bonds of the Arizona & New Mexico. A joint application has also been filed for authority for the El Paso & Southwestern to lease and operate the Arizona & New Mexico property.

KNOXVILLE, SEVERVILLE & EASTERN.—*Resale.*—Confirmation of the sale of this 30-mile road to L. C. Gunter, president of the Stony Fork Collieries Company and of the Southern Appalachian Coal Operators' Association, for \$50,000 was agreed to before Chancellor Charles Hays Brown at Knoxville, Tenn., on November 1, by counsel for the Merchants' and Mechanics' bank, the largest creditor of the road. New bidding on the property followed opposition to the confirmation of the sale to W. B. Townsend, on October 5, for \$30,000.

LIBERTY-WHITE.—*Sold.*—This company's 24-mile line between McComb, Miss., and Liberty, has been sold by the receiver, K. G. Price to Hugh L. White, of Columbia, Miss., for \$30,000. The sale included the equipment and other property. The road was ordered abandoned by the Interstate Commerce Commission, as noted in the *Railway Age*, September 10, 1921, page 512.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

NEW YORK CENTRAL.—*Authorized to Pledge Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue \$19,500,000 of 6 per cent refunding and improvement mortgage bonds and to pledge them with the director general of railroads as security for a demand note for a like amount given in payment of the applicant's indebtedness to the United States for additions and betterments made during federal control.

SARATOGA & ENCAMPMENT.—*Taken over by Union Pacific.*—See Union Pacific.

SOUTHERN PACIFIC.—*Asks Authority to Guarantee Certificates.*—This company has applied to the Interstate Commerce Commission for authority to guarantee \$600,000 of equipment trust certificates issued by the Anglo-California Trust Company for the purchase of equipment for the San Diego & Arizona.

SOUTHERN RAILWAY.—*Bonds Sold.*—J. P. Morgan & Co. have sold \$5,655,000 first consolidated 5 per cent mortgage bonds, at 85 to yield 5.90. The proceeds are to be used to refund a like amount of Georgia Pacific first mortgage 6 per cent bonds, maturing January 1, 1922.

ST. LOUIS-SAN FRANCISCO.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$2,122,000 prior lien 6 per cent gold bonds dated July 1, 1916, and maturing July 1, 1928, to be sold at not less than 90 or to be pledged at not less than 75 as collateral security for short term notes. It is stated that the bonds cannot now be sold on reasonable terms.

TOLEDO, ST. LOUIS & WESTERN.—*Bondholders Approve Settlement.*—The bondholders' committee has approved the proposed settlement of the controversy, which was noted in last week's *Railway Age*, page 913, concerning the company's collateral trust 4 per cent series A and B 1917 bonds. Announcement to this effect was made by Edwin G. Merrill, chairman of the committee, in a notice to the holders of certificates of deposit for series A 4 per cent bonds.

In his statement Mr. Merrill said, in part:

Under the terms of that settlement the bondholders' committee will receive the stock of the Chicago & Alton Railroad, now held as collateral for the bonds (of both series), together with payment of \$1,130,000 in cash and approximately 9,500 shares of preferred stock and 9,500 shares of common stock of the "Clover Leaf" company.

The committee has made a favorable adjustment with the holders of the entire issue of series B bonds and with certain holders of series A bonds involving the distribution to them of their pro-rata share of Chicago & Alton preferred and common stocks only. The committee estimates that after this adjustment and the payment of all expenses in connection with the committee, there will be available for distribution on each certificate of deposit representing a \$1,000 series A "Clover Leaf" bond, with all unpaid coupons attached, approximately (1) in cash \$150; (2) in "Clover Leaf" preferred stock \$180, par amount; (3) in "Clover Leaf" common stock \$180, par amount; (4) in Alton preferred stock \$360, par amount, and (5) in Alton common stock \$1,250, par amount.

As soon as this settlement is carried out and the cash and securities become available, the distribution will be made by the New York Life Insurance & Trust Company.

The bondholders' committee is of the opinion that this settlement is fair and satisfactory. By its protracted litigation is avoided and the bondholders will receive promptly their full pro-rata share of Chicago & Alton stock, both preferred and common, together with a substantial cash payment and a share in the equity of the "Clover Leaf" Company.

UNION PACIFIC.—*Control of the Saratoga & Encampment.*—The Union Pacific has taken over this road on a tentative plan, the terms of which have not been announced, for a minimum period of three years. The road operates between Encampment, Wyo., and Walcott, 45 miles.

### More Equipment Trust Certificates Sold

The director general of railroads announced on November 5, that he had, with the consent of the President, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government, as follows:

To Salomon Brothers & Hutzler, and Kidder Peabody & Co.:	
Louisville & Nashville, 1922 to 1924, inclusive.....	\$2,011,700
Great Northern, 1922 to 1924, inclusive.....	858,900
Illinois Central, 1922 to 1924, inclusive.....	1,941,300
New York Central, 1922 to 1924, inclusive.....	2,768,100
Nashville, Chattanooga & St. Louis, 1922 to 1927, inclusive	519,000

To Bernard Scholle & Co.:

Buffalo, Rochester & Pittsburgh, 1922 to 1924, inclusive....	1,039,200
Michigan Central, 1922 to 1924, inclusive.....	400,800

Total amount of these sales is..... \$9,539,000

The sales were arranged by Eugene Meyer, Jr., managing director of the War Finance Corporation. Total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$109,338,800.

### Dividends Declared

Cripple Creek Central.—Preferred, 1 per cent, quarterly, payable December 1 to holders of record November 15.

New Orleans, Texas & Mexico.—1½ per cent, quarterly, payable December 1 to holders of record November 15.

Pittsburgh, Youngstown & Ashabula.—Preferred, 2½ per cent, quarterly, payable December 1 to holders of record November 15.

AMERICAN COMPANIES are meeting with hard competition in China, especially from British companies, for British laws have recognized the special requirements of the China situation and made it possible for British companies operating in China to do so without paying corporate taxes in England. American companies are at a distinct disadvantage in competition with such British companies, and apparently are at a similar disadvantage in comparison with French companies and Japanese companies.—*Foreign Commerce Department, U. S. Chamber of Commerce.*

## Railway Officers

### Executive

**Charles I. Sturgis**, secretary and treasurer of the Chicago, Burlington and Quincy, with headquarters at Chicago, has been elected vice-president and director, with the same headquarters. A photograph and sketch of Mr. Sturgis were published in the *Railway Age* of June 10, 1921 (page 1378).

**R. C. Morgan**, superintendent of terminals of the Canadian Pacific at Winnipeg, Manitoba, has gone temporarily to the Reid Newfoundland Company, St. John's N. F., as chairman of the management committee. The other members of this committee are **R. G. Reid** and **J. M. Forbes**. This committee will have charge of the general management of the company and is expected shortly to bring out a new plan for the permanent operation of the railway.

### Financial, Legal and Accounting

**Charles M. Sheafe, Jr.**, whose appointment as general solicitor for the New York, New Haven & Hartford was announced in the *Railway Age* of October 8 (page 698), was

born at Holden, Missouri, on August 14, 1874. He attended Leland Stanford Jr. University in 1893 and 1894 and thereafter attended Harvard University, from which institution he received the degree of bachelor of arts in 1898 and bachelor of laws in 1901. He entered railway service on May 1, 1905, as assistant attorney for the New York, New Haven & Hartford at New York. In 1908 he was promoted to attorney and, in 1914, to counsel for the same company with the same head-



Chas. M. Sheafe, Jr.

quarters. This latter position he was holding at the time of his recent appointment.

**L. G. Lind** has been appointed auditor of disbursements of the Wabash with headquarters at St. Louis, succeeding A. L. Fallier, resigned.

**A. T. Williams**, assistant secretary and cashier of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been elected assistant treasurer.

**R. B. Williamson**, superintendent of claim prevention of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to freight claim agent with the same headquarters, succeeding T. S. Walton, deceased. **T. F. Scruby** will succeed Mr. Williamson as superintendent of claim prevention.

**W. Walmsley**, chief clerk to the assistant to the auditor of revenues of the Grand Trunk, Canadian lines, with headquarters at Montreal, Que., has been promoted to assistant auditor of revenues with the same headquarters, succeeding G. A. Godfrey, whose promotion was noted in the *Railway Age* of September 10 (page 515).

### Operating

**N. W. Smith** has been appointed assistant to the general manager, Eastern region, of the Pennsylvania, effective September 1.

**O. M. Higgins**, night chief dispatcher of the Canadian National has been promoted to chief dispatcher, with headquarters at Saskatoon, Sask.

**J. D. Fraser**, chief dispatcher of the Esquimalt & Nanaimo, with headquarters at Victoria, B. C., has been promoted to acting superintendent, with the same headquarters. **F. E. Tebo**, dispatcher, will succeed Mr. Fraser.

**W. L. Hack**, whose appointment as superintendent of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, was announced in the *Railway Age* of October 15 (page 743), was born at Vallejo, Cal., on October 10, 1880. He entered railroad service in July, 1896, in the shops of the Southern Pacific, since which time he has been successively employed in a roundhouse for two years; as road fireman for four years; engineer for the next ten years; fuel expert on the Los Angeles, Tucson and San Joaquin divisions, with headquarters at Los Angeles, Cal., for three years; road foreman of engines of the Tucson division, and district road foreman of engines of the Northern district. On September 1, 1918, he was promoted to assistant superintendent of the Sacramento division, with headquarters at Sacramento, Cal., which position he was holding at the time of his recent promotion.

**A. J. Hancock**, whose appointment as supervisor of transportation of the Southern Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of October

15 (page 743), was born at Frankfort, Kentucky, on March 4, 1880. He entered railroad service in September, 1901, as a clerk and telegrapher for the Postal and the Western Union telegraph companies, working at various stations on the Louisville and Nashville, the Louisville, Henderson and St. Louis, the Union Pacific, and the Kansas City Southern, until July, 1903, when he became a stenographer in the office of the superintendent of telegraph of the Southern Pacific, with headquarters at San Francisco,



A. J. Hancock

Cal. He left railroad service in January, 1904, to become cashier of the United States Life Insurance Company, but re-entered railroad service in August of the same year as a telegrapher, and was soon appointed a clerk for the division superintendent of the Southern Pacific at San Francisco, being promoted later to chief clerk. From September, 1905, to December of that year, he was employed by that company in its Sacramento telegraph office. In February, 1906, he entered the service of the Kansas City, Mexico & Orient, of Texas, and served successively as dispatcher and chief clerk to the general manager. In September, 1912, he returned to the Southern Pacific as assistant chief clerk to the vice-president and general manager, which position he held until March, 1913, when he was promoted to chief clerk to the general manager. In January, 1917, this position was abolished and Mr. Hancock returned to his former position which he held until September 1, 1918, when the position of chief clerk to the general manager was re-established. He was holding that position at the time of his recent promotion.

### Traffic

**E. S. Brissey** has been appointed commercial agent of the Kansas, Oklahoma & Gulf with headquarters at Chicago. **W. D. Lambert** has been appointed general agent with headquarters at Pittsburgh, Pa.

**E. P. Bass** has been appointed commercial agent of the Georgia & Florida with headquarters at Valdosta, Ga., succeeding **H. K. Wilkinson**, division freight agent, who has resigned and whose office has been abolished, effective with his resignation.

**R. E. Greene**, general passenger and freight agent of the Salina Northern, with headquarters at Salina, Kan., has been promoted to traffic manager with the same headquarters; and the office of general passenger and freight agent has been abolished.

**H. J. Dymond** has been appointed general agent of the Georgia & Florida with headquarters at Cincinnati, Ohio, succeeding **D. W. Agnew**, general western agent, who has resigned and whose position has been abolished. **E. W. Dodge, Jr.**, has been appointed commercial agent at Savannah, Ga., succeeding **W. C. Duggan**, resigned.

### Mechanical

**O. S. Jackson** has been appointed assistant superintendent of motive power of the Union Pacific, with headquarters at Omaha, Neb.

**J. W. Keppel**, general foreman of the Canadian Pacific, with headquarters at Vancouver, B. C., has been promoted to master mechanic of the Regina division, Saskatchewan district, with headquarters at Regina, Sask., succeeding **W. G. McPherson**, promoted, as noted in the *Railway Age* of October 22 (page 806).

**G. H. Likert** has been appointed fuel engineer of the Union Pacific with headquarters at Omaha, Nebr. **B. E. O'Neill** has been appointed fuel supervisor of the southern district with headquarters at Kansas City. **A. L. Coey** has been appointed fuel supervisor of the northern district with headquarters at Cheyenne, Wyo., and **P. C. Coats** has been appointed fuel inspector with headquarters at Omaha, Nebr. These changes were effective October 1.

### Engineering, Maintenance of Way and Signaling

**Dougald Cameron**, whose appointment as district engineer, maintenance of way, of the Iowa district of the Chicago, Burlington & Quincy, with headquarters at Burlington, Iowa, was announced in the *Railway Age* of October 15 (page 774), was born at Aberdeen, Scotland, on August 26, 1884, and educated in the public schools and at Robert Gordons College there. He entered railroad service as a rodman and instrument man on the Chicago, Burlington & Quincy, in September, 1909, and was successively a draftsman and assistant engineer up to 1918. In July, 1918, he was appointed roadmaster of the Chicago division, with headquarters at Chicago, which position he held until February 6, 1920, when he was transferred to Beardstown, Ill. On April 24, 1920, he was promoted to assistant to the general inspector of permanent way and structures, with headquarters at Chicago. He was holding this position at the time of his recent promotion.

**Howard M. Smitten**, assistant engineer in the valuation department of the Southern Pacific, has been appointed bridge engineer of the Western Pacific, with headquarters at San Francisco, Cal. He was born at San Jose, Cal., on February 8, 1878. He entered railroad service in May, 1900, as a rodman on the Southern Pacific and held this position until 1902, when he was made structural draftsman in the maintenance of way department. A short time later he left railroad service and was employed by various architects in San Francisco as a structural engineer and draftsman. In June, 1906, he re-entered the employ of the Southern Pacific as a structural engineer. From May, 1917, to March, 1919, he served in the United States army successively as captain, major and lieutenant-colonel, in which capacities he had charge of various engineering details at Camp Lewis, and was assistant depot engineer in charge of railroad shops at Sievres, France. At the close of the war he was in command of the 37th engineers. He again re-entered the service of the Southern Pacific in January, 1920, as an assistant engineer in the valuation department, which position he was holding

## Obituary

**Albert S. Johnson**, general manager of the Terminal Railroad Association of St. Louis, died at his home in that city on November 8 as a result of an acute heart affection.

**E. A. Chenery**, superintendent of telegraph of the Missouri Pacific with headquarters at St. Louis, died on November 8 in the Missouri Pacific Hospital in that city from a stroke of apoplexy.

**George H. Webb**, chief engineer of the Michigan Central, with headquarters at Detroit, Mich., died at Newton, Mass., on November 3. Mr. Webb was 61 years of age. Upon graduating



Lt. Col. G. H. Webb

from the Pennsylvania Military Academy in 1880, he entered railroad service as a rodman on the Somerset & Cambria branch of the Baltimore & Ohio, and was later levelman and transitman on the Pittsburgh Southern and on the Pittsburgh & Western (both now parts of the Baltimore & Ohio). In 1883 he became city engineer of Johnstown, Pa., and later engineer of the Johnson Steel Rail Company. From 1885 until the Spring of 1888 he was assistant engineer and locating engineer on several branch lines of the Chicago, Burlington & Quincy. During 1888, he located and constructed portions of the Seattle, Lake Shore & Eastern (now a part of the Northern Pacific) and the Puget Sound, Skagit & Eastern. In 1889 he went to Chile in charge of the construction of government railroads. He was appointed division engineer and superintendent of construction of the Summit division of the Central Railway of Peru in 1891. He built that division through the main range of the Andes. This work was in high altitude with heavy grades and high curvature and many tunnels. He returned to this country in 1893 and was engaged in private engineering practice for four years, after which he was appointed chief engineer of the Cincinnati, Georgetown & Portsmouth. In 1899 he became a roadmaster for the Cleveland, Cincinnati, Chicago & St. Louis, later holding the same position on the Chicago & Alton. In 1901 and 1902 he was engineer in charge of construction of the Baring Cross shops of the St. Louis, Iron Mountain & Southern at Baring Cross, Ark., and in 1903 he entered the service of the Michigan Central in charge of location work. He was promoted to engineer of the Middle division in April, 1903, and assistant chief engineer in charge of surveys, construction and maintenance of way, in November, 1903, which position he held until June 16, 1905, when he was promoted to chief engineer. In June, 1911, Mr. Webb was also appointed chief engineer of the Detroit River Tunnel Company. In June, 1917, he was commissioned lieutenant colonel, in the Sixteenth (Railway) Engineers, the following year was promoted to colonel. He spent approximately two years in service in France in recognition of which he was awarded the Distinguished Service Medal, decorated by the president of France, made an officer in the order of the Black Star, and a member of the Legion of Honor. He resumed his duties as chief engineer of the Michigan Central in May, 1919.

Who is going to buy from us, with the foreign exchanges in their chaotic position? Let the United States, which has the world's gold, come to the world's aid! It is a fact that the unemployment problem in the United States is greater than in this country (England) although she has all the gold. Countries cannot afford to buy from the United States, consequently the United States cannot export. Where there is no export trade there is no production, and no production means unemployment. —*Sir Robert Hadfield in the London Chronicle.*

# Railway Age

Vol. 71 November 19, 1921 No. 21



Campanas, Brazil, the Northern End of the Electrified Section of the Paulista Railway

## Contents

The Case of the Detroit, Toledo & Ironton ..... Page 969

The Road's Net Earnings Have Been Steadily Declining Since April Despite General Impression of High Efficiency, by Harold F. Lane.

C. & O. Improves Line and Grades at St. Albans, W. Va. .... 973

Increasing Coal Traffic Necessitates Rebuilding of Important Branch for Mallet Operation.

The Legal Status of a Railroad Strike ..... 977

Interference With Service Under Present Conditions Is Against the Government Instead of Against the Corporations, by James C. Davis.

### EDITORIALS

Developing Goodwill Towards the Railroads	965
Tractors and Trailers for Short Hauls	965
England and Railway Education	965
Strike Powers and the Federal Government	965
The Transportation Engineer	965
Why Schedule Shop Work?	966
A Recent Wage Decision of the Labor Board	966
Stop, Look and Listen	967
Why Tinker With an Inefficient Machine	967

NEW BOOKS ..... 968

### GENERAL ARTICLES

The Case of the Detroit, Toledo & Ironton, by H. F. Lane	969
Hearings on Capper Bill in Senate Committee	871
C. & O. Improves Line and Grades at St. Albans, W. Va.	973
Freight Car Loading	975
The Legal Status of a Railroad Strike, by James C. Davis	977
Executives Propose a Temporary Freight Rate Reduction	980

### GENERAL ARTICLES—Continued

An Analysis of the Freight Car Situation, by J. E. Mitchell	981
Passenger Traffic Association Meets at Frech Lick	983
Developments in the Railroad Labor Problem	984
American Railway Association Annual Meeting	985
Malleable Castings Improved by Research	986
Selecting Designs for Electric Locomotives, by A. W. Gibbs	987
Passing the Buck—Perhaps the Dividend	989
Utilizing Tractors and Trailers for 100 Ft. Hauls	991
Railroad Bill Discussed on Floor of Senate	993
Railroad Ticket Protective Bureau Still Fighting Scalpers	994
Railway Development Association Meets in Chicago	995
Traffic League Holds Annual Meeting at Chicago	999
2-8-2 Type Locomotives for the Nickel Plate	1002
Obsequies for Steam Locomotive Will Not Be Staged for Some Time	1003
A New Overhead Handling System	1004

GENERAL NEWS DEPARTMENT ..... 1005

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building CLEVELAND: 4300 Euclid Ave. LONDON: England: 34, Victoria St., Westminster. S. W. I.  
PHILADELPHIA: 407 Bulletin Bldg. Cable address: Uraslimeco, London  
CINCINNATI: First National Bank Bldg. WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON	A. F. SEVERING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. E. COLE
R. E. THAYER	ALFRED G. OEHLER	J. G. LYNE
C. B. PECK	F. W. KRUEGER	Y. H. DUNN
W. S. LACHER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Anti-Trust Circulation List

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of the 1,800,000 copies were printed of these 8,800 copies 7,900 were mailed to regular subscribers, 500 were provided for counter and news company sales, 300 were mailed to advertisers, 45 were mailed to employees, 500 were sent out and 44 were provided for new subscriptions, 500 were sent in the mail and office use, that the total circulation of the issue for the date were 4,255,000, an average of 940 copies a year.



Ryerson machinery reduces the costs of spring repairs in any shop.

## Output Increased 52%

Some roads repair springs at home instead of shipping them hundreds of miles and back.

They find it saves time, money and locomotive delays.

One such road repairing its own springs installed improved Ryerson machinery and increased its output 52% with the same number of men.

Perhaps Ryerson machinery can cut your labor costs in half. It will pay you to investigate—and of course there is no obligation.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The members of the American Railway Development Association, although they devote their attention exclusively to the development of such things as farming, live stock raising, the colonizing of unsettled lands, the improving of settled districts and the establishment of industrial enterprises, are very

### Developing Goodwill Toward the Railroads

much a part of the country's transportation system. Traveling extensively as they do, lecturing to agricultural communities, helping immigrants to improve their conditions, co-operating with commercial clubs, chambers of commerce, college extension departments, marketing associations and other agricultural and business organizations, these men are in a most strategic position through their personal contact with the public to establish good-will towards the railroads. There is an opportune position and an immensely worthwhile mission.

The New York, New Haven & Hartford, in September of this year, inaugurated a tractor and trailer system at two of the outbound houses in its Boston freight terminal where the maximum haul rarely exceeds 100 ft. This installation, and the methods of handling the freight, are described in detail on

### Tractors and Trailers for Short Haul

other pages of this issue. It will be noted that the tractors were employed only after the congestion, which, years ago, had been relieved by the substitution of manually operated four-wheel trucks for the usual two-wheel trucks, had again become acute. The underlying conditions—the necessity of handling through 20 doors to the cars all freight received from the driveway side through 52 doors—which led to experimenting with tractors at this point are approximated at the outbound houses of many other railways. The success that the New Haven has had in reducing delays to shipments as well as the reduction in the cost per ton of handling freight at Boston, through this radical departure from usual methods, may well point the way for like economies at the outbound houses of other roads where conditions are somewhat similar.

The London School of Economics is doing a remarkable work in training promising railway employees in the larger aspects of the railway business. A wide range of interesting courses in railway economics, operation, law and accounting is offered and classes are held for the most part in the early evening in order

### England and Railway Education

not to interfere with the students' regular work. Such educational facilities can only prove effective when there is hearty co-operation on the part of the railways whose employees are to be trained. When the students realize that the officers of their companies are interested in their efforts to become of greater service and are watching closely the records they are making in their studies, the effect is that they derive the utmost benefit from the opportunities afforded them. Trained men are as necessary to the railroads of this country as to those of England. There has been much discussion on the place of college men in the railroad organization. Does not this English plan offer a possible solution? That is to say

that making college men out of railroad employees ought to be at least as feasible as making railroad men out of college students. Practically all of the larger cities of the country have their institutions of higher learning which could be made available during certain hours of the day for the instruction of ambitious railroad men. All that remains is for some one to take the initiative. The success of the movement in England proves its feasibility.

The analysis of the authority and responsibility of the federal government in the case of a railroad strike, made by

### Strike Powers of the Federal Government

James C. Davis, director general of railroads, in an address at Kansas City and published elsewhere in this issue, is of particular interest in view of the experience through which the nation has recently passed, because (although he does not say so in the speech) it is an exposition of the legal theory on which the Harding administration was preparing to deal with the strike if it had not been called off. Mr. Davis shows clearly how the lack of "teeth" in the labor provisions of the Transportation Act, which many have deplored, may be supplied readily from the general powers to protect the interests of the public, which the government has been declared to possess by the Supreme Court decisions in both the Debs case and the Adamson law case. While the Transportation Act provides no penalties for violation of the orders of the Railroad Labor Board, Mr. Davis shows clearly how the new law has made a strike against the orders of the board an act against the government rather than against the corporations and how the Department of Justice may, as it was actually prepared to do in this case, proceed against the leaders of a strike by the injunction process and if they fail to obey the injunction arrest them for contempt. Mr. Davis' explanation of the legal points involved is of particular significance because there was no clear public explanation given at the time of the policy which the government proposed to follow if it became necessary. The fact that the Labor Board was first used as a mediator, and that the brotherhood leaders were given an opportunity and a plausible reason for withdrawing their strike order before the Board issued its order forbidding a strike left some confusion at the time in the public mind as to whether the strike was settled by the announcement of the Labor Board that it could not consider further wage reductions before disposing of other cases on its docket or whether the firmness displayed by the Washington administration had thoroughly convinced the strike leaders that they had made a serious mistake.

The co-ordination of the activities of all branches of railway service makes a smoother working machine, increases efficiency and promotes economies. It

### The Transportation Engineer

is necessary in order to accomplish this to the fullest extent that a liaison be established between the division and the general officers. Some roads already have felt it desirable to study this subject and others no doubt could benefit by such an investigation. For example, on the Chicago & North Western this signal

engineer acts as the chairman of a system committee, which studies such problems as the causes of delays to cars passing through terminals to ascertain where such delays occur in interchange movements or yard switching and initiates the proper steps to eliminate them. The value of such a study is obvious, particularly in a time of car shortage. Again, the location of division facilities and their effect on operation, and other subjects of like importance, may well receive careful study. On the Pennsylvania a mechanical department officer is in charge of such work. The location of terminals and classification yards presents problems which frequently cannot be solved by division officers alone, because their viewpoint is limited to their own territory, yet their recommendations largely determine the character and location of the improvements made. By proper classification at the starting point it may be found that there is no need for an intermediate classification yard and train operation may be materially benefited by its elimination. It is thus evident that the co-ordination of the activities of different departments offers possibilities which the railroads can well afford to develop. The man assigned to such work may well be called a "Transportation Engineer." Such a man should have broad vision and an analytical mind as well as a general fund of knowledge pertaining to the work of the various departments. Thus equipped, and reporting direct to the president or vice-president, he should be in a position to produce results not possible by the busy general or division officer, provided, of course, that he is permitted to devote all of his time to his work and is given a competent staff of assistants.

Closely allied with the question of order and cleanliness in railroad repair shops is that of scheduling various repair operations. In fact the same factors which stimulate certain managements to keep shops clean, orderly and well lighted, also cause them to install schedule or routing systems whereby

#### Why Schedule Shop Work?

the order of detail operations is known in advance and confusion avoided. The converse of this statement also is true. It is significant to note that almost invariably the dirty, congested shop has no schedule system and, with the possible exception of a weekly calendar of outgoing cars or locomotives, has no means of knowing in what order work will be needed. Unfortunately there are still many shops of this latter type and the truth of the matter is that these simply reflect the individual preferences of higher shop and mechanical department officers who fail to appreciate the value of systematic, planned work. A shop schedule system is not difficult or expensive to install and time and again its installation has been promptly followed by important increases in shop output. It is time that every important railroad shop in the country should be provided with a shop schedule fitted to its individual needs. Not only should ordinary repair operations be scheduled, but many shops handle a large amount of miscellaneous machinery repairs and outside work which also should receive the attention of the schedule supervisor, to be handled in order of its importance, thus interfering with the regular work as little as possible. Shop orders are generally issued for work of this kind, and it is to be hoped that not many shops handle these orders in the haphazard manner recently noted by a visitor at one point. The shop in question was badly congested with new work, general locomotive repairs, and outside machinery repairs to be done on shop orders, and the only guide for under-foremen and shop employees was the weekly calendar of outgoing locomotives. Impressed with the congestion of machinery, stock and unfinished machine parts, the visitor asked a foreman how he knew which shop order to work on first. The reply was, "We wait until somebody needs the order so much that he tele-

graphs for it." Is any comment on such a practice necessary? It is earnestly believed that a simple, workable schedule system applied in this shop under the direction of a capable schedule man and backed by the general foreman and shop superintendent would relieve the congestion in a short time, increasing the output and enabling shop orders to be completed in a reasonable time, without the formality of a telegram to start work on them.

## A Recent Wage Decision of the Labor Board

THE DECISION recently rendered by the Railroad Labor Board in the controversy between the New Orleans Great Northern Railroad and the organizations representing its telegraphers and train service and shop employees seems to be of much significance. It seems significant not only because of the wage reductions authorized, but also because of the reasons given for authorizing them.

The wages of the train and engine service employees were reduced to the same amounts that they were on March 1, 1920—that is, when the railways were returned to private operation. This is what the railways intend to ask the Labor Board to do with respect to the wages of all train and engine service employees. The wages of shop employees were even more sharply reduced. According to statistics given by A. O. Wharton, a member of the board, in a dissenting opinion, the new wages of the shop employees are 30 to 40 per cent less than those fixed for them by the board in Decision No. 2 on July 20, 1920.

The board authorized larger reductions in the wages of shop employees than in those of train service employees, apparently because the increases granted to the former were relatively larger. It authorized relatively larger reductions in the wages of comparatively unskilled than of skilled employees, partly, no doubt, because the former were given larger increases and partly because it believed that the differentials between skilled and unskilled workers ought to be larger.

The board said it was "sympathetic with the principle that the ability of the carrier to pay is not a controlling factor, but recognizes that it is entitled to secondary consideration with a certain type of carrier dependent almost entirely on local business or whose principal function in the final analysis is the development and upbuilding of a new, or comparatively new, country." This is the situation of the New Orleans Great Northern, which it was shown has been operating at a heavy loss. In spite of the guarded language used by the board, however, its statement is clearly a recognition of the principle that a road's earning capacity is one of the "relevant circumstances" which must be considered in determining what wages it can be required to pay. Now the Transportation Act makes no distinction between railways serving only a few communities and railways serving many, and if this principle is applicable to one railroad then it is applicable to all.

The board gave weight to evidence "that the cost of substantial necessities, i. e., groceries, meats, dry goods and wearing apparel, March, 1921, as compared with July, 1920, shows an average decrease of 30 per cent" in the territory of the New Orleans Great Northern. It added the following significant statement: "It is a matter of common knowledge that in the territory served by this carrier the question of rent does not bear the same excessive relation to the living budget as is evidenced in large centers, and it is worthy of note that none of the employees here involved are required to live in large centers." It said that the wages authorized by it for the shop crafts and roundhouse labor are "substantially higher than paid in other industries," but that

"special consideration has been given to the rates paid for similar service in other industries in the centers where the carriers' men are employed."

The result of the weight given by the board to this railroad's earning capacity and to the cost of living and the wages paid in other industries in its immediate territory was a decision authorizing the payment to all the classes of its employees involved of wages substantially lower than those being paid to employees doing the same classes of work on other railways.

The precedent established may mean one or both of two things: First, it seems to mean the board recognizes the principle that railway wages should not be standardized throughout the United States, but that as nearly as practicable they should be adjusted according to the cost of living and the wages paid in other industries in the various communities in which the employees live and work. This is a healthy sign since nothing is more needed, in justice to the employees, the railways and the public, than the breaking down of the present arbitrary standardization of wages throughout the country regardless of local conditions. Secondly, while it cannot be taken to indicate the board believes the wages of all employees should be reduced, it certainly does suggest the inference that when the railways generally bring new wage cases before the board it will not be found entirely inhospitable to the argument that railway labor costs should be readjusted downward in proportion to the need of the country for lower rates and to the changes in wages in other industries, as well as in the cost of living.

## Stop, Look and Listen!

FAMILIARITY breeds contempt. The man who does not own an automobile, or the one who is but a recent purchaser, feels a genuine concern whenever he rides over railway tracks, but this feeling soon becomes dulled and the average seasoned driver does not suffer any particular anxiety when he approaches a crossing. Eventually he becomes more or less careless or perfunctory in his observance of the ordinary rules of safety. Then there is the dare-devil who will always take a chance; nor must we forget the drunken joy-riider.

Through the combined effort, or rather lack of effort, on the part of these classes of automobile drivers we are confronted with an appalling casualty record in grade crossing accidents. The accident report of the Interstate Commerce Commission for 1920 shows that 6,868 persons were killed or injured at grade crossings, and of these 5,250 were occupants of automobiles. The investigation of such accidents and traffic studies at crossings shows that fully 95 per cent of the casualties are clearly the fault of the automobile driver. It is well known that in many of the collisions which occur at grade crossings the automobiles or trucks run into the side of trains.

This situation has long been a source of great concern to the railroads, the insurance companies and the National Safety Council. The public, on the other hand, except when aroused by some particularly gruesome accident, has taken but little interest in the subject, about the only manifestation being agitation for grade separation or for an additional safeguard at the crossing. In spite of the fact that the chief need is for greater care on the part of the driver, about the only agencies which have endeavored to promote caution are the National Safety Council and the individual railroads. Public authorities in general have had but little part in such preventive measures. It is, therefore, of particular interest to note that the state of North Dakota, through its railroad commission, is now carrying on an intensive state-wide campaign of public education. This will be directed primarily toward a greater spirit of caution in approaching and driving

over tracks at highway crossings and is the result of a series of thorough investigations of the causes of several recent collisions between trains and automobiles in that state.

This is but a start. The benefits to be secured will be measured almost directly by the extent to which other states lend their efforts to this end. There are many ramifications of this problem which cannot be solved without the assistance of the public bodies. Adequate warning signals at an effective distance from the tracks, the use of speed restricting humps and the elimination of view obstructions, are typical of matters largely within the province of the public authorities rather than the railways. But of greatest importance is the campaign for careful driving, which obviously should be much more effective when promoted by the state than when carried on in the name of the railroad.

## Why Tinker With An Inefficient Machine?

"SHOULD WE CONTINUE to tinker with an old and inefficient machine when it is impossible to escape the installation of the modern and efficient one?" This sentence is quoted from the superpower survey report. The "old and inefficient machine" referred to is the steam locomotive. The reference is but one among several like it which appear in Professional Paper 123 entitled, "A Superpower System for the Regions between Boston and Washington." The sentence is indicative of the broad-minded attitude with which the investigators of the superpower survey did *not* approach the question of railroad electrification in the so-called superpower zone.

The superpower survey report was presented to the President on November 5. An abstract of the parts of it relative to electrification appeared with editorial comment in last week's issue of the *Railway Age*, pages 862 and 881. Briefly, the report presents a plan for a correlation of the electric power units in the so-called superpower zone, included roughly between Washington and north of Boston and extending about 150 miles inland. Large expenditures are admitted to be necessary to put the several plans in effect, but the savings claimed put to shame the promises of a salesman of oil securities.

The parts of the report dealing with electrification are, of course, the ones in which readers of the *Railway Age* are primarily interested. The investigators ascertained that there are included in the superpower zone some 36,000 miles of railroad, including main line, additional tracks, sidings and yards. Of these it is shown, to the satisfaction of the investigators at least, that 19,000 miles could profitably be electrified. The electrification of these lines will cost only about \$500,000,000, but it is estimated that the savings over the present methods of steam operation will be from 11 to 19 per cent on the investment, or an average of 14 per cent per year.

It will have to be admitted that the method whereby the investigators prove that these startling savings of 14 per cent will be made is not quite as clear as might be desired. Apparently they expect almost unlimited savings in locomotive maintenance. They count further on a decrease of some 25 per cent in crew wages. They rival even the previous most ardent advocates of heavy electrification in claiming a saving in fuel of no less than 66.8 per cent.

In an editorial on the superpower survey which appeared in last week's *Railway Age*, objection was made that the report suffered from its partisanship. It is very evident that the investigators tackled the problem of electrification with a decided prejudice against steam operation. A careful perusal of the report, and more particularly of that section dealing with electrification, Appendix C, may possibly ex-

cuse them. It is only too apparent that they were not sufficiently familiar with railway operation to be at all interested in its favor. A statement to the effect that no more skill is required to operate an electric locomotive than is demanded of an ordinary chauffeur does not indicate else than a marked ignorance of railway-operating conditions. The following quotation is possibly even more indicative of lack of knowledge of how our railways are run:

The reason for this reduction in crew wages per ton-mile is clear: if a steam locomotive pulls a train 100 miles in 10 hours and an electric locomotive pulls it 100 miles in 8 hours, the use of the electric locomotive will save 33 per cent in crew wages (as 2 hours of the 10 would be paid for at double-time rates); and if the train pulled by the electric locomotive is 25 per cent heavier, the saving in wages will be 46 per cent. Such a saving is easily made.

As has been said in these columns again and again, there are presumably few railway men left who do not believe that electrification is the proper development in situations suitable for it. The electrification advocates do not seem to realize that the electric locomotive has not proved itself the panacea for all the railroad ills. On the other hand, they seem to have little or no comprehension of the fact that the steam locomotive of today is a quite different motive power unit from the locomotive of a decade ago. This probably explains why they do not hesitate to compare operation with the most modern up to date electric locomotive working on mountain grades with the operation of the old steam locomotives displaced on these electrified sections.

Further than that, electrification will cost enormous sums of money. Money is not easily obtainable by American railroads under present conditions. We submit that the burden of proof is still on the electrification advocates to show that enormous expenditures will be worth while in the present state of the art of heavy electric traction. All these facts are omitted from consideration in the superpower survey report. Admitted always that electrification has proved itself worth while in the conditions suited for it, we assert that a general plan for electrification such as is proposed in this report is visionary and not sufficiently supported by facts.

The *Railway Age* has always contended that electrification must be "sold"—to use a merchandising term—not to the electrical engineers nor to the public. It must be sold first to the hard-headed practical men who operate our railways. We do not feel that such arguments as the following will get far with men who have been brought up with steam operation.

The normal amount demanded annually for extensions and betterments for the railroads within the superpower zone is approximately \$150,000,000, an amount which even in the face of present construction prices would suffice in three or four years to cover the cost of electrifying all the mileage mentioned. *Should we continue to tinker with an old and inefficient machine when it is impossible to escape the installation of the modern and efficient one?*

Possibly the following remark will appeal to steam railroad men:

These improvements in operation can be made more readily under electric service than under steam, for a change in the power system would bring fresh minds into the service and would consequently liberate the mental operations of the average railroad man from their conventional routine.

As was stated in last week's issue there is much of value in the superpower report. There is much said in favor of electric operation that is correct and fair. There is much less said of steam operation that can be so termed. The report insofar as electrification is concerned partakes altogether too much of unfair propaganda in favor of steam railroad electrification. The propriety shown in putting this propaganda in an official government document prepared with the assistance of an appropriation of \$125,000 from Congress is, however, not evident.

## New Books

*The American Railroad Problem*, by I. Leo Sharfman, Professor of Economics, University of Michigan, 5½ in. by 8½ in. 474 pages. Bound in cloth. Published by the Century Company, New York.

This book is first a summing up of recent railroad literature and as such is an important contribution to railroad history. In addition it is an able analysis of the present railway situation and in this, perhaps, lies its greatest value to the railroad man and lay reader alike. Professor Sharfman gives first a brief summary of railroad history prior to 1914 and then goes into considerable detail concerning the railroads under pressure of war, both previous to and during federal control. Several chapters are devoted to the accomplishments and shortcomings of the railroad administration and then the writer launches into the discussion of the present railroad situation. Theoretical questions of private versus public ownership, unification of service, rates, credit and earnings and the attitude of labor are dealt with from an impartial viewpoint to provide a background and then the writer takes up the Transportation Act.

The author's conclusions are interesting—"it is very questionable, therefore, whether relief can be expected through further extension of the scope of regulation. The continuance of private ownership must be accompanied by a reasonable degree of independence in management," and "unless the railroads accept the plan of consolidation now being formulated by the Commission, it will doubtless be deemed essential to render the extensive emergency powers over traffic and 'car service' continuously applicable, in order to secure the benefits of informal operating unity. Such developments must ultimately bring public ownership." With these and other statements throughout the book there will not be universal agreement, yet if such a grasp of the railway situation as Professor Sharfman has been general among the leaders of the country's thought, the railroads and their managements would find their problem greatly simplified. The book recommends itself to the attention of all who would be intelligently informed about our national railroad policy.

*Railroad Shop Practice*. By Frank A. Stanley. 331 pages, 5 in. by 9 in. Bound in cloth. Published by McGraw-Hill Book Company, New York.

The purpose of this book as outlined in the preface is to show typical methods and appliances adapted to the work of various repair shops. It contains 23 chapters, covering in a general way practically all phases of locomotive repair shop operation. Data for the preparation of the book was secured from railroads in various parts of the country and the methods shown, therefore, are not simply local. The description of methods is written primarily from the standpoint of general machine practice and in many cases the author shows lack of familiarity with railroad shop methods. The author has given little consideration to the problem of repairs in its general aspect, but has treated each operation as practically unrelated to other work. Consequently, the book is more in the nature of a collection of shop kinks than a treatise on general shop practice. A very large portion of the entire book is devoted to machine shop practice, although short sections dealing with blacksmith shop, boiler shop and car department practice are included. Some of the methods described are probably the best in their respective lines, but other methods included would be classed as obsolete in the majority of shops. The value of the book would have been increased if greater care had been taken to give each important division of railway shop work the attention which its relative importance would warrant and if more discrimination had been used in selecting the examples of shop practice described in the work.

# The Case of the Detroit, Toledo & Ironton

Between June and August Net Operating Income Declined  
70 Per Cent; For Class I Roads Increased 75 Per Cent

By Harold F. Lane

THE INTERVIEW with Henry Ford, published recently in *The Nation's Business*, telling how, he would operate a big railroad if he owned one, instead of a little one, suggests that as a railroad operator Mr. Ford is a good press-agent for the Ford Motor Company, but who is not always as careful as he might be as to his facts. But following his advice to look up in Washington some of the figures reflecting the operation of the Detroit, Toledo & Ironton, which he does not find it necessary to use in illustrating the various points made in his interview, one comes to the further conclusion that as the head of the motor company he is also a good traffic solicitor for the D., T. & I. Having such a traffic solicitor, the D., T. & I. is this year making some money, whereas last year it made deficits; but the recent reports of the road to the Interstate Commerce Commission, which apparently were not made by a press-agent, fail to maintain the same improvement in net earnings which earlier in the year filled the newspapers with accounts of Ford's "railroad miracle."

The credit which the Ford management received for the results of suddenly placing on this road a large amount of Ford tonnage was based largely on comparisons between the earnings of April and the immediately preceding months, and those of the year before when (before the general rate advance) most of the railroads of the country were showing deficits. The reports on file with the Interstate Commerce Commission show a decrease in every month since April in the net operating income, as compared with the preceding month, and for August it was lower than it was during March, the month in which the Ford management took charge. While there has been a large increase as compared with the corresponding period of the year before, before the 40 per cent rate increase of August 26, 1920, the reports show that this is largely due to the increase in gross earnings, the reduction in expenses having been only slightly greater than that made by the railroads of the United States as a whole.

## Net Lower Each Month from April to August

For the six months from September, 1920, to February, 1921, after Mr. Ford had bought the road but had not yet installed the new management, the D., T. & I. had a constant succession of deficits. For March the net operating income was \$77,985. By April the effects of the Ford traffic or the Ford genius were made apparent in a net operating income of \$276,452, which resulted from an increase in revenues of \$258,439, while the expenses increased only \$42,846.

Month	Operating revenues	Operating expenses	Oper. ratio, per cent	Net operating income
March, 1921	\$439,052	\$352,070	80.4	\$77,985
April	697,491	395,816	56.7	276,452
May	744,466	422,338	56.7	263,293
June	713,527	376,383	52.7	261,250
July	744,398	444,294	59.7	187,395
August	763,860	548,246	71.8	70,643
	\$4,102,814	\$3,540,537	61.9	\$1,137,027

The report for April became available about July 1, or about the time Mr. Ford announced his increase in wages and proposed reductions in rates and led to the wide publicity given to statements that Ford had shown an increase in net while increasing wages and reducing rates. For May there was a further increase in revenues, but the expenses also went up and the net was lower than in April; and in each

month since the net has been lower than it was the month before until in August it was only \$70,643, or less than it was in March, although the revenues were greater than in any preceding month and \$324,000 greater than in March. The revenues, expenses and net for the six months of Ford management are shown in the accompanying table.

The report for September is not yet available. All of the other Class I railroads except the Detroit, Toledo & Ironton had submitted their September reports to the commission by November 9, but the road has had some correspondence with the commission asking to be relieved of reporting some of the information called for, in accordance with Mr. Ford's policy of simplifying the accounting.

For the six-months period, it is true, the net operating income was \$1,137,027, as compared with a deficit of \$1,003,-804 for the corresponding months of 1920, but it is also apparent that various factors other than the mere change in management or the application of "common sense principles" were at work. The operating revenues had increased 58.36 per cent, the rates in eastern territory having been increased 40 per cent, and the expenses had decreased 24.2 per cent. The railroads of the United States for the same period showed a reduction in expenses of 22 per cent, but traffic in general did not increase under the new rates like the "flivver" traffic of the D., T. & I., and they had a reduction in revenues. If the 20 per cent reduction in rates which Mr. Ford proposed had been applied to his earnings for the six months they would have been reduced by some \$800,000 and his net would have been reduced to about \$300,000; while the net for July and August would have been completely wiped out, unless, of course, it is to be assumed that Mr. Ford as a shipper would have given his road more traffic at lower rates, in which case his expenses would have been greater than they were.

The reduction in expenses consisted of a decrease of 40.28 per cent in maintenance of way, 34.75 per cent in maintenance of equipment, 9.75 per cent in traffic expenses, 6.50 per cent in transportation expenses, and, strangely enough, an increase of 0.21 per cent in general and other expenses. The increases in wages were in effect during July and August, and the number of bad order cars was greatly reduced in August.

Mr. Ford in his interview says: "We don't claim to have done anything new in railroading—yet," and doubtless he is not personally responsible for all the foolish claims that have been made for him. He says: "We have only taken the old system of operation and cut off the obvious absurdities. We have simply cut out the loafing of men, the loafing of engines and the loafing of cars. The result seems to have surprised many people. But there is no mystery or magic about it. Anyone can do it."

The chief mystery seems to be as to what Mr. Ford means by the "result." The thing that surprised everybody was the statement that for the month of April the road had shown an increase in net income of \$200,000, and the publication of that fact in such a way as to indicate that it had been done under rates reduced by 20 per cent and an increase in wages, when neither had then taken place. The reduction proposed in interstate rates is still under suspension by the Interstate Commerce Commission and the reduction in local rates in Ohio affects very little of the D., T. & I.

traffic. The results that appear in the reports of the road do not reflect the cutting out of any considerable amount of loading, lost motion or "absurdities," although of course the reports do not show everything.

Mr. Ford probably would not like to have his record judged simply from the standpoint of earnings. What the D., T. & I. makes or loses is of comparatively little importance as compared with the part it may play in the development of the motor business. But "almost anyone" could show an increase in net out of an increase of 58 per cent in gross earnings. If he were operating a railroad such as the New York Central or the Pennsylvania, Mr. Ford says, he would immediately set about accomplishing four things. He would "reorganize in such a way as to get rid of the unproductive stockholder," which he has done on the D., T. & I. by taking the stock himself. He would "redesign the rolling stock" and he has conducted some experiments along that line from which he promises some "revolutionary changes." He would "expedite the delivery of freight," and he claims that "by speeding up our freight on this preliminary part of its journey we have been able to shorten the time of its delivery by periods ranging from 7 to 14 days," but apparently there is some question as to whether the speeding up has been done by the D., T. & I. or by its connections.

He would also "discharge unnecessary employees" and he says that "by cutting out the lost motion" the 2,600 people on the payroll of the D., T. & I. had been reduced to 1,500. The record shows that while the road was still under the old management there was a reduction in the number of employees from 2,677 in October, in which month the road handled 55,901,000 ton-miles of freight, to 1,328 in February, when the ton-mileage was only 9,789,000, but that there has since been an increase from 1,326 in March to 1,751 in July, the ton-mileage having increased to 38,217,000. The Interstate Commerce Commission has recently declined a request of the D., T. & I. that it be relieved from filing the usual statistical reports on employees, service and compensation.

Mr. Ford's proposal to "retire the parasite non-contributing stockholders and get the ownership into the proper hands," in order to remove the "dividend drain" is not so easy of accomplishment in most cases as in his own. He suggests that the stock ought to be owned by employees, and many roads have encouraged their employees to acquire stock just as we understand the Ford Motor Company has, but any prominent railroad that showed profits comparable to those of the Ford company would speedily have the dividend drain reduced by regulation; and stockholders who are so "productive" in the way of tonnage as the present owner of the D., T. & I. are not available to every road.

Mr. Ford says that "overweight of rolling stock is the prime mistake on the mechanical side of railroading," that "engines and cars are four or five times as heavy as they should be" and that "a freight train is several times the weight of the load it carries." If the weight of rolling stock were as great as this, the results of his experiments in building a lighter freight car would be awaited with much interest, but the condition is hardly as bad as Mr. Ford pictures it. The latest report of the Interstate Commerce Commission giving operating statistics for Class I roads shows that for eight months of 1921, when the train loading has been less than it is in a year of heavy traffic, the gross ton-miles, including the weight of the locomotive and tender, totaled 559,749,000,000, while the net ton-miles were 222,345,000,000, which would indicate that the cars and engines weigh a little over one and a half times the weight of the load. Excluding the locomotive and tender, the gross ton-miles were 489,402,000,000.

#### As To Speeding Up Freight

Neither do all roads enjoy the peculiar opportunity that Mr. Ford does for "expediting the journey of the freight

carrier." He says that "on the D., T. & I. we tolerate no idle men, idle cars or idle engines," and that "freight can be kept moving." This would suggest that he had found a way to improve on the average mileage per freight car per day shown by the railroads generally, which many critics of the roads have often called unduly low. The reports of the D., T. & I. to the Interstate Commerce Commission do show an improvement in this respect this year as compared with last year. From September, 1920, to February, 1921, the average mileage per car per day was 19.2, 17.2, 17.9, 12.1 and 15.8. From March to August, 1921, it has been 27.8, 26.3, 27.3, 25.1, 21.6 and 20.7. For all the roads the average for August was 22.7, which was less than it was a year ago. The decrease from 27.8 in March to 20.7 in August on the D., T. & I., however, does not indicate a speeding up of the delivery of freight on the "preliminary part of its journey." It indicates rather that Mr. Ford's traffic manager is giving his freight to the connecting roads that will deliver it the quickest, and the D., T. & I. is in an excellent strategic position to stimulate competition among them in this respect. A locomotive cannot always be sent to pick up a single car of freight without delay, but most any road is glad to keep one waiting a short time to get a train load.

A newspaper man who is "touring on Henry Ford's railroad" for the Scripps-McRae papers, and telling how Mr. Ford is accomplishing wonders "by common sense and work," explains it this way: "Ford simply plays one line against the other. He says to one big trunk line, 'Give me service and I will give you freight. No service, no freight. I will give it to another line.' The D., T. & I. is such a big feeder that there isn't a single big trunk line that can afford to loaf on the job."

Mr. Ford says that "one of the first things is to dispense with the legal staff" because a "well-managed road needs less of that sort of service" and that this was done on the D., T. & I. "The lawyers are mostly in the claims department," he said, and as the Ford company has its own lawyers and as Mr. Ford is his own largest shipper, we can easily understand why he could reduce the claim department of his railroad.

Mr. Ford greatly prefers to have it believed that the conversion of a deficit into a net operating income represents his improvements on the "present bad system of railroading." In reply to a suggestion that his success was due to the fact that he was able to divert Ford traffic to the D., T. & I., Mr. Ford said: "How can that be true when the road hauled more tonnage the year before we took it over than it has hauled since we have had it? The figures are all in Washington; why doesn't some one look them up? The great majority of the freight which goes over our roads goes over other roads, too." This entirely ignores the fact, which is shown by the figures in Washington, that while the tonnage this year has been less than it was last fall, much of it is a kind of tonnage which the road did not have last year and which but for the Ford Motor Company it would not have this year. While the coal traffic this year has been greatly reduced on the D., T. & I., as on other roads, Mr. Ford has not only given it an automobile tonnage which it did not have before, but the new tonnage pays a much higher rate per ton-mile. The average receipts per ton-mile increased from 1.331 cents in January to 1.833 cents in March and were 1.893 cents in July, as compared with 1.254 for the railroads as a whole.

Mr. Ford says he "doesn't like to appear as criticizing any railroad manager" and that he has "never done so." He is merely criticizing "the present bad system." We have no desire or occasion to criticize Mr. Ford either as a manufacturer or as a railroader. We only wish he would be more particular to tell the truth or to find it out if he does not know it, before he attempts to compare with so much pub-

licity his own "good management" with the "bad system" of the other railroads.

### In a Nut Shell

Comparing Mr. Ford's railroad with all the Class I railroads of the United States is like comparing a mouse with a hippopotamus. Since, however, the propaganda regarding the "miracle" worked on the D., T. & I. has invited the comparison, the following facts are presented for what they are worth: Between June and August when Mr. Ford made

his famous changes in rates and wages the total earnings of the D., T. & I. increased 7 per cent, while those of all the Class I railroads increased 9.3 per cent. Meantime the operating expenses of the D., T. & I. increased 46 per cent, while those of the Class I railroads increased less than 1 per cent. In consequence the net operating income of the D., T. & I. declined over 70 per cent, while that of the Class I railroads increased from \$51,640,000 to \$90,241,000, or almost 75 per cent. The increase in net operating income of the Class I roads was mainly due to the reduction of wages of July 1.

## Hearings on Capper Bill in Senate Committee

### Carriers Testify Against Legislation Designed to Destroy Protection of Adequate Revenues

WASHINGTON, D. C.

THE PRESENTATION of testimony on behalf of the railroads in opposition to the Capper bill and other bills proposing the amendment of the Transportation Act to limit the authority of the Interstate Commerce Commission to regulate state discrimination against interstate commerce was begun before the Senate committee on interstate commerce on Monday, November 14. Fred H. Wood, general attorney and commerce counsel of the Southern Pacific, was the first witness for the carriers, taking up the question of the jurisdiction of the Interstate Commerce Commission over state rates. He was to be followed by Alfred P. Thom, counsel for the Association of Railway Executives, and H. A. Scandrett, commerce counsel of the Union Pacific.

The National Association of Owners of Railroad Securities also expects to present testimony and has retained Edgar E. Clark, former chairman of the Interstate Commerce Commission, to represent it in defending the rate-making provision.

Mr. Wood said he did not think the Interstate Commerce Commission had misinterpreted the act or overstepped its bounds in ordering increases in certain intrastate rates; that neither Section 15a, the rate-making section, nor the provision of the Transportation Act relating to state rates increased the commission's authority; that the latter only clarified it and that even had these sections not been enacted, the commission would have been justified in making the orders it did under the doctrines of the Shreveport case. In that case, the Supreme Court held that the Interstate Commerce Commission has authority to regulate intrastate rates where they are found to discriminate against interstate commerce.

"I don't think that there is anything in the law as it stands today or in the administration of that law by the Commission as evidenced by its decisions which would warrant the assumption that the state commissions today are not as a whole perfectly free to adjust individual rates on traffic moving within their own borders to the reasonable requirements of purely state traffic," said Mr. Wood.

In considering the state rate cases, Mr. Wood said the commission had required the introduction of evidence similar to that presented in the Shreveport rate case.

"I shall subsequently review," said Mr. Wood, "one or two of these cases, in a sufficient way to put before the committee the character of the evidence and the contentions that were made. Those cases I think were typical of all and from what I know of the cases in which I participated and of the cases in which I did not participate, but with which I am familiar, I think that without any amendment to the law every one of these orders would be sustained—must be sustained—under the doctrine of the Shreveport case itself.

"My opinion is that neither the general advance rate case before the Interstate Commerce Commission in Ex Parte 74 or these state rate cases would have been fundamentally

different in any particular even if Section 15a had not been enacted.

"The emergency for the general advance in rates in order to restore the credit of the carriers and insure adequate transportation facilities would have been just the same. That emergency would have applied just as acutely to the state traffic as to the interstate traffic with or without the provisions of Section 15a and these resulting discriminations growing out of the advance in the interstate rates and the failure to advance state rates would have been just exactly the same.

"I am safe in saying that, whether the Interstate Commerce Commission was mistaken or not, in every one of these cases it believed that the evidence before it, taken as a whole, was sufficient to justify the order that it made even if there had been no amendment to the Interstate Commerce Act through the operation of the Transportation Act."

Mr. Wood testified that, at the invitation of the Interstate Commerce Commission three members of state commissions, selected by the National Association of Railway and Utilities Commissions participated in the hearings which resulted in the commission's order making a general increase in freight and passenger rates effective on August 26, 1920. He read a letter sent by these commissioners to their national organization in which they reported their concurrence in the commission's action.

"The letter shows," the witness said, "that the decision was just as much the decision of these state commissioners as it was that of the Interstate Commerce Commission."

The real question before the committee, he said, is whether the exercise of jurisdiction by the commission is consistent with public policy and the practical requirements of public regulation. He said that previous witnesses on behalf of the shippers and the state commissions had suggested that the commission found its jurisdiction over state rates in the provisions of Section 15a, but that this was not a fact. In each case the commission did examine the effect on the revenues of the carriers of action or non-action on the part of the states, because the effect on revenues is always a pertinent question in a discussion of the cases, and it had also reviewed its own action in Ex Parte 74 which was based on Section 15a, but this was in accordance with the policy of considering the attendant circumstances.

The commission also had to consider the purpose of the statute as a whole, but it did not rest its control over state rates on Section 15a. It was impossible to present evidence as to each specific rate and cases which have arisen under the Shreveport doctrine have always been based on representative rates. The commission had evidence of specific rates on specific relationships which were representative, and in no case was there contradiction of that evidence, except

as to a few particular rates on which issue was joined. In some cases the commission found that as to these rates the carriers were right and in some that they were wrong and it excluded the particular traffic involved from its order.

The Supreme Court, Mr. Wood said, has not undertaken to define the limitations of the commission's jurisdiction as it existed before the new law. The prohibition against discrimination against persons, localities and descriptions of traffic, he had always thought was all-embracing. The new law simply added the words "or interstate commerce." This he considered a valuable addition even if there was no intention to add to the commission's jurisdiction because it indicated the intention to make it clear that the prohibition against discrimination was all-embracing. If the previous language was not all-embracing, the new language in Section 13 was wise, because it is unthinkable that we may have effective regulation of commerce unless the federal tribunal does have power to remove any discrimination against interstate commerce which it finds.

Senator Cummins suggested that the state commissioners and those who agree with them say that no evidence was presented to the federal commission except that the state rates were lower than the interstate rates. Mr. Wood said that such a statement is most incorrect and that he would endeavor to show before he concluded his testimony that the facts regarding the various state rate cases were not as they had been represented to the committee by previous witnesses.

To take away from the Commission its existing authority to deal with the transportation question as a national problem and prevent discriminations against interstate rates would result in chaos, inadequate revenues for the carriers and in inadequate transportation at a time when the country is undergoing economic readjustment, Mr. Wood said:

"The suggestion," said Mr. Wood, "that by reason of the provisions of the Transportation Act state rates have been frozen and the states deprived of the power to adjust individual rates within their own borders to the legitimate requirements of state commerce is without foundation.

"Regulation of interstate commerce and its instrumentalities presents a national problem. As to it, there are certain fundamental matters which must be decided by the national government as a national policy. These are the general level of rates necessary to provide adequate transportation for the country as a whole and the prevention of undue discrimination in favor of the persons of one locality or state as against another. There is no more loss of dignity or of states' rights in a statute which requires the states to conform to these fundamental requirements according to the national standard, leaving to the states the adjustment of rates within the states where they do not impugn the national program, than there is in the supervision exercised by the federal courts over the action of state courts on matters likewise arising under the Constitution.

"The removal of the commission's power would also retard the orderly liquidation of freight rates in response to such reduction in operating costs as may be brought about and in thus extending to the country the maximum benefit of downward revisions of rates in the necessary economic readjustment. With the carriers' wage bill alone for the past year substantially equivalent to the entire gross revenues of 1916 or 1917, a restoration of a pre-war level of rates as a whole cannot be expected for a long time to come. The nation's economic readjustment requires that such reductions in rates as may be possible in response to reduced operating expenses should be placed where they will do the most good. By the restoration of pre-war statutory passenger fares or by reduction in passenger fares to a lower level than now exists the opportunity to reduce freight charges in the interest of commerce and of the people as a whole would be greatly diminished. This is one of the results that would follow by withdrawing from the commission its existing authority

or requiring a cancellation of its orders by legislative enactment. To the extent that state commissions whittle away revenues from freight traffic by reductions in rates the opportunity in an orderly way to make such reductions on interstate traffic in basic commodities is likewise diminished.

"If reduction in freight rates is to be made an effective instrument in the economic readjustment orderly and harmonious action looking towards placing of these reductions where they will do the most good is necessary and cannot be accomplished as long as a large proportion of the states insist upon the maintenance of rates which reduce revenue and result in discrimination against interstate commerce.

"The carriers are already assuming as much of the burden of the economic readjustment as they can stand. By loss of traffic and by many reductions in rates to meet economic conditions their revenues are today far below the standard required for the maintenance of adequate transportation facilities. It is as essential that they should come out of this period of economic readjustment as solvent institutions and with a reasonable assurance of established credit as it was at the time that the Transportation Act was passed.

"No single act upon the part of Congress would be as severe a blow to the rational regulation of transportation charges for these purposes as the removal from the Interstate Commerce Commission of the existing power to bring into harmony that which ought to be brought into harmony, to see that out of all of its traffic the carriers' revenues reach that standard which, when the economic readjustment is complete, the interests of the country demand they should reach, and to remove the undue discriminations against interstate commerce which would result from freeing the states from all supervising control or limiting the jurisdiction of the Commission so that it could not act as the practical requirements of the situation demand."



From the New York Tribune

Isn't It Rather Dangerous Not Having the Two Hitched Together Some Way?



*Large Modern Tunnels Have Been Constructed*

## C. & O. Improves Line and Grades at St. Albans, W. Va.

### Increased Coal Traffic Necessitates Rebuilding of Important Branch for Mallet Operation

**T**HE CHESAPEAKE & OHIO has, for some time past, been facing the problem of handling efficiently the increasing traffic originating in those sections where coal is almost the only tonnage moved. This is particularly true in the vicinity of the more newly developed fields of the Kanawha and Logan districts where a major portion of that road's coal traffic is obtained. This condition is now being remedied, in accord with the more pressing needs, by con-

in each direction. This replaces an old line having grades of one per cent against loaded traffic and 2.0 per cent against empty movement and also shortens the haul by about three-quarters of a mile. In place of the nine highway crossings on the old line, all of which were at grade, there are now only two, neither of which is at grade. These necessitated the construction of one under crossing and one highway bridge. Two tunnels, one 1,500 ft. long and the other 300 ft., were required.



**Permanence in Construction Marks This Highway Under-Crossing**

siderable grade and line revision and some double tracking, all of which will materially speed up the movement through this section. It will then be possible to use Mallet locomotives, to secure longer hauls and heavier train loads and to dispense with helper service.

The construction described in this article is concerned with the revision of the grade and line on a part of the Coal River branch connecting with the main line at St. Albans, W. Va., near which city most of the work was done. Slightly less than four miles of new single track line has been constructed with maximum grades of 0.20 per cent compensated

The Coal River branch serves a part of the Kanawha district, the territory often being designated as the Coal River district. It extends south from the main line for a distance of approximately 60 miles and contains about 164 miles of line. Leaving St. Albans, the line follows Coal river to the town of Sproul, W. Va., about 15 miles distant and a junction point for two lines running back into Boone, Logan and Raleigh counties. The river also splits at this point into two streams known as Big and Little Coal rivers along which the two branch lines follow generally. The Kanawha and Logan fields, of which this section is a part, are the newest fields along the Chesapeake & Ohio. The coal produced is highly volatile and makes up about 60 to 65 per cent of the road's total coal tonnage. The development in this territory in the past has been chiefly of an extensive nature. The growth of the traffic in this district has been rapid with the result that the existing line was offered, under ordinary circumstances, as much or more traffic than it could handle. Of the various sections lying within the district mentioned the resources of Boone county are perhaps the least developed and as a future source of supply are of immense importance. Areas containing many thousands of acres have not as yet been touched and tests in these areas have shown them to contain coal in abundance and of the finest grade.

Today about 71 mines along the lines of the Coal River branch deliver coal to the Chesapeake & Ohio, all of which must pass out onto the main line at St. Albans. In addition



brought along with the heading. At the same time a heavy cut leading to the west end was excavated to grade and carried up practically to the location of the west portal. The finishing of these two pieces of work left a wall of sandstone running from side to side of the cut and up to the height of the tunnel springing line. This was removed last. In bringing the bench through from the east, considerable difficulty was experienced with the large amount of water which seeped out of the tunnel walls. On the morning following



The Portal at the St. Alban's Tunnel Where the Old and New Lines Diverge Before Entering the Town

the removal of the rock at the portal, no signs of water were seen. The unusual character of this development brought about a hurried inspection of the situation which disclosed the fact that the steam shovel in the tunnel was tipped partly on one side and was leaning against the wall plates and also that about 320 ft. of the west end of the tunnel had been subjected to a severe strain. The 12-in. by 12-in. segments on the arch of the tunnel timbering had been sprung or bent, some were even broken and nearly all in the 320-ft.



Clearing Out the Bench in the St. Alban's Tunnel

section showed that they were under heavy pressure. The springing lines had been squeezed in about 6 in. and tests revealed that they were still moving slightly. The hard sandstone subgrade of the tunnel had been heaved up about 1½ ft. and was also moving slightly.

As in the case of the short tunnel, cross bracing was installed and, believing that the removal of the rock across the entrance had in a measure been the cause, the men in charge started immediately on the construction of the portal. The portal was excavated down to a depth of about 6 ft. below

subgrade and when it was poured, a 4-ft. by 6-ft. concrete beam, reinforced with old rails and tied in with the side walls, was poured integrally with it. When this was completed all movement ceased. Two additional reinforced beams of the type used at the portal were poured at the west end in conjunction with the lining of the tunnel while the remainder of the 320-ft. section was reinforced by the construction of a concrete "invert" having a maximum depth of 2 ft. 2 in. and a minimum depth of 1 ft. 6 in. under the wall plates. This required an excavation of about 4 ft. by drilling and dynamiting as the heaving did not seem to have disturbed the formation of the rock. The invert as well as the arches of the lining were reinforced with wire mesh extending up into the side walls which were given a batter of one ft. inward as an additional precaution. This batter is shown clearly in one of the photographs. Because of the way the old timber lining was being stressed at many spots the concrete was poured around the cross bracing which was left in place until the concrete had set. They were then cut out and the holes filled.

The tunnel on the old line had a clear width of 16 ft. between side walls and an overhead clearance of 16 ft. above top of rail. It was also on an eight-degree curve and this factor, in connection with the measurements, made it unsafe to operate Mallets through it. The new tunnel section measures 18 ft. between side walls and 23 ft. above subgrade or approximately 21 ft. above the top of rail. Except where the "squeeze" occurred the concrete was poured one foot thick over the timbers, which were almost uniformly 12-in. pieces backed by 4-in. lagging, thus giving a maximum thickness of concrete of about 2 ft. Where the "squeeze" occurred the width or thickness of the wall at the subgrade was increased to give the one foot batter mentioned. The pouring of the portals and the tunnel lining was handled from concrete plants set up near one portal of each tunnel. The concrete was carried in and placed from scaffold cars.

Other work in connection with this grade and line revision included the construction of a steel overhead bridge, a concrete undercrossing carrying both a street and an electric car line, a drainage system, a four-track yard adjacent to the present station facilities and a new highway to follow certain stretches of the old roadbed.

The work was planned by and carried out under the direction of the engineering department of the Chesapeake & Ohio, C. W. Johns, engineer of construction, and E. G. Rice, resident engineer, in direct charge of the field work. The Boxley Brothers Company, Orange, Va., was the contractor for the construction.

## Freight Car Loading

WASHINGTON, D. C.

THE VOLUME of railroad freight traffic, as measured by the weekly car loading reports compiled by the Car Service Division of the American Railway Association, has apparently passed its peak for this year, after having exceeded that for the corresponding weeks of 1919 for two weeks although not having quite reached the figures for 1920. The curves showing the loading for the past four years show a steady increase from spring to fall ending during the last week of October in the last three years, although the decrease began considerably earlier in 1918.

Loading of revenue freight totaled 829,722 cars during the week ended on November 5, compared with 952,621 cars during the previous week or a reduction of 122,899. This was 85,893 cars less than were loaded during the corresponding week of 1920 but 2,998 cars more than were loaded during the corresponding week in 1919.

While there was a reduction in the loading of all commodities compared with the week before, the principal de-

crease was in coal and merchandise and miscellaneous freight, which includes manufactured products. The decrease in traffic was to some extent due to the observance of two church holidays during the week.

Loading of merchandise and miscellaneous freight amounted to 515,894 cars which was 62,684 cars less than during the week before but was 10,000 cars in excess of the loading of that commodity during the corresponding week last year. It was, however, 16,778 cars less than were loaded during the corresponding week in 1919.

A decrease of 34,818 cars, compared with the week before, was reported for coal, the total being 172,875 which was, however, 30,945 cars less than were loaded during the same week last year but 60,758 cars more than during the same week in 1919. Ore loadings also dropped off 7,230 cars within a week, the total being 10,979.

Grain and grain products, according to the report, amounted to 40,921 cars, a reduction of 8,028 cars compared with the week before but 4,698 cars more than were loaded during the corresponding week last year and 1,700 in excess of that week in 1919. Livestock also declined 6,379 cars to a total of 31,126 which was, however, only slightly under the total for the corresponding week last year while forest products with a total of 51,188 cars was 3,160 less than the week before.

Coke loadings were 6,739 cars, 600 less than the previous week.

Compared by districts, reductions in the loading of all

commodities were reported both compared with the week before and the corresponding week in 1920.

The number of surplus freight cars for the week ending November 1 averaged 80,203, a reduction of 19,768 as compared with the week before. This included 22,628 box cars, a reduction of 3,996, and 33,643 coal cars, a reduction of 16,265.

Refrigerator equipment continues to be in strong demand. Loading in the Puget Sound district, principally apples, is in excess of last month and much in excess of last year. Other Western districts continue active loading. Citrus fruit is moving from Florida in increasing volume. All car requirements are being satisfactorily met. The box car supply is ample at all points to meet requirements, which remain comparatively heavy and the coal car supply is about equal to the requirements. Shortages which existed during the past few months of exceptional demand have been eliminated almost entirely.

The number of bad order cars on November 1 was 345,201, or 15 per cent, a reduction of one-half of 1 per cent as compared with October 15.

The number of surplus cars for the period November 1 to November 8, however, shows an increase to 93,172, of which 34,737 were coal cars and 32,747 were box cars. There were shortages amounting to 4,600 as compared with over 11,000 the week before.

The summaries for the weeks of October 29 and November 5 follow:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR LAST YEAR, TWO YEARS AGO FOR WEEK ENDED SATURDAY, OCTOBER 29, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mer- chandise L.C.L.	Miscel- laneous	Total revenue freight loaded			Received from connections		
										This year 1921	1920	1919	This year 1921	1920	1919
Eastern	1921	12,254	3,686	52,306	2,693	5,261	4,467	65,822	98,019	244,508	268,360	257,768	246,959		
	1920	5,643	2,782	60,169	3,162	7,843	10,130	51,051	97,212	238,442	222,840	210,427	201,498		
	1919	3,541	3,696	58,940	2,614	3,196	5,123	50,801	68,012	165,923	137,708	150,612	143,452		
Allegheny	1921	2,320	3,464	67,362	8,046	3,450	12,068	42,015	71,702	36,980	16,772	19,185	21,138		
	1920	276	441	24,681	212	1,457	3	5,870	4,041	37,469	40,437	77,622	72,259		
	1919	96	277	24,184	969	1,797	257	3,189	4,709	133,229	129,367	131,536	125,599		
Pocahontas	1921	3,737	2,549	27,657	562	16,967	563	39,331	41,863	133,229	129,367	131,536	125,599		
	1920	2,844	2,458	26,745	1,401	18,371	2,988	35,587	38,973	129,367	131,536	125,599	125,599		
	1919	10,136	10,136	12,560	872	12,765	6,463	29,368	39,875	125,149	59,829	59,829	62,453		
Southern	1921	11,215	13,729	25,548	196	7,329	770	32,525	55,751	148,113	140,817	139,200	139,200		
	1920	9,900	12,058	25,400	479	6,649	3,040	31,771	51,417	140,817	139,200	139,200	139,200		
	1919	3,846	3,218	8,971	190	7,373	821	15,739	31,361	68,719	66,280	59,463	51,853		
Northwestern	1921	3,826	2,499	24,852	149	6,601	565	17,934	27,754	66,280	59,463	51,853	50,897		
	1920	3,826	2,499	24,852	149	6,601	565	17,934	27,754	66,280	59,463	51,853	50,897		
	1919	3,846	3,218	8,971	190	7,373	821	15,739	31,361	68,719	66,280	59,463	51,853		
Central Western	1921	12,215	13,729	25,548	196	7,329	770	32,525	55,751	148,113	140,817	139,200	139,200		
	1920	9,900	12,058	25,400	479	6,649	3,040	31,771	51,417	140,817	139,200	139,200	139,200		
	1919	3,846	3,218	8,971	190	7,373	821	15,739	31,361	68,719	66,280	59,463	51,853		
Southwestern	1921	3,846	3,218	8,971	190	7,373	821	15,739	31,361	68,719	66,280	59,463	51,853		
	1920	3,826	2,499	24,852	149	6,601	565	17,934	27,754	66,280	59,463	51,853	50,897		
	1919	37,974	41,196	217,025	9,556	56,972	41,642	140,711	379,939	981,242	935,479	677,630	666,959		
Total, all roads...	1921	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	829,722	829,722	829,722		
	1920	37,974	32,867	222,986	16,492	59,466	68,039	213,440	330,456	981,242	935,479	677,630	666,959		
	1919	39,484	41,196	217,025	9,556	56,972	41,642	140,711	379,939	981,242	935,479	677,630	666,959		
Increase compared 1920	1921	11,453	4,638	15,293	9,153	5,118	49,830	26,216	8,466	28,621	41,088	51,853	50,897		
Decrease compared 1920	1921	9,165	3,691	15,293	9,153	5,118	49,830	26,216	8,466	28,621	41,088	51,853	50,897		
Increase compared 1919	1921	5,065	6,309	10,668	2,217	2,624	23,343	40,671	23,343	33,822	33,822	33,822	33,822		
Decrease compared 1919	1921	51,001	40,188	212,319	6,647	53,426	23,186	236,640	338,985	962,292	1,008,818	977,051	645,522		
October 22	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078	609,378		
October 15	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078	609,378		
October 8	1921	53,964	34,073	180,339	6,054	49,459	25,702	233,465	312,684	895,740	1,011,666	982,171	597,524		
October 1	1921	57,890	32,868	178,005	5,615	49,466	26,393	234,227	317,429	901,893	992,283	957,956	581,252		

\*Grain and total figures revised due to correction on D. L. & W. reports.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, NOVEMBER 5, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mise- laneous	Miscel- laneous	Total revenue freight loaded		
										This year 1921	Corres-pond- ing year 1920	Corres-pond- ing year 1919
Eastern	1921	8,993	3,189	46,380	2,274	4,793	2,904	65,129	78,533	213,095	217,514	199,961
	1920	5,415	3,148	50,641	3,180	6,963	10,752	47,948	89,467	217,514	217,514	199,961
	1919	3,541	3,392	48,582	2,692	2,617	4,223	48,192	54,814	167,811	192,111	175,886
Allegheny	1921	2,504	3,514	63,147	7,104	3,224	12,445	46,397	34,397	33,480	33,480	33,480
	1920	211	201	22,580	194	1,302	9	5,617	3,336	33,480	33,480	33,480
	1919	121	278	21,004	857	1,834	181	5,037	4,237	33,480	33,480	33,480
Pocahontas	1921	3,137	1,973	24,903	516	16,476	511	30,288	38,443	125,247	126,783	113,515
	1920	2,440	2,760	29,208	1,280	17,545	3,275	34,389	36,586	126,783	126,783	113,515
	1919	11,048	8,295	7,677	703	11,802	1,871	28,809	34,809	104,704	104,704	104,704
Southern	1921	11,603	8,027	10,712	1,677	13,866	37,166	28,075	36,822	147,953	147,953	131,397
	1920	9,558	11,252	17,696	209	6,754	748	31,805	44,357	122,379	122,379	122,379
	1919	10,196	11,420	23,931	536	6,153	3,193	29,978	46,620	132,027	132,027	117,380
Northwestern	1921	3,663	2,514	61,477	151	7,057	715	15,630	27,112	84,006	84,006	84,006
	1920	3,864	2,138	7,172	114	7,212	581	16,993	26,214	64,288	64,288	55,818
	1919	40,921	31,126	172,875	6,739	51,188	40,979	234,770	281,124	829,722	829,722	829,722
Southwestern	1921	36,223	31,313	203,820	14,748	56,797	66,893	201,478	304,343	915,615	915,615	826,724
	1920	39,221	40,368	112,117	11,943	58,777	31,726	146,354	386,318	826,724	826,724	826,724
Total, all roads...	1921	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	829,722	829,722
	1920	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	952,621	952,621
	1919	51,001	40,188	212,319	6,647	53,426	23,186	236,640	338,985	962,292	1,008,818	977,051
October 22	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078
October 15	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078
October 8	1921	53,964	34,073	180,339	6,054	49,459	25,702	233,465	312,684	895,740	1,011,666	982,171

# The Legal Status of a Railroad Strike\*

## Interference with Service Under Present Conditions Is Against the Government Instead of Against Corporations

By James C. Davis  
Director General of Railroads

IN PRESENTING THIS PAPER it should be distinctly understood that it is done in a wholly personal way, and is not in any wise connected with any official position I may hold, and whatever opinions I express or statements I make are entirely on my own responsibility. It is further only fair to say that in some 20 years of railroad corporate service I have always maintained the most liberal and progressive ideas in the matter of the rights of organized labor, firmly believing in the same right of labor to organize for the protection of all lawful rights, by either defensive or offensive action, that capital might have, and that I freely subscribe to the doctrine that "the labor of a human being is not a commodity or article of commerce." But, over and above all these considerations, I have an abiding belief in the settlement of all disputes, especially those involving the rights and responsibilities connected with public service, by some legally constituted authority, with power on the part of the government to enforce the orders and findings of those public tribunals charged with the power to settle disputes arising between employers and employees, where these employees are engaged in the service of what might be termed public service corporations.

### Transportation Act Marks a New Era

The passage of the Transportation Act of 1920 marks a new era in the great question of the public control of our national system of railroad transportation. While this law may perhaps be subject to just criticism in some particulars, taken as a whole it is the most constructive piece of legislation ever enacted by Congress on this subject.

In considering the railroad question in any of its phases, the rapid growth of this great industry, and the varied aspects of public opinion and public legislation as the industry has progressed, must always be considered. Next to agriculture, it is the greatest commercial activity of this country, practically brought into existence within the memory of men now living.

It was in the experimental stage from 1830 to 1850. From 1850 to 1875 the science of railroad building was rapidly developed; great projects were created and executed, and during practically all of that period the railroads were generally recognized as private property, there being little or no regulation by either state or national governments. During that period the construction of new roads was aided and encouraged by the federal and state governments, counties and cities, and in every other form of possible public and private aid. In 1876 the United States Supreme Court sustained the right of the national and state governments to control, in the matter of charges, public service corporations, the states being limited to local and intrastate service; the federal government being supreme in the realm of interstate commerce.

From that time down to the period of federal control there was a perfect flood of state and national legislation, much of it enacted without any fair consideration, and the regulation of railroads by the various governmental bodies in the states and in the nation became so multiplied that by the

commencement of federal control the railroads were engaged in a desperate struggle for existence.

Following the 26 months of federal control ending February 29, 1920, and as a preface to the return of the property to its owners, Congress enacted the Transportation Act of 1920 (approved February 28, 1920). This enactment may be fairly described as the only real constructive legislation attempted by Congress in the matter of railroad regulation which in any substantial way contained provisions looking to the property rights of the owners of the interstate lines of transportation, all former legislation having for its object the regulation of rates and operation in the interest of the public and the railroad employees.

This act in great detail increased the specific authority of government control. In the matter of rates, the power to reduce charges as well as increase them is taken from the carriers. A substantial control over local or intrastate commerce is granted to the Interstate Commerce Commission, when such local rates made by state authorities cause an undue, or unreasonable preference or prejudice as between persons or localities engaged in interstate commerce, or discriminate against interstate commerce. The commission is given very wide authority in the matter of permitting pooling of earnings, distribution of freight equipment, consolidation of companies, and joint use of terminals; in fact, control in the most minute details of operation is granted to the commission under this law.

In other sections of the law there is created a national "Railroad Labor Board." This board is composed of nine members—three members selected by the President from nominations made by the organizations of labor; three members appointed by the President from nominations made by the carriers, and three members appointed by the President as representatives of the public.

This board is given general authority to hear "and with diligence decide" disputes growing out of rules of working conditions, and is further authorized to hear "and with diligence decide" all disputes with reference to the wages and salaries of employees and subordinate officials.

The Labor Board has construed its power under this act to extend to the control of all changes in wages, and that no changes in existing contracts or rules can be made by the interstate carriers under its jurisdiction except upon approval of the board. In the recent strike controversy in which the principal railroad labor organizations were engaged, the Railroad Labor Board made, in part, the following order:

But, at this time, and while the matter is so intensely before the minds of all, the board deems it expedient and proper to make its rulings and positions on some of the points involved so clear that no ground for any misunderstanding can hereafter exist.

First—When any change of wages, contracts or rules previously in effect are contemplated or proposed by either party conference must be held as directed by the Transportation Act, and by rules or decisions of the board promulgated by the board, and where agreements or decisions of conference must be brought before this board, and no action taken or change made until authorized by the board.

By this plain and unequivocal language the Labor Board assumed complete control and jurisdiction over all changes in wages, rules, or working conditions.

If the language of the Transportation Act receives the construction which these words seem to imply, and the construction which the tribunals charged with its enforcement

\*Address before the Knife and Fork Club, Kansas City, Mo., November 18, 1921.

have placed upon it, then, since the return of the railroad property at the end of federal control to the several corporations owning same, the interstate carriers have absolutely no power over the rates they can charge for services or the wages they shall pay out in operation, and any complaint as to rates or wages is a complaint against governmental authority rather than against corporate action, and, if the complaint is as to rates, it is lodged directly against a finding of the Interstate Commerce Commission, while if the complaint is in the matter of wages, it is lodged directly against rules or orders of the Railroad Labor Board.

#### Strikes Against Government, Not Corporations

Therefore, a strike against rates, if a strike of this kind could be possible, is against the rules and regulations of the Interstate Commerce Commission, and a strike against wages or working conditions and rules is likewise a strike against rules or decisions of the Railroad Labor Board. In other words, future strikes are directly against orders or findings of the government, represented by the Railroad Labor Board, and are strikes against a situation for which the corporations are not responsible, and which the corporations are absolutely helpless to correct.

In considering the rights of the public in a railroad strike, and especially the duties and obligations of the men engaged in railroad service, a sharp distinction must be drawn between men engaged in private service and those engaged in what might be termed quasi-public service. The latter would include men employed in railroad transportation, street railways, public lighting and water companies, and perhaps those engaged in the production of essentials to the life of the nation, such as coal. These men are quite comparable, as to the nature of their employment, to mail carriers, firemen and policemen.

In the case of interstate railroads, the public, represented by the United States government, has such an interest in the continued and uninterrupted operation of these public ways, involving not only the comfort of all the people and the existence of commerce, but the lives of many helpless men, women and children, that no organized or combined effort to interfere with or block the channels of interstate commerce should be permitted, and, in addition to the foregoing considerations, it is the public that eventually pays the bill for the expenses necessarily incident to railroad operation, an item of importance which, in wage controversies, is ordinarily given scant consideration.

The Supreme Court of the United States, in the case popularly known as the Adamson Law Case (Wilson vs. New, 243 U. S., 333), clearly recognized and announced the doctrine that men engaged in railroad operating service were subject to certain public duties and obligations not present in private employment, and could not, by combined organization, interfere with the freedom of interstate commerce, or the transportation of the United States mail. Commenting on the power of Congress to regulate carriers, the court held that there also existed the same power of Congress to regulate employees engaged in such service, the court saying, in the course of the opinion:

As to the employee. Here again it is obvious that what we have previously said is applicable and decisive, since whatever would be the right of an employee engaged in a private business to demand such wages as he desires, to leave the employment if he does not get them and by concert of action to agree with others to leave upon the same condition, such rights are necessarily subject to limitation when employment is accepted in a business charged with a public interest, and as to which the power to regulate commerce possessed by Congress applied and the resulting right to fix in case of disagreement and dispute a standard of wages as we have seen necessarily obtained.

In other words, considering comprehensively the situation of the employer and the employee in the light of the obligations arising from the public interest and of the work in which they are engaged and the degree of regulation which may be lawfully exerted by Congress as to that business, it must follow that the exercise of the lawful governmental right is controlling.

This opinion definitely declares that the obligations to the

public of the railroad corporations and their employees are alike, in that both the corporations and the employees are bound to recognize and respect the public nature of their employment, and these public obligations are emphasized when we consider that the public service corporations are obliged to continue to furnish services whether they make or lose money, and that the great and controlling interest in the operation of interstate transportation plants is the duty to the public rather than the interests of either the corporations, as such, or the men who are in the service of such companies, and it is this controlling and paramount interest of the public which up to this time in many railroad strikes has either been ignored or given slight consideration.

I believe it is a fair statement of the law to say that railroad corporations having been entirely deprived of the right to fix their own compensation for services, or the right to adjust the cost of operation in the way of wages or working rules or conditions, railroad strikes in the future are against the government, by reason of the fact that such strikes will be directly against rules laid down by public tribunals over which the corporations have no control, and, in this situation, it is of paramount interest at this time to consider the power which the government has to protect this authority which it has undertaken, and the responsibility which the government should exercise in seeing that the orders of the Labor Board are respected and carried out.

#### The Debs Case Decision

In 1894 there was a strike in the Pullman Company. The employees of the great interstate railroads hauling sleeping cars, in sympathy with this strike, refused to handle Pullman cars. Richard Olney, the then attorney general of the United States, under the direction of the then President, Grover Cleveland, obtained an injunction in the United States district court at Chicago against Eugene Debs and other controlling officers of the labor organizations engaged in the strike, enjoining Debs and his associates from interfering with the operation of the railroads engaged in carrying the mails and in interstate commerce. The officers of the various unions refused to obey the decree of injunction. They were found guilty of contempt by the court issuing the decree, and sentenced to imprisonment in the county jail for periods ranging from three to six months.

A writ of *habeas corpus* was sued out to test the legality of this punishment, and in an opinion of the Supreme Court of the United States, announced by the late Justice Brewer, the conviction and punishment of these men for violating the injunctive order of the court was sustained.

In the light of the present situation, this opinion of the court is very illuminating. The court, in sustaining the conviction, not only sustained it because of statutory provisions, giving the government power over the transportation of the mails and interstate commerce, but also rested its opinion upon the broad ground of the power of the government to protect the exercise of governmental functions, and further decided that there was a governmental duty to see that the great highways of interstate commerce were kept open and free from interference, and that the United States mails could be carried without interruption.

The court, in the course of its opinion (in *Re Debs*, 158 U. S., 584), said:

Every government, entrusted, by the very terms of its being, with powers and duties to be exercised and discharged for the general welfare, has a right to apply to its own courts for any proper assistance in the exercise of the one and the discharge of the other, and it is no sufficient answer to its appeal to one of those courts that it has no pecuniary interest in the matter.

Again, the court said:

It is obvious from these decisions that while it is not the province of the government to interfere in any mere matter of private controversy between individuals, or to use its great powers to enforce the rights of one against another, yet, whenever the wrongs complained of are such as affect the public at large, and are in respect of matters which by the Constitution

are entrusted to the care of the Nation, and concerning which the Nation owes the duty to all the citizens of securing to them their common rights, then the mere fact that the government has no pecuniary interest in the controversy is not sufficient to exclude it from the courts, or prevent it from taking measures therein to fully discharge those constitutional duties.

#### Again, the court said:

The national government, given by the Constitution power to regulate interstate commerce, has by express statute assumed jurisdiction over such commerce when carried upon railroads. It is charged, therefore, with the duty of keeping those highways of interstate commerce free from obstruction, for it has always been recognized as one of the powers and duties of a government to remove obstructions from the highways under its control.

This opinion definitely decided that the government has the right to appeal to its own courts in the protection of proper governmental rights, and that the duty of keeping the interstate highways free from obstructions and in operation is a governmental duty which should be recognized and enforced.

#### Clayton Act

Following this decision, many conflicting decisions were made by state supreme courts and some federal courts as to the facts and circumstances which justified a court of equity in issuing the extraordinary writ of injunction in controversies growing out of labor strikes. This led to the enactment by Congress of what is known as the Clayton Anti-Trust Act (approved October 15, 1914). This act was amendatory of the Sherman Anti-Trust Act, and contained the oft-repeated declaration that "the labor of a human being is not a commodity or article of commerce." It in effect legalized "labor, agricultural and horticultural organizations instituted for the purpose of mutual help," and further prohibited restraining any such organizations "from lawfully carrying out the legitimate objects thereof," and also contained the following provision:

Nor shall such organizations be held or construed to be an illegal combination or conspiracy in restraint of trade, under the anti-trust law.

Section 20 of this Clayton act, in effect, practically prohibited the issuance of a writ of injunction in dispute between employers and employees.

It must be noted as very controlling that the restrictions of the Clayton act in favor of labor organizations apply only to direct controversies between employers and employees, and do not apply when the controversy is with a third person, other than the employer or the employee.

Therefore, in controversies which are instituted by parties other than employers or employees, as to the issuance of injunctions, the provisions found in the anti-trust laws will apply.

An important proposition as to the jurisdiction of cases brought under the provisions of this law is that an action may be commenced in any district where one or more of the defendants can be found, and, upon proper order of the court, persons residing in other districts may, by subpoena, be made defendants and brought within the jurisdiction of the court.

The Supreme Court of the United States, as late as January 3, 1921, construed the Clayton act as applied to the issuance of injunctions against labor organizations. The Duplex Company, a manufacturer of printing presses, located in Battle Creek, Michigan, brought an injunction suit against the International Association of Machinists and Michael T. Neyland, business agent and representative of Local Lodge No. 328, with headquarters in New York. A strike of machinists, members of this national association, had been in progress at the Michigan plant, and this action was brought in the state of New York to prevent members of the same order from carrying on what is termed a "secondary boycott" in the way of interfering with the installation of the Duplex Company's printing presses in New York City.

The court sustained the injunction (Duplex Co. vs. Deering, 254 U. S., 443), and in the course of the opinion, re-

ferring to the provision of the Clayton act exempting labor unions from injunction, said:

But there is nothing in the section to exempt such an organization or its members from accountability where it or they depart from its normal and legitimate objects and engage in an actual combination or conspiracy in restraint of trade, and by no fair or permissible construction can it be taken as authorizing any activity otherwise unlawful, or enabling a normally lawful organization to become a cloak for an illegal combination or conspiracy in restraint of trade as defined by the anti-trust laws.

The court further held that the act did not apply because the controversy in question was not directly between employer and employee.

#### Government Responsible

It would, therefore, seem quite clear that, in the event of a general strike, where any combination of members in a great, powerful railroad labor organization seeks, by an organized cessation of labor, to paralyze the service of railroads engaged in interstate commerce, and prevent them from complying with their public duties in the matter of carrying mails and interstate commerce, the United States government, at the relation of the attorney general or other proper governmental representative, has the right to apply to a court of equity for a writ of injunction, enjoining such employees from combining and conspiring to interfere with interstate commerce, and, upon violation of such orders, the court may inflict punishment upon those guilty of disobedience of same, by fine and imprisonment, as was done in the Debs case.

It further seems entirely clear that the government, having deprived the carriers of the right to adjust on their own motion, these disputes, the dispute arising solely because of governmental action, the controversy then becomes one for which the carrier is not responsible, and that the responsibility not only of adjusting the controversy but of protecting the public right of operation rests with the government, and the government must of necessity assume the burden of the settlement of the dispute, and that strikes in the future on all interstate railroads become controversies between the government and the organizations bringing about the strike.

There must be no misconception of this power of the government, or the circumstances under which it should be exercised. There is not now and never will be involuntary servitude in this country. The right of an individual to quit work upon his individual responsibility, should not be questioned. The legality of labor organizations, as such, is fully protected, but when such organizations, in combinations or conspiracy, seek to interfere with and prevent the free exercise of governmental functions,—and the duty to carry the mails and to protect the free and uninterrupted flow of interstate commerce are public duties and functions,—then the rights of the great helpless public intervene, and the government, as the representative and trustee of these rights, must assume the responsibility of protecting them, and take the proper measures to enforce the freedom of the performance of governmental duties by interstate carriers.

On the other hand, the carriers should be held to the same measure of obedience and respect for the findings of duly authorized public tribunals as is required of employees, and the authority of the government should in every instance be exercised to the limit to bring about such obedience and respect.

It appeals to me that this is a logical and fair interpretation of the law as it is now written.

In recovering from the devastating effects of the World War, civilization may well be said to be on trial. No greater catastrophe can be imagined in this country than a prolonged and concerted railroad strike. It means not only the entire disorganization and paralysis of business, with the irreparable financial loss attending same, and this loss must be met by persons who are not responsible for the strike, but, if carried on for a sufficient length of time, it means suffer-

ing, starvation, and often death to the helpless, especially women and children.

Should there not be in this country a sufficient respect for law and order to prevent misfortunes of this character? Is there not sufficient patriotism in all classes of our citizens to say that America will show not only to herself but to the world that civilization in this country is not a failure; that the power of the law is supreme, and that in these controversies, involving so vitally the public interest, we are and will be a government of law and order, and not go back to the wager of battle, to trials of strength, to the tooth, the claw, and the club?

I am always an optimist. I know the people of this country will never write "failure" as to our form of government. What we need in these labor controversies is patience and courage,—a struggle by all good citizens to see the very right of these things while these intricate propositions are being worked out.

I have an abiding faith that the same courage, patriotism, spirit of sacrifice, and love of country and fair play that saved civilization in the great World War will again assert itself, and that the American spirit of love of fair play and respect for law and order will in the end prevail.

## Executives Propose a Temporary Freight Rate Reduction

THE ASSOCIATION OF RAILWAY EXECUTIVES has been proceeding with the plan announced after its meeting in Chicago on October 14, of seeking further wage reductions with a view of reducing freight rates by a like amount, just as if no obstacle to the carrying out of the plan had been interposed by the methods used by the Labor Board to induce the brotherhood leaders to call off their threatened strike. Although the Board has indicated that no consideration can be given to further wage reductions until other matters on its docket have been disposed of, and although the labor leaders have chosen to represent this to their members as a sort of promise that nothing further will be done to their wages for several months, the railroads have announced their plans for taking the formal steps to initiate a wage controversy to be later submitted to the Board in a way to indicate that if there is any delay it will not be their fault. They have also resumed their negotiations with the Interstate Commerce Commission regarding the rate situation, in accordance with their promise to translate at once any wage reductions that may be allowed into rate reductions with the concurrence of the Interstate Commerce Commission. While the labor leaders have referred to a "promise" by the Labor Board, the Board's own public utterances have gone no further than a statement of fact regarding the condition of its docket; and no one at Washington knows of any promise or pledge having been made by anyone. Moreover the demand for rate reductions has been by no means abated because of the Board's announcement that it cannot take up a wage case for some time.

At a meeting of executives in New York on November 10, Alfred P. Thom reported the results of his conferences with the commission, and on Saturday, November 12, the executive committee of the association, accompanied by a number of traffic executives, held a four-hour conference at Washington with the commission. After meeting together for some time the railroad men withdrew for a brief conference among themselves, and after they had rejoined the commissioners the latter in turn withdrew for a short time. The joint conference was then resumed; but neither the railroad men nor the commissioners would give any information of its nature. Evidently all decisive action was deferred pending further conferences this week.

On Wednesday the executives met in New York and at the close of the meeting Chairman T. DeWitt Cuyler announced a temporary reduction in freight rates and a proposal for a general reduction in employees' wages. He said:

"The executives of the railroads of the United States have determined to make for a period of six months an immediate reduction of 10 per cent in carload freight rates on farm products, any reduction in such rates made since September 1, 1920, to be constituted a part of such 10 per cent., this reduction to be put in effect without waiting for a reduction in wages (except on traffic moving wholly within New England).

"The reductions already made since August, 1920, involve an estimated loss of revenue at the rate of \$175,000,000 to \$200,000,000 annually. . . . The railroads are awaiting decisions of the Labor Board which it is hoped will relieve the companies from the expense of many onerous and uneconomical working conditions.

"The railroads are not in a financial position to make this sacrifice. Unless there should be some revival in business the entire immediate loss involved in this proposed reduction would be taken from net earnings. . . . The railroads are relying upon the public for effective aid in bringing about the necessary reduction in labor and other costs, and are hoping for the co-operation of labor itself to that end. They have taken the first step in relieving existing business depression and have given an earnest of their fixed purpose to reduce rates and to relieve at the earliest practical moment, as far as reasonably possible, the transportation burden on the public."

The resolution covers carload rates on wheat, corn, oats, other grain, flour and meal, hay, straw and alfalfa, unmanufactured tobacco, cotton, cotton seed and products (except cottonseed oil and cottonseed meal), citrus fruits, other fresh fruits, potatoes, other fresh vegetables, dried fruits and vegetables and live stock.

If a general reduction of wages and labor expenses is put into effect prior to the expiration of the experimental period, the limitation of six months is not to apply.

### Action to Reduce Wages

The proposed general reduction in wages of employees was announced in notices sent out this week by each road to the chairmen of the different employees' organizations. The notices call for a conference between officers of the roads and representatives of the employees' organizations, and say that the date of the conference is to be fixed later.

There is a general impression that the reduction to be proposed by the roads will be 10 per cent; but nothing has been said as to what classes of employees this rate will apply to, or what differences may be proposed as between the train service men and those engaged in work requiring fewer skilled men. The resolution as adopted requires the necessary steps under the law to be taken as promptly as possible "with the understanding that concurrently with such reduction in wages the benefit of the reduction thus obtained shall, in a manner approved by the Interstate Commerce Commission, be passed on to the public in the reduction of existing railroad rates except insofar as such reductions in rates have been made in the meantime."

The executives also voted to ask the Interstate Commerce Commission for a rehearing of the hay and grain case and for a general inquiry to ascertain whether until a substantial reduction can be secured in the labor and other costs of operation any further reduction in rates could lawfully be required, or, with due regard to the transportation industry, is possible.

RECENT CENSUS STATISTICS in England show that 79 per cent of the population lives in urban districts.

# An Analysis of the Freight Car Situation

It Would Appear That the Pooling of Freight Car Equipment During Federal Control Was Anything But a Success

By John E. Muhlfeld

IN A LETTER under date of April 29, 1920, written by L. F. Loree, president of the Delaware & Hudson Company, to E. N. Brown, chairman of the committee of the Association of Railway Executives (of which committee Mr. Loree was a member) appointed to recommend to the Interstate Commerce Commission the purposes for which loans should be made from the \$300,000,000 fund created by the Transportation Act of 1920, Mr. Loree set out many pertinent facts relating to the then ineffective loading, movement and upkeep of existing freight train equipment as an argument against the expenditure of large sums for the purchase of additional

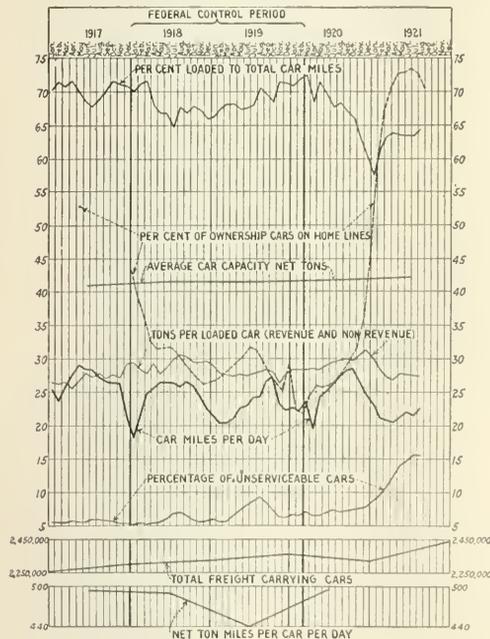
with what obtained prior and subsequent thereto. Summing the figures in their entirety, they would seem to indicate that the roads as a whole, while they have made great progress, have not as yet recovered from the effects of government control and the many inequities permitted thereby. The following brief analyses of the graphics show that these improper practices were directly reflected with the return of the roads to corporate control and that the carriers are now bearing the burden of the United States Railroad Administration having fooled not only itself but everyone else who believed in its methods.

*Per Cent Loaded to Total Cars.* This factor shows decidedly in favor of corporate control. The low marks in May, June and July, 1918 and 1919, can be attributed to the practice of the U. S. R. A. rushing cars promiscuously to points of loading to take care of seasonal movements, disregarding largely the demand for such equipment in territories where it might be loaded, and entirely the factor of car efficiency. The low point in December, 1918, and January, 1919, can be attributed to the falling off in loading after the Armistice during the readjustment period, as per diem was abolished and there was, therefore, no necessity for moving cars when not needed unless upon orders of the Car Service Section. The extremely low figure in January, 1921, was the result of business depression and the relocation of equipment by corporate management to avoid the payment of per diem and is emphasized by the fact that this line crosses the line of "Per Cent of Ownership Cars on Home Lines" in the latter's ascendancy.

*Per Cent of Ownership Cars on Home Lines.* We have here a very clear illustration of what the effect of government ownership and the abolition of per diem would result in; this particular factor means a tremendous financial loss to the carriers of the country in the way of service performed in empty car mileage made necessary to favorably influence per diem balances and to secure return of equipment to owner's rails. On March 1, 1920, when the roads were returned to corporate management, there were only 21.9 per cent of ownership cars on home lines and coal cars needed for loading on ownership lines in the East were held empty on foreign lines in the West, while box cars needed on ownership lines for loading in the West were held empty on foreign lines in the East. Only the business depression that was experienced in the forepart of 1921 enabled the cars to get home. Had traffic held up, they would still be badly scattered and in even a more deplorable condition of upkeep. While a car pool such as established by the U. S. R. A. might be worked out under certain practical conditions, the government made a decided failure of its venture in that direction.

*Average Car Capacity.* This line merely shows the natural increase in the average car capacity of the country that can be expected for some years to come and against which, as the use of 120-ton capacity coal cars on the Virginian Railway has demonstrated, no reasonable argument can well be advanced.

*Tons per Loaded Car.* Corporate management has no apologies to offer when compared with government control in this regard as with all the influence and effort of the latter, in combination with the movement of heavy war materials and supplies, the U. S. R. A. was unable to bring and hold the average car loading up to the figure that should have been



freight cars at extraordinarily high unit costs and the resulting prohibitive interest and retirement charges. In closing his letter, Mr. Loree stated: "Conditions are now very abnormal in that during federal control all restrictions of ownership were ignored and the cars were scattered throughout the country and their repairs sadly neglected. Efforts should now be made to bring them back as promptly as possible to the owning line and every effort should be made to as rapidly as possible put them in proper repair."

An examination of the chart, prepared from the data set up in Tables I and II and showing the "Performance of Freight Train Cars in Service of Class I Railways" during the period January, 1917, to September, 1921, will not only confirm the soundness of Mr. Loree's judgment, but it also shows the relationship of the freight car situation during the federal control period, January 1, 1918, to March 1, 1920,



**Conclusion.** For the past 20 years the freight cars ordered by all steam roads and private car lines and industrials in the United States has been about as follows:

1901.....	193,439	1911.....	133,117
1902.....	195,248	1912.....	234,758
1903.....	108,936	1913.....	146,732
1904.....	136,561	1914.....	80,264
1905.....	341,315	1915.....	109,792
1906.....	310,315	1916.....	170,054
1907.....	151,711	1917.....	79,367
1908.....	62,669	1918.....	123,770
1909.....	189,360	1919.....	25,899
1910.....	141,024	1920.....	84,207

During 1920, according to the *Railway Age*, the cost for maintenance of 2,382,212 freight cars in the United States totaled \$626,746,636, or an average of \$265 per car.

When the President of the United States took control of the railroads he promised the owners that their properties would be returned in as good repair and with as complete equipment as when taken over by the government. To date this has not been done and the operations of the Class I railroads for 1920 realized a net operating income of only sixty-two million dollars, without any allowance for either interest or dividends, but which included approximately sixty-four million dollars of back mail pay from the government. This sixty-two million dollars represented the earnings upon nineteen billion dollars of property investment, which valuation

## Passenger Traffic Association Meets at French Lick

THE ANNUAL convention of the American Association of Passenger Traffic Officers was held on November 14 and 15 at French Lick, Ind., with an attendance of about 150 passenger traffic representatives from this country and Canada. The convention was opened by W. A. Russell, president of the association and passenger traffic manager of the Louisville & Nashville.

Various subjects pertaining to passenger traffic were discussed, among them being the reports from the various standing committees. Matter was submitted by the Committee on Safety Ticket Paper, the Committee on Official Digest of Fares and Divisions and the Committee on Standard Forms of Interline Tickets. Included in this report were findings relative to an improved baggage storage check and on an inexpensive method of attaching seals to trunks and valises for the purpose of preventing thefts from baggage. The latter part of this report was deferred for consideration to the annual convention of the American Association of General Baggage Agents to be held shortly at San Antonio, Texas.

The question of advertising mediums for securing publicity

TABLE II  
FREIGHT TRAIN CARS (OWNED OR LEASED BY CLASS I LINES) IN SERVICE OF CLASS I RAILWAYS IN THE UNITED STATES  
(From Information Compiled by Bureau of Economics)  
As of December 31

Freight train cars in service	As of December 31				As of month of July, 1921
	1916	1917	1918	1919	
Box .....	1,021,757	1,040,818	1,038,751	1,059,296	1,048,762
Stock .....	83,559	85,188	87,261	84,556	80,774
Refrigerator .....	51,257	51,969	62,952	61,927	59,677
Tank .....	9,507	9,062	9,886	9,714	10,380
Coal .....	884,880	916,219	927,547	949,931	932,986
Flat .....	117,355	114,234	111,297	105,867	104,981
Other freight-carrying cars.....	85,918	84,569	87,799	85,811	83,955
Total freight-carrying cars.....	2,253,233	2,302,059	2,325,673	2,261,102	2,321,517
Locomotive cars.....	27,722	28,064	28,571	28,758	28,758
Total freight train cars.....	2,280,955	2,330,123	2,354,244	2,389,860	2,440,275

NOTE.—Figure for July, 1921, not strictly comparable with other data as it includes cars owned by Class II and III railways as may be on Class I lines. Comparable figure for December, 1920, would be 2,396,768.

tion has been approximated by the Interstate Commerce Commission for rate making purposes. During the latter part of 1920 a more rigid policy of economy was enforced to offset the abnormal labor rate increases as established by the Railroad Labor Board as of July 20, 1920. As a result during the first eight months of 1921, even in the face of business depression, the net railway operating income, exclusive of any provision for interest or dividends, was greatly improved but even then amounted to a rate of only 2.5 per cent per annum on the nineteen billion dollars of valuation as compared with the 5½ to 6 per cent rate of return as fixed by the Transportation Act for the March 1, 1920, to February 28, 1922, two-years' period.

While the United States Railroad Administration has for all time demonstrated in its operation of the railway systems of the country, and in fact in the existing freight car situation alone, the delusion that burdens can be indefinitely passed along, still the experiment of government control in the United States has not been without some benefits to the carriers and their owners.

KENTON, OHIO, by action of its city council, has ordered the speed of all railroad trains moving in the city to be limited to eight miles an hour. This action has been taken, it is said, with the purpose of compelling the railroads to furnish what the citizens consider adequate and necessary crossing protection. Railroads affected by the ordinance are the Erie, the Big Four and the Toledo & Ohio Central.

was discussed but owing to the varying conditions in the several sections of the country it was concluded that it would be impossible to obtain uniformity in this respect. In this connection suggestions were offered for reducing the heavy cost of printing folders and improving the present method of their distribution. It was decided that hereafter more careful supervision should be given to this problem. Suggestions were also offered by the representatives of carriers in the various sections of the country for the construction of joint passenger tariffs and the elimination of the so-called free mailing list.

The most important business conducted at this convention was a change in the by-laws of the association which provided for a standing territorial committee, the composition and functions of which are as follows:

"Standing territorial committee—to be composed of the chairman or other administrative officer of each territorial passenger association, together with not more than five members from each local passenger association territory, and three members representing water lines, whose duty it shall be to make recommendations from time to time either direct to the association or to the several territorial passenger associations on such subjects as the committee may initiate or which may be referred to it for consideration by this association or the territorial association. It shall also be the duty of this committee to present the recommendations of this association thereon and report the result to the secretary of this association."

Under the above action periodical meetings of the com-

mittee will consider questions of interterritorial concern, their recommendations to be immediately submitted to the territorial passenger associations without waiting, as formerly, for the annual meeting of the association. This will not only enable preliminary consideration by a committee representative of the entire country, but it is also certain to effect an earlier disposition of interterritorial traffic problems.

Among the subjects referred to the interterritorial committee for consideration were the following:

Minimum requirements for exclusive occupancy of drawing rooms, compartments, and sections of sleeping cars and drawing rooms in parlor cars; interterritorial clergy arrangements; parking charges for special passenger cars and coaches in use and in transit, method of computing time to be charged; uniform rule for redemption of wholly and partially unused tickets.

The following officers were elected to serve for the coming year: president, John Frances, general passenger agent, Chicago, Burlington & Quincy; vice-president, A. B. Smith, general passenger agent, New York, New Haven & Hartford; secretary, W. C. Hope, passenger traffic manager, Central of New Jersey. Following the adjournment a meeting of the fraternal section of the association was held during which a report was presented setting forth its financial status.

## Developments in the Railroad Labor Problem

WHILE comparative calm prevailed during the past week in the railroad labor situation there have been several significant developments which indicate to some extent what may be expected in the near future. Foremost among these developments are: (1) the preparation of the railroads' case in favor of a further wage reduction averaging approximately 10 per cent and the steps which are being taken to bring this case before the Railroad Labor Board; (2) the presence of leaders of the engineers' and firemen's organizations "on the carpet" before their general chairmen at Chicago, explaining why and how the recent strike orders were recalled, and (3) the continued application of the Labor Board to the question of rules and working conditions.

The first development, the preparations which the carriers are making in behalf of their requests for a further wage reduction, will undoubtedly be the means of again focusing attention on the railroad labor problem. While statistics and other material are being compiled, railroads throughout the country are notifying their employees of the proposed wage reductions, conferences between representatives of the individual carriers and their own employees are in order and the individual disputes will probably be certified to the Railroad Labor Board within the next 30 days. It is expected that the whole controversy will be placed in the hands of the Board before the end of the present year and then the Board's action in docketing and providing for hearings in these disputes will be watched closely by both the carriers and the employees involved. It will be recalled in this connection that the train service organizations have already interpreted a memorandum, issued by the Board and used to bring about the recall of the recent strike order, as promising that no further wage reductions would be considered for a time, variously estimated at from eight months to a year. In this connection, also, members of the board have pointed out that no definite promises of any kind have been made to the men, and this fact, coupled with the progress which is being made by the Board in disposing of disputes now before it relating to rules and working conditions, naturally leads to the conclusion that hearings on further wage reductions are not far off. The reactions of the labor leaders then will command the interest of railway officers and the public.

The second development indicates at the same time that the organization leaders involved in the recent threatened strike are meeting with certain difficulties within their own organizations. On November 14 more than 600 general chairmen of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Enginemen and Firemen met at Chicago behind closed doors to ask W. S. Stone, grand chief of the engineers, and W. S. Carter, head of the firemen's organization, why the strike scheduled for October 30 had been called off at the last minute and what assurances were given railway workers against further wage reductions and interference with existing working conditions. Extensive plans were made to keep these sessions and the proceedings therein secret, but the reports which "leaked" out indicate clearly that the brotherhood leaders were "on the carpet." None of the other three organizations, the Brotherhood of Railroad Trainmen, the Order of Railway Conductors and the Switchmen's Union of North America, parties to the recent strike threat, were represented at the meeting. Their absence, according to rumor, is due partially to factional feeling among the leaders of the five train service organizations as a result of the "satisfactory settlement" of the recent threatened strike. The effect that this development will have on the future of the railroads' labor problem can be estimated when the question of a further wage cut comes before the Labor Board and the attitude of the various brotherhood chiefs is analyzed.

Following the conference of brotherhood general chairmen, Mr. Stone announced that meeting was held to determine the future policy of two organizations in regard to wage reductions and working conditions. Mr. Stone was credited with the statement that a plan for meeting any efforts to revise existing rules and working conditions or to reduce wages had been agreed upon.

The third development of significance, the work of the Labor Board in disposing of controversies over rules and working conditions now on its calendar, is leading to much speculation as to the length of time in which the Board will take to dispose of all questions of this character.

As announced in last week's *Railway Age*, the Board recently announced that it would probably dispose of the remaining disputes as to shop crafts rules within three weeks. This statement has been interpreted by some as indicating that the Board will be ready to hear requests for reductions in the wages of all employees soon after. The Board, however, has specifically said that it would consider requests for further reductions in the pay of any class of employees only when it had disposed of the disputes over the rules and working conditions of that particular class. This means, of course, that insofar as those organizations which recently threatened a strike are concerned, the Board has not indicated what progress it has made on disputes involving these classes and consequently conjecture as to when the Board will consider further reductions in the pay of these classes is futile.

NEWSPRINT PAPER, made in Canada, amounts to 1,000,000 tons a year, according to A. L. Dave, secretary of the Canadian Pulp and Paper Association. He says that in the United States the quantity used is 2,500,000 tons annually.

FARM LABOR will be the subject of questionnaire forms issued by the Dominion employment service, to elicit as far ahead as possible the requirements of farmers in the harvest season in order to facilitate through this co-operation the movement of farm labor next year from the east and other points.

A large volume of grain is still to come out of the Canadian prairie provinces, the crop having been larger than seemed probable two months ago. The wheat crop in the Prince Albert district is the best for 30 years; 40 bushels to the acre being quite common.

# American Railway Association—Annual Meeting

## Comprehensive Round-Up of Varied Activities of Eight Divisions —Important Work Laid Out

THE ANNUAL meeting of the American Railway Association was held at the Waldorf-Astoria Hotel, New York, on Wednesday, November 16, with an attendance of about 200 and R. H. Aishton, president of the association, in the chair. The membership now includes 391 full members and 345 associate members, operating 314,019 miles of road. The board of directors reported that since the last meeting a Safety Section had been created within the Operating Division; and that M. J. Gormley has been appointed chairman of the Car Service Division at Washington.

The board has taken appropriate action in connection with the ninth session of the International Railway Congress, to be held in Rome, Italy, in April, 1922. The chairman, the president, the general secretary and five other persons (yet to be selected) will represent this association at Rome, and an appropriation was made for establishing suitable headquarters there.

Reports recounting the activities of the past 12 months were received from the seven Divisions—Operating, Transportation, Traffic, Engineering, Mechanical, Purchase and Stores and Freight Claims—and from the committees on automatic train control and fuel conservation.

Most of the material in these reports has been covered in accounts published in the *Railway Age* from time to time in connection with the meetings of the Divisions and Sections of Divisions; and the significant parts of the present report are those which tell of the approval, by the Association, of matters sent up from the Divisions in the form of recommendations.

The Association adopted the recommendation of the Operating Division covering rules for the draining or filling of gasoline tanks of automobiles and the loading and unloading thereof in railroad cars or on railroad premises, and amendments to the standard rules covering the use of dimmers on electric headlights of locomotives. Numbers of proposed changes in the Standard Code of Train Rules are still under consideration.

On the recommendation of the committee on grade crossing protection and trespassing the Association adopted a resolution recommending that highway crossing watchmen be deputized with police authority at crossings where such authority is desirable.

The committee on Safe Transportation of Explosives and other dangerous articles, N. D. Maher, chairman, supervises the work of the Bureau of Explosives, and its report deals largely with the doings of the Bureau (which have already been reported in the *Railway Age*). The chief inspector of the Bureau is now the agent of the railroads for filing the regulations for the transportation of explosives, etc., as a tariff, under the rules of the Interstate Commerce Commission.

The function of the Bureau has been expanded so as to enable it to formulate a code of standard specifications for containers, not only of explosives and dangerous liquids, but also for all classes of freight. In this work, the chief inspector will consult with other Divisions of the association and with associations of shippers, etc.; and his inspection force has been increased by the addition of four engineers, for the purpose of investigating present conditions.

The Medical Sections recommended a Standard Railway Sanitary Code and Railway Hospital Standards were approved.

The Protection Section's recommendations of a federal law to cover trespassing on railroad trains and also that individ-

ual roads consider the advisability of bonding receiving and delivering clerks, were approved.

The Safety Section reported that plans for a national campaign for the prevention of grade crossing accidents were being prepared. The Telegraph and Telephone Section submitted a list of specifications which have been considered and approved by the Section covering the work of the telegraph and telephone departments of the railroads.

### The Transportation Division

The General committee of the Transportation Division, C. W. Crawford, chairman, presented a long report covering the work which has been done during the past year by regular and special committees of the division, no annual meeting having been held. The subjects covered are: (1) Code of car service rules; various revisions and recommendations. (2) Restoration of old car service rule 20. (3) Computing average miles per car per day; an amendment approved by the board of directors. (4) Car service and per diem agreement. (5) Code of per diem rules; changes approved July 1, 1921. (6) Per diem forms. (7) Uniform abbreviations in interchange reports. (8) Cancellation of claims during the period of federal guaranty. (9) Settlement for car hire with short-line railroads. (10) Assignment of reporting marks. (11) Mileage allowance on private cars. (12) Railroad business mail; amended regulations. (13) Car seals; rules. (14) Demurrage and storage rules. (15) Revision of storage rules. (16) Rules for loading package freight. This code of rules fills nearly 100 pages and includes 75 photographs illustrating right and wrong ways of loading freight. This code was first adopted in November, 1914, and the present report includes amendments to date. (17) Rules for loading carloads of news print paper. (18) Rules for packing and marking household goods. These rules have been printed on a placard and it is recommended that all railroads secure copies of this placard for distribution and to be posted in freight stations. (19) Reports of arbitrations under per diem rules. (20) Statistics showing the cost of owning freight cars.

The General Committee expects soon to make a report on a uniform plan to govern settlements for car hire with non-member roads; also a revision of the switching reclaim rules.

The Association approved the recommendations of this Division covering the revision of Car Service Rule 20; revision of the regulation for the handling of railroad business mail; a code of car-seal rules; rules governing the loading of package freight, and of paper, and the revision of the storage rules. The latter rules, if approved by the National Industrial Traffic League, will be submitted to the Interstate Commerce Commission for its tentative approval before being made effective.

The Traffic Division reported that a number of topics had been received from the other Divisions of the Association and had been handled by standing committees.

The Engineering Division reported a number of engineering specifications and principles of practice, which were approved. The report also included recommended principles of practice from the Electrical Section and the Signal Section.

The Mechanical Divisions' recommendations concerning the rules of interchange, loading rules and tank car specifications were adopted. The Purchases and Stores Division has distributed numerous reports to the membership on reclamation of material and material accounting; on purchase, in-

spection and distribution of cross ties; on scrap classification and on purchasing agents' office records.

The Freight Claim Division reports that the Freight Claim Association has been formally abandoned and that the experience of several months' operation as an integral part of the American Railway Association has proved eminently satisfactory. The Division has held profitable conferences with the National Industrial Traffic League, the National Association of Wholesale Grocers, and other organizations.

The Joint Committee on Automatic Train Control reports that its inspectors, working jointly with a similar inspector of the Bureau of Safety, I. C. C., has been making daily observations of the installation on the Chicago, Rock Island & Pacific, and the Chesapeake & Ohio. The final results will be used as a basis for the proposed requirements to be prepared jointly with the Interstate Commerce Commission for the installation of automatic train control devices, some 165 of which have been brought to the committee's notice.

The Joint Committee on Fuel Conservation has distributed 35,000 copies of its rules for fuel economy on locomotives. On the recommendation of the committee, plans for the organization for fuel conservation, for inspection of fuel at source of supply and preparation of a fuel schedule, and the methods of conservation were adopted.

The following have been elected by letter ballot as members of the board of directors for the ensuing three years: J. H. Hustis (B. & M.); C. R. Gray (U. P.); W. G. Besler (C. N. J.); W. R. Scott (S. P.) and W. H. Truesdale (D. L. & W.); W. L. Mapother (L. & N.).

The next annual meeting will be held in November, 1922, the place to be selected later by the board of directors.

## Malleable Castings Improved by Research

THE American Malleable Castings Association inaugurated an intensive research program a few years ago to improve the quality and reliability of its product, which at that time was unfortunately frequently of a very uncertain character. A central laboratory was established and Enrique Touceda, Albany, N. Y., was engaged as consulting engineer and metallurgist. With the aid of a corps of assistants and inspectors investigation was made of the

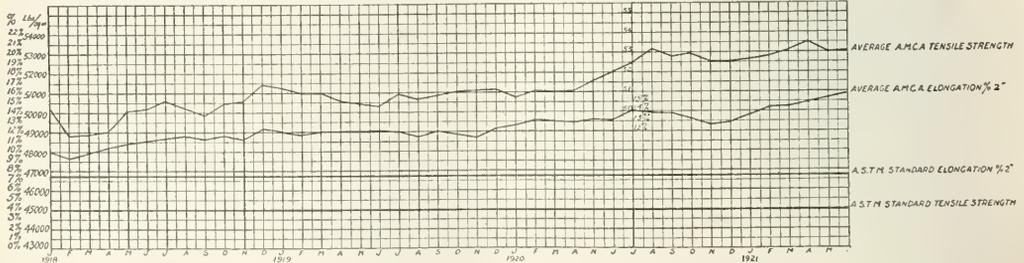
A bulletin just issued shows the most marked advance in development has been made in the past three and one-half years, during which period the product of association members as a whole has increased from an average somewhat under 49,000 lb. per sq. in. ultimate tensile strength to over 53,000 lb. and from an average elongation under 10 per cent in two inches to nearly 16 per cent.

The bulletin includes the report of bars tested for the month of June, 1921, when the highest average percentage of elongation of the association as a whole was attained, namely 15.77 per cent in two inches, or over twice the elongation, 7½ per cent, required by the American Society for Testing Materials in its standard specification for malleable cast iron. The June value for ultimate tensile strength was 53,038 lb., or 8,000 lb. in excess of requirements.

A reference to the chart showing average ultimate tensile strength and elongation for the product of the membership as a whole for 1918, 1919, 1920 and the first six months of 1921, indicates clearly how these two properties have increased during this interval despite the addition of many new members.

An interesting fact is the high percentage of perfect scores made by the members of the association. By a perfect score is meant the ability of every bar submitted by a member to equal or surpass the A.S.T.M. standard specifications of 45,000 lb. tensile strength and 7½ per cent elongation in two inches. In June of the present year 87 per cent of the contributors made perfect scores. Comparing this record with those for the same month of the previous years, it is found that perfect scores were attained by but 29 per cent of the contributors in June of 1918, 57 per cent in 1919, and 74 per cent in 1920. Out of a total of 31 contributors in June, 1918, of whom 29 per cent attained perfection, all but one made perfect scores in June of the present year. Only 2.53 per cent of all bars cast and submitted for test during June failed to pass the standard A.S.T.M. specifications as against 15.12 per cent for June, 1918.

This general improvement of the product of all members is reflected in the number of certificates that were awarded for the quarter ending June 30; sixty-one plants having been awarded the coveted certificate, the highest number yet issued for any one quarter. The awarding of a certificate is not based upon the test bar record alone, the general plant practice as reported by the consulting engineer's corp of inspectors being considered in its effect upon the product. Through



Average A. M. C. A. Ultimate Tensile Strength and Elongation by Months

foundry practices of the different members and improvements made as rapidly as investigation demonstrated their value. Test bars were regularly submitted by all manufacturers.

As a result of this work malleable castings as at present manufactured in conformity to association standards, instead of being of uncertain quality are of the highest quality and integrity. They are on a plane of dependability with the best mild steel castings or forgings, while they can be machined at almost double the speed of either.

this safeguard, the purchaser is assured that the test bar record of each day's production can be considered as truly representative of the castings. Castings furnished by certificate holding plants are designated as "certified."

Nothing could more clearly indicate the value of a research program consistently carried out and rigidly applied than a comparison of this most recent report with those that have preceded it. The net result of this work has been to raise to a high level the standards of the industry, and to increase materially the commercial applications of its product.

# Selecting Designs for Electric Locomotives\*

## Merits of Various Wheel Arrangements of Steam and Electric Locomotives Determined by Tests

By A. W. Gibbs

Chief Mechanical Engineer, Pennsylvania

THERE ARE CERTAIN questions as to electric locomotives such as the transmission of power from the motor to the driving wheels and the behavior of the complete locomotive considered as a vehicle, particularly with reference to its effects on track structure, which have not received adequate attention. These problems may best be studied with reference to approved types of steam locomotives and this paper deals especially with the results of a comparative trial of steam and electric locomotives which was made in 1907 to secure information in connection with the design of electric locomotives for the Pennsylvania terminal in New York City.

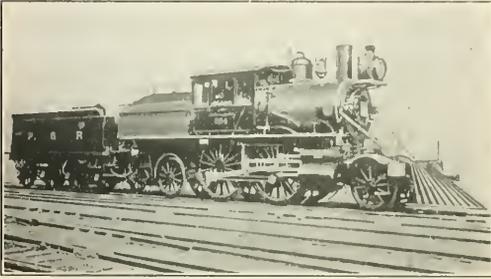


Fig. 1. Columbian Type (2-4-2) Locomotive

It should be understood that at that time but a limited number of types of electric locomotives were available for comparison.

The greatest difficulties of the electric locomotive, other than financial, are mechanical rather than electrical. None of the mechanical arrangements to be described are ideal by any means, and we must not mistake the absence of heavy repairs in the early years of an installation as truly representative of the expenses which will be met later on.

At first blush it would seem that nothing could be more ideal than the connection of a revolving armature and a revolving driving axle. As a matter of fact, it is not at all simple for the reason that the driven axle not only revolves but is displaced bodily as well as angularly in the vertical plane. Moreover, these displacements of axles and wheels, which are not spring supported, occur suddenly, due to irregularities in the track, hence it is desirable to reduce the unsprung weight to a minimum.

The difficulties from these various disturbances are encountered principally at the higher speeds and are those with which we shall mainly deal. The different methods of communicating motion from the motor to the driving axle may be considered under the following designations:

A. That in which the armature is carried directly on the driving axle, the axle boxes sliding in vertical pedestals and the face of the field coils being parallel vertically on each side of the armature. In this construction the whole of the field coils can be rigidly secured to the frame and above the supporting springs. This arrangement permits the easy removal of the driving axles and wheels with the least dis-

turbance of other parts. The disadvantages are the increase in the unsprung weight on the axle and the low center of gravity of the entire motor. So far this drive has been confined to direct current operation.

B. The geared drive, with the gear on the driving axle engaging a pinion on the motor, one end of the motor frame being carried in bearings on the axle, the other by proper nosing on the truck frame. The disadvantages of this arrangement are the low center of gravity of the motor as a whole, the considerable unsprung weight and the gear wear, principally that of the pinion. Usually the motors are in pairs between pairs of axles, and in consequence the gyratory disturbance is less than where the motor center coincides with that of the axle. This general type of drive, which is in common use in street car operation is, undoubtedly, the one having the widest application and operates with both alternating and direct current.

C. The quill arrangement in which the whole motor is concentric with the axle in its normal position, but is not directly connected, the axial opening of the armature being larger than the diameter of the axle. The physical connection between quill and axle is by springs interposed between pockets in the periphery of the driving wheel center and the arms of a revolving spider connected to the armature. These springs not only transmit the driving torque, but also compensate for the axial disturbance of the driving axle. In some installations the motor frame as a whole is spring-supported, so as to assist in assuming a position concentric with the axle. The objections are the low center of gravity of the motor, the distance between the motors measured from the center of the truck, the fact that the motor can be removed from the axle only by drawing one of the wheels, and that

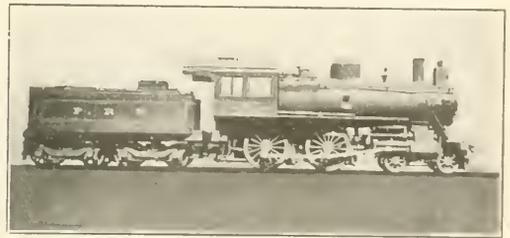


Fig. 2. American Type (4-4-0) Locomotive

any lack of concentricity between the quill and the driving axle puts a continued and varying inertia stress on the torque springs.

Both arrangements "A" and "C" have the further disadvantage that the ratio of the speed of the motor to that of axle is unity, thus involving higher motor weights than when this ratio is greater.

D. A modification of the quill arrangement in which the quill is driven by one or more motors through spur and pinion arrangement. The advantage of this is that the motor parts are much more accessible than in the concentric type, and that the speed ratio of motor armature to driving axle may vary through a fairly wide range, and that where two

\*Abstract of a paper read before the Franklin Institute, Philadelphia, Pa.

motors drive the same quill the tooth load is that of a single motor. The disadvantage is the increased axle distance due to the width over two motors.

E. That in which one revolving element is a jack shaft driven by one or more motors and coupled by crank pins and rods to the crank pins of driving axles. The jack-shaft when placed in the horizontal plane of the driving axles maintains a fixed position relative to the driving motor or motors. The relation between them may be a second set of rods coupling the jack-shaft cranks to a similar pair on the motor; or the jack-shaft may be driven through spur or herring-bone gears cut on the periphery of the disk engaging pinions of one or more motors. These rod connections have been used more largely in Europe than here. The jack-shaft and rod combination is an exceedingly rigid one and the wheel arrangement forms a more rigid connection than in the case of steam driving through pistons. The advantages are that the removal of driving wheels does not involve electric complications, and that all driving wheels in the group act together, so that the full adhesion of the group is secured, and it is probable that a higher total adhesion will be available from groups than from single units where the slipping of one unit reduces the total adhesion. The disadvantages are mechanical complication involving exact quartering of all wheels and jack-shafts, the necessity of equal diameter of all driving wheels, and the heating of pins and maintenance of rod bushings. Contrary to expectation the maintenance of jack-shafts involves no great difficulty.

In no type of electric locomotive drives are there counterbalance disturbances due to counterweights, as only rotating masses are in motion.

### Starting Power of Locomotives

As governed by adhesion the motor-driven axle in starting has a relatively high adhesion because of the uniform torque of the motor. It is a well-recognized fact that static weightings of locomotives show considerable discrepancies on individual axles. How this discrepancy varies in moving locomotives is not known.

Assuming that the motor torque is greater than adhesion

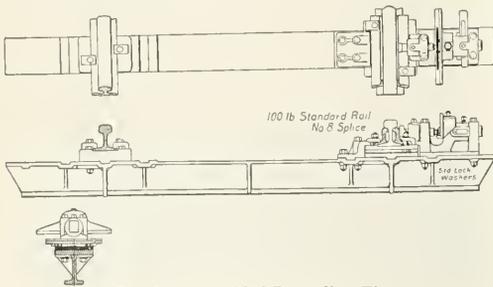


Fig. 3. Assembled Recording Tie

resistance, we have, where axles are individually driven, the adhesion of the axle with the lightest loading governing the adhesion of the group. Where, on the other hand, there is a rod connection between the various axles, we utilize the full adhesion of the group. The presence of the coupling rods does not preclude the application of power to any axle or number of axles, though the usual practice has been to apply all the power to one or more jack-shafts and from them to a group of axles. This utilization of the full adhesion in starting is a matter of importance in any type of locomotive, as usually they will pull heavier trains than they will start.

In the earlier days of steam locomotives the aim was to keep the vertical center of gravity low with the idea that this was conducive to stability. Not until the Reading Railroad in its introduction of the wide firebox type of locomotive was

forced to elevate the boiler so that the firebox would clear the driving wheels, was it recognized that this change had materially improved the steadiness of the locomotive as a vehicle. The reason, of course, was that the center of gravity of the parts above the springs acting as an inverted pendulum failed to respond to the many small disturbances which would otherwise have produced side shocks. Since that time designers have not hesitated to raise the center of gravity of the parts above the springs, and the present limits are chiefly those of overhead clearance.

One other steam locomotive lesson that seems to have been forgotten was that with a short symmetrical wheel arrangement with heavy overhanging weights distributed longitudinally



Fig. 4. Metal Strip Used in Recording Tie, Showing Impressions

of the whole machine, excessive lateral oscillations were set up which endangered the track and locomotive. Figs. 1 and 2 show locomotives of the Columbian or 2-4-2 type and the American or 4-4-0 type. Here are two types of almost the same total wheel-base with nearly the same height of boiler above rail. The weight of the 4-4-0 type was but 7 per cent greater than that of the 2-4-2 type. The 2-4-2 type was so unstable that it was soon condemned. The 4-4-0 type is notably a steady-running one and its performance will be graphically shown later. The reason for the difference in performance is probably that the wheel arrangement of the 2-4-2 was symmetrical, while that of the other was not.

When it became necessary to design locomotives to operate the New York terminal of the Pennsylvania Railroad two electric locomotives were designed and built.

Both consisted of two four-wheel trucks with motors for each axle. In both cases the trucks were articulated at the center and carried the necessary draft gear at the ends, thus the pull was transmitted through the frames of the trucks and not through the super-structure.

In one of these locomotives the motor drive was by gear, the second method referred to. The other was driven by four concentric motors through quills.

The wheel-base of both were identical, that of the trucks 8 feet 6 inches and the total 26 feet 1 inch.

Both operated by direct-current at 650 volts through third rail.

About the time that they were completed reports of troubles elsewhere made it very desirable that we should ascertain their performance before constructing the large number of locomotives necessary for the operation of the tunnels.

### Method of Determining Lateral Impact

The line of the West Jersey was available for track and current, and it was decided to construct an experimental track with ties which would make some permanent record of the lateral impacts of the locomotives. As it was expected that the bad oscillations would occur on curves, if anywhere, only one end of each of the ties was arranged to register.

Fig. 3 shows one of these ties, the end at the outer rail being so constructed that the rail was free laterally, resting on rollers, resisted against outward movement by a bracket carrying a strip of boiler plate, movable longitudinally at will. Against this strip rested a one-inch steel ball which in turn bedded in a plunger bearing against the outside face of rail. (Fig. 4 shows one of the impression plates carrying the record of 30 runs.)

The record obtained with this device was a species of glorified Brinell test, the depth of the impressions of the one-

inch ball in the boiler plate being taken as a measure of the impact. After each run the plates were slipped longitudinally and adjusted to touch the ball, each single plate taking the record of 30 or more runs. It is to be clearly understood that this method carries with it some decided limitations which must not be overlooked. Each run, whether with one or more vehicles, made a single impression on each plate. While it was assumed that the indentation was that of the heaviest impact, it is possible that two or more impacts occurred on a single point with some cumulative effect. In some of the runs it is believed that this was the case. There was also some question as to the interpretation of the impressions. They were calibrated by static loading in the testing machine and also dynamically by falling weight.

The recording ties, 80 in number, extending over five rail lengths, or a total distance of 165 feet, were laid on a one-degree curve in the southbound track, near Franklinville, N. J., in 1907. There were 16 of the recording ties to each rail-length and at every splice on both rails the two ties at the splice were so located that the joint between the rails came between the ties, which at this point were 20 inches apart. The other 14 ties were spaced as uniformly as possible, taking into consideration the necessities for spacing at the rail joints. Tie No. 1 was placed about 28 ft. south of the point of curve. The super-elevation of the outer rail of curve was 3 in. and the elevation of the rail began at a point about 250 ft. north of the point of curvature.

The plates were used on wooden ties immediately south of the test track for one-quarter of the distance around the curve. The ballast used at the curve was gravel and cinder.

The rails were P. R. R. section, 100 lb. to the yard, in good condition. It was specified in arranging the experimental track that it should be lined up in about the best average condition of track used on this piece of road.

The tangent track approaching the curve from the north consisted of 100-lb. rails supported by wooden ties, single spiked. The substructure was of broken stone ballast with the exception of about 1,500 ft. north of the test track, in the vicinity of Clayton, where most of the runs were started and where cinder and gravel ballast were used.

After the completion of the runs on the curve, the recording ties were removed to the tangent north of Franklinville station, where the trials were completed. At this location the track consisted of 100-lb. rail with broken stone ballast. The speed record was obtained by means of a series of trips, operated by the locomotive passing over them, which broke and I made the circuit going to the chronograph. These trips were located such distance apart that at a speed of 100 miles per hour the time between trips would be one second. Four trips were used for the tests on the curve and seven for those on the tangent, the idea being that failure of one or two trips would not vitiate the record of the run.

Other apparatus used in the tests consisted of speed recorders on the locomotive, which were used only to obtain approximate speeds; and in some of the runs, there was placed on the locomotive a seismograph having three pendulums, giving vibrations in vertical, transverse and longitudinal directions.

*The second and concluding part of this article will include descriptions of the locomotives tested and the results of the tests.*

## “Passing the Buck—Perhaps the Dividend”

Lessons of Experience for the Operating Officer Who Would Not  
Be a Slave to the Typewriter

AT THE MEETING of the New York Railroad Club, in New York City, on November 18, the address was by Howard Elliott, editor of the New York Traffic Club Bulletin and formerly Inspector of Transportation on the San Pedro, Los Angeles & Salt Lake Railroad. Mr. Elliott was for 16 years in the railroad service, but during the past four years has been in other business. The spirit and tone of what he said may be guessed from the title. Following is an abstract of the address.

Two tendencies are doing incalculable harm to the railways' best interests; one the hostility to suggestions for improving the service and the other the disposition to shift responsibility, especially in matters of public relations. Quoting the views of William Howard Taft, Louis D. Brandeis, W. Jett Lauck and Henry Ford, the speaker declared unwise the general attitude of railroad officers toward criticisms such as those made by these men. Instead of admitting that there might be a modicum of truth in what Mr. Brandeis said, railway men set their faces like flint against his suggestion that large savings could be made in railroad operation; this merely because it came from a man who had had no experience in the business. To admit error would have done violence to long established theories of railroad pride; but it is along the pathway of criticism that real progress lies. The railways replied to Mr. Lauck that two wrongs would not make one right. This, however, did not settle anything. What was needed for general enlightenment was a frank statement that there was a kernel of truth in Mr. Lauck's criticisms and that many savings could be made. Even Mr. Ford may have some ideas that can be copied with profit. We must get away from the idea that

an admission of error is a confession of weakness; throw off the cloak of infallibility.

The speaker next discussed a parasite which he called the “red-tape-worm.” This, said he, is one of the worst evils in railroad operation. It is gnawing at the vitals of railroad efficiency. Everybody admits its existence, but usually they call it a necessary evil. In discussion with a prominent operating vice-president the speaker said, “I ventured the suggestion that if I were placed in charge of a railroad I would make all of my employees ‘generals,’ and I would charge them all with the responsibility of producing dividends. I expressed the belief that the most logical method of accomplishing real efficiency was by consolidating offices and by making such changes in the organization as would allow officers to broaden the scope of their authority without fear of criticism. As for employees, each one should take a deeper interest in the company's affairs and pass on to others only those things which he is sure that he himself cannot perform. I cited sample of daily report I believed any division official could make if clothed with the proper authority and inspired with interest. The report read as follows:

1. Rode front train from A to B. Encountered wreck at X. Inspected the injured passengers and settled with each of them for \$10. Looked after the transfer of damaged freight, wiring freight claim agent and agents at origin and destination.

2. I find trainmen are not keeping in touch with interpretations of the 16-hour law as rendered by the I. C. C. Pested 6 of them while waiting for the wrecker.

3. At G, a blind siding, found three misplaced cars. One was a loaded Chicago telephone directry, found names of companies there and immediately wired freight claim agent. Cars were disposed of same day.

4. On Nov. 9, were only 15 pay passengers. On Nov. 10, there were 20. Recommended conference to consider taking these trains off. See separate report of revenues and expenses, and suggestions as to handling mail and express on other trains, also proposed line of defense in case we are called upon to restore them.

While at X, went through the shops. Note the 10 employees who need

safe-guarding. See separate report. I find that reports of trivial accidents are going by telegraph, thus tying up a hundred-dollar operator at each end of the line. Suggest general committee consider having such reports come by mail. I attended meeting of Division Safety and Efficiency Committee, and participated in the discussions.

"I rode No. 1 from E to F. While in diner overheard drummer tell of five cars canned goods just sold, and the routing of which he controlled. At favorable opportunity, told him of the advantages of our line, secured some of his firm's letter heads, borrowed dining conductor's typewriter, and after making three copies, handed him my fountain pen with which he signed routing order. Forwarded the original in one of his own envelopes to the shipping officer copies to general freight agent. Estimated revenue, our proportion, \$500."

I may add that I have done practically all those things myself except to settle with passengers injured in a train accident."

Mr. Elliott here referred to the notable case of the late Thomas J. Potter, the former well known general manager of the Chicago, Burlington & Quincy, who secured early promotion because he took it upon himself to settle claims, after a collision, without waiting to get authority.

However, said the speaker, his argument did not convince his friend the vice-president. He said: "I don't believe in your general idea. If men would use their heads it would work, perhaps; but nothing is so disastrous as the control of technical specialists by ignorant generalists; and the same is true of intermeddling. There is an immense desire for dominion among all men. A friend of mine three years ago organized his work so that every superintendent was to be supreme on his division; but after three years he has reorganized it. The superintendents are now supreme with respect to the function that belongs to them, the *conduct* of transportation. They no longer play with the mechanical matters, and they could not do else because they didn't know how; and if they had known they might better do something else and leave technical details to others. There must be the closest co-operation. The superintendent *should* be the chief man on the division. The mechanical man *should* be his loyal lieutenant and all that, but the superintendent *should not* interfere with the prerogatives of the mechanical specialist. I've tried both plans, and I have seen both tried in dozens of cases. One tends to the glory of men, the other to the welfare of the stockholders. Both things can be accomplished. The man can have his glory, the stockholder his dividends."

Yet, said the vice-president, this man made the mistake of introducing a special design of locomotive without taking the advice of his trainmasters, and the experiment was a failure. It is true that the trainmaster cannot design a locomotive; but he is the man who uses the engines, and by all rules of reason the opinion of transportation department officers should have been sought and carefully considered. The highly trained ultra-specialist is no more efficient than the specialist with a broad general basic education; but he is apt to be less efficient because of the monotony which a repetition of the same tasks invariably develops. Again, one disadvantage of the departmental system is that it fails to train men for those positions where authority is converged.

**Bad Influence of the Typewriter**

The vehicle for red tape and shifting responsibility, said Mr. Elliott, is the typewriter, a small manually operated machine which repeats parrot-like anything it is told. Typewriters move no freight, yet there are on some roads as many typewriters as locomotives. The typewriter is the buck passer's chief ally. One of the best things which could happen to a railroad would be to reduce the inter-office correspondence. Officers now tied to their desks handling papers would be released for road service.

Mr. Elliot said that he was interested once in listening to the dictation of a clerk in a general manager's office sending contracts to the auditor, each with a letter of transmittal. Wishing to avoid monotony he varied the form of his letter. One read "with this I hand you," and the others, "with this you have," "enclosed please find," "attached hereto is," "I enclose herewith," and "I beg to send you." There was no necessity for any letter of transmittal.

While on the Salt Lake Route Mr. Elliott drew up a form which avoided the necessity for letters and yet kept the general manager's files complete. It was called "Disposition of papers memo." There was a blank space for file number and subject, followed by the words: "Papers to Mr. \_\_\_\_\_ today with request that he—

- (a) Note and return.
- (b) Confer with the general manager.
- (c) Approve as to form, legality, description.
- (d) Take necessary action and advise result.
- (e) .....

Then a date line, and place for initials of the person handling the file.

Letter writing is expensive. According to the figures of a prominent paper manufacturer, the cost of producing an average business letter, using a good grade of paper and envelope, is a little over 18 cents, itemized as follows.

Labor; stenographic service.....	\$0.6727
Office overhead.....	.0727
Postage.....	.02
Printing or lithographing letters and envelopes.....	.0062
Paper and envelopes.....	.0126
Total.....	\$0.1842

In the office of a general superintendent on one occasion the first 100 letters in the copy book showed:

Plain letters of transmittal referring the matter to others for attention..	40
Asking or answering simple routine questions.....	20
Endorsing agreements to heads of departments in same building for approval.....	20
Approving train service, details of which had been arranged by division officers.....	10
Definite rulings on sundry matters.....	10
	100

Most railroad letters are written by clerks who sign the name of their chief. This system has many stout defenders, but it seems to me that it breeds disrespect for signatures, and that it places officers of one unit below clerks of the next higher unit. The chief clerk who is qualified should, said Mr. Elliott, have a title and do business in his own name.

**Relations With the Public**

There is much passing of the buck in matters of public relations, the speaker continued. There are many popular vagaries which need explanation, and every railroad officer has a serious duty in this respect. It is not a valid excuse to say that you cannot write well; or that you cannot talk effectively. The officer who feels incompetent to present the facts about the railroad situation truthfully, interestingly and effectively, should study the problem and then try his hand at writing and speaking. A man can do almost anything if he will try. Two men were talking one day about a fox hunt. One of them said: "The dogs pursued the fox, and when they got close enough to snap at his heels the fox climbed a tree." "Hold on," said the other, "foxes don't climb trees." "But," answered the first, "this fox had to."

The superiority of the Allies over the Germans was due, in no small part, to the aptitude of the Allied soldiers in "carrying on" in new and strange situations. The railroad officer should practice putting his thoughts in writing. To write on any subject, the important point is to begin; having begun, then the process of amplification, elimination and revision comes easier. The magazines published by different railroad companies now furnish a golden opportunity for employees to show their ability in writing; writing where the superior, and frequently the public, will see what is written. Perhaps an employee thinks he cannot discuss capitalization and freight rates; but at least he can write or speak on better packing and marking of freight.

This educational work presents a stirring appeal, said the speaker. "The railroad business is fascinating. It has splendid traditions which need to be maintained. The railroads are rich in history and romance, and I am hopeful that they will continue to attract the youth of our land."

# Utilizing Tractors and Trailers for 100 Ft. Hauls

The New Haven Railroad Departs from Usual Methods in  
Handling L. C. L. Freight at Boston

THE USE OF tractors and trailers for hauls which rarely exceed 100 ft. is the outstanding feature of the methods followed by the New York, New Haven & Hartford in the operation of the outbound houses of its Boston, Mass., freight terminal. Ordinarily, operating officers associate the use of the tractor-trailer system of handling freight with long hauls. Therefore, considerable interest is attached to the Boston installation, where the hauls are decidedly short.

The Boston freight terminal is almost exclusively a city freight proposition, the transfer tonnage amounting only to a negligible 3 per cent of the total tonnage handled. In



When Long Hauls Are Necessary, the Trailing Method of Handling Is Used

normal times the operation of this terminal involves five outbound houses containing 111,000 sq. ft. and seven inbound houses having 234,000 sq. ft., and four piers with 650,000 sq. ft., an approximate total of 1,000,000 sq. ft. of floor space for the entire terminal. A 300-car set-up can be taken care of readily at the five outbound houses and, at various times, more than 400 cars have been loaded through the outbound houses and piers in one day, while 200 cars were unloaded into the inbound house in the same time.

Tractors and trailers are used only for the handling of outbound freight. At present, owing to the business depression, all such freight is handled through houses No. 1 and No. 6, the largest of the five outbound houses. Each of these two houses is 810 ft. long and 40 ft. wide, with platforms 150 ft. long and 175 ft. long, respectively, provided at one end. These platforms are utilized in the receipt of freight, the total area of the platforms being 7,800 sq. ft.

No. 1 house is served by four tracks and No. 6 house with five tracks. The present daily set-up at No. 1 house consists of 76 cars with an average daily tonnage of 530 tons, while at No. 6 house the daily set-up involves 120 cars and 800 tons of freight.

Each of the two houses is provided with 52 doors on the driveway or the receiving side, and 20 doors on the track or loading side of the houses. Thus it will be seen that the operation is funnel shaped, with the small end towards the cars, making it necessary to handle through the 20 rear doors, and into the cars, the tonnage unloaded by teamsters through the 52 front doors.

The plan of operation in the two houses is predicated on securing a direct haul from the teamster's trucks, through the house and into the proper car, avoiding longitudinal move-

ments through the house wherever possible. To this end cars for a particular destination are always spotted at the same location and directly across the house from the door or doors assigned for the receipt of shipments for the particular destination. In other words, No. 1 house is designated as the house which will receive shipments for certain destinations, while No. 6 receives only freight for certain other destinations. Outbound shipments must be delivered to designated houses at points within a reasonable distance of the proper door. In this way confusion and congestion resulting from crossing traffic are eliminated. Sufficient variation in deliveries is, of course, permitted to avoid the stopping of teams at an excessive number of doors. The arrangement is subscribed to by the drivers who co-operate by loading their trucks by house and door destination, as far as possible, following instruction books furnished by the railroad.

It is obvious that with the short hauls from the point where freight is delivered to the railroad to the destination car, which result from this plan, the arrangement is advantageous to the shipping public inasmuch as it is possible to receive freight until a late hour in the afternoon and still get it loaded for movement that night. But, formerly, even with this apparently desirable arrangement doors and floors become blocked with freight, especially in the late hours of



The Trailers Are Loaded at the Receiving Doors by Teamsters and One Freight House Man

the afternoon, since approximately 60 per cent of the outbound tonnage is offered between 2 p. m. and 5 p. m.

The former method of receiving freight, in effect prior to July, 1918, was to accept all outbound freight at the assigned doors as dropped on the floor by the teamsters. The freight was then checked up by the receiving clerks who signed the bills of lading. In order to keep the doorways clear it was necessary to move the freight back into the house to await rechecking and loading. This moving back of the freight was done by the doormen who used hand trucks for this work. The loading into the cars was done by the so-called gang system after a rechecking of the shipment against the shipping order.

Two distinct operations were involved in this method as well as much lost motion occasioned by the necessity of moving the freight back to the center of the freight house

floor. The delivery of shipping orders to the billing department was also delayed until late in the day.

In July, 1918, the operating plan was changed and manually operated drop-trucks were installed. Under this plan four-wheel trucks were provided and placed at the receiving doorways. This enabled the teamsters to unload from their trucks direct to the drop-trucks, thus keeping the freight off the house floor. Doormen, reduced 50 per cent in number, kept a sufficient number of trucks at the doors while a tallyman checked the number of packages, chalked the freight with the number of the outbound car and signed the bill of lading, thus eliminating one check and one handling of



Because of the Short Hauls, It Is Generally Advantageous to Push the Trailers

freight. The loaded trucks were then pushed away from the doorway and subsequently were pulled into the cars by laborers assigned to that duty.

While the drop-truck method proved greatly superior to previous methods it was still impossible, during the late afternoon when the heavy flow of freight was offered, to keep abreast of receipts with the loading. Consequently, it was decided to replace the man power trucks with tractors and trailers. These were placed in service on September 1, 1921.

#### Results of Tractor-Trailer Operation

While prior to the introduction of the present system approximately 10 per cent of the outbound freight was held over daily because of the inability to clean up, it has been possible, since the installation of the tractors and trailers, to keep the floor free of freight. The necessity of pushing freight back into the house has been eliminated under the

new plan and a substantial saving in wages paid to labor has also been effected. Furthermore, the likelihood of loss and damage incident to the pulling down and overhauling freight standing on the floor in order to load complete shipments without splitting them up, has been obviated. A decided improvement also has been made possible in the billing department through the ability to deliver shipping orders earlier, thus reducing the likelihood of error and omission resulting from the hurry incident to train departure. In addition the cost of handling outbound tonnage has decreased from 67 cents per ton in July, 1921, to 50 cents per ton as a result of the tractor-trailer operation.

With the tractor-trailer operation in the two 40 ft. wide houses which load to four and five strings of cars, with the freight received nearly opposite the car, and with an approximate haul of 100 ft. the houses have at all times been kept clear of congestion and there is no freight on the floor to run around except certain bulky articles which the present 15 in. high trailers cannot accommodate. Trailers 11 in. high from floor have been ordered to afford lower trucks on which to handle such bulky freight as barrels, bales, etc.

The house equipment includes a charging station in each house operated. The tractors are put on charge by a freight house man at the close of the day. A second class electrician, reporting at 11 p. m., is responsible for their proper operating condition. No. 1 House, handling 530 tons of freight, requires two tractors and 120 trailers while No. 6 House, with 800 tons, has three tractors and 180 trailers.

Empty trailers are always kept at the freight house doors and are loaded by the teamsters and one freight house man. A separate trailer is given each shipment regardless of size and, after the block number has been chalked on the freight, the truck is moved by the tractor to designated car.

There are two men on the tractors; a driver and helper. The latter makes the hitches and steers the trailer when it is being pushed. At Boston pushing, rather than trailing, is the prevailing method of procedure because of the short haul and the absence of any turn around platform on the farther side of the cars. The tractor will turn in a car but the push method has been found expedient as the tractor, after pushing the load into the car, backs out and repeats, keeping busy all the time in one part of the house or another. Stevedores, one for each ten cars, unload the trailers and push the empties back into the house.

The Boston freight terminal is operated under the general supervision of G. Marks, assistant to the general manager, and F. S. Hobbs, superintendent. William King, agent, is in direct charge.



Consolidation Freight Locomotive for Huntingdon and Broad Top Mountain

Two of these locomotives have lately been delivered by the Baldwin Locomotive Works. They are designed for coal traffic in western Pennsylvania on a road having 18-deg. curves, 1.86 per cent grades and 85-lb. rails. The locomotives weigh 190,766 lb., of which 170,100 lb. are on the drivers, have a tractive effort of 40,609 lb., cylinders 22 in. by 28 in., 51 in. drivers, boiler pressure 190 lb., evaporative heating surface 2,237 sq. ft., superheating surface 503 sq. ft. and grate area 46.7 sq. ft.

# Railroad Bill Discussed on Floor of Senate

## Skepticism About Passage of Bill at This Session Due to Tactics of Senator La Follette

W. W. SUTHERLAND

SENATOR CUMMINS' SPEECH in the Senate in explanation of the bill to authorize the Railroad Administration to sell its railroad securities was completed on Monday, November 14, and general debate was begun on the following day. Both at the White House and among the Senate leaders the hope was expressed that the bill could be passed at this session and in time for an adjournment of Congress by Thanksgiving Day, but it is apparent that Senator La Follette will lead a fight against the bill that will consume so much time that there is much scepticism as to the possibility of any action on the bill before the next session, which begins on December 4. As was expected, Senator La Follette and others have taken advantage of the opportunity to propose as amendments to the bill various changes in the Transportation Act.

Senator La Follette introduced three amendments, one of which would repeal Section 15a, the 5½ per cent rate-making section of the interstate commerce act, another of which would amend the provision under which the Interstate Commerce Commission has ordered increases in intrastate rates, and another which would provide that all funds made available under the bill shall be expended only in payment for labor and materials for the maintenance, repair and renewal of equipment, roadway and structures of the carriers and that all labor shall be performed in the shops or on the roadway or on the structures of the carriers making such repairs. This is designed to prevent contracts with outside companies.

Senator Kendrick also submitted an amendment to substitute for paragraph 3 of Section 15a a provision that the commission shall from time to time determine what percentage constitutes a fair return, such percentage to be uniform for all groups or territories, and adding to the considerations which shall govern the commission in making rates, the following: "In order not to prejudice the interests of, impose an unreasonable burden upon, or discrimination against, shippers, producers and consumers."

Senator Jones of New Mexico also introduced an amendment to eliminate the proviso of the fourth section and make the long and short haul rule absolute.

### Senator Cummins Explains

Senator Cummins said that when the President comes to determine whether in the case of a particular railroad he will fund any part of the indebtedness of that railroad to the government he will consider its financial condition and if he finds that it is not necessary to extend the time on any part of that indebtedness he will not extend it, but he assumed that in the future as in the past he will find some railroads which do need that indulgence and he will fund a part of that indebtedness within the range of \$500,000,000. If he pursues the plan he has hitherto pursued, the amount funded would not be great. At any rate, he thought it would be found in the public interest to fund at least from \$75,000,000 to \$150,000,000. Suppose it were \$100,000,000, he said, that would have to be added to the \$279,000,000 which the government owes the railroads above what the railroads owe the government and to pay this amount the President must either sell railroad securities or go to Congress for an appropriation. If he does not exercise his judgment in favor of funding at all, the Railroad Administration will be \$125,000,000 or \$130,000,000 short of funds necessary to pay the admitted debts to the railroads.

Some of the railroads, Senator Cummins said, have plenty of money. They were prosperous up to the first of September,

1920, when the government guaranty expired, but since that time the roads have earned less than enough to pay the interest on their bonds and he ventured to predict that when this calendar year closes, if the rates which are in existence now be maintained, the railroads will not have earned more than enough to pay the interest upon their bonds.

In reply to a question as to whether the President will be expected to sell railroad securities to anybody but the War Finance Corporation, Senator Cummins said that it may not be necessary to use the War Finance Corporation at all. The President in the last two months has disposed of over \$100,000,000 of equipment trust certificates to private investors merely with the assistance of the War Finance Corporation, but without the War Finance Corporation buying them. The bill provides that the President may sell other securities in a similar way.

One of the amendments to the bill as passed by the House, Senator Cummins said, is intended to provide for partial payments to the railroads because the bill in the form as passed by the House would prohibit such payments.

### Advances Only to Needy Roads

With regard to the railroads which have accumulated a surplus and can pay the government the advances made for capital expenditures during federal control, the President will not fund the indebtedness. "The act," he said, "is only intended to give that measure of relief which I think every reasonable man will approve as necessary to keep our railroads in operation."

"The fact is that at the close of federal control the government owed the railroads, from its present point of view and its present interpretation of the contract, a sum approximating \$1,400,000,000; and from the railroads' point of view, with their interpretation of the contract, and after giving credit to the government for all the amounts due from them to the government, the government still owed them more than a billion dollars. The uncertain part of it all has been in the claims of the railroads for undermaintenance; for the failure, as they allege, on the part of the government to maintain the properties in as good condition as they were in when they were taken.

"There has been no controversy with regard to the amount of compensation. Under the bill that was passed in March, 1918, we agreed to pay the railroads as a whole more than \$900,000,000 a year, and that and the money taken over at the time the railroads were surrendered to the government and the admitted undermaintenance make up chiefly the sums of money due from the government to the railroads; but you can take it as absolutely true that on October 1, as nearly as could be estimated, if the government shall in the future require the payment of all the money now due from the railroads on account of additions and betterments, we would still owe the railroads more than \$279,000,000. We have not the money with which to pay it, and we shall either have to dispose of a part of the securities which the President now holds or we must make an appropriation with which to pay it; and, as I remarked the other day, in that alternative I think there can be no difference of opinion as to the wisdom of disposing of the securities, assuming that the President can and does, as the bill provides, dispose of them without loss; that is, at the par at which the government took them and without recourse upon the government."

All of the Senate committee amendments to the bill as passed by the House were agreed to on November 15, but

on November 16 the bill was displaced to give way to the Newberry controversy.

Senator Cummins put into the record a letter from Director General Davis explaining in detail how the balance in cash which will be required to complete the final settlements between the Railroad Administration and the carriers as of October 1, \$279,851,593, is arrived at, as follows:

In the accounts which the Railroad Administration has with each carrier the amount due the administration for additions and betterments appears as a charge against such carrier, so that estimates made by the Railroad Administration as to the funds necessary to complete final settlements have always been based upon collecting from the carriers the amount of the additions and betterments, and the sum stated as necessary to conclude final settlements is in excess of the balance due for additions and betterments.

Explaining somewhat in detail, March 1, 1920, at the close of Federal control, the addition and betterment account of the Railroad Administration against the carriers aggregated \$1,144,681,582.39. The expenditure for equipment aggregated \$381,649,957.12. As this expenditure was taken care of in the equipment trust certificates, this amount should be deducted from the aggregate expenditure, and leaves a balance of additions and betterments to be otherwise disposed of aggregating \$763,031,625.27.

Prior to any final settlements, and largely in the earlier part of Federal control, there was special assistance given some of the carriers in the way of funding (Baltimore & Ohio, \$9,000,000; Boston & Maine, \$8,000,000; Erie, \$3,500,000; New York, New Haven & Hartford, \$17,000,000) aggregating \$37,500,000, which deducted from the \$763,031,625.27, leaves a balance of additions and betterments of \$725,506,625.27.

Up to October 1, 1921, final settlements were made of claims aggregating \$387,017,099.12, and in these settlements \$170,756,035.16 of additions and betterments were disposed of, \$137,313,035.16 being collected from the carriers—that is, this amount was charged to them and deducted in the final settlements—otherwise the cash payment to the carriers would have been increased by the amount of additions and betterments so collected, and \$33,443,000 was funded as a part of and in connection with the final settlements.

These two items make an aggregate of \$170,756,035.16, which, deducted from the \$725,506,625.27, above stated, left a balance, as of October 1, 1921, of \$554,850,590.11 of additions and betterments to be disposed of in final settlement.

It is estimated by the Railroad Administration that, as of October 1, 1921, there is due the carriers from the Government on final accounting, and this includes compensation, money taken over, maintenance of way and structures, maintenance of equipment, depreciation, and all other items, exclusive of additions and betterments, \$534,702,183.66. Deducting the balance of additions and betterments undisposed of as of October 1, 1921, \$554,850,590.11, leaves a balance of cash required for the completion of final settlements, based upon collecting from the several carriers the amount charged against them on account of additions and betterments, \$279,851,593.55.

In all estimates of amounts necessary to conclude final settlements, such estimates have always been based upon the assumption that the additions and betterments, which, exclusive of the equipment trust certificates, aggregated \$763,031,625.27, would be collected from the carriers in final settlement.

I am always apprehensive that some confusion may exist because of differences in aggregate amounts given at different times. For instance, comparing the statement I made before the Interstate Commerce Committee of the Senate, the statement herewith submitted, as of October 1, 1921, and some subsequent statements that I have made, as of November 1, 1921, and some subsequent statements that I have made, as of November 1, 1921, it must always be borne in mind that in the progress of liquidation these balances are constantly changing from month to month by reason of the fact that final adjustments are being completed almost daily.

In this particular statement I am calling attention to a specific item of \$37,500,000 which represents funding completed by the Railroad Administration before my connection with it. In some statements heretofore made we have included this \$37,500,000 in the aggregate of funding made. This does not change the balances in any particular, but, as a matter of fact, the \$37,500,000 was funded prior to final settlements, and to be exactly accurate should receive the special consideration which I have given it.

**TOTAL AMOUNT NECESSARY TO COMPLETE FINAL SETTLEMENTS BETWEEN THE RAILROAD ADMINISTRATION AND THE CARRIERS, AND HEREIN THE EFFECT OF CLAIMS FOR ADDITIONS AND BETTERMENTS, PROPERLY CHARGEABLE AND TO BE COLLECTED FROM THE CARRIERS IN FINAL SETTLEMENTS**

Total amount expended by the Railroad Administration for additions and betterments during 26 months of Federal control.....	\$1,144,681,582.39
Of this amount there was expended for equipment (100,000 freight car and .003 locomotives), which expenditures are represented by 10-year equipment trust certificates, and are therefore eliminated from the account.....	381,649,957.12
Leaving balance of account for additions and betterments, less equipment trust certificates.....	763,031,625.27
Up to special adjustments made by the Railroad Administration prior to final settlements, funding for individual roads (Baltimore & Ohio), \$9,000,000; Boston & Maine, \$8,000,000; Erie, \$3,500,000; New York, New Haven & Hartford, \$17,000,000) aggregated a total of.....	37,500,000.00

This left a balance of additions and betterments to be adjusted in final settlement of.....	\$725,506,625.27
Up to October 1, 1921, final settlements were made of claims presented by the carriers in the aggregate sum of \$387,017,099.12. In these settlements \$137,313,035.16 of additions and betterments were charged to the carriers, and \$33,443,000 of additions and betterments were disposed of as a part of and in connection with the final settlements. These settlements have, therefore, reduced the addition and betterment claims by the sum of.....	170,756,035.16
Leaving a balance of additions and betterments to be adjusted in future final settlements of.....	554,850,590.11

It is estimated by the Railroad Administration that, as of October 1, 1921, there is due the carriers from the Government, on accounts growing out of Federal control, and this includes compensation, money taken over, maintenance of way and structures, maintenance of equipment, materials, and supplies, depreciation, and all other accounts, exclusive of additions and betterments.....	834,702,183.66
Deducting the balance of additions and betterments undisposed of October 1, 1921.....	554,850,590.11

Leaves the balance of cash required for final settlements, based upon the estimate of the Railroad Administration as above set forth, and further based upon collecting the balance due on additions and betterments as shown above \$279,851,593.55

**EXPLANATION.**

In all estimates of the amount necessary to conclude final settlements, same have been based upon the assumption that the additions and betterments would be collected from the carriers on final settlement, as the amount of such additions and betterments was charged in the accounts against the carriers at the time of the completion of same.

In comparing these estimates with estimates heretofore given, it must always be borne in mind that, because of adjustments that are being constantly made, balances are continually changing. The foregoing estimate is as of October 1, 1921.

**Railroad Ticket Protective Bureau Still Fighting Scalpers**

THE RAILROAD TICKET PROTECTIVE BUREAU, which was first established in February, 1903, and was disbanded during the period of federal control, was again organized in November, 1920, and since that time has been particularly active. Its object, as stated in its articles of organization, is the "detection and prosecution of forgers, counterfeiters, and unlawful manipulators of railroad tickets." During federal control the duties of the bureau were taken over by the Property Protection department of the U. S. R. A.

Since its reorganization, the bureau has made an extended investigation of railroad ticket scalping throughout the country, as a result of which it has found that scalping has increased to a much greater extent than was in evidence prior to 1918. This is especially the case at suburban points where low monthly rates are made on 60 or 25-ride tickets. The Long Island recently estimated its loss from suburban ticket scalping to exceed \$100,000 per year. The New York Central, on September 1, inaugurated the plan of requiring a photograph of the purchaser pasted on his monthly ticket and, by that means of identification, prevent its re-sale.

Commuters have protested strongly against the inconvenience of this regulation and several attempts were made to have the ruling revoked before it became effective on October 1. The New York Central reports that one of the first effects of the new ruling was a tremendous decrease in the sale of commutation tickets at a small station on the West Shore division. Although this station has only a handful of commuters it always sold at least 40 commutation tickets each month. This was explained by the fact that the commutation rate from this station is only 32 cents, whereas the regular round trip fare is \$2.70.

Scalping of other than suburban tickets has also been uncovered in the process of the Ticket Protective Bureau's investigation. It was found that the low-priced week-end and Sunday excursion rates brought about the resumption of curbstone ticket scalping in the vicinity of the depots. Sunday excursionists are openly importuned to buy and sell the return coupon of a ticket. This is easily accomplished by the scalpers as excursion tickets are usually issued in non-generative form and are not protected by former state and federal court injunctions. Of the 48 states in the Union, only 16 have attempted to enact anti-scalping legislation and in some of these states the bills have been carelessly drawn, while in others riders and amendments have been added to the bills, practically destroying their effect. To remedy this situation, C. A. Fox, chairman of the Railway Ticket Protective Bureau, and an advisory board are now working on several plans which are designed to curb, if not entirely eliminate, this drain on passenger earnings.



*Farming Along the Canadian National*

## Railway Development Association Meets in Chicago

Agriculturists and Industrial Agents Discuss Transportation  
Business from Interesting Angles

THE American Railway Development Association, organized in 1906 and consisting of about 200 land commissioners; agricultural, real estate, tax and industrial agents; immigration inspectors; horticulturists and colonization agents of railroads in the United States and Canada, held a semi-annual meeting at the Hotel Sherman, Chicago, on November 10 and 11. The convention was opened by the president, G. E. Bates (D. & H.), and was conducted in two separate sections, one agricultural and the other industrial, except when giving attention to matters of mutual interest. One such occasion was the tribute paid to the dead soldiery of the world war when at 11 a. m. on November 11, the assembly discontinued its deliberation for a moment while the members stood silently facing east.

A variety of topics received consideration during the convention. Addresses were delivered by C. S. Ucker, vice-president, Southern Settlement and Development Organization, and Samuel O. Dunn, editor of the *Railway Age*, and many excellent papers were presented on the several phases of the agricultural, industrial and marketing problem.

### Publicity Came First on the Program

That the association entertains a very favorable opinion of the value of publicity work in railway development and a desire to familiarize itself with the various ramifications of the problem was indicated by the large amount of time allotted to the consideration of this subject. S. R. Guard, director of publicity, American Farm Bureau Federation, speaking first on this subject, dwelt somewhat on what he considered the underlying principles of successful publicity methods and concluded his talk with a description of the methods of the American Farm Bureau Federation. From this description it appeared that while the Farm Bureau Federation has no official publication, it accomplishes a great deal through the medium of a weekly news letter which is made available to newspapers and is distributed to the officers of the state and county agricultural offices who adapt the information to the local situation.

Z. G. Hopkins (M. K. & T.) followed Mr. Guard with a spirited talk on the subject of railway publicity methods.

Since the railway industry is of such importance to the public that the newspapers will say things about it whether the carriers themselves like it or not, Mr. Hopkins said, it is highly important for the roads to see that the public is not misinformed about what the railway situation is and what the roads are trying to do. To do this, in Mr. Hopkins' opinion, is the primary object of railway publicity at the present time. He pointed out that while the dissemination of absolutely correct information by a definite organ of publicity and the close surveillance given to newspapers by publicity men can accomplish considerable along this line, it is desirable that railway men should not lose sight of their own opportunity to do effective work when in personal contact with the public and to this end he urged the members of the association never to fail to throw their weight on the railroad side of the argument during their extensive travels.

Responding to a request from the chair, J. F. Jarrell (A. T. & S. F.) strongly indorsed the remarks of Mr. Hopkins and along with C. S. Hatfield (secretary, St. Louis Convention, Publicity and Trade Bureau), placed special emphasis on the merit in the idea of localized publicity as introduced by Mr. Guard. Mr. Jarrell in his remarks on the latter point referred particularly to the value of cultivating the good will of newspaper men and Mr. Hatfield illustrated the point by reference to the Neosho plan of community advertising, described elsewhere in this article.

### Samuel O. Dunn Addresses the Convention

Appearing before the joint session of the association on Thursday and addressing himself to the railway and general economic situation, Mr. Dunn brought home to the association forcibly a pressing phase of development work. The most important problem confronting the railroads at the present time, he pointed out, does not lie so much in getting more business as in getting ready to handle it, for as he stated the present predicament of the farmers, though a serious one, is the result of a temporary under-consumption throughout the world which condition is even now righting itself, while, on the other hand, the condition of the railroads is one of under-development. The difficult thing about this latter

phase of the problem Mr. Dunn said, is that the railroads are powerless to solve it alone; since the public fixes the freight rates on the one hand and the pay of the labor on the other, as a result of which it necessarily follows that if the problem is going to be solved correctly the public must understand what the situation is. As a class of railway men who are in constant touch with the public, it devolves upon the members of the association to overcome the erroneous ideas entertained by the public regarding the railway business and meet false propaganda; and, by co-operating with the public in problems of mutual interest, to acquire its confidence and good will.

### Railroads Have an Immediate Interest in Colonizing

When Mr. Dunn had concluded his address the association undertook the consideration of the immigration and colonization question. This session was conducted under the direction of H. W. Byerly (N. P.) and involved the presentation and discussion of three papers, the first of which was by B. G. Packer (commissioner of immigration of Wisconsin) on the Wisconsin plan of colonization. In his talk Mr. Packer described fully the origin and operation of Wisconsin's effective organization for clearing and populating its hitherto sparsely settled and cut over lands. The success of the Wisconsin plan, Mr. Packer pointed out, is based on the personal interest which is taken in each settler before and after his connection with the land, this interest manifesting itself through liberal financial support given to the settler while improving his land, protection extended against unscrupulous real estate men and the educational service rendered.

Among other things of which the settler is apprised, Mr. Packer said, is the fact that the railroads are themselves rendering material help to the farmers by colonizing undeveloped lands, equipping trains with products for exhibition in other states, working with the agricultural department in holding meetings among settlers, furnishing speakers for farmers' institutes, advertising agricultural meetings, helping farmers to secure better markets for their products, co-operating with the state department in operating land clearing specials, etc. In discussing this paper, D. W. Foster (Canadian National) deplored the fact that whereas 73 per cent of the population was on the land a few years ago only 27 per cent is so situated at the present time and stated that there are thousands of farmers in cities who ought to be back on the land.

The second paper presented during this session of the association was one by J. M. Jones (S. A. L.) on the subject of immigration methods in the west and the northwest. After dwelling upon the importance to any railroad of a well-settled and thriving country tributary to its lines and calling attention to the vast areas of sparsely inhabited lands which the Seaboard Air Line traverses, Mr. Jones told of a trip which he recently made through the west and northwest in search of methods and practices applicable to the Seaboard Air Line's problem. Visiting in Michigan, Wisconsin, Minnesota, Montana, Washington, Oregon, California, Utah, Colorado, Kansas and Oklahoma, Mr. Jones observed a wide variety of colonization programs in various stages of completion and of more or less merit. Prominent among the projects visited and studied were those near Marquette, Mich., the projects of the Chippewa Valley Colonization Company, the Wisconsin Colonization Company and the Tomahawk Land Company in Wisconsin, the Huntley Irrigation Project in Montana, the Yakima and Wenatchee projects in Washington, the Hood River project in Oregon, the Dwinell and Forkner projects in California and the Red Lands project in Colorado. As a result of his study Mr. Jones concluded that settlement work to be successful must afford (1) a legitimate profit to the man who is selling the lands, (2) an opportunity for the settler to work, to gain

a living while working, to establish a happy home and to pay for his property within a reasonable time, and (3) the means to improve social conditions and advance the interests of citizenship.

"Land selling against land settling" was the subject of the final paper presented on the question of colonization. In this paper H. M. Madison (S. A. & A. P.), portrayed the evils of colonization which goes no deeper than the selling of the land. "With some notable exceptions and a few partial successes," Mr. Madison said, "land settling methods have been largely an orgy of reckless advertising and expenses," with permanent profit to nobody. "The payments made by purchasers have seldom been used," he said, "to improve land or develop production, neither have much of them gone to land owners or served to accumulate assets for land selling concerns." It is not the amount of land sold but the percentage of farms in cultivation, Mr. Madison explained, that determines the success or failure of railroads serving agricultural sections, and it is a significant fact that a railroad serving an agricultural country is seldom able to meet its operating costs and fixed charges alone until one-third of the territory it serves is under cultivation. If this were more generally known and understood by railway investors and managements, Mr. Madison said, less reliance would be placed in mere land selling methods and more attention given to the cultivation and proper financing; for, as Mr. Madison further pointed out, failures in land selling not only result in immediate losses to railroads but give the land an unfavorable reputation which is difficult to overcome. The policy of a railroad, therefore, in Mr. Madison's opinion, should be one of land settlement as against land selling and this policy, to be effective, should rest upon the following rules:

1. Refuse to list, advertise, sell or help sell any improved farm—leaving such work to real estate men.
2. Refuse to help sell or encourage any farmer to buy raw or unimproved land.
3. Refuse to lend any assistance or to encourage any concern to simply sell raw or unimproved lands.
4. Encourage local organizations to improve land.
5. Offer assistance in finding farmers to purchase newly improved farm lands.
6. Help farmers get money to improve larger percentages of their farms.
7. Point out the desirability of better plans in subdividing and improved tracts of land.
8. Point out the adaptability of soils to particular kinds of crops, and otherwise.
9. Encourage better farming methods.

In discussing this paper C. L. Seagraves (A. T. & S. F.) emphasized the importance of getting co-operation from the state in the development work and of interesting the various chambers of commerce in disseminating full information about the farms as well as the products. He further pointed out that colonization plans to be successful should provide a means by which farmers might obtain comforts in their homes comparable to those in the cities. The fact that surveys show that people who left the smaller towns and the farms four or five years ago and moved into the larger cities now want to return, Mr. Seagraves contended, made it apparent that, if reasonably comfortable homes could be provided on the farms, little difficulty would arise in populating unsettled regions.

As an additional item on this subject F. McCabe (C., St. P., M. & O.) briefly discussed the situation along the Omaha Line in northern Wisconsin. In order to populate this section, he pointed out, the road has found it advisable to make a thorough study of every element entering into the development work, including the banks and the real estate men. A clear-cut distinction is made between land sellers and land settlers, he pointed out, and deserving agencies are given free transportation in connection with their promotion work.

### Helping the Farmer Improve His Business

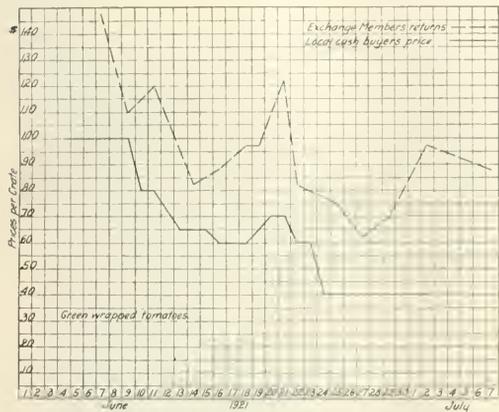
The extent to which the association considers it profitable for the railroads to go into development work, was brought out Friday morning when the agricultural section, under the direction of J. M. Jones (S. A. L.), devoted its time to the consideration of such subjects as the raising of live stock and potato loading. On the live stock subject E. J. Leenhauts (N. Y. C.), after dwelling on the decided economic advan-

telling how, in order to reduce the annual losses which both farmers and railroads experienced from improper potato loading, a campaign was conducted over the Chicago, Burlington & Quincy and the Colorado & Southern lines in Wyoming, Colorado and Nebraska, in co-operation with agricultural agents and colleges to teach the farmers, station agents and any other interested parties, the right and the wrong ways of loading this produce.

In discussing Mr. Reed's work F. Benz (N. P.) emphasized the value of the correct sorting and loading of potatoes in establishing a reputation with buyers, and made a special point also of the losses which a railroad can avoid either from injury in shipment or practices of unscrupulous buyers, by inspecting carefully the potatoes which are loaded in these cars. It is highly essential, Mr. Benz said, that the railroad must not only know how to load cars but what to load. E. G. Wade (I. C.) called attention to the fact that this statement applies even more directly to the loading and handling of sweet potatoes, neglect in culling out diseased and otherwise defective specimens invariably giving rise to immediate or ultimate losses.

### Discussion of the Marketing Problem

Turning its attention finally to the marketing phase of railway development work, the agricultural section of the association with L. D. Fuller (Erie) in the chair, concluded its session with the consideration of three subjects,



### How the Railroads Helped the Farmer by Encouraging the Organization of Commodity Marketing Associations

tages to a community of the well bred over the scrub stock, described how the New York Central had co-operated with various agricultural organizations, including the Michigan Agricultural College, in introducing pure bred livestock in northeastern Michigan. In the particular campaign in question it developed that a special train of 9 cars, carrying stock and various educational exhibits, and accompanied by the agricultural agents of the road as well as representatives of



The New York Central's Live Stock Special Aroused the Communities



Poorly Sewed Sacks Cause Large Annual Losses

other organizations, made an 18-day trip throughout this section coming into contact with 15,000 people.

During the discussion of this paper it developed that similar campaigns had been conducted by other roads. H. G. Schweiter (I. C.) told how the Illinois Central has gone to the extent of including an educational motion picture in its itinerary, and T. S. Acheson (C. P. R.) said that dairying is made quite as important a subject as live stock on such trains sent out by the Canadian Pacific.

A particularly interesting presentation was made by E. G. Reed (C. & S.) on the subject of potato loading. Mr. Reed

the first of which was the produce market of New York City. This included a motion picture portrayal of the various operations of marketing farm products in that city from the time the freight cars were ferried across the river, or sold from the farmers' carts in the market-place, to their final disposition. This picture was presented by H. B. Rogers (Erie).

Following this picture, V. B. Farrar (St. L. S. W.) presented a paper on the organization of commodity marketing associations. In this paper Mr. Farrar referred to associations of farmers in certain sections of the country for the purpose of marketing their products as distinguished from organizations for buying, as the most important agricultural development which has grown out of the depression of the last two years. He described the nature of these organizations and enumerated their apparent advantages. Under this plan of organization, Mr. Farrar showed, producers of certain commodity combine together on a purely business basis whereby they are able to eliminate competition between various communities, to protect themselves more effectively against calamity in shipping and marketing and stabilize their business. Along the Cotton Belt Route the railroads have been instrumental in establishing a number of flourishing organizations of this kind, one of which is the Texas Tomato Growers Association.

The third and final presentation made before the Agri-

cultural Section was a paper on the state inspection of perishables prepared by W. C. Andreas (State Bureau of Markets, Nebraska). In the absence of Mr. Andreas this paper was read by J. B. Lamson (C. B. & Q.). While confining itself to the potato situation in Nebraska and in this respect consisting more or less of a reiteration of what was said on potatoes during the discussion on potato loadings, this paper also brought out the advantages of state inspection of such produce. In Nebraska, Mr. Andreas pointed out, state inspection was inaugurated in 1919, when it was made compulsory for the department of agriculture to inspect and grade each carload lot of potatoes originating in the state. The results of this inspection has been very satisfactory, the Nebraska potatoes now receiving due consideration in terminal markets where during the war period the food administration had difficulty in protecting the Nebraska potato from discrimination on the markets.

### Industrial Development Considered

While the Agricultural Section of the association considered railway development work from an agricultural standpoint, the Industrial Section, meeting elsewhere under the direction of J. M. Mallory (C. of Ga.), applied itself to a more or less informal discussion of such subjects as shipper's guides, industrial surveys, community development programs and property leases. Shipper's guides were subjected to a particularly thorough discussion, it developing that such a book was in the process of preparation on the Delaware & Hudson under the direction of G. E. Bates and that other roads were contemplating the preparation of similar books. The book now under preparation by the D. & H., Mr. Bates pointed out, will list all industries and wholesale companies either on the D. & H. tracks or with which the D. & H. has switching arrangements. These industries, he said, will be listed both by stations and with respect to the products they manufacture or handle. The first pages of the book will be devoted exclusively to all information of interest and value to the public and shippers regarding the Delaware & Hudson road and the book will provide advertising space for any industry desiring to use it. E. S. Center (A. & W. P.), when called on for comment on this subject, made the statement that a road should have a guide if for no other purpose than to keep the traffic department in close touch with the revenue tonnage produced by the industry.

On the subject of industrial surveys the association appeared particularly interested in the system on the Baltimore & Ohio. This system, as H. O. Hartzell pointed out, was inaugurated in 1916 and had for its goal the making of an industrial survey of every town along the line. The underlying principle of this survey was solely one of providing a fund of preliminary information for prospective industries to the end of which data was appended on labor conditions, power, coal supply, housing conditions, railroads, business sites, distances to waterfronts, large cities, etc. This sort of information is of material value to the prospective industrial firm and has justified itself on the B. & O.

While the entire assembly appeared to indorse the idea behind industrial surveys, many differences of opinion arose as to the mechanics of the work and its application. J. C. Emig (C. C. C. & S. L.) voiced one of the differences when he expressed his disapproval of permitting too free use of this material by commercial clubs, to which A. G. Moore (L. & N.) responded with the opinion that the railroads had little to lose and a great deal to gain by extending such services as well as others to these organizations.

Taking up the subject of community development, the association devoted its attention to a discussion of the Neosho plan of community advertising. As described by J. B. McCartney (C. of Ga.), this plan, which derives its name from the Missouri town in which it originated, is one whereby all markets in the community set apart a sale day once a month

on which non-competitive bargains, which had been advertised by co-operative advertising, are offered. On the same date an auction sale is held at which farmers may dispose of their goods; and finally as a third feature of the plan, monthly visits are made by the merchants to selected farms. The entire plan directs itself to the increasing of business and through the mediums of personal contact and clean advertising. These organizations are adapted to towns of from 1,500 to 15,000 population, Mr. McCartney pointed out, and are functioning successfully in many places where railroads have helped to institute them.

The final subject discussed by the industrial section of the association was that of side-tracks and industrial leases. At this time report was made by a special committee which conferred with the American Railway Engineering Association as to uniform terms and contract for the lease of railroad property to industries and individuals and of the construction and maintenance of private industry tracks. As the committee's report was in the nature of a progress report, no final action was taken and the remainder of the session was devoted to the informal discussion of a variety of points incident to the making of contracts, the handling of taxes on industrial property, the limitation placed on the amount of property which any industry may lease, etc.

### Railroads Urged to Encourage Reclamation

Appearing before the association on the last day of its session, C. S. Ucker (Southern Settlement and Development Association) delivered a forceful address on the subject of the land reclamation by the United States government in which he developed the importance of the work to the country, making special reference to the beneficial results accruing to railroads, and urged the roads to lend their support in effecting the passage of the Bankhead bill now pending in Congress. There are at present in the country vast stretches of land which can be made available for agricultural purposes and it is highly important, Mr. Ucker pointed out, both from economic and social standpoints that they should be prepared for settlement. The problem of putting much of this land in shape, however, is one requiring federal aid and since there is no longer a fund from the sale of public lands to support projects of this kind, such work must be carried on with funds taken from the public treasury. To this end the Bankhead bill, as Mr. Ucker explained, seeks authority for the appropriation of a revolving fund of \$500,000,000 to provide for the construction of reclamation projects and the improvement of lands otherwise for settlement, not only in the west, as the earlier reclamation acts provided, but wherever else such work is needed, including 100,000,000 acres of land in the south.



Photo from Kadel & Herbert

Entrance to Tunnel in Paris, France, Where a Collision Recently Cost Forty Lives

# Traffic League Holds Annual Meeting at Chicago

## Important Action Included Consideration of Reports on Legislation, Demurrage and Claim Prevention

ABOUT 350 members attended the annual meeting of the National Industrial Traffic League at the Hotel Sherman, Chicago, on November 9 and 10. Committee reports were presented and discussed. Action on the report of the special committee on legislation was deferred to a special meeting to be held later. The league endorsed the continuance of the government barge line.

W. H. Chandler, manager of the transportation bureau of the Boston Chamber of Commerce and president of the association, called the meeting to order on Wednesday morning. J. H. Beck, executive secretary, then presented the report of the executive committee. He discussed the necessity of continuing the Interstate Commerce Commission as it has been in the past, free from all outside influences and also told of the projected removal of the suspension of section 28 of the Jones act, stating that his committee would watch the matter closely and undoubtedly take action if the removal of the suspension is threatened.

### Report of Special Committee on Legislation

R. C. Fulbright presented the report of the special committee on legislation. He suggested that a special meeting be called in February to act on the report. It was decided to distribute the report among all of the members, action to be taken not later than February, 1922. The report is summarized as follows:

Generally speaking, the Transportation Act has demonstrated its importance and efficacy in solving many of the difficult problems of transportation. This committee has only found a few features which in its judgment should be changed at this time; but some of these are of basic importance. The future operation of the bill may justify the League in proposing further changes or additions, but for the present, this committee has sought to confine its recommendations to those cases where some urgent necessity seems to dictate the change. For the most part it has avoided the recommendation of additional regulation of common carriers, and on the contrary has recommended the elimination of several features which require additional regulation which have been productive of discontent. It has sought to take from rather than to add to the present common carrier law.

1. *The Six Per Cent Clause.*—This provision has been productive of so much litigation because of its having been construed to give complete power over intrastate rates, and has aroused so much prejudice against the railroads that it has worked to their detriment rather than to their benefit. It is the belief of the League that if the Interstate Commerce Commission is to succeed as an administrative tribunal it must be left unfettered by hidebound rules in determining the lawfulness of rates. The committee is also opposed to the socialistic principle of the recapture of excess earnings, whereby the earnings of one carrier may be taken from it and applied directly to the betterment of others. Such a precedent in legislation is most dangerous and may be followed by legislation which will be disastrous to other lines of business. It is therefore recommended that Section 15-a be repealed.

2. *Jurisdiction Over Intrastate Rates.*—The committee recommends that the power of the state regulatory bodies over the common carriers be preserved subject only to the right of the Interstate Commerce Commission to remove unjust discrimination upon specific complaints as to specific rates. It further recommends that no order of the Interstate Commerce Commission as to the removal of such discrimination should be permitted to have the effect of raising an intrastate rate until the matter has been presented to the state regulatory body which should be allowed time to review the reasonableness of the rate. Should the state regulatory body refuse to act, the act should most certainly not operate to prevent the Interstate Commerce Commission from thereafter prescribing the method by which such discrimination may be removed.

3. *Consolidation of Railways.*—It is recommended that subdivisions 4, 5, 6 and 8, of Section 5 of the Act be repealed, and that, in lieu thereof, the Interstate Commerce Commission be given the authority to authorize consolidation upon application of the interested lines, provided that such consolidation, in the judg-

ment of the commission, will be in the public interest and will not substantially lessen carrier competition.

4. *Telegraph, Telephone and Cable Companies.*—It is recommended that the Interstate Commerce Act be amended so that all of the provisions of the act will apply to telegraph, telephone and cable companies engaged in interstate commerce, in so far as the provisions are pertinent to such companies. Telegraph companies should be subject to the Cummins amendment to the extent that there should be no limitation of liability for repeated messages and the Commission should be given authority to prescribe reasonable limitations of liability as to other classes of service.

5. *Suspension Period.*—The committee recommends that the suspension period be restored to the period of 120 days with the power in the Commission to extend same for an additional period of 6 months as was formerly provided.

6. *Claims Against the Director General.*—The committee recommends and reaffirms the decision reached at the Cleveland meeting of the League authorizing the counsel for the League to draw an amendment to Section 206 providing that orders entered by the Commission awarding reparation against the Director General shall be paid promptly by the treasury department without compelling the claimant to bring suit thereon.

7. *Jurisdiction of the Commission Over Reparation.*—It is recommended that the Interstate Commerce Commission be not divested of jurisdiction over reparation as the Commission affords a method so much more satisfactory to the shippers. Therefore the League opposes taking this jurisdiction from the Commission and placing it in the hands of the court.

8. *Shippers Right of Appeal.*—The committee recommends that the act be amended to give to shippers the same right of appeal to the court now enjoyed by the carriers.

9. *Labor Board.*—The committee advocates that the Labor Board should be an unbiased, independent agency not constituted of persons directly interested in the controversies and it should have the right to hear important controversies and inform the public as to the merits or demerits thereof; it is of profound importance that the public be advised of the issues in any serious controversy. To this end the committee recommends the amendment of Title 3 of the Transportation Act to provide: a. The Labor Board to consist of five public representatives to be appointed by the President and confirmed by the Senate. b. The Labor Board shall consider the issues involved in such disputes as may be brought before it, in the manner hereinafter described and to make public its findings and recommendations. c. At the written request of any carrier or a prescribed number of employees thereof, the board shall hear any dispute or grievance as to wages, salaries, rules or working conditions with respect to such employees and not only shall the carriers' representatives and the employees' representatives be entitled to be heard but also the representatives of the shippers, or organizations of the public likely to be affected thereby. The statute in describing the number of employees necessary to sign a request for a hearing should be so drawn as to prevent the submittal of minor matters. d. The act should clearly state that the findings and conclusions of the Labor Board are not enforceable or binding on any party in the controversy but simply represent an unbiased judgment as to the merits of the controversy. e. The so-called national agreements should be abrogated, and the Act should provide for the treatment of wage questions and working conditions by each individual carrier or individual groups of carriers under the same management and control. f. Adjustment boards may be established by agreement between an individual carrier, or a group of carriers operated as a single system, and any number of employees thereof, with such power to decide any dispute as the parties to the agreement shall confer upon such board.

10. *Anti-Strike Measures.*—The committee recommends the enactment of adequate legislation which will provide penalties for interference with the movement of passengers or property in interstate commerce or with any person engaging in or seeking to engage in employment connected with common carriers' service or for any conspiracy to do any of the foregoing things.

11. *Construction of New Railroads.*—The Interstate Commerce Commission has construed paragraphs 18 to 22, inclusive, of Section 1 of the Act as amended in 1920, as not requiring a certificate of the Commission or to the public convenience and necessity in the case of the projection or construction of new railroads which are not a part of existing railroads. The committee recommends that the Commission be given jurisdiction over the construction

of such new lines or railroads, independently owned, except that where new lines or new extensions are to be located wholly within one state and have no financial connection with any railroads located in other states.

### Report of Standing Legislative Committee

The report of the standing legislative committee which was adopted opposed the bills requiring mileage books at reduced rates, providing for the creation and organization of a national railway corporation, seeking the retention of emergency powers of the commission, limiting salaries of railroad officers, establishing standards of work and duty for common carriers, proposing the abolishment of "Jim-Crow-cars," seeking to prescribe rates, fares and charges of railroads in the United States. It recommended the endorsement of the bill for protection of trade and commerce against unlawful restraints and monopolies insofar as affects transportation, and of the bill requiring the prompt payment and adjustment of claims, say within 60 days.

### Car Demurrage and Storage Report

After considerable discussion of the projected charge of a \$3 flat demurrage rate, which this committee was instructed to secure at the Cleveland meeting of the league, which rate was to apply both during periods of car surplus and car shortage, the question was tabled. W. H. Day, traffic manager, Chamber of Commerce, Lynn, Mass., chairman of the committee, stated that although the recommendation had been adopted by the Cleveland meeting by a vote of 145 to 90, a referendum taken had resulted in 360 votes against and only 152 in favor of the flat charge.

The recommendations regarding changes in demurrage rule 3, section B, paragraph 2, and section 6, paragraph 1, were adopted as follows:

"Several of our members have long felt that when forwarding directions on outbound cars were mailed by shipper to billing agency of carrier, cars should be considered as released at 7 a. m. date forwarding instructions are received by carrier, provided postal date shows same was deposited in the mail prior to the date received. To cover this situation the following note is suggested.

"Note.—Except as otherwise provided in rule 6, section C, paragraph 1, this will also apply to forwarding directions on outbound cars when mailed by consignor to the agent of this railroad at point of shipment."

"Demurrage rule 3, section C, paragraph 1. There seems to be a lack of uniformity in computing free time on cars placed on public delivery tracks which the consignees begin to unload sometime between midnight and 7 a. m. and before notice of arrival has been sent or given. Some carriers compute the time on such cars from the first 7 a. m. following removal of a part of the contents of a car, although the removal has occurred on the same calendar day. This practice is based on the theory that a demurrage day runs from one 7 a. m. to the next 7 a. m., so that while the removal of the contents of the car may have occurred say at 5 a. m., it occurred on the demurrage day immediately preceding the 7 a. m., from which time should be computed, and consequently under demurrage rule 4, section D, which provides that such removal shall be considered as notice of arrival, the first 7 a. m. after removal constitutes the first 7 a. m. after the demurrage day on which the notice was consummated by consignee's beginning to unload the car.

"Other carriers compute the free time from the second 7 a. m. after the consignee begins to remove the contents, on the theory that rule 3, section C, paragraph 1, does not specifically state that the day on which notice of arrival is sent or given means a demurrage day running from 7 a. m. to 7 a. m., and therefore means a calendar day. Consequently, the first 7 a. m. after the day on which the consignee begins unloading the car would be 7 a. m. of the next calendar day. In order to overcome this difficulty and to assure uniformity, the American Railway Association recommends that the following note be added to rule 3, section C, paragraph 1:

"Note.—On cars subject to rule 4, section D, time will be computed from the first 7 a. m. following removal by consignee of any part of the contents of the car."

The recommendation of the committee to secure uniformity in the application of demurrage charges on cars placed on public delivery tracks, opposite consignees' oil tanks, coal bins, elevators or warehouses, did not meet the approval of

the meeting. Although the wording of the committee's note had been approved by the American Railway Association's demurrage committee, the following change suggested by J. L. Roberts was substituted:

When any railroad owned track or portion thereof, is leased or assigned to one or more consignees or consignors, the track or portion of track so leased or assigned will be treated as a "private track" only when used for the handling the business of consignees or consignors to whom track or portion of track is leased or assigned; but the track or portion of track so leased or assigned will be treated as a "public delivery track" when used for the handling of business of consignees or consignors other than those to whom the track or portion of track is leased or assigned.

### Diversion and Reconsignment

Four changes were proposed by H. D. Rhodehouse, traffic manager, Chamber of Commerce, Youngstown, Ohio, chairman of this committee and the meeting ratified the report and changes with wording as follows:

A joint conference of diversion and reconsignment committees representing the National Industrial Traffic League and the carriers in Official, Southern and Western Classification territories was held in Chicago, July 12, 1921. Discussion was had with respect to changes in the present rules, regulations and charges governing diversion and reconsignment of general commodities. The committees agreed on certain changes, with the understanding that such changes must be approved by the League and the railroad executives before they are published in carriers' tariff. The proposed changes are as follows:

Rule 2. Freight rate applicable.—These rules and charges will apply whether shipments are handled at local rates, joint rates or combination of intermediate rates. The through rate to be applied under these rules is the rate from point of origin via the diversion, reconsigning or reforwarding point to final destination in effect on date of shipment from point of origin. If the rate from original point of shipment to final destination is not applicable via the point at which the car is diverted, reconsigning or reforwarded, in connection with these lines, the tariff rate in effect to and from the diversion, reconsigning or forwarding point will apply, plus diversion or reconsigning charges, except that if a lower combination of rates is lawfully applicable over the route of movement such lower combination of rates, plus diversion or reconsigning charges, will apply.

Rule 4 (b) switching charges additional.—If diversion or reconsigning is made after arrival of car at billed destination and the car has been delivered to a connecting road, the switching charges of connecting road will be in addition to any other charges named herein, except that where combination of local rates is applied to and from the diversion or reconsigning point, switching charges will be added or absorbed to the same extent as on traffic moving locally to or from the diversion or reconsigning point.

Rule 8 (a) stopping in transit.—If a car is stopped for orders for the purpose of delivery or diversion or reconsigning or reforwarding prior to the arrival at original billed destination, or if such destination is served by a terminal yard, then prior to arrival at such terminal yard, on request of consignor, consignee or owner, a charge of \$..... per car will be made for such service and the point where the car is stopped will be considered the destination of the freight, and the party upon whose order car is held will be notified at the postoffice address designated by him. If the car is subsequently forwarded from point at which held, the provisions of rules 9, 10, 11 or 12, as the case may be, will also be applied. The service of stopping as provided in this rule will not prevent one change of destination under the provisions of rule 5.

Rule 11 (b) and (c). Diversion or reconsigning to points within switching limits before placement.—(b) At a charge of (\$2.50-\$3.00) per car, if, after arrival of car at destination, or if destination is served by a terminal yard, then after arrival at such terminal yard, such orders are received before the expiration of twenty-four (24) hours after the first 7 a. m. after the day on which notice of arrival is sent or given to the consignee or party entitled to receive same. (See note below.)

(c) At a charge of (\$6.50-\$7.00) per car, if such orders are received subsequent to 24 hours after arrival of the car at destination, or if the destination is served by a terminal yard, then subsequent to 24 hours after arrival at such terminal yard. (See note below.)

(c) At a charge of (\$6.50-\$7.00) per car, if after arrival of car at destination, or if destination is served by a terminal yard, then after arrival at such terminal yard, such orders are received subsequent to the expiration of 24 hours after the first 7 a. m. after the day on which notice of arrival is sent or given to the consignee or party entitled to receive same. (See note below.)

Note.—In computing time, Sundays and legal holidays (na-

tional, state and municipal) will be excluded. When a legal holiday falls on Sunday the following Monday will be excluded.

Proposals to change a number of other diversion and reassignment rules were discussed, but no agreement could be reached. Those changes will be considered at future conferences with carrier's committees.

The changes made in the uniform code of storage rules and charges as agreed upon with the American Railway Association and presented by the committee in their new form were adopted.

At the opening of the afternoon session Mr. Beck told of the League's efforts to combat the position taken by Mr. Finerty, counsel for the director general, that all reparation, both because of discrimination and because of unlawfulness ought to be made on the basis of rates in effect subsequent to the operation of General Order 28, even though the shipments moved under federal control prior to the effective date of that order. Mr. Beck said that arguments were presented before the Commission early in October but that the Commission had done nothing about it and that the League counsel was now watching the matter. The executive committee's wage and rate resolution of September 23 was ratified.

The report of the classification committee on the proposed revision of rule 7 of Consolidated Classification was sent back to the committee for a minority report. In discussing the committee's report on uniformity of classification, President Chandler said that the matter had been under advisement by the executive committee and that it had been decided to ask the meeting to go on record as being opposed to further revision of the classification if made for uniformity only. He stated that an investigation would show that the advances have been made where they count most and that so far as uniformity was concerned, he thought it was just as easy to add second class to the river and third beyond, as it was to add second class to second class.

#### Bill of Lading Committee Report

F. T. Bentley, traffic manager, Illinois Steel Company, Chicago, chairman of the committee, read the following report which was adopted:

Bill S2530, amending Pomereue bills of lading law.—As this bill is practically what was recommended to the Cleveland convention by the Bill of Lading committee, your Bill of Lading committee endorses it to the executive committee and recommends that appearance before the Senate and House committees by the League be made to further its passage.

Changes proposed in uniform bill of lading based on the Supreme Court decision in Mark Owen Company vs. Michigan Central.—In the summer the eastern section of the uniform bill of lading committee requested a conference with our committee for the purpose of considering the effect on the bill of lading of the Mark Owen vs. Michigan Central decision which definitely defined the liabilities of the carrier for delivery of carloads from public team tracks. Our committee could not meet the views of the railroad committee on this, and we agreed and reported to the executive committee at its recent meeting, that no action should be taken to change the present bill.

#### Claim Prevention

The report of the special committee on claim prevention was adopted, following which the meeting was addressed in turn by Colonel B. W. Dunn, manager of the Bureau of Explosives, Fred E. Winburn, of the Freight Claim division of the American Railway Association, and W. H. Canavan of the Chicago post office, all of whom spoke on the perfect package campaign. The work of this committee is still in the formative period and it was not thought sufficient to warrant making any definite proposals.

A supplementary report of the claim prevention committee which was adopted follows:

The investigations of your committee have developed an apparent lack of authority that can be invoked in the direction of securing the active and hearty co-operation of railroad officers and local agents in this matter of claim prevention. Industry cannot and should not bear all the burden of effort in these conservation matters.

There seems to be a lamentable lack of what may be termed "a point of contact" within railroad circles—that is to say, there is an apparent lack of unity of purpose as between the traffic and operating units of the carriers, and it is the belief of your committee that proper, affirmative and positive influence in this regard can emanate only from the source of the highest railroad authority.

Your committee, therefore, recommends that the executive committee of this league bring such influence to bear on transportation executives as will create "points of contact" in transportation circles through which will be exerted a quality of authority to carry to a successful conclusion the co-operative principles which your committee believes essential to the conduct of this work.

#### Other Reports

The report of the freight claims committee as presented by G. A. Blair, general traffic manager, Wilson & Co., Chicago, chairman, was adopted. A recommendation by G. T. Haynes of Sioux City, asking that further consideration of the McCaull-Dinsmore decision be tabled was also adopted. The weighing committee's report was accepted unchanged.

The meeting after hearing the report of the committee appointed to deal with the railroad traffic officers went on record with the following resolution:

It is the sense of this meeting that proposed reductions in strictly local rates having no influence on other rates should in the interests of expediency be handled by individual roads and not docketed.

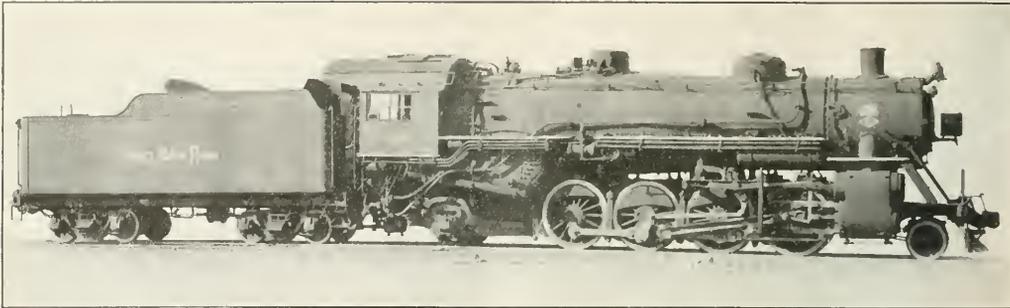
The meeting also went on record by resolution as being in favor of the continued operation of the Mississippi—Warrior River barge line by the government until such time as it can be disposed of to private interests to fair advantage.

#### Election of Officers

The following officers were elected for the ensuing year: president, W. H. Chandler, manager transportation bureau, Boston Chamber of Commerce; vice-president, Charles Rippin, traffic commissioner, Merchants' Exchange, St. Louis, Mo.; treasurer, E. C. Wilmore, traffic manager, Sefton Manufacturing Corporation, Chicago; executive secretary, J. H. Beck, Chicago; regional vice-presidents: F. H. Baer, Cleveland, Ohio; M. M. Caskie, Montgomery, Ala.; C. E. Child, Omaha, Neb.; W. H. Day, Jr., Lynn, Mass.; G. S. Maxwell, Dallas, Tex.; Seth Mann, San Francisco, Cal.; R. J. Menzies, New York; board of directors: H. C. Barlow, Chicago; J. M. Belleville, Pittsburgh, Pa.; W. S. Creighton, Charlotte, N. C.; J. S. Davant, Memphis, Tenn.; C. B. Baldwin, Boston, Mass.; F. T. Bentley, Chicago; C. O. Bergan, Spokane, Wash.; C. S. Bather, Rockford, Ill.; H. E. Driscoll, Oklahoma City, Okla.; R. N. Field, Peoria, Ill.; R. L. French, Bridgeport, Conn.; R. S. French, Washington, D. C.; Carl Glessow, New Orleans, La.; E. P. Gregson, Los Angeles, Cal.; J. C. Graham, Jackson, Mich.; J. P. Haynes, Sioux City, Ia.; F. S. Keiser, Duluth, Minn.; J. C. Lincoln, New York; L. G. Macomber, Toledo, Ohio; J. D. Mansfield, Seattle, Wash.; C. D. Mowen, Fort Smith, Ark.; Herman Mueller, St. Paul, Minn.; U. S. Pawkett, San Antonio, Tex.; R. W. Poteet, New Britain, Conn.; F. M. Renshaw, Cincinnati, Ohio; J. T. Ryan, High Point, N. C.; M. H. Strothman, Minneapolis, Minn.; J. H. Tedrow, Kansas City, Mo.; T. H. Wallace, Lansing, Mich.; and G. P. Wilson, Philadelphia, Pa.

The executive committee for the new year is: chairman, H. C. Barlow, Chicago; vice-chairman, J. M. Belleville, Pittsburgh, Pa.; F. T. Bentley, Chicago; W. S. Creighton, Charlotte, N. C.; R. M. Field, Peoria, Ill.; J. P. Haynes, Sioux City, Ia.; F. S. Keiser, Duluth, Minn.; J. C. Lincoln, New York; Herman Mueller, St. Paul, Minn.; U. S. Pawkett, San Antonio, Tex.; R. W. Poteet, New Britain, Conn.; C. D. Mowen, Ft. Smith, Ark.; J. S. Davant, Memphis, Tenn.; R. L. French, Bridgeport, Conn.; Carl Glessow, New Orleans, La.

The next annual meeting of the league will be held in New York City November 15 and 16, 1922. During the last year the membership of the league has increased from 936 to 1,029 members.



Mikado Locomotive Equipped with Booster

## 2-8-2 Type Locomotives for the Nickel Plate

Design Based on U.S.R.A. Light Mikado with Improvements in  
Details—Booster Handles 22 Per Cent Additional Tonnage

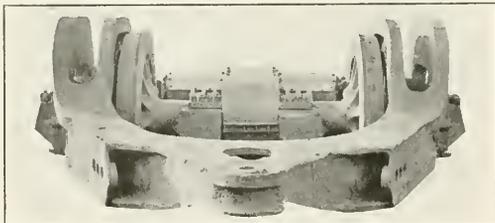
THE NEW YORK, CHICAGO & ST. LOUIS (Nickel Plate) has lately received from the Lima Locomotive Works six Mikado (2-8-2 type) locomotives. The design was based largely upon the U.S.R.A. standard light Mikado, ten of which were allocated to the road, but a number of new and interesting features were added which make the locomotives among the best of this class.

One of the locomotives was equipped with a booster fur-

are not adjustable but are provided with solid round bushings pressed in the same as on the side rods.

Instead of six-feed lubricators with feeds to the cylinders, these locomotives use four-feed lubricators, the cylinder feeds being omitted in accordance with the standard practice on the Nickel Plate which has been found to be entirely satisfactory.

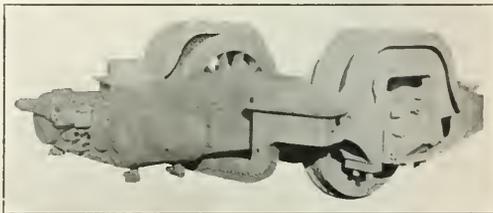
The boiler is of the conical-connection type with combustion chamber and is equipped with type A top header superheater, Security brick arch and butterfly type firedoor. A Duplex stoker is used and particular attention was given to the cab arrangement to locate all necessary piping and fittings for the greatest convenience of the engineer and fireman. The boiler pressure is 200 lb. The firebox is  $11\frac{1}{8}$  in. long by  $8\frac{1}{4}$  in. wide, which gives a grate area of 66.7 sq. ft. There are 216,  $2\frac{1}{4}$  in. tubes and 40,  $5\frac{1}{2}$  in. flues, 19 ft. long. The heating surface of the firebox, combustion cham-



Front View of Trailing Truck with Booster

nished by the Franklin Railway Supply Company and provision was made on the other engines for the ready application of boosters at some future time. The trailer trucks are of the Commonwealth Steel Company's outside bearing Delta type, equalized with the drivers. The booster and truck are shown in two of the illustrations.

These locomotives have a tractive effort of 54,700 lb. without the booster and 64,200 lb. with the booster, an addition of 17 per cent. The cylinders are 26 in. by 30 in. and the drivers 63 in. outside diameter. The total weight of the locomotive equipped with the booster is 307,000 lb., of which 226,500 lb. are on the drivers, 20,500 lb. on the front truck and 60,000 lb. on the trailing truck. The driving wheel base is 16 ft. 9 in. and the total engine wheel base 36 ft. 1 in. The frames are fitted with a cast steel cradle and Franklin automatic adjustable wedges are used on all drivers. The valve gear is of the Walschaert type and control is by a Ragonnet type B power reverse. Cylinder and steam chest bushings are of Hunt-Spiller metal. The front truck is of the constant resistance type. Okadee automatic cylinder cocks and White single sanders to the front drivers only are among the other specialties. The front end main rod brasses



Side View of Trailing Truck with Booster

ber and arch tubes is 280 sq. ft., the evaporative heating surface of the tubes and flues 3,497 sq. ft. and the superheating surface 882 sq. ft.

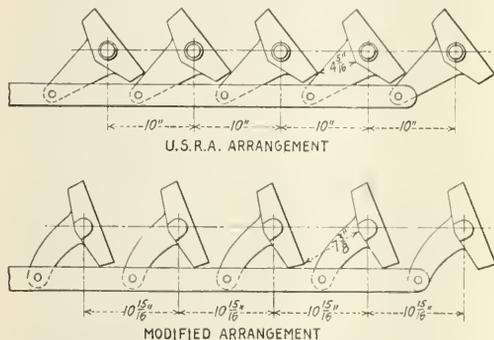
Special features include a cast steel ash pan, Woodard outside connected throttle with lever support designed to provide for expansion of the boiler, Nathan non-lifting injectors, Phillips top boiler check valves and Franklin power grate shaker.

The two center arch tube plugs in the throat sheet are located on the radius and in order to get good threads the holes in the sheet are tapped out  $3\frac{1}{2}$  in., steel bushings screwed in and then welded around the edge, the arch tube plugs being screwed into the bushings. This may be con-

sidered a minor detail but attention to such points can save much vexation in the roundhouse.

The grate arrangement is of an entirely different design from that used on the U.S.R.A. standard light Mikados. The U.S.R.A. box grate had a straight horn perpendicular to the grate on the longitudinal center line. With this arrangement when the grates are wide open the maximum distance between the top of one grate and the bottom of the next grate is  $4 \frac{5}{16}$  in. In redesigning the grate arrangement, a curved horn was used which threw the center of the grate connection pin about  $3 \frac{1}{2}$  in. ahead of the center. When these grates are wide open there is a maximum of  $7 \frac{3}{8}$  in. from the top of one grate to the bottom of the next. The difference in design is shown plainly in one of the illustrations.

Drop grates were used on the U.S.R.A. locomotives, but these were omitted on the new Mikados which have 10 rocking grates on each side of the firebox. With the large openings it is possible to dump the fire much more quickly and easily than with the old standard arrangement of drop grates and smaller openings in the rocking grates. The curved horn grate is not original on the Nickel Plate for it is the standard on the New York Central. However, the comparison be-



Grate Arrangement on Old and New Locomotive

tween the two designs is interesting, especially as it is in connection with such points as this that the U.S.R.A. standard designs commonly have been criticized.

As indicative of the value of the booster the record of a run made soon after the locomotive was received is of interest. This run was between Conneaut and Buffalo with a train of 50 loaded cars, 3 empty cars and 2 cabooses, the tonnage being 3,848. The regular tonnage for this class of power without a booster is 3,136. The excess tonnage handled was thus 712, or an increase of 22.7 per cent over the regular rating.

The train left Conneaut at 8:40 a. m. and arrived at Tift street yard, Buffalo, at 4:32 p. m. The time on the division was 7 hr. 52 min. and the actual running time 5 hr. 45 min., an average speed while the train was running of 19.9 miles an hour.

The booster was used eight times, as follows: Leaving Conneaut yard; on Springfield hill; pulling into and out of Girard siding; pulling into Cascade siding; pulling into and out of Pomfret siding; starting at D. A. V. & P. crossing, Dunkirk, and on Delaware hill. The approximate distance over which the booster was operated was three miles.

The maximum steam pressure was maintained over the entire division—even when the booster was operated the steam pressure did not fall and it was not necessary to lower the water level. In ascending Springfield hill the speed slackened to about seven miles an hour. The booster was

then cut in and the speed was accelerated to approximately ten miles an hour before the top of the grade was reached.

It was necessary to stop at the D. A. V. & P. crossing in Dunkirk. After the crossing was cleared the train, although standing on a heavy ascending grade combined with a slight curve, was started with the aid of the booster at the first attempt. This is considered one of the hardest places on the division to start a train, and demonstrated the added drawbar pull obtained from the booster.

## Obsequies for Steam Locomotive Will Not be Staged for Some Time

THE Superpower Survey report was discussed by W. J. Cunningham, professor of transportation, Harvard University, in an article which appeared in the New York Evening Post, November 15. In commenting on the position of the steam locomotive, he said:

"From time to time, as certain railroads have changed from steam to electrical operation for portions of their lines, the passing of the steam locomotive has been confidently predicted by experts who have been impressed with the superiority of electric traction, but the steam locomotive not only appears to be holding its own, but by notable improvements in design and appearances seems recently to have taken a new lease of life."

Professor Cunningham described the status of electric operation as follows:

"The typical railroad executive recognizes the advantages of electrical operation. He knows that it will eventually displace steam, at least on lines of heavy traffic and in congested terminals. For his own line under these conditions he would welcome the advent of electricity if a fairy godmother would provide the capital funds and make it possible to earn the additional carrying charges. The problem is not one of engineering. It is essentially one of finance."

His opinion of the value of the report follows:

"If the estimates of the Superpower Survey engineers as to savings in expenses and return on capital investment could be accepted without reservation the financial problem would be easier of solution. Unfortunately, however, this is not the case. The figures are subject to material qualification. There is evidence of an inclination to go out of bounds in making a case in favor of electricity and against steam. The zeal of the electrical engineer, who is firmly convinced as to the general soundness of his conclusions, is quite natural, but the report would carry much greater weight if it were less biased.

"For example, in the item of fuel the electrical engineers have assumed that a steam locomotive requires seven and one-half pounds of fuel for each kilowatt hour of work at the rim of the drivers. Against this they set an estimate of two pounds under electrical operation. From these data it is assumed that electrification will save two-thirds of the fuel bill.

"It is interesting to compare this theoretical saving of two-thirds of the fuel with the actual figures for the Norfolk & Western. In discussing the subject before a joint meeting of the Societies of Electrical and Mechanical Engineers in New York in October, 1920, the chief electrical engineer of that road stated that a comparison of fuel consumption on the electrified divisions with tests made with modernized Mallet type locomotives under similar conditions indicated that the saving in fuel by electrical operation was 29.5 per cent. This is less than one-third. If the Superpower Survey engineers had assumed a saving of one-third instead of two-thirds (the former is closer to the facts) the estimated fuel savings would be cut in two.

"As has already been stated, the problem is essentially one

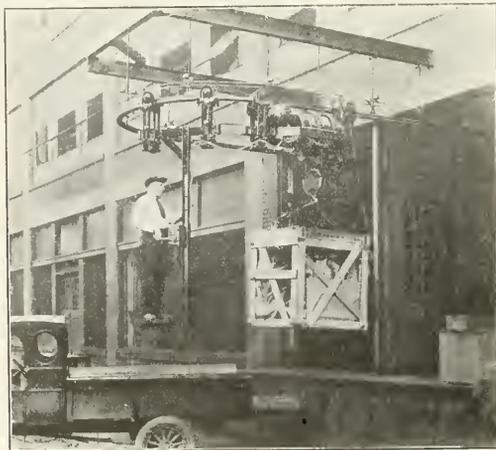
of finance. In the case of a railroad that has an investment in road and equipment of, say, \$100,000 per mile, something more than a questionable return of 14 per cent is needed to induce recommendations for an investment, of, say, \$40,000 more per mile for electrification. On every hand there are needs for additional investments of other kinds which without question will yield more than 14 per cent.

"The Superpower Survey will probably stimulate further discussion of railroad electrification. Notwithstanding the defect which has been mentioned, the report is constructive and should be regarded as a valuable contribution to engineering and economic literature. When the railroads are again on their feet there will probably be further extensions of electrification where the conditions are most favorable.

"It is improbable, however, that electrification on any such scale as is recommended by the report will be attempted. It will come piecemeal and gradually"

## A New Overhead Handling System

IT IS GENERALLY conceded that mechanical methods of handling materials are more economical than manual. Consequently, in the efforts towards reducing costs of operation, the railways are utilizing mechanical devices in increasing numbers. In numerous freight terminals, repair shops, machine shops, etc., where floor space is at a premium, the space overhead is little used. Under such conditions the overhead methods of handling cranes, monorails, tramrails, etc., offer a solution of the problem. The Cleveland Crane



The Tramrail as Applied to Freight Handling

and Engineering Company, Wickliffe, Ohio, has developed a tramrail for use in such localities for which important advantages are claimed.

In the freight terminal the tramrail makes a straight-line movement of outbound l.c.l. freight from a shipper's vehicle into any one of a large number of cars awaiting loading; for inbound freight, a similar movement from any car to some spot in the inbound house and thence, on call, to the consignee's vehicle. The system saves floor space and speeds up delivery. Its use on the railways is not restricted to the handling of freight as it may also be applied in railway shops in the handling of parts to and from the repair job and in the repair shop, machine shop, etc.

Flexibility of the installation of the rail, which can be attached to the purlins of a building or most any support avail-

able through the adaptability of the suspension fittings to varying conditions, is the feature of this tramrail. The entire system is standardized so that a mechanic possessing a common knowledge of machinery can layout, order and install the rail, rail fittings, switches, turntables, carriers, etc. By use of cold bends in the rail any curve down to a 4-ft. radius can be negotiated without a sacrifice of safety.

The sliding switch designed especially for this tramrail is a departure from the usual type of switch employed in overhead systems. Like the other units of the system the switch is standard and possesses distinct advantages. The same switch is installed whether for hand power or electric operation. This permits the hand power system to be electrified at any time. Both the stationary and movable rail in this switch are held in firm contact, eliminating the open space at the point where the rails join. Special attention has been given to safety at this point, with the result that the instant a switch is opened a safety stop drops on the rail, preventing the carrier from passing that point. When the switch is in position, it is automatically locked, thus preventing the carrier and its load from sliding the switch out of alinement. When desired, an additional safety feature, the installation of a trolley wire insulator, makes it impossible for an electrically driven carrier to run at full speed against a safety stop or open switch.

It is often found necessary to install the rail at different levels. This means that the carriers must negotiate a grade. The electrically driven carrier has ample power to operate with its full load up to a grade of 12.5 per cent. This makes the employment of a brake essential and a foot brake is provided on carriers which travel a grade. Where the difference in levels means excessive grades an ordinary freight elevator is installed with the tramrail.

By use of a central control system, one man can operate several carriers. Where an unobstructed view of the system is impossible, the operator is informed as to the location of the carriers he controls by signal lights on a board before him. With this arrangement the dispatcher can switch the carrier to any track or location desired.

Approximately 1,200 types of carriers are available through the combinations of the standard equipment. It should be noted that all working parts are fully enclosed as a protection from fumes, moisture and dirt. The ball bearings and other bearings, of bronze graphite inserted bushings with ample provision for self-lubrication are readily accessible if it becomes necessary to remove them.



Photo by International

Fighting the Erie Pier Fire at Weehawken, N. J.

# General News Department

## Western Railway Club

The next meeting is to be held on the evening of November 21 at the Great Northern Hotel, Chicago. N. D. Ballantine, superintendent of transportation of the Union Pacific, will read a paper entitled, "Does It Pay to Repair Foreign Freight Cars?"

## Tentative Valuations

The Interstate Commerce Commission has issued tentative valuations in which it states the final value of the used property of various roads as follows: Massillon Belt, 1916, \$19,123; Baltimore & Sparrows Point, 1915, \$429,327; Charleston & Western Carolina, \$10,509,027; Boston Terminal Company, \$19,910,500.

## Alaska Railroad Bill Passed by Senate

The Senate on November 14 passed the bill which had been passed by the House the week before, authorizing an additional appropriation of \$4,000,000 for the completion of the Alaska railroad. This is not a regular appropriation bill, but simply raises the limit on the cost of the railroad from \$52,000,000 to \$56,000,000, so that estimates may be sent to Congress; and actual appropriation made hereafter.

## Engineering Institute of Canada—Annual Meeting

The annual general meeting of the Engineering Institute of Canada will be held at Montreal on Tuesday, January 24, 1922. At this meeting the formal business of the Institute will be conducted, reports presented and officers elected. The meeting will then adjourn to Winnipeg, where it will convene on February 21, 22 and 23, and where the annual general professional meeting will be held under the auspices of the Winnipeg branch.

## American Society for Steel Treating Meeting

At the meeting of the board of directors of the American Society for Steel Treating held at Cleveland, Ohio, during the week of November 7, it was decided to hold two sectional meetings of the society during the coming year, one in New York during January or February, and the other in Pittsburgh, Pa., in May. These meetings, at which one or two well-chosen, pre-printed papers will be presented, will be of one or two days' duration and will be in addition to the annual convention and exposition which will be held at Detroit, Mich., September 25 to 30, 1922.

## Savannah Signal Section—A. R. A.

E. B. De Meritt, chairman of the Savannah Sectional Committee of the Signal Section of the American Railway Association announces that the committee will hold a meeting at the De Soto Hotel, Savannah, on Monday, November 21. J. W. Hackett, of the Okonite Company, will describe the manufacture of insulated wire, illustrating with motion pictures. W. D. Cloud, of the General Railway Signal Company, will speak on Power Interlocking; and there will be a motion picture illustrating the Use and Abuse of Drills and Reamers, presented by the Cleveland Twist Drill Company. All signal department men are invited.

## Numerous Subjects Discussed Before A. S. C. E.

The subject of the St. Lawrence Ship Canal and Power Project was presented Monday evening, November 14, before the New York Section of the American Society of Civil Engineers under the auspices of the New York sections of the four Founder Societies. Julius H. Barnes, president of the U. S. Grain Corporation, presided, the speakers being: Hon. Henry J. Allen, governor of Kansas; Hon. W. L. Harding, governor of Iowa; Dr. R. S. MacElwee, Washington, D. C., and H. I. Harriman, Boston, Mass. On Tuesday and Wednesday, November 16 and 17, a three-

session program, including a regular business meeting, was presented to cover the following subjects: A symposium on Stream Pollution and Sewerage Disposal; a paper on Odors and Their Travel Habits, published in the August proceeding and presented for discussion at this time, and a symposium on Water Supply and Water Purification.

## Western Union on the L. & N.

The long drawn-out litigation between the Louisville & Nashville Railroad and the Western Union Telegraph Company came up again in the United States Court in Kentucky on November 5, when there was filed a report by Special Commissioner John W. Menzies, finding that the sum of \$2,300,000 is due to the railroad company from the telegraph company for the use of the railroad right-of-way for a period of about nine years. It is said that this sum is based on a rate of \$73.06 annually per mile of line.

## Ben W. Hooper To Be Guest of

### The New York Railroad Club

Ben W. Hooper, a member of the public group of the Railroad Labor Board and former Governor of Tennessee, is to be the speaker and guest of honor at the third annual dinner of the New York Railroad Club, which will be held at the Commodore Hotel, New York, Friday evening, December 15. Mr. Hooper played a most important part in the recent wage controversy. Tickets for the dinner may be had by applying to W. J. Moody, treasurer, Erie Railroad, 50 Church street, New York City.

## N. Y. C. Leases Shops

The New York Central has leased its car repair shops at East Buffalo, N. Y., to William J. Conners, a prominent business man of that city, and work was resumed this week after an almost complete suspension for about eight months. The lessee expects to employ from 1,500 to 2,000 men. The manager of the shops under Mr. Conners, will be James J. Barrett. It is proposed to make the work-day ten hours.

It is understood that negotiations are pending for a similar disposal of the extensive shops at West Albany, N. Y.

It is reported that the shops at Collinwood, Ohio, (Cleveland), and those at Air Line Junction, near Toledo, have been leased to the A. S. Hecker Company, of Cleveland.

## Malaria Control on the Cotton Belt

The St. Louis Southwestern has carried on an extensive campaign for the control of malaria along its lines in Arkansas and Texas during the past five years. This company has just issued a complete report, consisting of a booklet of 66 pages, describing in detail the methods used and the results obtained. Typical of the latter is the statement that the man-hours worked by the section men for each hospital case of malaria in 1916 (prior to malaria control) was about 10,000, as compared with 100,000 man-hours in 1920 (under malaria control), while the average annual number of hospital cases of malaria for the years 1913-1916 was 602, as compared with 251 for the period 1917-1920. This campaign was described in an article in the *Railway Age* issue of July 5, 1918, page 23. Since that time it has been extended and a number of towns and cities along the route have co-operated with the railroad in controlling the disease, with benefit to the entire communities. An educational car has been equipped to demonstrate the source, effect and prevention of malaria to the people in the various towns on the system, while a tank car has been provided for the distribution of oil for fighting the mosquito. The extensive use of quinine to prevent malaria among the employees of the track and bridge departments has also been studied carefully.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921

Table with columns: Name of road, Average mileage operated per month, Operating revenues (Freight, Passenger, Inc. misc.), Maintenance of way and equip., Traffic, Transportation, General, Total, Operating ratio, Net after railway operations, Operating income (or loss), Net after other rentals, Net after rentals 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTHS OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage during period, Operating revenues, Freight, Passenger, (Inc. misc.), Total, Maintenance of way and structure, Equip., Traffic, Transportation, General, Total, Operating ratio, Net from railway operations, Operating income (or loss), Net after taxes, Net after 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage during period, Operating revenues (Freight, Passenger, etc.), Total operating expenses (Traffic, Trans-portion, Equip-ment, etc.), Total, Operating ratio, Net from operations, Operating income (or loss), Net after rentals, Net after rentals 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921.—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Total.	Net after railway 1919.	Net after rentals.	Operating (loss).	Net from operating.	Net after 1920.
		Freight.	Passenger.	Total (inc. misc.)	Way and structure.	Maintenance of equip-ment.	Traffic.						
Mobile and Ohio.....	Sept. 1,165	\$11,224,914	\$106,972	\$11,331,886	\$186,984	\$364,228	\$1,551,218	\$11,888,100	\$1,643,817	\$300,976	\$238,895	\$1,404,921	\$1,643,817
.....	9 mos.	14,759,539	1,455,046	16,214,585	2,298,308	4,544	6,842,852	15,371,733	1,647,000	517,997	488,936	1,028,061	1,647,000
Columbus & Greenville.....	Sept. 1,226	104,125	1,155,456	1,259,581	15,644	15,644	31,288	1,290,869	167,051	13,923	13,923	1,276,946	1,657,000
.....	9 mos.	258	256,861	331,704	174,659	26,664	617,671	58,493	1,209,191	438,391	148,990	289,401	653,881
Momongahela.....	Sept. 32,133	418,810	58,588	477,398	58,588	58,588	117,176	596,574	148,008	181,716	148,008	448,568	653,411
.....	9 mos.	106	2,612,363	321,261	2,976,484	608,502	2,367,982	5,345,484	228,697	664,353	664,353	1,621,630	530,335
Momongahela C-mecting.....	Sept. 7	.....	.....	54,173	12,977	24,957	37,134	36,586	92,800	54,683	54,683	38,117	319,592
.....	9 mos.	92,528	.....	54,173	12,977	24,957	37,134	36,586	92,800	54,683	54,683	38,117	319,592
Montour.....	Sept. 56	92,528	.....	54,173	12,977	24,957	37,134	36,586	92,800	54,683	54,683	38,117	319,592
.....	9 mos.	1,083,578	8,567	1,092,145	37,666	37,666	75,332	1,129,811	161,970	783	783	1,129,028	606,887
Nashville, Chattanooga & St. Louis.....	Sept. 1,258	1,249,619	414,987	1,664,606	185,266	407,579	592,845	1,857,761	161,970	37,837	37,837	1,819,924	213,372
.....	9 mos.	1,258	10,933,930	3,835,655	15,833,279	2,135,246	3,693,529	14,139,753	402,840	844,325	441,485	13,698,268	5,009
Nevada Northern.....	Sept. 165	17,384	2,678	20,062	10,733	3,511	14,244	34,293	4,262	6,315	4,262	30,031	7,763
.....	9 mos.	164	186,256	46,381	263,512	100,423	54,085	154,508	116,539	1,488	1,488	153,051	389,089
Newburgh & South Shore.....	Sept. 7	.....	.....	129,725	21,081	23,897	42,166	171,841	116,779	116,779	116,779	94,089	339,868
.....	9 mos.	7	.....	114,893	23,897	23,897	47,790	162,683	116,779	116,779	116,779	94,089	339,868
New Orleans Great Northern.....	Sept. 274	153,584	33,747	187,331	67,046	64,978	132,024	319,355	14,970	14,970	14,970	304,385	35,866
.....	9 mos.	245	2,609,134	174,011	2,783,145	439,828	1,379,181	4,162,326	650,411	650,411	650,411	3,511,915	1,667,727
Cleveland, Cin., Chic. & St. Louis.....	Sept. 1,866	4,146,659	1,762,626	5,909,285	928,994	1,779,131	3,708,125	9,617,410	1,667,727	1,667,727	1,667,727	7,949,683	1,667,727
.....	9 mos.	2,419	40,919,531	13,393,846	60,883,378	8,066,793	13,323,085	74,206,463	1,667,727	1,667,727	1,667,727	71,538,736	1,667,727
New York Central.....	Sept. 6,078	17,035,923	4,845,633	21,881,556	4,093,888	3,676,008	7,770,896	29,652,454	5,232,916	5,232,916	5,232,916	24,419,538	5,232,916
.....	9 mos.	6,077	144,368,385	70,727,022	240,095,407	28,585,187	55,330,213	341,425,614	5,232,916	5,232,916	5,232,916	339,192,698	5,232,916
Cincinnati Northern.....	Sept. 143	364,352	17,327	381,679	59,166	50,921	110,087	491,766	39,437	39,437	39,437	451,329	39,437
.....	9 mos.	245	2,609,134	174,011	2,783,145	439,828	1,379,181	4,162,326	1,667,727	1,667,727	1,667,727	2,494,600	1,667,727
Cleveland, Cin., Chic. & St. Louis.....	Sept. 1,866	4,146,659	1,762,626	5,909,285	928,994	1,779,131	3,708,125	9,617,410	1,667,727	1,667,727	1,667,727	7,949,683	1,667,727
.....	9 mos.	2,419	40,919,531	13,393,846	60,883,378	8,066,793	13,323,085	74,206,463	1,667,727	1,667,727	1,667,727	71,538,736	1,667,727
Indiana Harbor Belt.....	Sept. 130	237,075	17,619,158	17,856,233	362,025	673,682	1,035,707	1,401,412	131,980	131,980	131,980	1,269,432	131,980
.....	9 mos.	126	6,452,468	67,782	142,432	33,500	3,669,834	81,861	1,318,522	1,318,522	1,318,522	1,186,967	1,318,522
Kanawa & Michigan.....	Sept. 176	376,364	549,026	925,390	650,071	1,318,605	1,973,676	2,900,065	161,670	161,670	161,670	2,738,395	161,670
.....	9 mos.	176	2,972,096	540,920	3,513,016	650,071	1,318,605	4,832,621	161,670	161,670	161,670	4,670,951	161,670
Lake Erie & Western.....	Sept. 738	728,620	49,440	778,060	140,355	199,155	339,510	1,117,570	88,900	88,900	88,900	1,028,670	88,900
.....	9 mos.	738	5,959,248	519,130	6,478,378	1,812,797	1,770,420	3,583,217	88,900	88,900	88,900	3,494,317	88,900
Michigan Central.....	Sept. 1,866	4,146,659	1,762,626	5,909,285	928,994	1,779,131	3,708,125	9,617,410	1,667,727	1,667,727	1,667,727	7,949,683	1,667,727
.....	9 mos.	1,866	43,886,184	15,359,997	59,246,181	8,066,793	13,323,085	72,570,266	1,667,727	1,667,727	1,667,727	70,902,539	1,667,727
Pittsburgh & Lake Erie.....	Sept. 227	1,375,131	327,075	1,702,206	362,025	673,682	1,035,707	2,368,412	171,080	171,080	171,080	2,197,332	171,080
.....	9 mos.	227	13,715,830	777,391	14,493,221	1,472,123	5,866,902	20,360,125	171,080	171,080	171,080	19,649,045	171,080
Toledo & Ohio Central.....	Sept. 503	898,788	77,391	976,179	132,083	193,409	225,492	1,201,681	180,738	180,738	180,738	1,020,943	180,738
.....	9 mos.	503	6,995,432	697,171	7,692,603	1,913,409	3,152,685	10,846,094	180,738	180,738	180,738	10,665,356	180,738
New York, Chicago & St. Louis.....	Sept. 574	2,190,884	125,500	2,316,384	299,755	435,971	735,726	3,052,110	428,749	428,749	428,749	2,623,361	428,749
.....	9 mos.	574	18,517,514	1,905,311	20,422,825	2,439,050	4,077,120	24,500,000	428,749	428,749	428,749	24,071,251	428,749
New York, New Haven & Hartford.....	Sept. 1,986	8,586,381	1,696,405	10,282,786	1,696,405	2,634,574	4,330,979	14,617,359	1,696,405	1,696,405	1,696,405	13,920,954	1,696,405
.....	9 mos.	1,986	88,386,381	18,215,849	106,602,230	18,215,849	27,103,336	133,715,585	1,696,405	1,696,405	1,696,405	132,019,180	1,696,405
Central New England.....	Sept. 301	653,246	23,663	676,909	170,320	250,256	320,576	997,484	131,980	131,980	131,980	865,504	131,980
.....	9 mos.	301	5,525,873	338,017	5,863,890	1,907,487	1,985,143	3,892,630	131,980	131,980	131,980	3,760,650	131,980
New York, Ontario & Western.....	Sept. 569	6,438,773	3,028,112	9,466,885	1,293,019	1,923,538	3,216,557	12,683,442	3,216,557	3,216,557	3,216,557	9,466,885	3,216,557
.....	9 mos.	569	54,320,430	8,668,765	62,989,195	8,668,765	12,943,400	75,932,600	3,216,557	3,216,557	3,216,557	72,716,043	3,216,557
Norfolk & Western.....	Sept. 2,231	49,167,537	7,714,564	56,882,101	8,844,815	14,481,449	23,326,264	80,208,554	3,216,557	3,216,557	3,216,557	77,000,000	3,216,557
.....	9 mos.	2,231	415,650,666	67,392,912	482,943,578	67,392,912	100,959,863	583,893,441	3,216,557	3,216,557	3,216,557	580,676,884	3,216,557
Norfolk & Southern.....	Sept. 942	2,600,624	1,155,552	3,756,176	569,063	891,584	1,460,647	5,216,821	891,584	891,584	891,584	4,325,237	891,584
.....	9 mos.	942	22,000,624	11,555,552	33,556,176	5,690,663	9,816,421	43,372,597	891,584	891,584	891,584	42,481,013	891,584
Northern, Pacific.....	Sept. 6,655	47,533,289	1,353,866	48,887,155	1,353,866	2,062,342	3,416,208	52,303,363	1,353,866	1,353,866	1,353,866	51,000,000	1,353,866
.....	9 mos.	6,655	475,332,890	13,538,666	488,871,556	13,538,666	20,623,421	503,395,027	1,353,866	1,353,866	1,353,866	502,041,161	1,353,866
Northwestern Pacific.....	Sept. 3,072	5,333,281	948,372	6,281,653	1,099,598	1,699,598	2,799,196	9,080,849	1,699,598	1,699,598	1,699,598	7,381,251	1,699,598
.....	9 mos.	3,072	45,333,281	8,483,372	53,816,653	9,095,598	14,395,196	68,211,849	1,699,598	1,699,598	1,699,598	66,512,251	1,699,598
Pennsylvania.....	Sept. 7,233	27,576,013	11,406,502	38,982,515	6,074,372	9,974,407	16,048,779	55,031,292	4,315,279	4,315,279	4,315,279	50,716,013	4,315,279
.....	9 mos.	7,233	244,707,674	99,570,271	344,277,945	58,813,224	95,823,274	440,101,219	4,315,279	4,315,279	4,315,279	396,785,940	4,315,279
Balt., Chesapeake & Atlantic.....	Sept. 87	852,390	107,241	959,631	125,348	182,334	207,682	1,167,314	207,682	207,682	207,682	959,631	207,682
.....	9 mos.	87	8,523,390	1,072,411	9,595,801	1,253,481	1,823,334	2,076,682	207,682	207,682	207,682	1,868,960	207,682
Chic., Lebanon & Northern.....	Sept. 70	6,881	85,901	92,782	25,338	40,681	66,019	158,800	43,274	43,274	43,274	115,526	43,274
.....	9 mos.	70	68,881	859,011	927,892	253,381	406,811	1,334,703	43,274	43,274	43,274	1,291,429	43,274
Grand Rapids & Indiana.....	Sept. 575	4,057,200	5,274	4,062,474	1,355,296	1,979,341	3,334,637	7,401,815	3,334,637	3,334,637	3,334,637	4,068,152	3,334,637
.....	9 mos.	575	4,057,200	5,274	4,062,474	1,355,296	1,9						

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921--CONTINUED

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total (inc. misc.), Operating revenues, Maintenance of way and structure, Equipment, Operating expenses, Traffic, General, Total, Operating ratio, Net from railway operations, Operating income (or loss), Net after rentals, Net after interest.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1921—CONTINUED.

Name of road.	Average mileage operated during period.			Operating revenues			Maintenance of way and equipment			Operating expenses			Total.	Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Net after rentals, 1920.	
	Passenger.	Freight.	Total (inc. misc.)	Passenger.	Freight.	Total.	Way and structure.	Equip-ment.	Traffic.	Trans-portion.	Traffic.	Trans-portion.							
Gabveston, Harrisburg & S. Ant., Sept. 9 mos.	1,380	\$1,508,650	\$4,421,103	\$2,076,936	\$430,850	\$724,102	\$75,755	\$1,655,537	79.70	\$421,399	\$17,878	\$210,929	\$2,700,292	79.70	\$421,399	\$17,878	\$210,929	\$16,683	
Houston & Texas Central, Sept. 9 mos.	1,380	1,508,650	4,421,103	2,076,936	430,850	724,102	75,755	1,655,537	79.70	421,399	17,878	210,929	2,700,292	79.70	421,399	17,878	210,929	16,683	
Houston & Texas Central, Sept. 9 mos.	932	938,882	2,189,684	1,279,435	235,171	795,171	111,241	2,189,684	87.80	1,179,491	855,527	312,200	8,498,023	87.80	1,179,491	855,527	312,200	602,285	
Houston, East & West Texas, Sept. 9 mos.	215,534	47,971	276,616	66,642	41,282	107,924	10,793	208,332	75.30	3,560	30,132	8,071	208,332	75.30	3,560	30,132	8,071	36,76	
Louisiana Western, Sept. 9 mos.	1,923,654	4,091	2,026,664	593,709	293,640	897,349	111,006	1,612,355	74.96	87,407	275,444	1,011,017	6,834,881	74.96	87,407	275,444	1,011,017	337,900	
Morgan's L. & T. R. R. & S. C. (Sept. 9 mos.)	1,561,941	1,529,371	3,091,312	704,858	1,175,621	1,880,479	183,838	2,754,317	79.43	183,838	275,341	320,731	1,011,008	79.43	183,838	275,341	320,731	91,073	
Texas & New Orleans, Sept. 9 mos.	475,429	1,301,131	6,722,906	1,366,099	1,722,037	3,088,136	157,098	2,838,038	88.30	103,922	231,642	25,790	5,922,214	88.30	103,922	231,642	25,790	513,278	
St. Louis Transfer, Sept. 9 mos.	165	5,981,660	11,419,124	28,436	11,236	39,672	1,680	34,066	69.40	30,465	5,337	82,659	30,465	69.40	30,465	5,337	82,659	33,575	
St. Louis Connecting, Sept. 9 mos.	165	792,143	143,727	976,464	88,850	702,666	7,601	327,845	72.20	271,070	141,787	1,147,787	327,845	72.20	271,070	141,787	1,147,787	314,077	
St. Louis Melts, Bridge Term., Sept. 9 mos.	549	5,206,236	17,781	839,945	108,263	948,208	3,406	336,013	83.60	376,638	19,424	3,593,230	376,638	83.60	376,638	19,424	3,593,230	652,985	
Tennessee Central, Sept. 9 mos.	292	1,372,366	57,098	210,416	47,912	268,328	1,236	42,474	84.63	88,914	104,469	194,403	163,138	84.63	88,914	104,469	194,403	6,900	
Term. R. Assn. of St. Louis, Sept. 9 mos.	37	1,933,894	465,988	1,770,222	406,101	363,497	3,309	363,497	43.980	940,119	100,088	1,853,657	43.980	940,119	100,088	1,853,657	216,149		
East St. Louis Connecting, Sept. 9 mos.	3	1,655,642	734,789	2,599,806	346,619	473,268	404,718	1,052,038	8.995	347,826	1,476,347	6,993	229,941	8.995	347,826	1,476,347	6,993	7,831	
St. Louis Transfer, Sept. 9 mos.	1,950	17,667,648	6,694,893	56,201,543	4,633,763	5,076,291	80,413	2,033,993	80,413	2,033,993	197,283	3,593,230	197,283	80,413	2,033,993	197,283	3,593,230	303,178	
St. Louis Transfer, Sept. 9 mos.	6	1,655,642	734,789	2,599,806	346,619	473,268	404,718	1,052,038	8.995	347,826	1,476,347	6,993	229,941	8.995	347,826	1,476,347	6,993	7,831	
Texas & Pacific, Sept. 9 mos.	1,950	17,667,648	6,694,893	56,201,543	4,633,763	5,076,291	80,413	2,033,993	80,413	2,033,993	197,283	3,593,230	197,283	80,413	2,033,993	197,283	3,593,230	303,178	
Toledo, Peoria & Western, Sept. 9 mos.	247	91,556	46,763	149,851	24,050	36,503	2,000	63,509	74.03	63,509	7,403	133,455	63,509	74.03	63,509	7,403	133,455	6,306	
Toledo, St. Louis & Western, Sept. 9 mos.	247	714,599	38,618	1,235,191	284,820	386,833	27,067	733,781	72.643	43,980	940,119	100,088	1,853,657	72.643	43,980	940,119	100,088	98,441	
Trinity & Brazos Valley, Sept. 9 mos.	368	298,949	33,264	333,812	58,352	49,911	3,085	1,020,023	9.112	3,085	9,112	30,014	3,085	9.112	3,085	9,112	30,014	581	
Union Pacific, Sept. 9 mos.	3,614	9,993,869	1,838,330	12,570,483	1,588,240	1,905,798	3,498	3,422,655	83.10	3,498	3,422,655	69,770	6,091,982	83.10	3,498	3,422,655	69,770	6,091,982	348,064
Union Pacific, Sept. 9 mos.	3,614	9,993,869	1,838,330	12,570,483	1,588,240	1,905,798	3,498	3,422,655	83.10	3,498	3,422,655	69,770	6,091,982	83.10	3,498	3,422,655	69,770	6,091,982	348,064
Union Pacific, Sept. 9 mos.	3,614	9,993,869	1,838,330	12,570,483	1,588,240	1,905,798	3,498	3,422,655	83.10	3,498	3,422,655	69,770	6,091,982	83.10	3,498	3,422,655	69,770	6,091,982	348,064
Oregon Short Line, Sept. 9 mos.	2,359	3,407,768	599,916	4,197,806	601,149	599,157	42,672	1,164,601	115.910	115,910	1,164,601	1,164,601	1,164,601	115.910	115,910	1,164,601	1,164,601	1,011	
Oregon, Wash R. & Nav. Co., Sept. 9 mos.	2,359	3,407,768	599,916	4,197,806	601,149	599,157	42,672	1,164,601	115.910	115,910	1,164,601	1,164,601	1,164,601	115.910	115,910	1,164,601	1,164,601	1,011	
Oregon, Wash R. & Nav. Co., Sept. 9 mos.	2,359	3,407,768	599,916	4,197,806	601,149	599,157	42,672	1,164,601	115.910	115,910	1,164,601	1,164,601	1,164,601	115.910	115,910	1,164,601	1,164,601	1,011	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	93,248	28,644	138,248	65,500	55,898	2,871	129,427	78.500	129,427	11,624	65,500	129,427	78.500	129,427	11,624	65,500	2,871	
St. Joseph & Grand Island, Sept. 9 mos.	25	9																	

### Addition to M. D. T. Company's Shop

The Merchants' Dispatch Transportation Company is making extensive additions to its car shop at East Rochester, N. Y. Approximately 125,000 square feet of space is being provided for repairs to steel cars. The shop is to be of steel frame construction with steel sash and will be fitted with modern equipment for repairing or rebuilding steel freight cars. In addition a new blacksmith shop of 10,000 square feet floor area has recently been erected.

### Illinois Central Expense-Reduction Campaigns

A campaign to prevent the killing of cattle by trains will be started by the Illinois Central on December 1. Section hands will be instructed to be on the lookout for broken fencing, gates and cattle guards, and farmers along the line are to be asked to co-operate. Some preventive measures are already in practice but the campaign will give wide publicity to the matter.

For September, the first month of the coal-saving campaign, a saving of 30,991 tons of coal as compared with September, 1921, and 25,187 tons as compared with August, 1921, has been reported. The estimated saving is based upon the reduced consumption per unit of service and the number of service units rendered during the month. The system actually burned 380,499 tons of coal in September, 1920; 324,314 tons in August, 1921, and 294,576 in September, 1921. The report shows that a saving was made in September as compared with the same month of last year of 6 lb. per 1,000 gross ton miles in freight service, 195 lb. per 100 passenger car miles, 10 lb. per switching locomotive mile, and a total of 3,147 tons in miscellaneous service.

### Annual Dinner of Central Railway Club

The Central Railway Club held its annual dinner at the Hotel Iroquois, Buffalo, N. Y., on the evening of November 10. About 300 railroad men and guests attended, a large number coming from other cities, including a delegation in two special cars from New York. W. H. Flynn, superintendent of motive power of the Michigan Central and president of the club, introduced Hon. Charles F. Moore, who acted as toastmaster. At the conclusion of the dinner Arthur T. Baldwin, vice-president of the McGraw-Hill Company, delivered an address.

Frank C. Pickard, a former president of the club, was presented with a testimonial in recognition of his work for the organization, the presentation being made by W. F. Jones, also a past president.

Announcement was made of the election of the following officers to serve for next year: President, George Thibaut, master mechanic, Erie railroad; first vice-president, W. O. Thompson, general superintendent rolling stock, New York Central; second vice-president, J. R. Schrader, general car foreman, New York Central; third vice-president, C. L. McIlvaine, superintendent motive power, Pennsylvania, Central region. Members of executive committee; A. N. Dugan, Bronze Metal Company; J. M. Gaiser, Erie, and T. J. O'Donnell, chief joint inspector, Buffalo.

### Thirty-six Roads Had Deficits for September

Thirty-six of the 200 Class I railroads that have reported had operating deficits for the month of September, according to a preliminary compilation of railway returns for that month made by the Bureau of Railway Economics. Of these, 18 were in the Eastern district, 10 in the Southern and 8 in the Western. Fifty-six roads had operating deficits in August. The net operating income for all of the Class I roads, except the Detroit, Toledo & Ironton, which has not yet reported, was \$87,174,000, or an annual rate of 4.6 per cent on the value. For the Eastern roads the net operating income was \$31,426,000, which would be at the annual rate of 4 per cent; for the Southern roads it was \$10,251,000, or at the annual rate of 4 1/2 per cent; and for the Western roads it was \$45,497,000, or 5.2 per cent. Expenditures for maintenance, while considerably less than those for September, 1920, showed little difference from the amounts expended in August. The expenditures in September for maintenance of ways and structures amounted to \$72,556,000, a decrease of 23.3 per cent as compared with September, 1920, and approximately \$616,000 more than for August, 1921. Expenditures for maintenance of equipment were \$103,539,000, a reduction of 22.7 per cent as compared with September, 1920. For August the maintenance of equipment amounted to \$105,482,000.

## Traffic News

At the annual banquet of the Lansing Traffic Club of Lansing, Mich., on November 3, L. W. Landman, passenger traffic manager of the Michigan Central, Chicago, discussed the railroad situation from the viewpoint of the railroads. Sherman T. Handy, chairman of the Michigan Public Utilities Commission, spoke for that body, and Joseph H. Beck, executive secretary of the National Industrial Traffic League, presented the views of shippers.

Grain shippers have been informed that the expected reduction of grain and hay rates would not become effective on November 20; and the railroads are to ask for a rehearing before the Interstate Commerce Commission, as noted elsewhere in this paper. At the conference in Washington last week the commissioners indicated that an order would be issued "if necessary." Tariffs reducing the grain rates in accordance with the commission's opinion should have been filed with the commission by November 15 to make them effective by November 20; but they were not filed.

The Southwestern Industrial Traffic League, at its annual meeting at Fort Worth, Tex., went on record as favoring the repeal of Section 15a of the Transportation Act and recommended other changes in bills in force and certain of those proposed in line with the action of the National Industrial Traffic League at Chicago on November 9 and 10. The following officers were elected: President, H. J. Fernandez, traffic manager, Chamber of Commerce, Monroe, La.; vice-president, H. D. Driscoll, manager, Oklahoma Traffic Association, Oklahoma City, Okla.; G. J. Vizard, traffic manager, Board of Commerce, Little Rock, Ark.; G. S. Maxwell, manager traffic department, Chamber of Commerce and Manufacturers' Association, Dallas, Tex.; secretary and treasurer, F. A. Lefingwell, traffic commissioner, Chamber of Commerce, Waco, Tex.; directors, C. D. Mowen, E. P. Byars, U. S. Pawckett, F. E. Potts, H. G. Struble, Edgar Moulton and G. S. Gibson.

### Coal Production

Production of soft coal dropped back to 9,344,000 tons during the week ended November 5, according to the weekly bulletin of the Geological Survey. In comparison with the week preceding this was a decrease of 1,624,000 tons, or 15 per cent. The bulletin says that three factors entered into the decrease. The observance of All Saints' Day, a reaction in demand following the settlement of the railroad controversy, and mine strikes in Indiana and elsewhere.

### Anthracite Shipments—October, 1921

The shipments of anthracite for October, as reported to the Anthracite Bureau of Information, Philadelphia, amount to 5,872,753 tons against 5,519,412 for the preceding month of September, an increase of 353,371 tons, but show a decrease over October of last year of 368,118 tons, when 6,240,901 tons were recorded. October of this year can be considered a fair average shipment when consideration is given to the fact that a number of mines in the Scranton district were idle during the month owing to the fact that they could not operate under the provisions of the Kohler Act. Operations at these mines were resumed, however, on November 2. The total shipments for the coal year beginning April 1 have amounted to 40,223,367 tons as compared with 39,720,654 tons for the corresponding period last year, a gain of 502,713 tons.

Shipments by initial carriers were as follows:

	October, 1921	September, 1921
P. & R.	1,104,828	1,081,085
L. V.	1,048,996	966,600
C. of N.	570,189	576,875
D. L. & W.	759,492	736,571
D. & H.	898,376	711,459
Penna.	492,632	426,344
Erie	618,034	631,882
N. Y. O. & W.	126,925	123,742
L. & N. E.	253,311	265,114
	5,872,753	5,519,412

## Commission and Court News

### Interstate Commerce Commission

The Interstate Commerce Commission has announced the reopening of the New England rate division case for oral argument at Washington on November 29.

The commission has suspended until March 15 a supplement to Agent W. J. Kelly's tariff which proposes to establish a commodity rate of 32½ cents on sewer pipe from Cincinnati, Ohio; Lexington, Ky.; Louisville, Ky.; Maysville, Ky., and certain related points to Norfolk and certain other Virginia cities in lieu of the existing sixth class rate of 42½ cents.

The commission has suspended until March 15, the operation of schedules published in supplements to Agents E. B. Boyd's and F. A. Leland's tariffs which propose to prohibit the acceptance of shipments of petroleum by the Missouri, Kansas & Texas for routing via the Chicago & Eastern Illinois to certain destinations in Indiana and Michigan.

### Interlocking Officers and Directors Authorized

The Interstate Commerce Commission has issued a number of orders authorizing railroad officers and directors to hold positions with more than one railroad. Under Section 20-a of the interstate commerce act there is a prohibition against holding the position of officer or director of more than one carrier after December 31 of this year, except as authorized by the commission. Large numbers of applications for this permission have been filed with the commission and are coming in every day. It is understood the commission will shortly announce a hearing to consider some protests which have been filed against the applications. The orders so far issued authorize the officers and directors of the Chicago & Western Indiana to hold similar positions with the Belt Railway of Chicago, officers and directors of the Chicago, Milwaukee & Gary to hold similar positions with the Apalachicola Northern, officers and directors of the Waterloo, Cedar Falls & Northern to hold similar positions with the Kansas City Northwestern, and officers and directors of the Manufacturers Railway of St. Louis to hold similar positions with the St. Louis & O'Fallon.

## Court News

### Propensity of Mules to Kick

The Alabama Supreme Court holds, in an action for damages to mules in transit, that the disposition of mules to kick is too well known to be ignored by courts. Having regard, therefore, to the inherent nature and propensities of these animals, the mere fact that several individuals of the earload got down and received injuries does not authorize a finding of negligence on the part of the railroad. The rule of *res ipsa loquitur* cannot be here applied. —A. C. L. v. Carroll Mercantile Co. (Ala.), 89 So. 509.

### Railroad Agreeing to Reserve Steamship Space

#### Not Liable for Failure of Broker to Reserve It

A railroad company, receiving shipments to the coast over its line, was accustomed to ascertain from steamship companies whether they could book the shipments, and the clearance and rates. If accepted, it sent confirmations to its representatives on the coast, who exchanged confirmations with the steamship companies. The railroad company agreed with an exporter who had failed to get space, to reserve space from San Francisco to Japan for a cargo of pig iron, at \$15 a ton. Finding it could not secure space directly, it booked it through brokers at this rate, which was cheaper than that asked by the steamship companies. The brokers failed to reserve space. The Circuit Court of Appeals, Ninth Circuit, holds that the railroad company was not liable to the exporter for breach of contract, the agreement being one of agency, although the railroad did not disclose to the ex-

porter the ship or line with which it had booked the freight, the name of which it had been unable to get from the brokers — Baldwin Shipping Co. v. Southern Pac. Co., 274 Fed. 374.

### Converting Public Track to a Private

#### One Is Not Discrimination

Missouri Rev. St. 1919, §9975, provides a penalty for discrimination in charges or facilities between (1) transportation companies and individuals, or (2) in transportation of freight between (2) "commission merchants or other persons engaged in the transportation of freight and individuals." The Springfield Court of Appeals holds that the statute does not authorize a penalty where a railroad converts a public team track to a private one for the use of an individual, compelling another individual to go to a more distant track. The statute does not cover cases of discrimination between individuals. Moreover, neither of the individuals in question, a lumber dealer and a sand dealer, was a transportation company, and hence was not within the first classification of the statute. The second classification "commission merchants or other persons" was held to include only commission merchants and the class of shippers similar to commission merchants.—Tacker v. St. Louis-San Francisco (Mo. App.) 233 S. W. 512.

## United States Supreme Court

### Director General Upheld

The Supreme Court of the United States, reversing the judgment of the Mississippi Supreme Court, holds that Order No. 18 of the Director General, prohibiting the institution of suits against railroads under federal control in the court for any district other than that in which the plaintiff had resided or in which the alleged cause of action arose, was within the powers conferred by Congress on the President and by him on the Director General, and is valid.—Alabama & Vicksburg v. Journey. Decided November 7, 1921.

### Reparation for Discrimination

#### in Allotment of Coal Cars

The Supreme Court of the United States has affirmed Weber v. Pennsylvania, 263 Fed. 945, and 269 Fed. 111, sustaining an award by the Interstate Commerce Commission of restitution to a coal mine owner against a railroad for discrimination in the distribution of coal cars in times of shortage. The discrimination condemned was the special allotment to the Berwind-White Coal Company of 500 cars daily, and the sale to it and to other companies of a large number of cars in times of car shortage.—Pennsylvania v. Weber. Decided November 7, 1921.

### Reasonable Rates on Tap Lines

The Supreme Court of the United States has sustained the order of the Interstate Commerce Commission, 53 I. C. C. 475, finding that an allowance of more than \$3 a car for hauling from Union Sawmill plant to Dollar Junction, would result in unjust discrimination. The plaintiff, the Louisiana & Pine Bluff, contended that it should be allowed to receive the division of 1½ cents per 100 pounds, or about \$9 a car, on the ground that its haul from the Union Sawmill plant to Dollar Junction was longer than three miles. If hauled direct, the cars would travel only 2.41 miles, but as they were taken first in the opposite direction to a track scale located on and controlled by the trunk line, they traveled 3.42 miles. The Supreme Court says, in part, by Mr. Justice Brandeis: "The commission finds that, 'The evidence does not show that it is necessary that the shipments be weighed by the tap line rather than by the trunk line'; and, 40 I. C. C. 470-471, that allowing the larger division on these facts would place the plaintiff in a more advantageous position than any other tap line in that territory performing a similar service and would open the way in the case of many tap lines for a relocation of the track scales so as to require a long back haul, and in that way to lay a basis for divisions or allowances very materially in excess of those fixed by the Commission for the distance covered by a direct movement from the mill to the junction.' In other words, divisions that would operate as rebates."—Louisiana & Pine Bluff v. United States. Decided November 7, 1921.

## Foreign Railway News

### Russian Shipyard to Repair Locomotives

LONDON.

It is reported that the Balto-British Shipyard Company, Reval, Russia, has undertaken the repair of one thousand locomotives for the Russian railways during the next five years.

### German Locomotives for Spain

LONDON.

It is reported that four German-built locomotives, each of a total weight of 96 tons, have been delivered at Port Bon, Catalonia, Spain, for use on the Madrid, Saragossa & Alicante railway. Twenty-one similar engines are on order.

### Railway Accidents in Great Britain

LONDON.

A report recently issued by the Ministry of Transport states that 991 persons were killed in railway accidents in the year 1920, as compared with 932 in the year 1919. There was a total of 25,933 injured in the year 1920, as against 23,983 in 1919, an increase of 1,950.

### New Railway in Kenya Colony

A new railway line is to be built from Nakuru on the Uganda Railway, Kenya Colony, Africa, to Turbo, a distance of 148 miles, according to the Times (London) Engineering Supplement. The construction work will be done by British concerns and will total in the neighborhood of \$10,000,000. This line, it is said, will eventually be an important feeder to the Cape-to-Cairo line, when it is completed. The prime purpose of the new line will be to provide transportation for a large agricultural community.

The route chosen will make this line at its highest point 9,135 ft. above sea level. The maximum gradient will be 1.5 per cent and the maximum curvature about 10 deg. Fifty-pound rails will be used and maximum train loads will vary from 204 to 428 long tons. The gage of the new line will probably be one meter.

### Polish Government Places Orders

#### for Locomotives and Cars

The Polish ministry of railways has placed orders with Polish firms for 2,970 locomotives, 7,800 passenger coaches, and 70,000 freight cars, according to a report published in the Warsaw Polish Courier and transmitted to Commerce Reports by Consul General L. J. Keena of Warsaw.

The orders were distributed as follows: First Locomotive Construction Company, Chrzanow, 1,200 locomotives; Locomotive Construction Company, Warsaw, 360 locomotives; H. Cegielski Company, Posen, 1,410 locomotives and 4,400 coaches and freight cars; Wagon Car Factory, Ostrow, 2,800 coaches and 18,000 freight cars; Lipop, Rau and Loewenstein, Warsaw, 3,000 coaches and 20,000 freight cars; Boiler Manufacturing Company, Ostrowiec, 20,000 freight cars.

The contracts for locomotives run to 1932, and the contracts for passenger coaches and freight cars to 1922. Nearly 200 locomotives are to be delivered during the first two years.

### Rumanian Railway Reorganization

LONDON.

It is reported that a grant of 400,000,000 lei (approximately \$44,081,600 at the normal rate of exchange) has been made by the Rumanian government to the Ministry of Communications for alterations and improvements in transport services in Rumania. The greater part of this grant is to be devoted to the repair of the permanent way and material and to the enlargement and completion of railway workshops. Practically nothing has been done to replace the bridges destroyed

during the war, owing to which many branch and some main lines have been out of service. The rolling stock also is in a very bad condition, the passenger coaches being generally without windows and upholstery. Ten million lei (approximately \$1,927,040 at the normal rate of exchange) has been allotted to the standardization of railway lines in the newly acquired provinces of Bessarabia. The existing lines are built on the broad gage system used in Russia, to which Bessarabia formerly belonged.

### Car Exports in September

Eleven passenger cars and 488 freight cars, valued at \$55,000 and \$670,213 respectively, were exported from this country in September. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce follow:

Countries	Passenger		Freight and Other		Parts of cars
	Number	Value	Number	Value	
France	1	.....	.....	.....	\$4,936
Norway	.....	.....	.....	.....	80
Switzerland	.....	.....	.....	.....	.....
Ireland	.....	.....	.....	.....	456
England	.....	.....	.....	.....	1,200
Canada	.....	.....	21	\$18,062	87,631
Costa Rica	.....	.....	.....	.....	2,294
Guatemala	.....	.....	.....	.....	1,433
Honduras	.....	.....	.....	.....	2,981
Salvador	.....	.....	.....	.....	380
Mexico	11	\$55,000	73	58,305	24,517
Jamaica	.....	.....	.....	.....	542
Trinidad and Tobago	.....	.....	.....	.....	188
Cuba	.....	.....	140	351,806	6,776
Dominican Republic	.....	.....	150	58,500	3,493
Argentina	.....	.....	.....	.....	4,420
Brazil	.....	.....	.....	.....	4,368
Chile	.....	.....	.....	.....	196
Colombia	.....	.....	.....	.....	150
Ecuador	.....	.....	.....	.....	397
Paraguay	.....	.....	.....	.....	1,970
China	.....	.....	100	181,000	23,800
Kwantung, leased territory	.....	.....	.....	.....	7,764
Straits Settlements	.....	.....	.....	.....	25
Hongkong	.....	.....	.....	.....	.....
Japan	.....	.....	4	2,540	29,998
Australia	.....	.....	.....	.....	39
Philippine Islands	.....	.....	.....	.....	4,373
British South Africa	.....	.....	.....	.....	683
Portuguese Africa	.....	.....	.....	.....	5,313
Total	11	\$55,600	488	\$670,213	\$220,503

### Track Material Exports in September

The value of exports of track spikes, steel rails, switches, frogs, etc., and structural iron and steel increased greatly in September over the preceding month. The detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Railroad spikes, Pounds	Rails steel, Tons	Switches, frogs, bars, etc., Dollars	Structural iron and steel, Tons
France	.....	.....	10,990	599
Norway	.....	.....	544	.....
Spain	.....	.....	4,027	.....
England	.....	.....	769	12
Scotland	.....	.....	.....	16,388
Ireland	.....	.....	509	747
Canada	8,993	2,539	96,024	2,399
Costa Rica	16,000	60	788	.....
Guatemala	.....	.....	.....	359
Honduras	47,100	646	528	71
Panama	.....	.....	2,877	6
Salvador	.....	.....	.....	29
Mexico	121,330	353	8,220	377
Jamaica	.....	.....	39	.....
Trinidad and Tobago	.....	.....	.....	2
Cuba	.....	.....	12,918	932
Dutch West Indies	.....	.....	2	250
Dominican Republic	84,360	446	3,863	15
Argentina	.....	.....	747	.....
Brazil	.....	.....	90,556	.....
Chile	.....	.....	141	.....
Colombia	30,800	448	153	28
Ecuador	7,000	.....	2,097	.....
Peru	.....	.....	5,776	161
Venezuela	2,000	20	1,162	46
China	132,000	12,742	61,150	23
Kwantung, leased territory	.....	.....	630	16,000
British India	.....	.....	10	58
Philippine Islands	.....	.....	151	1,115
Hongkong	.....	.....	141	101,838
Japan	9,325	.....	.....	3,975
Australia	.....	.....	.....	72
New Zealand	.....	.....	.....	45
Philippine Islands	.....	.....	976	4,635
British South Africa	.....	.....	.....	17
Total quantity	473,014	30,442	.....	11,531
Total value	\$18,135	\$895,234	\$450,300	\$89,092

## Equipment and Supplies

### Locomotives

THE SEWELL VALLEY, reported in the *Railway Age* of November 12, as inquiring for one Mikado type locomotive, has ordered this locomotive from the Lima Locomotive Works.

### Freight Cars

THE GREAT NORTHERN is inquiring for 500 refrigerator cars and 1,000 box cars.

WHITTAKER-GLESSNER COMPANY, Wheeling, W. Va., is inquiring for five center dumping hopper cars, of 55-ton capacity.

THE WABASH has given a contract to the Western Steel Car & Foundry Company for the repair of 250 hopper cars.

THE LEHIGH & NEW ENGLAND is asking for prices on 50 steel underframe, drop end gondola cars, of 50-ton capacity.

THE PERE MARQUETTE is asking for prices on from 500 to 2,000 steel underframe, double sheathed box cars, of 40-ton capacity.

THE ALABAMA, TENNESSEE & NORTHERN, reported in the *Railway Age* of October 8, as inquiring for 215 freight cars, has given an order to the Mt. Vernon Car Manufacturing Company for 300 standard freight cars.

THE CHICAGO, BURLINGTON & QUINCY, which recently authorized the purchase of new equipment, as mentioned in the *Railway Age* of November 12, has issued inquiries for from 1,000 to 2,000 freight cars and also has given a contract to the Western Steel Car & Foundry Company for repair work on 300 of its gondola cars.

THE ILLINOIS CENTRAL has awarded a contract for 350 40-ton refrigerator cars to the General American Car Company and not the General American Tank Car Company as incorrectly reported in the *Railway Age* of November 12 (page 959). The Illinois Central is now inquiring for prices on 500 46-ft. gondola cars with 12 drop doors and for 2,000 46-ft. gondola cars with 8 drop doors.

### Iron and Steel

MITSUI & Co., New York, are inquiring for 300 tons of 60-lb. rail for export to Japan.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS through Suzuki & Company, New York, have ordered 66,000 tons of 60 and 75 lb. rail, from the Consolidated Steel Corporation.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon November 25, for the requirements of the New York Central and subsidiary companies of rails, not to exceed 200,000 gross tons of open hearth steel rail of 120, 115, 105, 90 and 80 lb. Dredley sections and 100, 90 and 85 lb. ASCE sections, plus five per cent of second quality rails, and with the necessary angle bars.

### Miscellaneous

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, November 30, for two lots of open hearth steel rails, one for 24,780 tons and the other for 15,220 gross tons; parts for electrical apparatus and 200 rolled steel wheels.

THE NEW YORK CENTRAL will receive bids until 12 o'clock, noon, December 1, for its present requirements on structural steel and castings for repairs to bridges on the Syracuse and Pennsylvania divisions; also galvanized fence and fence posts; trailer wheels and axles for repairs to 80 and 85 ft. turntable; splice bars for 80 and 100-lb. rail; rigid manganese frogs, and track switches.

## Supply Trade News

The United States Cast Iron Pipe & Foundry Company, Burlington, N. J., has opened a new office at 811 Dixie Terminal building, Cincinnati, Ohio. P. T. Laws, assistant works manager, now has his headquarters at the new office and Harold G. Henderson is in charge of sales from this office.

The final details of the merging of the Pullman Company and the Haskell & Barker Car Company, it is reported, were agreed on by committees representing both companies at Chicago on November 14. These committees are expected to report to their respective directorates within the next week and it is expected that the directors will then call for a special meeting to vote approval of the plan. The plan provides for the giving of 3 shares of the stock of the Pullman Company in exchange for 4 shares of Haskell & Barker.

Henry P. Hoffstot has been elected vice-president of the Pressed Steel Car Company in addition to his duties as president of the Koppel Industrial Car & Equipment Company. He was formerly manager of sales, central district, of the Pressed Steel Car Company, before assuming duties as president of the Koppel Company. C. W. Wrenshall, general superintendent and acting general manager, has been appointed general manager of the Pressed Steel Car Company and W. A. Chamberlain, formerly auditor, has been appointed comptroller, all with headquarters at Pittsburgh, Pa. C. E. Church, secretary and assistant treasurer, has been appointed secretary and treasurer with office at New York.

### Obituary

James Brown Rider, vice-president and general manager of the Pressed Steel Car Company and the Western Steel Car & Foundry Company with headquarters at Pittsburgh,



J. B. Rider

Pa., who died on November 2, as was noted in the *Railway Age* of November 5, was born at Morrison's Cove, Blair County, Pa., on September 10, 1879. He entered the service of the Pennsylvania Railroad in 1895, and remained with it until 1899, acting successively as messenger boy, shop order clerk, invoice clerk and stenographer. In 1899 he became connected with the Pressed Steel Car Company as stenographer and clerk to the general manager, being advanced to the position of assistant to the

vice-president in July, 1905. He was appointed general manager in July, 1909, and made a member of the board of directors in January, 1913. Mr. Rider was appointed general manager of the Western Steel Car & Foundry Company in August, 1913, and in December, 1915, he was elected a vice-president of the Pressed Steel Car Company and Western Steel Car & Foundry Company, with headquarters at Pittsburgh; he continued to perform the duties of general manager in charge of operations. Mr. Rider was also vice-president of the American Steel Company of Cuba.

GRAIN (in sacks) is now being shipped from British Columbia to Japan. Seven thousand tons of Canadian wheat have been booked for November shipment.

# Railway Construction

# Railway Financial News

**ATCHISON, TOPEKA & SANTA FE.**—This company contemplates the construction of 3 oil storage tanks at Argentine, Kan. The same company will also install an air compressor in its main power house at Cleburn, Tex.

**CHICAGO, BURLINGTON & QUINCY.**—This company has awarded a contract to the Materne Manufacturing Company, St. Louis, for the installation of a heating and washout system in its new engine house at Centralia, Ills.

**CHICAGO, OTTAWA & PEORIA.**—This company has been requested by the city of Ottawa, Ill., to abandon its bridge over the Fox River at Ottawa and to join the city in the rebuilding the city's bridge, which runs parallel to that of the railroad, the proposed city-railroad bridge to be constructed of a width equal to that of the street. This company has objected and the matter has now been brought before the Illinois Commerce Commission.

**CHICAGO, UNION STATION.**—This company will accept bids until November 17 for 2,600 sq. yd. of concrete track slabs.

**MISSOURI PACIFIC.**—This company, which was noted in the *Railway Age* of October 22 (page 804), as contemplating the construction of two brick car repair sheds, 46 ft. by 500 ft. at St. Louis, Mo., has awarded the contract for this work to Joseph E. Nelson & Sons, Chicago.

**NEW YORK, NEW HAVEN & HARTFORD.**—This company has contracted with the American Creosoting Company, Inc., Louisville, Ky., and not the American Creosoting Company, New York, as stated incorrectly in our issue of November 5, page 911, for the treatment of its cross ties and other timber in a plant to be built by the creosoting company adjacent to the Cedar Hill terminal of the railroad at New Haven, Conn.

**ST. LOUIS-SAN FRANCISCO.**—This company is accepting bids for the construction of a one-story express and baggage building at Okmulgee, Okla.

**BANGOR & AROOSTOOK.**—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate of convenience and necessity authorizing the abandonment of its line from Brownville Junction to Katahdin Iron Works, Me., 9.4 miles.

**CAROLINA, CLINCHFIELD & OHIO.**—*Asks Loan from Revolving Fund.*—This company has applied to the Interstate Commerce Commission for a loan of \$6,000,000 for five years from the revolving fund, to enable it to meet obligations maturing on January 1, 1922, consisting of \$5,000,000 of 5 per cent Elkhorn first mortgage gold notes and a note for \$1,000,000 to the Secretary of the Treasury.

**CHICAGO & EASTERN ILLINOIS.**—*Sale of Brazil Branch Postponed.*—The public sale of the line between Mokenca, Ill., and Brazil, Ind., 130 miles, has been postponed until December 16. See *Railway Age*, April 8, 1921, page 913.

**COLORADO, WYOMING & EASTERN.**—*Foreclosure Proceedings.*—The Equitable Trust Company, as trustee of the general mortgage, has notified the bondholders of its intention to begin foreclosure proceedings and to ask for the appointment of a receiver in the Federal District Court of Wyoming. The general mortgage trustee states that it is informed that the company is in default on July 1 interest on both of the senior bond issues, for which reason the trustee has declared principal and accrued interest on the general mortgage bonds due and payable and has made a demand upon the company for payment. It anticipates that the company will be entirely unable to make such payment, hence the intention to begin foreclosure and ask for a receiver. The trustee expects that foreclosure of the other two mortgages will be sought at once.

The Colorado, Wyoming & Eastern operates between Coal-mont, Colo., and Laramie, Wyo., 111 miles. The company was organized in 1914 and took over the property of the Laramie, Hahn's Peak & Pacific, subject to mortgages. Its outstanding bond issues are \$240,000 Laramie, Hahn's Peak & Pacific first 6s, \$550,000 C. W. & E. first and refunding 6s and \$1,600,000 C. W. & E. general mortgage income 6s. It has \$2,000,000 6 per cent preferred and \$2,300,000 common stock.

**FORT WORTH & DENVER CITY.**—*Extend Bonds.*—J. P. Morgan & Co. and the First National Bank have underwritten the extension of the \$8,176,000 first mortgage 6 per cent bonds of this company, a subsidiary of the Colorado & Southern, which mature December 1. Holders are offered the right to extend the bonds for 40 years at 5½ per cent and to receive a cash payment of \$40 on each \$1,000 bond, but the extended bonds are to be subject to redemption as a whole at 105 and interest on and for five years following January 1, 1935, and at a price reduced by 1 per cent of par for each five-year term thereafter until a redemption price of 101 is reached, which governs until September 30, 1961. Holders of the maturing bonds who do not wish to extend may sell their bonds to the bankers at 100 and accrued interest on or prior to December 1, 1921. The plan has been approved by the Interstate Commerce Commission.

**NEW ORLEANS & NORTHEASTERN.**—*Annual Report.*—The income statement for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1-December 31).....	\$6,344,097	.....
Operating expenses (March 1-December 31).....	5,545,381	.....
Net revenue from operations.....	798,616	.....
Taxes.....	383,979	.....
Operating income (March 1-December 31).....	512,424	.....
Standard return (January and February; full year 1919).....	713,256	\$1,204,492
Non-operating income.....	702,607	42,324
Gross income.....	1,415,863	1,247,316
Interest on funded debt.....	392,325	392,325
Total deductions from gross income.....	584,938	524,131
Balance of income over charges.....	830,925	723,285
Dividend of 6 per cent on common stock.....	360,000	360,000
Additions and betterments charged to income.....	821	.....
Balance carried to profit and loss.....	470,104	363,285

## Another Kind of Train Order

W. S. Hahn

31 9/10 8/10/20  
 Day & Night 1 R

Run wild between state line and Jersey City until eight o'clock tomorrow am following Engine No 2 and keep out the way of excursion train with engine 101 which will leave state line at seven o'clock for Jersey City Engine six after arriving at Little Falls with train thirty five (35) Tonight will run wild to Pompton Junction and engine seven (7) will then return from Pompton Junction to Little Falls, Engine No 3 will leave Jersey City at six o'clock tomorrow morning for Orange Engine five (5) between four and five o'clock tomorrow morning will go from Pompton Junction to midnight keep out of their way of all of the above wild trains and engines. Engine 101 will couple in with you & help you from Jersey City to Cooper. Also show this to General 101 at his order.

S B  
 C H

31 Ok Freeman

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES			
	1920	1919	
Freight	\$5,587,059	\$4,181,370	
Passenger	1,333,771	1,481,530	
<b>Total operating revenues</b>	<b>\$7,744,490</b>	<b>\$6,446,802</b>	
OPERATING EXPENSES			
	1920	1919	
Maintenance of way and structures	\$1,263,015	\$1,189,612	
Maintenance of equipment	1,608,488	1,416,892	
Traffic	148,541	98,137	
Transportation	3,379,776	2,984,737	
General	214,486	175,749	
<b>Total operating expenses</b>	<b>\$6,678,468</b>	<b>\$5,925,279</b>	
Net revenue from operations	1,065,022	521,523	
Taxes	451,982	483,753	
<b>Total operating income</b>	<b>613,299</b>	<b>362,299</b>	
PASSENGER TRAFFIC			
	1920	1919	
Number of passengers carried	1,028,580	1,099,974	
Number of passengers carried one mile	44,450,159	55,605,312	
Average distance hauled per passenger, miles	43.22	50.55	
Average receipts per passenger per mile (cents)	3.00	2.66	
FREIGHT TRAFFIC			
	1920	1919	
Number of revenue tons carried	3,611,520	3,248,178	
Number of tons carried one mile	545,249,253	462,906,258	
Average distance hauled per ton—miles	150.98	142.51	
Average receipts per ton per mile (cents)	1.02	0.90	

**PERE MARQUETTE**.—Asks Authority to Abandon Line.—This company has applied to the Interstate Commerce Commission for authority to abandon four branch lines; its Frocpont branch, 6.23 miles; the Buchanan branch from Benton Harbor to Buchanan, Mich., 25.69 miles; the branch from Haynor to Sheridan, Mich., 19.64 miles; and also the line from Big Rapids to White Cloud, Mich., 19.67 miles.

**SOUTHERN**.—Asks Authority to Nominally Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$5,225,000 of development and general mortgage 4 per cent gold bonds to be held in the treasury.

**WEST JERSEY & SEASHORE**.—Annual Report.—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Composition accrued under federal control (January and February, 1920; year 1919)	\$159,424	\$952,682
Net railway operating deficit (March-December 31) Def.	301,283	.....
Non-operating income	281,960	259,751
Gross income	140,102	1,212,433
Interest on funded debt	224,345	228,683
Total deductions from gross income	503,801	513,373
Net income	Def. 363,700	698,859
Appropriations to sinking fund	99,445	96,670
Dividend appropriations (five per cent in 1919)	.....	579,313
Balance transferred to profit and loss (debit in 1920; credit in 1919)	463,144	2,877

The operating revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES			
	1920	1919	
Freight	\$4,606,026	\$3,543,800	
Passenger	8,316,106	7,538,322	
<b>Total operating revenues</b>	<b>\$13,914,412</b>	<b>\$11,971,021</b>	

OPERATING EXPENSES			
	1920	1919	
Maintenance of way and structures	1,666,671	3,444,978	
Maintenance of equipment	3,035,466	2,443,484	
Traffic	139,867	98,811	
Transportation	7,333,856	5,961,368	
General	3,264,777	2,601,165	
<b>Total operating expenses</b>	<b>\$13,999,628</b>	<b>\$11,145,000</b>	
Net revenue from railway operations	Def. 8,177	829,060	
Railway tax accruals	571,832	578,677	
Railway operating income	Def. 637,366	245,968	
Net railway operating income	Def. 1,029,063	11,959	
PASSENGER TRAFFIC			
	1920	1919	
Mileage operated	359	361	
Number of passengers carried	15,195,454	14,762,658	
Number of passengers carried one mile	411,169,161	39,414,286	
Average miles each passenger was carried	27.06	26.70	
Average revenue per passenger per mile (cents)	.....	1.919	
FREIGHT TRAFFIC			
	1920	1919	
Number of revenue tons carried	4,209,450	4,285,431	
Number of revenue tons carried one mile	134,734,562	128,209,458	
Mile of road	375,096	354,974	
Average miles each ton was carried	32.01	29.9	
Average net revenue per ton per mile (cents)	0.297	0.617	

**Railroad Administration Settlements**

The Railroad Administration has prepared a statement showing the progress made in settling its accounts with the railroads as of November 1. Up to that date the total amount of claims presented by the carriers on final settlement aggregated \$882,429,605, representing 194,523 miles of road, or 80.65 per cent of the mileage under federal control. If the remaining roads file claims on the basis of those heretofore filed, it is estimated that the total amount of claims will aggregate about \$1,100,000,000. Included in the companies that have not filed their final claims are the Pennsylvania and the New York Central. The amount of claims on final settlement adjusted up to November 1 aggregates \$413,412,415, and the amount of cash paid in settlement of these claims aggregates \$127,429,839, or 30.8 per cent of the amount claimed. The claims settled represent 100,603 miles of road.

Director General James C. Davis of the Railroad Administration predicts that the entire business of the Railroad Administration will be wound up by December 31, 1923.

The Railroad Administration reports final settlements with the Pere Marquette for \$750,000 and with the Marquette & Bessemer Dock & Navigation Company for \$60,000.

**Dividends Declared**

Alabama Great Southern.—Common, 3 1/2 per cent, semi-annually, payable December 26 to holders of record November 30; preferred, 3 1/2 per cent, semi-annually, payable February 17 to holders of record January 30.

Catawissa.—First and second preferred, \$1.25, payable November 19 to holders of record November 3.

Delaware & Bound Brook.—2 per cent, quarterly, payable November 21 to holders of record November 11.

Mobile & Birmingham.—Preferred, 2 per cent, semi-annually, payable January 1 to holders of record December 1.

North Pennsylvania.—\$1, payable November 25 to holders of record November 11.

Pittsburgh, Bessemer & Lake Erie.—Preferred, \$1.50, payable December 1 to holders of record November 15.

Mobile & Birmingham.—Preferred, 2 per cent, semi-annually, payable January 2 to holders of record December 1.

Union Pacific.—Common, 1/2 per cent, quarterly, payable January 3 to holders of record December 1.



**Eight-Wheel Switchers on the Kentucky & Indiana Terminal**

Five new locomotives enabled the Kentucky & Indiana Terminal to handle the largest number of cars in their history without an end run for the past three years. These locomotives are of 49,700 lb. tractive effort, weigh 208,700 lb. on drivers, have 24 in. by 28 in. cylinders, 51 in. driving wheels, 2,443 sq. ft. heating surface, 41.7 sq. ft. grate area and carry 185 lb. boiler pressure.

## Railway Officers

### Financial, Legal and Accounting

**F. H. Jeffrey** has been appointed auditor of station accounts of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, succeeding **W. W. Scannel**, who has resigned.

### Operating

**F. W. Cowley**, passenger conductor of the Michigan Central, has been promoted to assistant trainmaster, with headquarters at St. Thomas, Ont.

**A. C. Becton** has been appointed general agent in the operating department, of the Missouri, Kansas & Texas, with headquarters at Fort Worth, Texas.

**J. A. Mathewson**, superintendent of the St. Louis Merchants Bridge Terminal, has been appointed general manager of the Terminal Railroad Association of St. Louis.

**H. R. Hughes**, chief clerk to the assistant general manager of the Southern Pacific, has been appointed trainmaster of the Los Angeles division with headquarters at Indio, Cal.

### Traffic

**L. H. Correll** has been appointed freight traffic agent of the Nashville, Chattanooga & St. Louis, with headquarters at Memphis, Tenn.

**E. H. Brinkmeyer** has been appointed commercial agent of the Tennessee Central with headquarters at St. Louis, effective November 15.

**F. M. Sublette**, commercial agent of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., has been transferred to Louisville, Ky. He is succeeded at Mobile by **R. P. Tallman**.

**George E. Bunting**, Australasian manager for the Canadian Government Merchant Marine, Ltd., will also act as general traffic agent for the Canadian National Railways with headquarters at Auckland, New Zealand.

**B. A. Rodgers**, general agent of the Kansas City Southern, with headquarters at St. Louis, Mo., has been promoted to assistant general freight agent, with headquarters at Kansas City, Mo. He is succeeded at St. Louis by **C. W. Wheeler**.

### Mechanical

**M. H. Haig** has been appointed master mechanic of the Pecos division of the Atchison, Topeka & Santa Fe, with headquarters at Clovis, N. M., succeeding **W. D. Hartley**, who has been transferred to the New Mexico division.

**E. E. Machovec**, master mechanic of the Atchison, Topeka & Santa Fe, with headquarters at Argentine, Kan., has been promoted to acting mechanical superintendent of the Northern Lines, Western District, with headquarters at La Junta, Colo., succeeding **J. R. Sexton**, who has been granted an indefinite leave of absence due to ill health.

**M. C. M. Hatch**, whose appointment as mechanical engineer of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., was announced in the *Railway Age* of November 5 (page 914), was born at Chelsea, Mass., on March 14, 1882. After two years attendance at the Massachusetts Institute of Technology, and two years at the University of California, he entered railroad service in June, 1903, working in the Southern Pacific shops at West Oakland, Cal., and in the testing and signal departments for about 18 months and about six months in the Atchison, Topeka & Santa Fe shops at Needles, Cal., and San

Bernardino. In June, 1905, he became a draftsman in the motive power department of the Boston & Maine, and in December, 1906, he was promoted to chief draftsman of that road, which position he held until November, 1911, when he was appointed engineer of tests of the New England Lines. In June, 1912, he was appointed superintendent of locomotive fuel service of the Delaware, Lackawanna & Western, which position he resigned in February, 1917, to become assistant to the president of the Locomotive Pulverized Fuel Company. He held this position until January, 1920, when he left this company to become a representative of the Railway & Industrial Engineers. He re-entered railroad service in April, 1921, as assistant mechanical engineer of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., which position he was holding at the time of his recent promotion.

### Engineering, Maintenance of Way and Signaling

**James F. Deimling** has been appointed chief engineer of the Michigan Central with headquarters at Detroit, effective November 15, succeeding **George K. Webb**, deceased.

**George H. Harris**, engineer maintenance of way of the Michigan Central, with headquarters at Detroit, Mich., has been promoted to assistant chief engineer, with the same headquarters, succeeding **J. F. Deimling**, promoted.

## Obituary

**Axel S. Vogt**, formerly mechanical engineer of the Pennsylvania, died on November 11 of heart failure.

**Albert S. Johnson**, general manager of the Terminal Railroad Association, with headquarters at St. Louis, Mo., whose death was mentioned in the *Railway Age* of November 12 (page 964), was born at Seymour, Ind., on July 21, 1871. He entered railroad service in November 8, 1889, as a messenger boy in the St. Louis freight office of the Terminal Railroad Association, and he had been with that company ever since. He was appointed freight agent on October 13, 1903, was promoted to superintendent with headquarters at St. Louis on April 23, 1913, and was again promoted to assistant general manager with the same headquarters on December 13, 1917.

During the period of government control, Mr. Johnson served as terminal manager of the St. Louis district, and when the roads were returned to private control, he was elected general manager, which position he was holding at the time of his death on November 7.

**James D. Collinson**, formerly general master mechanic of the Atchison, Topeka & Santa Fe, died at his home in Houston, Tex., on November 9. Mr. Collinson was born in Manchester, England, on January 21, 1849. He first entered railroad service in the mechanical department of the Chicago, Milwaukee & St. Paul. In 1889 he left to become general foreman of the shops of the Atchison, Topeka & Santa Fe at Topeka, Kan., was thereafter promoted successively to master mechanic at Raton, N. M., and later transferred to Fort Madison, Iowa. He became superintendent of motive power of the Gulf, Colorado & Santa Fe in 1896, assistant superintendent of motive power of the main line, with headquarters at Topeka, in 1900, and general master mechanic in 1901, during which year he retired from railroad service.



A. S. Johnson

# Railway Age

Vol. 71 November 26, 1921 No. 22



Just Station, Budapest, Hungary. Copyright by Facing Gallery, N. Y.

## Contents

Lackawanna Success the Result of Supervision—Part I . . . . .	Page 1027
A Study in Two Parts of the Road's Operations Which Are Characterized by Adequate Facilities, Good Morale and Careful Supervision, by Charles W. Foss and James G. Lyne.	
The Use of Wood in Freight Car Construction . . . . .	1037
Is the General Use of All-Steel Construction Justified?—The Advantages of Composite Construction, by H. S. Sackett.	
Selecting Designs for Electric Locomotives . . . . .	1057
Tests Indicate That Non-Symmetrical Wheel Arrangement is Essential for Best Performance, by A. W. Gibbs.	

### EDITORIALS

What is the Correct Standard of Maintenance . . . . .	1019
Extravagant Claims for "Superpower" . . . . .	1019
Second-Hand Machine Tools . . . . .	1019
Freight House Operation . . . . .	1020
Remarkable Reduction in Railway Accidents . . . . .	1020
Proposed Changes in the Transportation Act . . . . .	1021
Reductions of Rates on Agricultural Products . . . . .	1022

### NEW BOOKS

LETTERS TO THE EDITOR . . . . .	1022
---------------------------------	------

Sometimes It Is a Disgrace to Be Poor . . . . .	1023
The "Big Stick" Versus the Golden Rule . . . . .	1023
The Rock Island Employers' Clubs . . . . .	1023
Ford a Disappointment . . . . .	1023
University of California Overlooked . . . . .	1024
Make Better Use of Freight Cars . . . . .	1024
Superpower Development Would Effect Much Needed Economics . . . . .	1025
Railway Storage Battery Cars . . . . .	1025
Long Sleeping-Car Runs . . . . .	1026
Why Employees Misunderstand Managements . . . . .	1026

### GENERAL ARTICLES

Lackawanna Success the Result of Supervision, by C. W. Foss and J. G. Lyne . . . . .	1027
The Trans-Continental Freight Rate Situation, by Edward Chambers . . . . .	1033
Carriers Want Commission to Announce Rate Policy . . . . .	1036
The Use of Wood in Freight Car Construction, by H. S. Sackett . . . . .	1037
Railroad Securities Bill Postponed Again . . . . .	1042
M. K. & T. Reorganization Plan Announced . . . . .	1043
Formula Covering Costs of Heavy Motor Trucking, by Chas. Hine . . . . .	1045
Ford Is Right—And Wrong, by W. D. Hines . . . . .	1047
Novel Engine Facilities for a Cold Climate . . . . .	1049
Freight Car Loading . . . . .	1051
Sprague Train Control to Be Tested on New York Central . . . . .	1051
Report on Gould (Ohio) Collision . . . . .	1052
Hearings on Bills to Repeat Rate Making Rule . . . . .	1053
Selecting Designs for Electric Locomotives, by A. W. Gibbs . . . . .	1057

### GENERAL NEWS DEPARTMENT . . . . . 1061

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building PHILADELPHIA: 407 Bulletin Bldg. CINCINNATI: First National Bank Bldg. CLEVELAND: 4300 Euclid Ave. LONDON, England: 84, Victoria St., Westminster, S. W. 1. (Cable address: Urasigmeo, London) WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

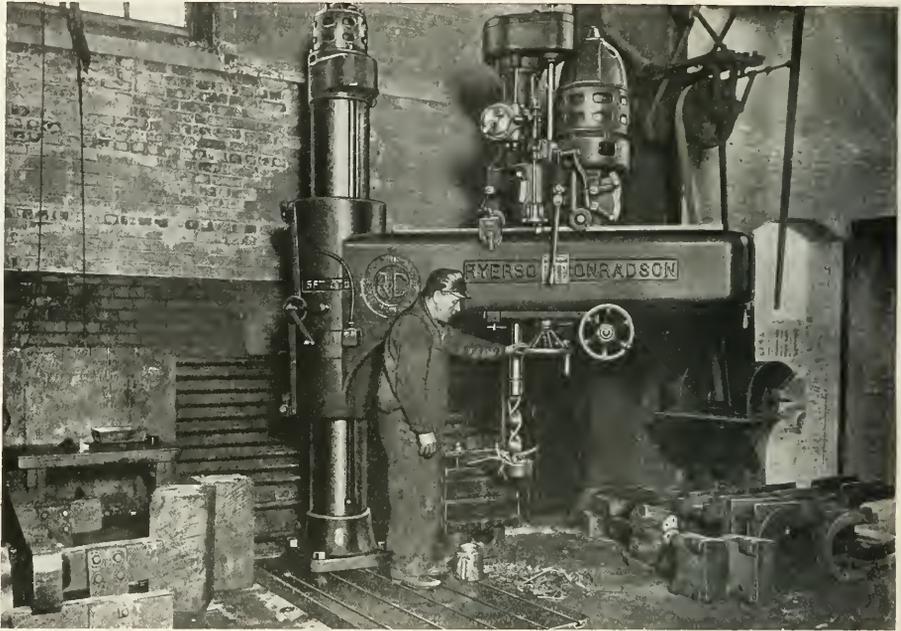
E. T. HOWSON	A. F. STUERLING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	K. E. KELLENBERGER	J. E. COLE
R. E. THAYER	ALFRED G. OEHLE	J. G. LYNE
C. B. PECK	F. W. KRAEGER	J. H. DUNN
W. S. LACHER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue, 8,750 copies were mailed that of these 8,750 copies, 7,944 were mailed to regular subscribers, 54 were provided for center and news company salesmen, 55 were mailed to advertisers, 65 were mailed to publishers, 100 were mailed to independent and 558 were provided for new subscribers, 500 copies left in the mail and office use that the total of 8,750 copies this year to date were 444,250, an average of 9,452 copies per issue (A. R. P.) and of the Audit Bureau of Circulation (A. B. C.)



For the quick repair of big locomotives—Ryerson-Conradson Railroad Radials.

## Are your shops ready?

A year and a half ago inadequate shop equipment handicapped locomotive repair work. Lack of locomotives handicapped the operating man.

Before the flood of repair work is again swamping you, fix your shops to handle it.

Every shop needs a modern Radial Drill.

Such a machine as the Ryerson-Conradson Radial, capable of drilling a 3" hole through the high carbon steel drawbar shown above at .025 feed and 89 R. P. M. speeds up this job and many others.

Do you know how the Ryerson-Conradson Radial reduces power consumption by 40%?

Write for bulletin 4,001.

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Undermaintenance has been the plaint of the railroads for the last five years. It comprises a primary basis for claims

### What Is the Correct Standard of Maintenance?

against the Railroad Administration and is the note of caution often heard of late in the analysis of railway operating results. Therefore, to hazard the opinion that some lines are being over-maintained is to invite the skepticism of the practical railway officer. We, however, venture the suggestion that many railroads may find it profitable to study their operating expenses with the view to ascertaining whether instances of over-expenditure for maintenance of way exist on their lines. Transportation costs receive closer scrutiny than maintenance of way costs because they are more tangible. A heavy locomotive hauling a long train will produce more ton-miles per dollar than a small engine hauling a short train, and the returns are available at the end of each month. But the increased costs of maintaining the track in fit condition to carry the heavier locomotive are not so readily available and are spread over the entire year. This problem attains particular importance on branch lines which have a heavy seasonal traffic of short duration with only the lightest train movements during the remainder of the year. For instance, some of the lines in wheat growing regions are maintained to standards that will permit of the use of heavy power so that the annual crop may be handled expeditiously and at low cost insofar as the transportation charges are concerned. However, this implies that the track is in better condition than necessary for the traffic handled during the greater portion of the year. While it is entirely possible that this policy is economically sound, it is to be questioned whether a sufficiently detailed analysis has ever been made in most of these cases to determine the correctness of this assumption with reasonable accuracy.

One of the principal economies claimed for the proposed superpower electrification system is in the consumption of

### Extravagant Claims for Electrification

locomotive fuel. The investigators estimate that electric operation in this region would have saved 57.6 per cent per unit of work done, or 8,890,000 tons of coal based on the traffic of 1919. The cost of electrical energy is given as \$44,233,000 and the cost of coal as \$68,770,000, a saving of \$24,537,000. The economies due to the saving of fuel amount to about 38 per cent of the total estimated saving. Since this is such an important item, it will be given the closest scrutiny by all who are interested in electrification. It must be admitted that anyone familiar with the performance of modern steam locomotives will find the basis on which the fuel consumption has been computed very unsatisfactory. The coal used by the electric system has been assumed to be equivalent to two pounds per kilowatt hour at the sub-station. The efficiency of the sub-station is assumed to be 85 per cent, of the distribution system 90 per cent, and of the electric locomotive 82.5 per cent. The output of the electric locomotive is therefore 63 per cent of the sub-station input, making the equivalent coal rate 3.18 pounds per kilowatt hour. The coal consumption of the steam locomotive is assumed to be 7.5 pounds per kilowatt hour, which makes the saving for the

electric locomotive on this basis 57.6 per cent. This figure for locomotive coal consumption is altogether too high even for saturated steam locomotives, being almost identical with the value obtained under unfavorable conditions with saturated locomotives on the Chicago, Milwaukee & St. Paul. If the method used in computing the equivalent coal consumption under electric operation is applied to the steam locomotive, the result is quite different. An efficient modern locomotive uses about 2.5 pounds of coal per horsepower hour output while working. Standby losses, firing up, etc., increase this to 3.1 pounds per horsepower hour, or 4.14 pounds per kilowatt hour. On this basis the saving by electrification would be only 23 per cent. It is evident, therefore, that the section of the report dealing with the saving of fuel is open to serious question. In fact the failure to obtain accurate and up-to-date information regarding the steam locomotive wholly invalidates the conclusions regarding the possible saving of fuel.

There is no doubt of the existence of a large stock of used machine tools and, in considering machine tool requirements

### Second-Hand Machine Tools

for 1922, the railroads are facing the question as to what extent, if any, they should take advantage of these second-hand machines. Some officers take the stand that a second-hand machine ought never to be installed in a railroad shop and, while this is a somewhat extreme view, there are many arguments to justify it in part. It is a well-known saying that "The first use of any article is the best use." The purchaser of a used automobile, for example, takes a big risk that the trouble and cost of keeping his machine in repair will more than offset the saving in price unless, in buying, he has benefited by the advice of an automobile expert. This does not prove that there are not good bargains in used automobiles and the same is true of used machinery. Slightly worn machines have been bought at a considerable reduction in cost and have given satisfactory service over a period of years, but the point is that used or second-hand machinery should be bought only after the most careful inspection and trial to demonstrate its accuracy and ability to produce. In a particular instance, a reputable machinery dealer learned that a certain railroad was in need of a large boring mill and approached the purchasing agent with the proposition that he had a slightly used machine which would be practically as good as new and could be sold at a considerable reduction in cost. In examining the machine carefully from the under side, an inspector from the railroad discovered that the bed was badly cracked and had been clamped together by bolts and stay irons. The machinery dealer, with the most profound expressions of regret, insisted that the break was unknown to him and stated that the machine had been giving satisfactory service. Admitting that the dealer did not know of this defect, the fact remains that except for the acuteness of its inspector the railroad would have been fooled into buying a defective machine. It is practically impossible to make a thorough examination of any large machine without taking it all apart and even if there are no apparent defects or undue wear, the only way to make sure of its accuracy and productive capacity is to subject the machine to a thorough series of tests under actual shop con-

ditions. It would probably be unwise to make any hard and fast rule against the purchase of second-hand machine tools, but where such purchases are made the railroads should exercise the greatest care in inspecting and trying out machines before orders are placed. In by far the great majority of cases, the practice which will be most satisfactory in the long run is to purchase and install new machines, made by reliable manufacturers.

An article on page 471 of the October 22 issue of the *Railway Age* describes the method of operating the Cedar Hill, New Haven, Conn., freight transfer station of the New Haven. At this station 0,943 tons of freight per hour per man is being handled at an average cost per ton of less than 67 cents. Another article on page 991 of the November 19 issue tells how congestion in the outbound freight houses of the same railroad at Boston has been overcome and the cost of handling freight per ton decreased from 67 cents to 50 cents. The operating conditions at Cedar Hill are radically different from those at Boston. At Cedar Hill the hauls are long while at Boston they are decidedly short. Cedar Hill is a modern plant in all respects while the Boston station has remained unchanged, in physical characteristics, for years. In the face of these varying conditions the railroad is employing tractors and trailers in the operation of both stations with gratifying results. While the stations under discussion exemplify extremes of operating conditions it does not necessarily follow that tractors and trailers can be used successfully in the handling of freight at all points where operating costs are distressingly high. On the other hand the success that has followed these installations certainly may be said to be indicative of the wide range of conditions under which such devices may be put to work with legitimate expectations of satisfactory results, provided the plan of operation has been carefully worked out. Each freight house or freight transfer station presents a distinctive handling problem and no single handling system can be applied to all with success. The fact remains, however, that the opportunities for savings in freight handling, through the adoption of modern methods and appliances are of too great importance to be passed over lightly.

### Freight House Operation

Remarkable Reduction in Railway Accidents

THE RAILWAY MANAGERS have a right to be proud of the accident record made by the railways in 1920. The total number of persons killed, including employees killed in industrial accidents, was 6,958. This is the smallest number killed in 22 years, or since 1898, when it was 6,859. But the number of fatalities occurring has no significance unless related to the number of employees, the number of train miles run, the amount of service rendered, and other factors which necessarily tend to affect the number of accidents occurring. In relation to the number of employees, to the number of miles trains run, and to the amount of traffic handled, the accident record made in 1920, statistics for which year recently were made public by the Interstate Commerce Commission, is the best that ever has been made since statistics upon the subject have been kept.

The accident reports of the Interstate Commerce Commission relate to accidents on all the railways of the United States. The only statistics we as yet have regarding the total number of employees, the train mileage run and the traffic handled in 1920 are those for the Class 1 roads. Therefore it is necessary, in making comparisons, to use the

accident statistics for all the railways and the statistics of the Class 1 roads regarding number of employees, train miles run and traffic handled. It is impossible to make a ten-year comparison satisfactorily because in 1910 statistics regarding the number of trespassers killed were not reported. But by using the accident statistics of all railways in 1911 and 1920, and the statistics of the Class 1 roads regarding number of employees, train miles run and traffic handled in these years, we can make comparisons for a nine-year period, which, while not strictly accurate, show the increase in safety of operation as clearly and almost as accurately as would be done by more complete statistics. These comparative figures are given in the accompanying table.

	Year ended June 30, 1911	Year ended Dec. 31, 1920
Total persons killed in train and train service accidents.....	10,396	6,958
Non-trespassers—		
Passengers.....	299	229
Employees on duty.....	2,873	2,107
Employees not on duty.....	292	91
Persons carried under contract.....	57	35
Other non-trespassers.....	1,154	1,867
Non-train accidents—		
Industrial accidents—employees and others.....	439	463
Trespassers.....	5,284	2,166
	1911	1920
Number of employees.....	1,599,854	2,031,927
Passengers carried one mile.....	32,371,444,793	46,724,880,000
Ton-miles.....	249,843,166,302	409,970,656,000
Passenger train miles.....	548,279,061	571,653,863
Freight train miles.....	608,678,284	633,972,312
Total tr in miles.....	1,185,652,129	1,205,626,175

It will be noted that in spite of the large increases in number of employees, in train miles run, and in amount of freight and passenger traffic handled, there was a decline in the number of fatalities to every class of persons, except those classified as "other non-trespassers." The increase in fatalities to "other non-trespassers" was chiefly due to a large increase in the number of persons killed at highway crossings, and this entire increase in the number of persons killed at highway crossings was due to an increase in the number of automobiles struck by trains or trains struck by automobiles.

In 1911 the number of employees for every employee killed was 444, while in 1920 it was 788. This increase of almost 78 per cent in the number of persons employed for each employee killed shows that there was a great decline in the hazards of the occupation of the average railway employee.

In 1911 the number of passengers carried one mile for each passenger killed was 108,265,701, while in 1920 it was 204,038,777. Stating the matter in another way, the average passenger, on the basis of the results of operation in 1911, could have traveled at the rate of 60 miles an hour for 206 years before being killed, while on the basis of the results of operation in 1920 the average passenger could have traveled at the rate of 60 miles an hour for 388 years without being killed. The danger of traveling by passenger train was reduced 47 per cent.

The measures of the public service rendered by railways are the number of passengers carried one mile and the number of tons of freight carried one mile. The number of passengers carried one mile in 1920 was 44 1/3 per cent more, and the number of tons carried one mile 64 per cent more than in 1911. On the other hand, the total number of persons killed in railway accidents of all kinds decreased 33 per cent between 1911 and 1920.

The total number of persons killed on the railways of this country was at its maximum in the years from 1911 to 1914, the highest figure ever reached being in 1913, when it was 10,964. While measures of various kinds to reduce accidents have been adopted on every railway for years, the "safety first" movement really was inaugurated in 1910. The "safety first" movement was different from measures which previously had been adopted, mainly because it was based on fuller and clearer recognition of the fact that most

accidents were due to carelessness and recklessness on the part of the personnel of the railways rather than to defects of their plant. The great reduction of accidents undoubtedly has been due principally to the educational work which has been carried on among employees by officers especially assigned to this duty, and to efforts of "safety first" committees composed of both officers and employees. Those who initiated and carried on this work deserve the greatest possible credit. The accident record of the railways can and should be further improved, and to that end the "safety first" movement should be given even more generous and energetic support by the managements than in the past. In the interest of humanity and in the selfish interest of the railways themselves nothing in connection with railway operation is more important than further increases in its safety.

## Proposed Changes in the Transportation Act

THE TRANSPORTATION ACT is the only really constructive legislation for the regulation of railroads ever passed in this country. This is true because it is the only example of such legislation which is in some measure designed to promote increases in railroad service as well as to prevent railroad abuses.

As yet, however, the Transportation Act has been of no benefit to the railroads. Every benefit conferred by it has gone to railway employees and the public. Under it the employees were given a large advance in wages and permitted to keep in effect for many months rules and working conditions which gave them large amounts of pay for work not done. Under it the public has escaped from the series of deficits incurred under government control, with the result, that including both what it has paid in rates and what it has paid in taxes, the total amount it has paid for railroad transportation has been hundreds of millions of dollars less than it would have been if government control had been continued.

The reason why the railways have derived no benefits from the Transportation Act is that certain of its provisions have not been carried out. The Act requires the Interstate Commerce Commission to so fix the rates that for two years ending March 1, 1922, the railways shall earn an average of not less than 5½ per cent or more than 6 per cent upon their combined valuation. On the rates fixed by the Commission the railways have thus far earned an average of less than 3 per cent. The first year the rates were in effect they earned about \$400,000,000 less net operating income than they were guaranteed annually under government control. On no possible construction of the Constitution of the United States could the Commission have restricted the railways to lower rates than those actually made by it if the rate-making provisions of the Transportation Act never had been passed.

Any benefit conferred by the Transportation Act upon the railways would have to be obtained by them in future. Curiously enough, however, while the public, under the provisions of this act, or in spite of them, has been saved hundreds of millions of dollars and the railways have lost hundreds of millions, Senator Capper of Kansas, Senator LaFollette of Wisconsin and others are urging the repeal of the rate-making provisions. This is what would naturally have been expected from Senator LaFollette. On the other hand, Senator Capper is a man who has grown very rich in the publishing business. One would naturally expect a man who has shown as much business ability in his own business as Senator Capper has to apply business sense to his work on behalf of the public.

Just what effect would be produced by repealing the rate-making provisions of the Transportation Act? The provision requiring the Interstate Commerce Commission to so regulate rates as to enable the railways to earn at least 5½ per cent has thus far been applied so that they have earned less than 3 per cent, and, furthermore, it automatically goes out of existence on March 1, 1922. The main provisions which would be left after that, if they were not repealed, are the following:

First, that the Commission shall fix such rates that the rates "will under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal as nearly as may be to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation."

Second, that the Commission shall from time to time determine what will be a fair return for the railways to earn, and "in making such determination it shall give due consideration, among other things, to the transportation needs of the country and the necessity of enlarging such (transportation) facilities in order to provide the people of the United States with adequate transportation."

Third, that any railway which earns more than 6 per cent in a year shall pay one-half of the excess to the government.

There are really but two things required in these provisions which are not required by the Constitution of the United States as repeatedly interpreted by the Supreme Court. All regulating bodies in fixing rates act under the constitutional requirement of so making them as to enable the railways to earn a fair return on the fair value of their properties. One thing this legislation requires which the Constitution does not require is that the Commission in fixing rates shall give due consideration to the transportation needs of the country and the necessity of enlarging transportation facilities in order to provide the people of the United States with adequate transportation. For Congress to repeal this provision would be tantamount to the adoption by it of an order to the Interstate Commerce Commission that in fixing rates in future it *should not consider the need of the country for adequate means of transportation*. Do Senator Capper and those who agree with him want the Commission to fix rates without any regard to the effect that the rates fixed may have upon the adequacy of the transportation furnished to the people of the United States?

The only other effect the repeal of the rate-making provisions would have would be to relieve railways which earn in any year an average of over 6 per cent on their valuation of the necessity of paying to the government one-half of what they earned over 6 per cent. The *Railway Age* would like to see that provision repealed. It would like to see every railway permitted to keep all it can earn. But why should Senator Capper and Senator LaFollette be so concerned lest some railway which earns over 6 per cent shall pay one-half of the surplus back to the government?

The answer is simple enough. This recapture provision is an integral part of the rate-making provisions of the law, and they want all the rate-making provisions stricken out so that the policy of regulation followed before government control, of making all rates as low as they can be made without being held confiscatory, shall be restored.

This "near-confiscation" policy of rate regulation which was followed prior to government control almost stopped the development of railway transportation. A revival of that policy will stop the development of railroad transportation. No industry can live and grow under such a policy. Cessation of the development of the railways under private ownership inevitably will result in government ownership.

The *Railway Age* never talks politics. It deals entirely with railroad affairs. There are times, however, when it is

necessary to refer to politics in order intelligently to discuss some railroad problem. There was a suspicion that certain leaders of the democratic party desired to fasten government ownership of railroads on the country. They brought about the adoption of government control of railroads. Public sentiment reacted against that policy powerfully, and the railways were returned to private operation under the Transportation Act. These democratic leaders in their zeal for promoting government ownership made its adoption impracticable for a time at least.

The republican party in its campaign hand-book in 1920 bitterly denounced the policy of government control carried out under democratic auspices. It opposed government ownership in its platform. Almost every public man, however, who is now advocating the repeal of the rate-making provisions of the Transportation Act is a republican. The revival of the old policy of near-confiscation would be as effective in promoting the cause of government ownership as the adoption of government control was in creating sentiment against it.

Is the country to be treated to the spectacle of leading democrats hindering government ownership by actively trying to promote it, and of leading republicans who pretend to be against it promoting policies directly adapted to bring it about?

## Reductions of Rates on Agricultural Products

THE INTERSTATE COMMERCE COMMISSION in a recent decision directed the western railways to make general reductions in the rates on hay, grain and grain products which would have averaged around 15 per cent and which would have cost about \$35,000,000 a year. The railways, after consultation with the Interstate Commerce Commission, have instead announced reductions on all agricultural products throughout the country averaging about 10 per cent and which will cost about \$55,000,000 annually.

The reasons why the railways have taken this step are easily discernible. The reductions in rates on hay, grain and grain products suggested by the commission would have been borne mainly by only part of the railways. The reductions the railways have decided to make on all farm products will not cost some of the railways so much and will be borne by all the railways. Furthermore, the reductions suggested by the commission would have conferred relatively large benefits on only a part of the farmers. The reductions actually to be made by the railways, while they will benefit grain producers relatively less, will benefit the farmers of the country as a whole to a larger extent. The farmers as a class have suffered the greatest reductions in the prices of their products within the last year and a half. Therefore, they have been the least able to pay the freight rates which were put into effect on August 26, 1920.

The wisdom of the action taken by the railways will be determined by future developments. If there was good reason for general reductions of the rates on any class of commodities this reason applied with special force to those on farm products. First, the farmers needed them more than any other class of producers; second, the Interstate Commerce Commission had decided that the rates on one large class of farm products ought to be reduced. It is very doubtful if the decision was warranted either by the facts or law, but the decision had been rendered and the railways could not disregard it or attack it in the courts without antagonizing the largest body of shippers and the most powerful regulating body in the country.

Already complaints are heard from some other classes of shippers, however, because the railways voluntarily have

given this reduction of rates to the farmers without giving corresponding reductions to other shippers. Most of these complaints are of very questionable validity. It is true that the prices of some other commodities have declined as much as those of farm products. Among the commodities which are selling for less than in 1913 are copper, tin, zinc, coffee and rubber. Other things which are selling at or very near their pre-war prices are steel billets, steel beams, wool, crude petroleum and sugar. Outside of farm products, however, the average wholesale price of all commodities is almost as much higher than in 1913 as is the average freight rate, and certainly there is no economic justification for the numerous producers whose average prices still are relatively as high when they are compared with the prices of 1913 as are the freight rates charged on their commodities, to demand reductions of rates.

The most important question raised by this reduction of rates is not whether it is fair to reduce the rates of some classes of shippers and not those of other classes, but whether, from the standpoint of the public welfare, it is expedient to reduce any rates under present conditions except those which can be shown to be hindering the movement of traffic. Any reduction of rates made for any purpose except that of moving traffic which otherwise would not move reduces the net operating income of the railways. Whatever reduces their net operating income will reduce their ability to buy equipment and materials and employ labor for the purpose of rehabilitating and enlarging their facilities. Whatever has this effect will tend to protract the industrial depression and to impair the ability of the railways to handle the country's commerce when general business revives. The very classes that will benefit most immediately by reductions in rates may in the long run lose the most if the railways are so crippled that next year or the year after they cannot handle all the traffic offered to them.

This reduction in the rates on farm products is made in the expectation of reductions in wages and other operating costs and will remain in effect only six months if these expected reductions in operating expenses are not secured. If they help the railways to obtain needed reductions in operating expenses they will serve a useful purpose both immediately and in the more distant future. If they do not have this effect they will do more harm than good.

## New Books

*Questions and Answers on the UC Equipment, 1921.* 72 pages, 5 in. by 7 in. Published by the Air Brake Association, 165 Broadway, New York. Price 50 cents.

The Air Brake Association has just added to its list of educational books, one on the Westinghouse UC equipment. The book is intended for those men engaged in railroad service who desire to inform themselves on the construction, operation and function of the new UC passenger air brake equipment. It is a radical departure from much air brake literature in that it does not necessitate an intimate acquaintanceship with ports and passages. Omission of a detailed consideration of the many intricate ports and passages of the universal valve should assist in readier comprehension of its general principles, of which the average reader should be informed. Based upon the foregoing, the subject has been covered not only by a text, but also by "Questions and Answers." For those readers who desire general information in a minimum of time, the first 50 questions and answers have been prepared. For those who prefer the regular descriptive form, a "Summary" has been included. Those readers who seek a more exhaustive treatment of the subject may find it in either the complete "Questions and Answers" or the complete text of the book.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### Sometimes It Is a Disgrace to Be Poor

NORTH PLEASANTON, TEXAS.

TO THE EDITOR:

I note a letter in your October 8 issue which appears under the head of "No Disgrace to Be Poor." I would take issue with "Subscriber." The difference between wealth and poverty is not measured by the gross incomes or amounts available to spend. Two families equal in size and with the same income live side by side. One family, due to its shiftless habits and poor management, is continually in debt, lives in poor quarters, wears poor clothes, and as a consequence is constantly dissatisfied and discontented.

The other family manages well, watches the small wastes and as a result lives well, owns its own home, dresses well and is generally pleased with life. In such a case it is a disgrace to be poor, and a large number of railroad mechanical departments are similar to the shiftless family. Before such organizations put up the plea of poverty, would it not be wise to make an inspection and ascertain if, without any changes in our plant, we could not prevent wastes in time of men and material which would, if conserved, soon equip our shops with the machines whose absence we now bemoan.

E. R. BREAKER.

### The "Big Stick" versus the Golden Rule

KANSAS.

TO THE EDITOR:

I have been an interested reader of your journal for a good many years and have been "hankering" for some time to say something through its columns. There has been much said about efficiency, co-operation and "get-together" movements, as between officers and employees, but little has been suggested as to how this co-operation could be brought about.

To my mind the greatest factor in the successful operation of railroads, or any other business for that matter, is the human element, and in railroading, at least, it has been given but little of the right kind of consideration. Officers are chosen mainly because of their knowledge of railroading and not because of their character; a big majority of them are men who, although they measure up to the average man of the world, are not men who through their character and habits inspire in the employees loyalty and efficiency towards the railroads or respect for the officers themselves. This may seem a hard thing to say, but it has been my observation from an experience of 30 years as a train dispatcher, a position just between that of officer and employee.

I have seen railroad unions grow from nothing to their present strength, largely, I believe, because officialdom has tried to handle men on the "big stick" principle instead of the "golden rule" plan—and it did not take a man of any great mental capacity to see where it was all leading. The catastrophe which has just been averted, for a time, is a sample.

To have a new era in railroading we shall have to get out of our hearts selfishness, greed and the domineering attitude, and establish the "brotherhood of man" idea, and to do this some one in authority will have to commence by doing "good for evil." Who will it be?

TRAIN DISPATCHER.

### The Rock Island Employees' Clubs

HAILEYVILLE, O'la.

TO THE EDITOR:

The officers and the employees of the Rock Island Lines were glad to note that the *Railway Age* in its issue of November 5 took cognizance of the fact that their road was one of the three of the country's carriers which handled more net ton-miles of freight in August, 1921, than in August of last year. The editor remarked that he had been informed that the Rock Island had been favored with a considerably improved morale in recent months.

The morale of this system is being improved in various ways. One of the recent adventures in this direction was started last May under the direction of Hal. S. Ray, assistant to President Gorman, and who is known on the Rock Island as Hal "Service" Ray. Mr. Ray devotes his time to matters of personnel and public relations, and his work is directed toward bringing about a better spirit of friendship and co-operation among employees, increased efficiency and courtesy toward the public.

Rock Island employees' clubs have been formed at various terminals along the railroad and "get-together" meetings are staged each month which bring the employees, their families and the public together. As an illustration as to what these clubs do, the first meeting of the Haileyville club was held at Rock Island Lake near Haileyville on August 4 and consisted of an all-day picnic, and dancing and other pastimes in the evening. The second entertainment was an original play given by home talent at the local theatre. The third was an oldtime spelling match, card party and dance. The fourth was a general entertainment consisting of various indoor games to which everyone was invited. The next to be staged will be a negro minstrel show.

The active workers in the club, as well as others, have been encouraged by the presence of several of the officers of the system at each entertainment. All entertainments and meetings have so far been well attended by the railroad people and the public. Rock Island clubs at other points along the line are also, we understand, doing well. The results of such efforts will make themselves felt in more ways than one to the credit of the Rock Island Lines.

J. L. COSS,

Train Dispatcher, C. R. I. & P.

### Ford a Disappointment

BUFFALO, N. Y.

TO THE EDITOR:

In an interview (*Railway Age*, November 12, page 939) which Henry Ford gave at Washington recently, he made some recommendations for improving railroad operation which were about as pertinent and would be just about as valuable for the purpose intended as his famous "Peace Ship" was in "getting the boys out of the trenches by Christmas."

To his suggestion that "the unproductive parasite stockholders" be eliminated, one cannot refrain from countering that no large railroad approaches the position of the Ford Motor Company as a close corporation. It takes the peculiar mental twist of a Ford to advance the opinion that the investors in railroad securities, most of them holders of small amounts, should be denied a return on their holdings, while the manufacturer of the Ford car is allowed to grow rich beyond the dreams of avarice.

On the other hand, Mr. Ford's suggestion to expedite the movement of freight is a sound one. The average operating officer's insistence on the maximum possible train load is all too frequently like the straw which broke the camel's back. Many, many times an engine will stall and tie up traffic which if one or two cars less had been placed in the train.

would have made the division in good time with consequent saving in fuel and wages.

Mr. Ford's ideas on railroad finance are truly remarkable; he seems to forget entirely that when talking of railroads he is not considering a gold mine like the business of making flivvers. He implies that the stock of the railroads should be owned by the employees, a very desirable condition, it is true. The writer is an employee of a very excellent railroad, the Erie, but he can hardly be censured for not caring to invest a large amount of money in its stock. Ford adds that a hue and cry would be raised if it were attempted to get the ownership of the railways into the hands of the employees because people had invested in them for the financial protection of their families, their children; he adds sarcastically, "Protection from what? From the necessity of earning their living?" I will wager that it is not Mr. Ford's intention that his son Edsel shall ever have to face the necessity of earning his living, and yet according to the old adage that charity begins at home, it would seem more fitting for him first to turn over the Ford plants to his employees before suggesting that the owners of the railroads be compelled to do so.

These are strange sentiments from our great apostle of thrift and industrial paternalism. Are we to imply that Henry has come out for the Plumb Plan? I quote Mr. Ford as follows: "If the brakeman on a railroad owns stock in it he has an added inducement to competent service. If the railroad is a success it is due to him (the brakeman) and his fellow workmen and they are entitled to the profit." Not a word is said about the executive whose guiding hand enables a great railroad system to function smoothly, or the trained engineers and designers who have planned the elimination of grades and have made such remarkable progress in effecting improvements in locomotive design in recent years, or of the division officers and senior clerks whose efforts to produce transportation at a minimum of expense are unceasing. As usual, Ford plays to the galleries, and the brakeman, who contributes less to the railroad organization than perhaps any other employee, and whose actions cannot affect operating results in the least, unless he fails properly to perform the comparatively slight service required of him, gets all the credit; the usual Ford propaganda, like the famous \$5 a day sweep-up men in his Detroit factory.

And in the one department of the science of railroading where we would expect the most from Ford, he fails us utterly. When he bought the D. T. & I. some of us had a suspicion that he would try to operate it with "flivvers." But now he makes the childish and inaccurate statement that a freight train weighs several times as much as the load it carries (a standard P.R.R. four-hopper coal car will hold 77 tons and weighs but 23 tons). It is a well-known fact that nothing contributes so much to the expense of operating a railroad as light equipment of insufficient strength. Ford refers to the fact that a bicycle weighing 20 lb. will carry a man weighing 200 lb., but a bicycle does not have to pull 100 other bicycles each with a man on it, or be subject to impact of hundreds of tons weight. It is true that lighter cars can be constructed but only at the expense of riding qualities and safety; one would hardly care to take a transcontinental journey at a speed of 60 miles an hour in one of the horse cars which navigated West street, New York, a few years ago. I used to be worried as to whether the originator of the "flivver" had to ride in one of his own instruments of torture on all occasions, but my mind was relieved by a recent press notice stating that Henry Ford had purchased one of the finest make European cars for his own use for \$15,000. Patriotic? So after all he does not practice what he preaches to the railroads.

After Ford has been running his railroad a little longer and knows more about the countless folks whose principal object in life seems to be to beat the railroads, he will have

no fault to find about the comparatively small legal forces which every railroad finds necessary to employ as a matter of self-preservation.

What Mr. Ford says about railroad bookkeeping and accounting being "complicated far beyond all necessity," is alas, only too true; but it is pertinent to remark in this connection that his railroad was called to account in no unmitigable terms last month by M. O. Lorenz, director of the bureau of statistics of the Interstate Commerce Commission, in connection with its request to be relieved from making various reports required by the commission from Class I railroads.

It is quite evident that Mr. Ford is not the Moses to lead the railroads out of the wilderness, and into the promised land, that some of his admirers think him to be.

C. C. HENKEL.

## University of California Overlooked

BERKELEY, Calif.

TO THE EDITOR:

An "Ohio State University Student" says in your issue of November 5, apropos of university instruction in transportation: "The truth is that those universities which have a College of Commerce offer work in transportation as a matter of course. Such universities are Chicago, Yale, Leland Stanford, Illinois, Wisconsin, Harvard and a host of others."

I dislike to inject an irrelevant remark into a perfectly good discussion, but, if a university upon the Pacific Coast is to be selected for illustration, why pick Leland Stanford, which in spite of the writer of the letter referred to, has no College of Commerce, and omit the University of California, which has a large and flourishing one with courses in transportation well represented in its curriculum. Would you not suppose that a student of Ohio State University would be better informed after the football game at Pasadena last year?

STUART DAGGETT,

Dean, College of Commerce, University of California.

## Make Better Use of Freight Cars

WASHINGTON, D. C.

TO THE EDITOR:

The diagram on page 948 of the November 12, 1921, *Railway Age* indicated that the surplus freight cars decreased from 500,000 to 125,000 in the six-month period ending October 15, 1921. Bad order cars increased from about 280,000 to 350,000 in the same period. That the railroads have such a large number of bad order cars indicates inefficient operation, which is costly both to the railroads and the public which they serve.

Freight cars are built to transport certain materials and have a given capacity. Efficient operation depends upon their being loaded to or near capacity and moved as rapidly as can be done economically. When a loaded car in a train is side-tracked or held in a yard or is moved at a rate that averages 30 car miles per day, it is not being used efficiently.

My suggestion is to so rate the locomotives that they can readily handle their trains without strain or delay and thereby reduce the number of cars that are damaged in service.

I. C. C. Accident Bulletin No. 78 shows the cost of accidents in 1920 to have been 38 per cent greater than in the previous year. Much of this annual waste should be eliminated by efficient operating methods. Therefore, load the cars to capacity but reduce the number of cars in the train so that the locomotive is never overloaded. The net result would be decreased operating cost all along the line.

AN ENGINEER READER.

## Superpower Development Would Effect Much Needed Economies

NEW HAVEN, CONN.

TO THE EDITOR:

The Superpower Survey report sets forth facts from which certain conclusions can be demonstrated. One of these is that there is a great deal of capital, coal and labor going to waste in the development of electrical and steam energy at too high a cost in the Boston-Washington zone. There should be greater economy in the development, transmission and consumption of this energy. The increase of distance over which electricity may be practically transmitted, the fact that it is not substantially affected by the law of gravitation and that it is instantaneous in transmission, all indicate the economy of a tying together of the sources of energy in the Boston-Washington zone.

The superpower plan would result in a kilowatt hour created at less cost, in more kilowatt hours being produced with a less amount of capital and a better controlled consumption and consequently a better load factor for the producers of power. Here in New England he will be a public benefactor who can make one ton of coal do what now takes two tons and this is what the Superpower Survey apparently demonstrates.

E. G. BUCKLAND,  
Vice-president, New York, New Haven & Hartford.

## Railway Storage Battery Cars

NEW YORK.

TO THE EDITOR:

In an article in the *Railway Age* of October 1, 1921, entitled "The Field for Gasoline Railway Motor Cars," by L. C. Josephs, Jr., the assertion is made that storage battery cars failed on railroads because of their limited radius of operation and inefficient transmission of power. The Edison storage battery car is not a failure in any sense and this statement is at variance with the experience of users of our car.

In justice to Mr. Josephs, we quote the following from his answer to a letter from us: "My ideas on this subject coincide with those set forth in the paper by Messrs. Dodd and Arnold, read before the International Railway Fuel Association, May, 1913, in Chicago." From this it would appear that his conclusions as to the storage battery car were based on a report made in 1913. Mr. Josephs apparently has not been in touch with the development of our industry since that date. While we do not concede that the storage battery car was a failure at that time, it would be just as useless to consider here the performance of the self-propelled battery car prior to that time as it would be to declare that the gasoline self-propelled car was a failure because prior to 1913 it had been tried on a number of railroads and discarded as an absolute failure and a dangerous fire risk as well.

In passing, let it be said that the Railway Storage Battery Car Company did not enter this industry until subsequent to 1913; that previous to that time builders of storage battery cars had entertained and followed the theory that a storage battery car must be of excessively light weight construction and that such oddities as loose wheels, stationary axles, and specially constructed light weight trucks and other unique members in the car body construction were considered essential. The Railway Storage Battery Car Company, however, in entering the field discarded both this theory and practice and adopted M. C. B. standard construction and has since developed and sold cars meeting this high standard in every particular.

There can be no question that the electric storage battery

car is the simplest, cleanest and easiest operating railway unit that has ever been invented, but in view of the fact that this article is written to controvert certain assertions and to disprove them by instances of actual operation, no enlargement will be made here on its numerous advantages, such as the few parts; the absence of any engine and the incidental and expensive wear on engine parts; the absolute elimination of any fire risk.

To meet the assertion that the storage battery car is a failure in general, due to its limitation of radius of operation and inefficient transmission of power, we cite the following actual records of cars that have been placed in operation since 1914, carefully tested as to the very two points alleged by Mr. Josephs:

### PENNSYLVANIA RAILROAD:

Philadelphia to Baltimore—92.4 miles, 1.1 k.w.h. current consumed p.c.m.	} 145 miles, 1.9 k.w.h. current consumed p.c.m.
Mechanicsville to Chambersburg,	
Waynesboro to Richmond and return	

### CANADIAN NATIONAL RAILWAYS:

Between Trenton and Belleville—228 miles daily, 1.2 k.w.h. current consumed p.c.m.
--

Campbellton to Bathurst and return—126 miles daily, 1.2 k.w.h. current consumed p.c.m.
--

For details of continued successful economical operation proving the success of the storage battery car in general, reference is made to the following Edison storage battery cars in operation throughout the world: Long Island Railroad; Pennsylvania System; Chattahoochee Valley Railroad; Cambria & Indiana Railroad; Chicago, Terre Haute & Southeastern Railroad; Towson & Cockeysville Electric Railway; United Railways of Yucatan, Progreso, Mexico; Havana Central Railroad, Havana, Cuba; San Salvador & Santa Tecla Railroad, Salvador; Tranvia de Oriente, Bogota, Colombia; Tranvia de Guayaquil, Guayaquil, Ecuador; Tranvia de Pisco, Pisco, Peru; Tranvia de Merida, Merida, Mexico; Tranvia de Iquique, Iquique, Chile; Tranvia de Huacho, Huacho, Peru.

Particular attention is directed to the fact of the operation of the car on the Canadian National Railways between Trenton and Belleville, Ontario, making a total of 228 miles a day with this one car, which mileage is admitted to be a fair maximum of the average branch line mileage on a steam railroad. It should be further noted in connection with this record, that although this car had been in service elsewhere for four years before being placed in operation by the Canadian National Railways, up to the present it has performed this mileage consistently for 178 consecutive days without being out of service for any cause whatsoever, mechanical or otherwise.

In view of the fact that without a particularly low cost of current, the cost of operation of this car over this mileage is 3 cents per car mile (based on the power consumption of  $1\frac{1}{2}$  k.w.h. per mile at 2 cents per kw), there is no inefficiency of power transmission from the practical operating standpoint, and we confidently challenge not only the gasoline self-propelled unit but any other known unit of railway propulsion to show any such power economy in continuous operation, ton for ton.

The foregoing list comprehends cars in operation not only in the temperate but in the torrid zone near the equator; and since 1912 a storage battery car has been operated in Alaska. It must be remembered, however, that all of the foregoing are cars operated with the Edison storage battery, which is an alkali and not a lead acid battery. Too much stress cannot be laid upon this fact.

We seek no controversy with Mr. Josephs, because he probably has an erroneous belief that the development of the storage battery car had been arrested by the outbreak of the war in 1914 and that its use on railroads can only be judged by the certain failures prior to that time, losing sight of the fact that the very purpose of Mr. Edison in projecting an alkali battery was to overcome defects which were par-

ticularly responsible for these failures, and the further fact that the Edison storage battery car industry has been developed just as much, if not more, than the gasoline car, since 1914.

In the United States, this is an error into which motive engineering experts and engineers in general have been too prone to fall without investigation of the great progress we have made as demonstrated by actual tests and operations.

L. KLOPMAN,

General Manager, Railway Storage Battery Car Company.

## Long Sleeping-Car Runs

NEW YORK.

TO THE EDITOR:

That through sleeping car line from Aberdeen, Scotland, to Penzance, England, 785 miles, which you notice in your issue of October 29, page 846, is an interesting development (provided there are enough people in Scotland desiring to visit Land's End to make the business profitable); but the funny part of it is that, though there may be a through "line," there is no through sleeper. You must have read your London exchanges with insufficient care. Between Aberdeen and Penzance cars are attached to and detached from the train at a number of places; and, as I read the statements, a day coach is the only vehicle which runs through. The run takes some 22 hours, and passengers cannot find berths, on the southbound trip, until they reach Oxford; while on the northbound trip, leaving Penzance at 11 a. m., the sleepy passenger cannot refresh himself by complete and satisfactory recumbency until he gets to York at 11.15 p. m.

The published accounts would seem to indicate that an American passenger agent (of a former generation) may have had a hand in preparing them; for the fact that there is no through sleeper is obscured as skillfully as possible.

Would any American railroad, in its efforts to please the public, employ any such half-way measure? Probably not. However, it is not for us to criticize. Changing from one car to another (at a convenient place) at bedtime, is not an unmixed evil. Long journeys have elements of tediousness. The people of England are not much used to 700-mile journeys, and very likely they will prefer to educate themselves by degrees.

In this country the longest through-car runs have been those of "tourist" or second-class sleepers. Travelers who use the highest grade of sleeping cars may have reasons for not desiring to go to extremes in this matter. England is not so slow as she is often painted.

L. B. G.

## Why Employees Misunderstand Managements

TO THE EDITOR:

The greatest problem facing the railroads today is to create a feeling of understanding between the men and the managements. This can be accomplished by a policy of education coupled with complete frankness on both sides.

Why do the men feel the way they do towards the managements? Sometimes from observation of the lack of co-operation between departments and often even between heads of the same department; by failure of the operating officials to keep in close touch with the men and conditions; by officers following the course of least resistance instead of taking the initiative and changing methods and practices to agree with new conditions. Suggestions are often met with rebuff, or with the standpat reply "We can't vary our practice or we can't do that as it is out of the ordinary, etc."

The men are impressed and discouraged by the complete

failure in many cases to remedy the practices and conditions that were in effect 20 years ago, and have in other lines of business been superseded by modern methods; by criticism that is often unjust and technically critical, instead of being constructive; by lack of understanding by the men of the financial conditions of the roads, and mistaken impressions that no one takes the pains to correct; by the attitude of the management of making a good paper showing for one year at the expense of the future; by the management spending its best talents and abilities to evade issues and conditions that have to be met, which with the same expenditure of brains could be solved as easily; by taking away from the men their incentive and initiative in various ways and substituting "red tape" and too much system.

So much for criticism. What will change these conditions? Absolute confidence between the men and management, created by humanizing the latter; by personal relations that are closer; show the men that the management desires to meet them on a frank and open basis; let them know the exact financial status of the road; place before them the problems you face in operating the road. Let them know what the materials and supplies cost that they consume and have charge of. Explain what train and train loading statistics mean in dollars and cents; give them a financial interest in the company through the privilege of buying stock and equipment certificates; create teamwork between departments; make your plans for economies consistent—don't set the example of waste here and save there.

If possible help the men to build and own homes and show an interest in their welfare. Let the men be interested and they will eliminate the shirkers themselves. Show them the reasons for different acts that look trivial on the face but grow to be mountains by discussion without a basis of facts. Help the men to get over the road, to keep the cars moving, to make a success of economical practices and methods, to reduce damage and claims to lading and equipment, and help them to have an interest in keeping the physical property in the highest state of efficiency; make them feel that the management is interested in each man's personal efforts and that discipline will be administered without fear or favor.

Meet the men on this basis as "man to man" and you will find that the men will meet you in the same spirit, which is the only thing that can save the roads from going under with the present conditions. ONE WHO BELIEVES IN 50-50.



Body of Unknown American Soldier Being Placed on Train for Havre for Passage to America

The Body Was Buried with Appropriate Ceremonies at Arlington National Cemetery on Armistice Day.



Going Up to Clark's Summit With Five Engines

## Lackawanna Success the Result of Supervision

Adequate Facilities, Good Morale and Careful Checking of Details Feature the Road's Operation

By Charles W. Foss and James G. Lyne

### Part I

THE DELAWARE, LACKAWANNA & WESTERN has been considerably in the public eye in recent months. This has been due to a variety of reasons, among which the most important are: (1) The declaration on July 28 of a 100 per cent stock dividend, following the approval by the Interstate Commerce Commission of this step to capitalize a portion of the company's surplus; (2) the segregation of the

sufficient so that the property had in September an operating ratio of but 69.4 per cent. Its net railway operating income in September was \$1,930,927 and for the first nine months of 1921, \$9,825,096, although a smaller amount of traffic was handled than in the first nine months of 1920 and in spite of increased rather than decreased expenses for maintenance.

The road has always been conservatively financed. It is

TABLE I—REVENUES AND EXPENSES OF OPERATION, 1912 TO FIRST SIX MONTHS OF 1921

Year ended December 31	Coal revenues	Misc. revenues	Passenger revenues	Total revenues	Total expenses	Op. ratio	Net rev. from operation	Net rev. op. income
1912	\$13,280,304	\$13,999,359	\$7,722,953	\$37,564,511	\$24,146,423	64.28	\$13,418,088	.....
1913	14,418,507	15,089,057	8,549,346	40,784,148	25,573,842	62.71	15,210,306	.....
1914	14,940,574	14,448,308	8,158,458	39,249,790	25,417,887	64.76	13,831,908	.....
1915	13,364,007	18,742,617	8,218,316	44,786,731	27,756,947	61.98	17,029,784	\$15,090,580
1916	14,475,244	23,229,865	8,674,863	51,580,399	31,940,974	61.92	19,639,975	19,430,919
1917	17,130,291	24,647,415	9,289,838	57,211,224	37,676,488	65.86	19,534,736	16,011,564 <sup>1</sup>
1918	19,009,846	31,287,554	11,204,813	68,740,076	49,925,684	72.63	18,814,392	16,041,656 <sup>2</sup>
1919	19,655,523	32,839,878	12,380,787	71,824,407	56,068,251	78.06	15,758,796	11,947,364 <sup>3</sup>
1920	20,238,484	40,132,590	13,868,517	83,340,067	73,840,729	88.60	9,499,333	5,186,136 <sup>4</sup>
1921—First six months				43,279,985	35,665,988	76.89	6,613,996	4,602,496 <sup>5</sup>

<sup>1</sup>Excludes war taxes 1917..... \$330,000

<sup>2</sup>Excludes war taxes 1918..... 766,474

<sup>3</sup>Excludes war taxes 1919..... 1,710,374

<sup>4</sup>Includes war taxes 1920..... 918,750

<sup>5</sup>Includes war taxes 1921..... 561,458

road's extensive coal properties and the formation of the Glen Alden Coal Company, which latter company began to function on September 1, and (3) the rather remarkable recovery in recent months in the Lackawanna's net earnings,

generally accepted that, because of the road's policy in former years of charging to income account its expenditures for additions and betterments, the property account as it appears on the balance sheet is far below the actual value of

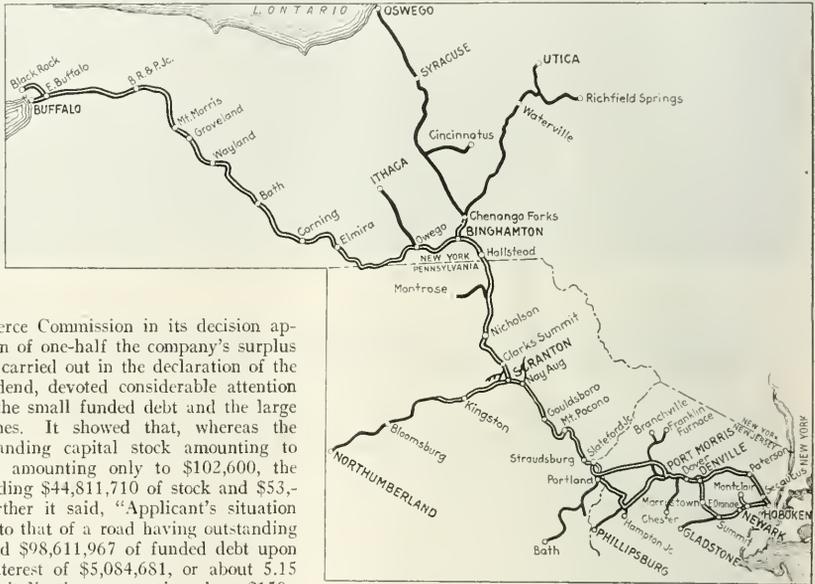
TABLE II—CORPORATE INCOME ACCOUNT, 1912 TO 1920

Year	Operating income	Coal dept. earnings	Total additl. income	Total income	Rental for leased roads	Total deductions	Net	Dividends	Rate per cent	Balance
1912	\$12,207,730	\$2,111,897	\$5,493,045	\$17,700,775	\$5,688,588	\$7,658,704	\$10,042,071	\$6,028,806	2 1/2	\$4,113,271
1913	13,742,106	1,270,020	4,328,084	18,070,201	5,928,936	8,370,585	9,699,616	6,038,880	2 1/2	3,670,816
1914	12,121,918	2,355,562	6,829,197	18,951,115	5,874,935	6,981,425	11,969,639	8,444,080	2 1/2	3,525,559
1915	14,912,945	1,536,916	5,026,013	19,938,958	6,063,815	8,975,810	10,963,140	8,440,080	2 1/2	5,111,060
1916	17,114,593	2,899,309	7,532,565	24,647,158	5,983,157	8,447,010	16,700,148	8,440,080	2 1/2	7,259,068
1917	15,940,064	4,521,268	8,800,963	24,741,027	6,777,191	9,370,831	15,370,197	9,490,560	22 1/2	5,870,637
1918	14,474,529	3,626,710	4,565,921	23,367,160	6,135,856	6,533,908	16,834,052	8,444,080	2 1/2	4,880,052
1919	17,334,424	4,689,682	3,565,541	25,874,647	6,126,908	9,805,447	16,072,200	8,444,454	2 1/2	7,627,745
1920	13,634,114	6,503,942	5,308,464	25,446,520	6,126,996	11,771,411	13,675,109	8,444,110	2 1/2	5,231,999

the property. The total interest on funded debt in 1920 was but \$6,156. This statement is made with due cognizance of the fact that payments to leased lines total over \$6,000,000 annually. Dividends have been paid at the rate of 20 per cent annually since 1905, with the exception of 1917, when 22½ per cent was paid, and of 1909, in which year the Delaware, Lackawanna & Western Coal Company was organized and cash dividends aggregated 75 per cent. A short while ago, as noted above, a stock dividend of 100 per cent was declared and the dividend rate on the increased capitalization has since been made 3 per cent quarterly, or 24 per cent annually on the former capitalization.

The Interstate Commerce Commission in its decision approving the capitalization of one-half the company's surplus of \$90,000,000, as later carried out in the declaration of the 100 per cent stock dividend, devoted considerable attention to the relation between the small funded debt and the large payments to leased lines. It showed that, whereas the Lackawanna had outstanding capital stock amounting to \$42,220,550 and bonds amounting only to \$102,600, the leased lines had outstanding \$44,811,710 of stock and \$53,697,657 of bonds. Further it said, "Applicant's situation is in a sense equivalent to that of a road having outstanding \$42,220,550 of stock and \$98,611,967 of funded debt upon which it pays yearly interest of \$5,084,681, or about 5.15 per cent, with a total capitalization aggregating about \$150,000 per mile of road and \$52,100 per mile of track."

The selling activities, however, were dropped in 1909 upon the organization of the Delaware, Lackawanna & Western Coal Company. Effective September 1, 1921, the railroad divested itself of its coal properties—the mines and the business of working them being turned over to the Glen Alden Coal Company. The Lackawanna mined some 9,000,000 to



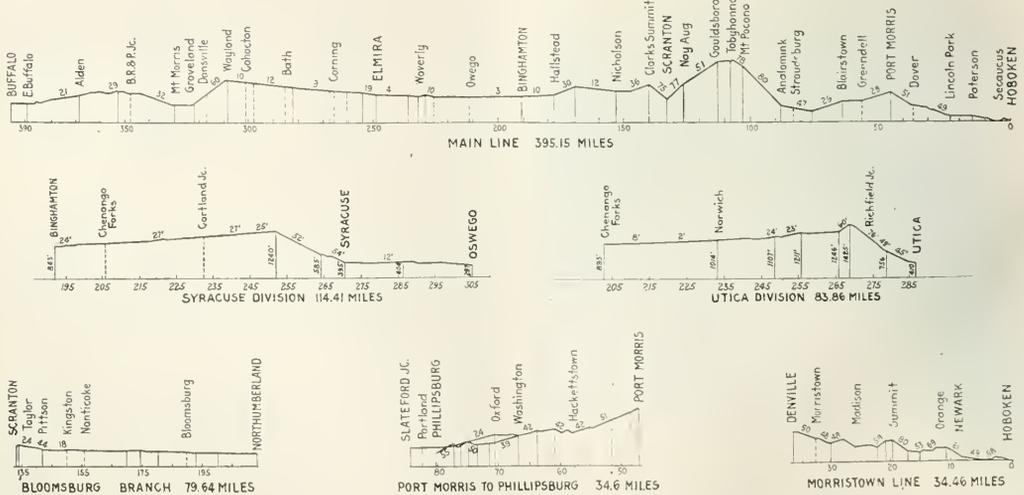
The Delaware, Lackawanna & Western

Segregation of Coal Properties

The Lackawanna was built primarily to handle anthracite coal and prior to about 1900 its traffic in other commodities was of comparatively small importance. The railroad owned the coal lands, mined the coal, transported it and sold it.

11,000,000 tons of coal annually, and derived from its coal department earnings of from \$1,500,000 to over \$6,000,000 yearly.

The Glen Alden Coal Company has been capitalized with 846,000 shares of no par value—this being the same number



Profile of Main Line and Important Branches

of shares of Lackawanna Railroad stock as were outstanding prior to the declaration of the 100 per cent stock dividend. The Glen Alden shares were offered to the railroad stockholders on record June 15 on the basis of one share of Glen Alden to one share of Lackawanna at a price of \$5 per share. The coal company has delivered to the railroad a mortgage of \$60,000,000 paying 4 per cent interest. It was further provided that the coal company must establish a sinking fund of \$1,500,000 annually, beginning September 1, 1926, to be continued until the \$60,000,000 has been paid; if the coal company mines more than 12,000,000 tons of coal in any year, the sinking fund must be increased to \$2,000,000. The Delaware, Lackawanna & Western Coal

future. It does not appear that it will be adverse. The important point, however, is that the coal properties have been segregated. It must be borne in mind in reading the remainder of this article that the Lackawanna Railroad—since September 1, 1921—no longer owns coal mines nor mines coal. It has now become a transportation company exclusively.

**Service Chief Asset in Competition**

The Lackawanna has the shortest line between New York and Buffalo—396 miles. The total mileage of the system is 995. Of this total the Lackawanna owns but 277, leases 703 and has trackage rights for 15. Although the system



Some Scenes Along the Line Between Hoboken and Scranton

Sales Company has been continued as the sales agent of the Glen Alden Company.

The segregation of the Lackawanna's coal properties into the hands of a separate company will be most unlikely to affect measurably the movement of the coal from these mines over the Lackawanna Railroad. It will presumably have some result on the Lackawanna earnings—what result, however, can only be determined by the developments of the

is small, it has been able to compete quite handily with the larger trunk lines having through lines of their own between New York and Chicago. The road's largest single item of traffic is, of course, anthracite coal, which makes up normally about 40 per cent of the total tonnage. The Lackawanna, however, also carries a large tonnage of high class merchandise freight—its chief asset in the competition for which has been its service. The road is noted for its ability

TABLE III—TRAFFIC AND OPERATING STATISTICS

Year	Net tons		Total freight tons	Total ton mileage		Average haul	Rev. per ton mile	Rev. tons per train mile	Miles per car per day	Gross tons per loco. mile	Gross tons per train mile	Net tons per train mile	Average tons loaded	Per cent total car miles
	Anthracite	Other		ton mileage	haul									
1912	9,501,967	13,394,359	22,896,326	3,921,197,831	171.26	...	602.38	33.7	...	...	...	...	...	...
1913	10,178,179	14,544,493	24,722,672	4,268,124,897	172.64	...	659.58	25.6	...	...	...	...	...	...
1914	9,803,693	12,293,423	22,097,116	4,030,594,486	177.35	...	651.94	26.5	...	...	...	...	...	...
1915	9,455,405	13,715,372	23,170,777	4,391,419,183	189.52	...	687.76	28.5	...	...	...	...	...	...
1916	10,968,286	17,301,637	28,269,923	5,263,262,974	186.18	...	769.62	28.8	1,074.55	1,659.35	803.12	26.7	67.3	
1917	12,587,055	17,890,436	30,477,491	5,591,042,823	183.45	...	816.39	30.0	1,094.47	1,673.29	847.71	28.1	68.0	
1918	12,203,916	18,168,821	30,372,737	5,574,773,609	183.55	...	840.20	29.0	1,073.64	1,682.21	866.73	30.1	68.67	
1919	10,418,250	15,564,298	25,982,548	4,830,065,815	185.90	...	850.71	28.3	1,154.67	1,763.94	895.17	29.1	68.72	
1920	10,219,848	18,095,511	28,315,359	5,166,315,007	182.46	...	814.25	29.6	1,140.94	1,745.09	843.94	28.3	67.82	

to operate fast manifest freight schedules and its record for making connections is an enviable one. This kind of service requires sufficient facilities for handling it, as also supervision and operating efficiency of the highest order, and of these the Lackawanna has had both.

As will be seen from the profile, the Lackawanna has on

TABLE IV—PASSENGER OPERATING STATISTICS

Year	Passengers carried	Passengers one mile	Rev. per pass. mile cents	Average distance	Cars per train mile	Pass. per train mile	Pass. per car mile
1912	25,462,301	505,585,264	1.53	20	..	..	..
1913	25,509,047	546,308,595	1.57	21	..	..	..
1914	24,736,458	520,508,572	1.53	21	..	..	..
1915	24,014,417	528,189,133	1.56	22	..	..	..
1916	25,037,226	548,804,959	1.58	21.92	7	107	31
1917	25,307,161	585,179,118	1.59	23.12	7	117	33
1918	24,623,034	604,647,645	1.85	24.56	7	129	36
1919	27,281,789	643,253,978	1.92	23.58	7	139	37
1920	30,612,506	698,358,572	1.99	22.81	7	146	37

its main line from Hoboken to Buffalo a number of rather heavy grades. The most important are those over the Pocono mountains east of Scranton and between Scranton and



Scranton Shops

Clark's Summit, west of Scranton. The opposing grade to westbound operation over the Poconos begins near the New Jersey-Pennsylvania state line, there being approximately 20 miles of 1½ per cent grade, or 78 to 80 ft. rise to the mile. From Scranton east to Nay Aug, about 6 miles, operation meets a grade of 75 to 77 ft. to the mile and from Nay Aug to Gouldsboro, about 14 miles, a grade of 51 ft. to the mile. From Scranton west to Clark's Summit there is another grade of about 75 ft. to the mile for a distance of about 7 miles. There is also an opposing grade to eastbound traffic between Groveland and Wayland, about 14 miles, averaging about 60 ft. to the mile. In addition, pusher locomotives are often used by westbound trains from Lincoln Park to Port Morris, 24 miles, 51 ft. to the mile, and by trains moving eastward over the New Jersey cut-off, 28.6 miles, in which section grades are met of 29 ft. to the mile.

#### Elimination of Grades and Curvature

Naturally, in view of the fact that the line goes through mountainous country where grades of 1 and 1½ per cent are met, it is to be expected that there should also be considerable curvature. The Lackawanna, however, is characterized by the extensive projects it has undertaken to eliminate curves and in general to secure a much improved alignment. There have not only been a large number of projects embracing a few hundred yards of track, but also the noted engineering achievements which are represented in the construction of the 28-mile cut-off from Port Morris, N. J., to Slateford Jct., Pa., reducing distance between Hoboken and Buffalo by 10 miles, and the 38-mile cut-off between Clark's Sum-

mit, Pa., and Hallstead. The former work was completed in 1911 and was carried out by the Lackawanna Railroad of New Jersey, a subsidiary company on the stock of which the Lackawanna guarantees annual dividends of 4 per cent. The project cost some \$11,000,000; one of its several distinguishing features is a fill some 3½ miles long, said to be the largest railroad fill in the world.

The cut-off between Clark's Summit and Hallstead was completed in November, 1915. As noted, it is 38 miles in length. It cost some \$12,000,000, procured through the sale of Lackawanna stock to the stockholders at par. The cut-off reduced the distance between Scranton and Binghamton nearly 4 miles and the saving in grades and curvature was such as to cut down the time of freight trains one hour. This cut-off likewise has several distinguishing features, the principal of which is the Tunkhannock Viaduct, 2,375 ft. long and 240 ft. high, said to be the largest concrete viaduct in the world. The old line which this cut-off replaced has been abandoned and is now being made over into an automobile highway—a part of the so-called "Lackawanna Trail."

The Lackawanna has been engaged in a continued and extensive engineering improvement program of many years' duration. In addition to the two cut-offs, this program has included new yards and terminals, new shops, new stations over a large part of the system, etc. Grade-crossing elimination has received particular attention. There is not a single grade-crossing on either of the two cut-offs; there is but one grade-crossing in the city of Scranton; with the completion of the East Orange track elevation project but very few grade-crossings will remain in the suburban zone. Work is now also proceeding on the elimination of two grade-



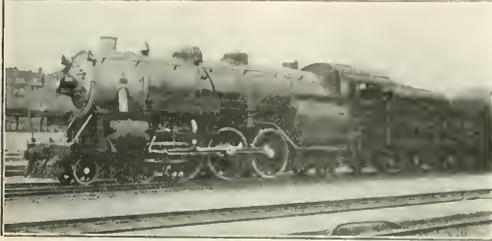
Keyser Valley Car Shops

crossings at Paterson, N. J., and one at Fox Hill, near Denville.

It is such developments as these which have induced the Lackawanna to use an expression such as "Mile for mile, the most highly developed railroad in America."

In comparatively recent years, the Lackawanna's improvement program has included the elimination of grade-crossings in the New York suburban zone, new stations at Buffalo and other points, etc. During federal control, the improvement program was deferred. At present two important projects are under way. The grade-crossing elimination work in East Orange, already noted, will cost about \$4,500,000. This is an elevation project; it will practically complete the program looking to the elimination of grade-crossings in the suburban zone, as above mentioned, and will facilitate train operation because of the addition of a third track 'as is already provided in Newark on the east, and Orange, etc., to the west.

The other project, estimated to cost about \$500,000, includes the preparation of a third track for passenger operation across the Hackensack meadows between the Hackensack river and Harrison. The work, now nearly completed, consists primarily of rock ballasting, etc., and the installation of color light signals on signal bridges in place of the present two-arm semaphore signals. An outstanding feature



The Lackawanna's Passenger Pacific

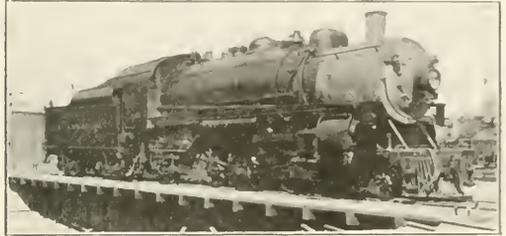
of these two projects is the fact that the Lackawanna is in a position to spend approximately \$5,000,000 in these times and without a bond issue. The next project in the Lackawanna's improvement program will probably be the electrification of the 1½ per cent grades between Gouldsboro and Clark's Summit, east and west respectively of Scranton.

#### A Striking Contrast

One of the striking things about the Lackawanna is the contrast that naturally results from the carrying out of projects of such extensive character. That is to say, in some places the facilities are adequate and show provision for many years of expansion. In others the opposite is true. Mention might be made of the yard facilities at Scranton. There the road is handling 70-car manifest trains in a yard, the longest track of which will hold but 48 cars. Another instance is the Hoboken passenger terminal which has had to meet an increase in business of 40 per cent in two or three years, but with facilities used to an extent which is rapidly

#### Pusher and Helper Service

The average revenue train load on the Lackawanna in 1920 was 814 tons; in 1919, it was 860 tons. Considering the Lackawanna's comparatively heavy grades and the large proportion of freight which moves in manifest trains and would presumably tend to reduce the average, it might be expected that an average train loading as heavy as this is probably secured through the use of heavy motive power. This, however, is not the case. The heavy train loading is due rather to the large amount of double-heading and pusher service. In 1920 the gross tons per train mile were 1,745; the gross tons per locomotive mile, however, were but 1,141. Operation is conducted over the Poconos and from Scranton west to Clark's Summit with double-headed trains having in addition two or three and, in winter, even four pushers. There is also a considerable amount of double-heading done

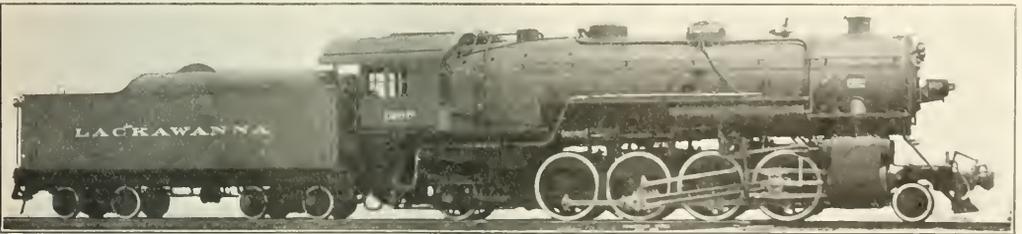


The Freight Pacific Type Locomotive

in passenger service; several of the rush-hour suburban trains are double-headed.

#### The Lackawanna's Locomotives

The Lackawanna's motive power standards are characteristic. This, however, is a development of comparatively recent years; even as late as 1914 through passenger trains were sometimes handled with a Ten-wheel locomotive double-headed with an Eight-wheel locomotive. Evidence of the progress that has been made up to the present time is per-



The Lackawanna's Heaviest Locomotive Is a Mikado Type

This locomotive has 28 by 30 in. cylinders; a weight on drivers of 253,500 lb. and a total weight in working order, engine only, of 328,000 lb. The maximum tractive effort is 57,100 lb. The fuel used is bituminous coal.

reaching the maximum. The general standard of excellence is so high that to the observer such things stand out in rather marked fashion.

The Lackawanna's standard rail section weighs 105 lb. to the yard. Creosoted ties exclusively have been put in main line track for some years past. Tie plates are used and screw spikes. The main line is ballasted with rock, except between Binghamton and Corning, where large-size washed gravel ballast is used. The Lackawanna has high standards of maintenance. So far in 1921 it has spent practically as much for maintenance of way as it spent up to this time last year.

haps best shown by the fact that it is hoped by next year to have applied superheaters to practically every locomotive in road service. The number of Eight-wheel and Ten-wheel locomotives in suburban service that have not been thus equipped can be counted on one's fingers.

The Ten-wheel locomotives are now being further modernized; the locomotives of this type that have been so treated compare favorably with many Pacific type locomotives. Mechanical stokers are a new development on the Lackawanna; they have been applied on about 14 Mikado locomotives and will shortly be applied to all Mikado type engines.

The Lackawanna's standard locomotives for freight serv-

ice are of the Mikado (1,200 class) and of the Pacific type (1,100 class). The Mikado locomotives have a total weight in working order of from 312,000 lb. to 328,000 lb.; a weight on drivers of from 236,000 lb. to 254,500 lb. and their tractive effort is 57,040 lb., the figures varying with the various orders. The Pacific type locomotives are intended primarily for fast freight and through passenger service. The Lackawanna's Pacifics are among the heaviest of their type used on any road. Those used in passenger service have a weight of 305,000 lb. and have 72 in. driving wheels. Those used in freight service have 69 in. driving wheels; have a total weight in working order of from 288,000 lb. to 291,000 lb.; a weight on drivers from 185,500 lb. to 188,000 lb. and a tractive effort of from 40,700 lb. to 43,116 lb.

Other locomotives used in freight service include the 300 Class Consolidations; the 500 Class Moguls; the 700 Class Consolidations and the 800 Class Twelve-wheelers. General details concerning the weights and tractive effort of these locomotives are given in the subjoined table. These various classes of locomotives are used principally in local freight service and as helper or pusher locomotives.

It is interesting to notice that in the years from 1912 to 1920 inclusive the Lackawanna acquired a total of 159 new locomotives. These included 74 Mikado, 69 Pacific type and 16 Eight-wheel and 1 Six-wheel switching locomotives.

The Lackawanna is termed "The Road of Anthracite." Anthracite coal is used exclusively as fuel for passenger

1912 to 1920 inclusive, the Lackawanna acquired some 7,800 new freight cars, inclusive of 800, 40-ton box and 800, 55-ton hopper cars allocated by the United States Railroad Administration.

The passenger equipment in through and suburban service alike is now largely of all-steel construction. Since 1910 the Lackawanna has acquired about 350 new passenger cars, all of all-steel construction and the most of them for suburban service.

As in the case of roadway and track, the Lackawanna is noted for its high standards of equipment maintenance. Its round-house facilities are unusually adequate and its shop facilities are rated among the best and most modern in the country. The main locomotive shops are at Scranton; the passenger car shops are at Kingsland, N. J., and the principal freight car repair shops are at Keyser Valley, not far from Scranton. With reference to the Lackawanna's stores department, it may be noted that the turnover in that department in the month of June was 40.2 per cent.

**How the Lackawanna Handles Its Coal**

The nucleus of the Lackawanna's business is the transportation of anthracite coal. In 1920 the road carried 10,219,848 tons of this commodity; it carried 18,095,511 tons of other freight, and the total revenue tonnage was 28,315,359. On the movement of anthracite coal, the revenues in 1920 were \$20,228,484. Revenues on other freight were \$40,132,599. The coal tonnage in 1920 was 40 per cent of the total revenue freight tonnage and the coal transportation revenues were 33 per cent of the total freight revenues.

The business of transporting anthracite coal is rather more different from that of moving bituminous coal than might ordinarily be expected. The distinguishing features in the case of anthracite are the very small area in which the mines are to be found, the small number of mines and the large capacity of the individual mines. Thus the Glen Alden Coal Company—or its predecessor, the Lackawanna's coal mining department—mines and ships from 9,000,000 to 11,000,000 tons of coal annually. This coal makes up some 85 per cent of the total anthracite tonnage moving over the Lackawanna.

The coal is secured from but 17 mines and one-half of it from six mines. Some of these mines produce 4,000 and even 6,000 tons of coal per day. When one considers that the bituminous coal shipped over the Virginian Railway is less in tonnage than the anthracite coal mined by the Glen Alden Coal Company, but that the Virginian's coal is obtained from some 70 mines, the contrast between the anthracite and bituminous coal business from the railroad point of view will be apparent.

The reader should also be reminded that anthracite is classified not by mines or pools as in the case of bituminous, but by sizes. These sizes are separated in the breaker which is at the head of the mine shaft. There are 8 sizes; furnace, egg, stove, chestnut, pea, buckwheat, rice and barley. The first five are domestic sizes and the latter three commercial. The size of the breaker will be perhaps best evidenced not only by the tonnage of coal which it sorts by sizes—as noted, in some cases 4,000 to 6,000 tons daily—but by the fact that a modern steel breaker costs about \$1,500,000.

LOCOMOTIVES IN SERVICE—JUNE 1, 1921

Series	Type	Class	Number in service	Total weight in working order, engine only	Weight on drivers	Tractive effort
	0-4-0	A	2	.....	.....	.....
	0-6-0	B	150	.....	.....	.....
	0-8-0	C	37	.....	.....	.....
500.....	2-6-0	E	74	176,000	133,000	30,000
300.....	2-8-0	F		180,000	166,000	34,000
				190,000	169,500	
700.....	2-8-0	F	244	to	to	34,197
				178,000	157,500	
900.....	4-4-0	G	80	185,200	106,400	23,701
				179,000	137,000	27,594
1000.....	4-6-0	H	48	to	to	to
				219,800	169,500	33,900
800.....	4-8-0	J	20	200,000	158,000	40,347
				312,000	236,500	
1200.....	2-8-2	L	62	to	to	57,040
				328,000	254,500	
				284,000	179,500	40,790
1100.....	4-6-2	N	58	to	to	44,079
				305,500	197,300	

This table gives only general details and is not meant to be a complete record of the Lackawanna's locomotives.

trains—through and suburban alike. During the war the road used in passenger service soft coal or a mixture, but it is now back to its former standard. The coal used in freight service is bituminous exclusively. Pittsburgh No. 8, the grade used, is obtained principally from mines on the Baltimore & Ohio and the Wheeling & Lake Erie.

**Freight and Passenger Cars**

In the matter of freight equipment the Lackawanna has followed a conservative policy. For coal traffic the car most commonly used is a 50-ton or 55-ton steel hopper car. The box cars are mostly of 60,000 lb. and 80,000 lb. capacity and of steel underframe construction. In the years from



# The Trans-Continental Freight Rate Situation\*

## A Presentation of the Railways' Position on Pacific Coast Rates and on Panama Canal Tolls

By Edward Chambers

Vice-President Atchison, Topeka & Santa Fe

THE TRAFFIC directly involved is the westbound movement of highly manufactured articles, practically ready for the consumer, from Atlantic ports and from points in what is known as the seaboard territory to Pacific Coast ports and to points inland from the Pacific Coast, where the ship rate to the port plus the local rail rate is less than the normal all-rail rate. There is also involved traffic from points of origin westward from Atlantic seaboard territory up to and including Colorado common points, for throughout all this region there is strong competition of manufacturers seeking markets in the Intermountain and Pacific Coast territories. The great bulk of this traffic originates or terminates on rail lines inland from the ports.

When the Panama Canal was opened in 1914 it made a through direct sailing distance between New York and San Francisco of approximately 5,000 miles and avoided all transfers en route. After the payment of tolls the Panama Canal route was still very much cheaper than any of the other water routes, and, by the uninterrupted sailings, made the all-water service much more valuable and nearer the all-rail-service than it ever was before.

### The Policy of the Government

From the beginning up to 1918 the railroads enjoyed continuous permission, either by direct authority of law or ruling of the Commission, to publish rates which would enable them reasonably to meet the rates of these coast-to-coast water carriers at competitive points and continue to carry higher rates at intermediate points; and also to apply, in like manner, these all-rail water-competitive rates from points inland, such as Cincinnati, Chicago, St. Louis, Kansas City, Denver, and other points in the same territories to the same Pacific Coast competitive points.

It always has been the policy of the Interstate Commerce Commission to grant authority to apply from intermediate points of origin westward from the Atlantic seaboard territory to Pacific Coast ports the same rate that it determined necessary to meet the coast-to-coast water-carrier competition in the seaboard territory, when such rate was lower than the normal all-rail rate, and this has proven to be a very wise policy. It would be disastrous to the western manufacturing interests to prohibit such rate adjustment now, as it only assists the western manufacturer in maintaining his natural relation to the Pacific Coast territory, which relation is now seriously disturbed by the rates made via the Panama Canal route. It would also be just as disastrous to the all-rail carriers, as they would lose the Pacific Coast traffic from western points, which is the most profitable movement to them. The trans-continental railroads receive the greater benefit by applying their water competitive rates from intermediate points west of Pittsburgh.

With the opening of the European war, ships operating between Atlantic and Pacific ports began gradually to withdraw from that service and go into foreign or overseas serv-

ice, which was much more profitable to them. That demoralized more or less the coast-to-coast service by water. Shortly after our country entered the war our government began to commandeer the desirable privately-owned United States ships and place them in overseas transport service. As a result the beginning of 1918 found practically no coast-to-coast water carrier operations in general domestic traffic. This condition was called to the attention of the Interstate Commerce Commission early in 1918 by intermediate shippers, and the Commission, after hearing, withdrew from the transcontinental rail carriers permission to carry the lower rates at Pacific Coast ports and obliged them to apply the Pacific Coast port rates as maxima at intermediate points. In order to protect their revenue, the rail carriers extended the maximum rates to Pacific Coast ports, which increased the rates at the ports very considerably. During 1918-1919 there was, because of the slow return of ships to coast-to-coast service, little or no competition between coast-to-coast water and all-rail carriers, and the traffic was handled almost entirely by the all-rail lines.

In the latter part of 1919 water-carrier competition by the additional ships placed in service began to show itself in a rather small way at first, but it increased gradually so that by the latter part of 1920 competition of the water routes had increased to a very considerable extent. Since then it has been steadily increasing, so that today the competition of these water lines is a very serious matter to the trans-continental rail carriers.

The all-rail carriers have up to the present time been very conservative in the matter of reducing rates to compete with the water lines. They recognize the demoralized conditions on the water and the fact that large numbers of ships are idle, there being in operation today seeking domestic traffic a greater number of ships than can be profitably operated.

With the rail lines thus practically out of the competition at Pacific ports, the intermountain shipper is in precisely the same position today that he would be if the all-rail carriers had in effect a system of competitive rates meeting the water carriers' rates, and such rates were not applied as maxima at intermediate points. But while the intermountain shipper gains nothing by the exclusion of the rail carriers from this business, the rail carriers themselves lose heavily. There is no complaint from the interior territory of the present rates of the water lines from Atlantic to Pacific Coast ports. Were the rail carriers to meet the water carrier rates at Pacific Coast ports, the present rate relationships of intermediate points to such Pacific Coast ports, based on existing combination, would not be changed. I cannot see what is to be gained by the intermediate territory if its objection prevents the all-rail carriers from meeting the rates of the water carriers. The water carriers would continue to make the same low rates to the same Pacific Coast ports regardless of the higher rate adjustment of the trans-continental railroads, which must be maintained if they are forced to carry the same rates westbound at interior points as are carried to the ports.

### Competition of Markets

The cities upon the Atlantic seaboard, by virtue of the Panama Canal, secure a maximum enjoyment in the markets

\*From a statement presented before Examiner William Disque of the Interstate Commerce Commission at Chicago on November 17, 1921, in behalf of all trans-continental lines in an application to the Interstate Commerce Commission for permission to make rates by the railroads from the Atlantic Coast and nearby territory, from the Gulf Coast, and also from the interior manufacturing regions such as the Chicago territory, the Mississippi river territory, and the Missouri river territory to Pacific Coast points, which shall be lower than the charges on the same commodities to destinations east of the Pacific Coast.

afforded by the Pacific Coast cities. This naturally creates a market competition for the cities in the middle west from the Rocky Mountains to the Niagara frontier, which should not be denied, and under the policies of the government the all-rail carriers sought to and did establish carrying charges to the Pacific Coast cities from such interior cities upon a basis which permitted a participation in the markets of the Coast. The sections of the country in which such interior cities are located, through the medium of taxation, have contributed their full quota to the cost and the maintenance of the Panama Canal, and it is the contention of the sections and the cities in competition with the seaboard cities that the carriers should be permitted to establish a system of rates which would permit of their products or wares being placed upon the Pacific Coast on a reasonable parity with the cost of transportation so far as the seaboard cities are concerned. To deny the establishment of a basis which will permit of a reasonable participation on the part of such cities in the interior would discourage the growth and development of a very large and substantial part of the United States, and cause to be withheld from the carriers a revenue which would be theirs if the market competition of the various cities as to the traffic in question were fully considered and properly disposed of. The maximum development of country and transportation justifies a scattering of manufactories to all parts of the country rather than a concentration upon the Atlantic seaboard.

Up to the time of opening the Panama Canal the situation on the water was such as to enable all-rail lines reasonably to compete with the coast-to-coast water routes and secure a fair share of this traffic at compensatory rates; but after the opening of the Panama Canal route it became more difficult for the all-rail lines to meet the competition of these coast-to-coast water carriers. This condition forced the rates all-rail to a very low level. The reduction of cost to the ship by its not having to transfer its cargo en route and moving it all-water via the shorter, direct route, enabled the ship to make much lower rates than ever before and to reach farther inland for traffic, both at the Atlantic and the Pacific Coast, and thereby to take a greater proportion of the traffic than at any time in the past. This forced the rail rates down to a minimum figure, very close to the out-of-pocket cost of handling traffic.

If tolls on the Panama Canal were eliminated it would create a still lower basis for rates via water routes, which in turn would compel the lowering of the all-rail rates and place an additional burden on the western railroads and on western manufacturing interests. The steamship operations between Atlantic and Pacific ports have never developed any considerable amount of traffic. The bulk of the traffic which they now enjoy was developed by the all-rail lines.

Pacific Coast and Intermountain territories produce an immense volume of food products, perishable and non-perishable, such as citrus fruits, deciduous fruits, dried fruits, fresh vegetables, canned goods, beans, sugar, rice and live stock, which moves to markets east of Colorado and largely to markets in the territory east of the Mississippi River and north of the Ohio. This western territory also produces an immense tonnage of lumber which is marketed at points eastward. The rates applied to these eastern markets are not in all cases fully reasonable. Many rates have been made on the basis of what the traffic could reasonably bear in reaching markets. There is no departure from the long-and-short-haul clause of the fourth section on east-bound traffic, except sugar from California to Chicago and wool and dried hides from the Pacific Coast terminals to the eastern territory and no complaint of the relationship of rates.

The territory east of the Mississippi River and north of the Ohio produces the great bulk of the westbound tonnage

of manufactured articles consumed on the Pacific Coast. The movement of traffic eastward across the Mississippi River is much heavier than the movement westward. There is always need of additional westbound traffic for loading refrigerator cars. The lumber traffic, even under normal conditions, requires a large empty movement of box cars westward. There are now owned by trans-continental lines and in service for handling perishable food products from points in Pacific Coast and Intermountain territory approximately 50,000 refrigerator cars. The character of freight generally moving westbound is desirable for loading into returning refrigerator cars, as it causes the minimum damage to the car. There is at best under normal conditions a large empty westbound movement of refrigerator cars, so that whatever increases the loading westbound contributes just that much to the net earnings of the trans-continental carriers, and, to that extent, affects favorably, from the shippers' and receivers' viewpoint, the rates both east and west-bound, terminal and intermediate.

An adequate supply of refrigerator cars is important not only to the Pacific Coast territory but also to the intermountain region. The latter territory is as much interested in having the trans-continental railroads enjoy profitable operation and give satisfactory service as the Pacific Coast could be. The present rate adjustment on the traffic of western territory moving to eastern markets is low for the distance hauled in comparison with rates from other producing points. But it is necessary to carry such rates in order that western products may enter the trade in eastern markets in competition with other sources of supply. The trans-continental railroads need all the westbound traffic that it is reasonably possible for them to secure in competition with the coast-to-coast water carriers in order that they may make the rates which are indispensable to the development of western territory. The traffic most important in any section is that which it produces and ships to markets in other sections of the country. The volume on the whole shipped out of Pacific Coast and Intermountain territory to eastern markets is much greater than the inward movement.

It should not be overlooked that along the lines of the trans-continental railroads is an extensive area which produces practically no traffic, and also a very considerable territory which produces only a very light traffic. The rail lines through such regions must be largely supported by the traffic which originates or has destination beyond.

#### Contention of Intermediate Territory

The contention of intermountain shippers is that no lower rate under any circumstances should apply at Pacific Coast ports than is in effect at intermediate points. This contention is based largely on the effect such rates may have upon distribution by interior jobbers of eastern manufactured articles in the Intermountain territory in competition with Pacific Coast jobbers, and not to any extent on any interference with manufacturing or production at intermediate points, as the question of raw materials westbound is not involved to any extent, nor is that of the great staples, such as coal, lumber, grain and its products, fruits and vegetables, and meats.

The rail carriers have no desire to make lower rates at Pacific Coast ports than apply at interior points, if it could be avoided. They would welcome a condition which would allow them to haul a reasonable share of Pacific Coast westbound traffic under fully reasonable rates. Today the all-rail carriers have no rates in effect which meet the rates of the coast-to-coast water carriers, and there is therefore practically no competition between the carriers by rail and those by water.

If the rail carriers should be denied permission to make

lower rates at Pacific Coast ports and have higher rates at intermediate points, it would leave the water carriers without any competition except between themselves and to enjoy the haul of practically all westbound traffic to Pacific Coast ports and nearby points. The middle-west manufacturer would be unable to compete at Pacific Coast cities with the manufacturer in the territory Pittsburgh and east, who would enjoy the low water-route rates—less than the normal rates to the same points on the same commodities from the territory west of Pittsburgh, which is nearer to destination. The position of the western manufacturer in Pacific Coast markets is seriously endangered now by rates made by the coast-to-coast water carriers from eastern territory, as there are no corresponding rates made for the western manufacturer by the all-rail lines. The western manufacturer is unable to absorb the present difference between the freight rate paid by him to the Pacific Coast and that paid by his competitor from the Atlantic seaboard to the water carriers. This certainly is not in the best interest of the country as a whole. Today manufacturing is congested in the territory east of the Mississippi River and north of the Ohio, where, outside of cereal products and lumber, 85 per cent of the general manufacturing is done. What the all-rail lines are seeking to do is to hold the business from western points now on their rails and to secure a share of the traffic from the competitive eastern territory. Unless this is done the business will practically all go to the eastern manufacturers.

#### Water Carriers Should Be Regulated

I have always been strongly of the opinion that the rates of water carriers in coast-to-coast traffic should be under the jurisdiction of the Interstate Commerce Commission. If this were done the Commission would prescribe reasonable rates for water service which would be stable and at a figure that would enable a regular, dependable operation of steamship lines, and avoid the disturbance and demoralization caused by what is known as the tramp ship, which often offers rates for cargo at almost any figure above the handling cost and usually takes on cargo without any intention of ever returning to operate in regular service. The public gets no benefit from fluctuation in water rates caused by such competition. I believe that, with coast-to-coast rates of the water carrier subject to the Interstate Commerce Commission, there would be removed much of the cause for complaint on the part of the intermountain shippers and there would be afforded more protection to the manufacturers in western territory in their natural relation to Pacific Coast markets. Such regulation would give to the shipper on the Atlantic seaboard a reasonable rate by water, and that is all he is entitled to have.

#### Canal Tolls Should Be Paid

The Panama Canal cost in construction over \$400,000,000. The revenues from tolls are about equal to the operating costs. The people of the western states are taxed for the original cost of the canal. By giving to seaports the free use of the canal, the entire benefit of the waterway would go to seaport cities. It is an artificial waterway, built for the protection and advantage of the country as a whole. It shortens the all-water distance between the Atlantic and Pacific coasts by 10,000 miles, and it gives to those coasts an artificial advantage in trade and commerce. Like any other facility to promote commerce, it should carry itself. It should not be the means of entirely destroying the natural advantage in mileage to the coast which the interior city possesses over the seaport.

#### The Application of Rail Carriers

The rail carriers have at present no relief from the requirements of the fourth section, so far as the traffic involved

is concerned. They feel that they cannot longer afford to ignore this coast-to-coast water-carrier competition, as it is seriously reducing their net revenues, and they are now asking the Interstate Commerce Commission in this case to grant them permission to meet the competition of the water routes so they may enjoy a reasonable share of this westbound Pacific Coast traffic which they have built up and participated in for many years. Their application, now before the Commission, asks for permission to make rates all-rail from Atlantic Coast and nearby territory to Pacific Coast points that will reasonably meet the rates made by the water routes from the same points of origin and not to be required to apply such rates as maxima to intermediate points. They desire also to make these water-competitive rates apply from manufacturing territory west of Atlantic seaboard territory to the same Pacific Coast ports under the same relief at intermediate points.

In previous cases inquiry has been made as to what the trans-continental carriers regard as a fair share of the traffic. Manifestly this cannot be stated in percentages. We do not assume it to be the function of the Commission to determine what percentage of the business should move by rail and what by water, any more than we assume it to be the business of the Commission, where it fixed a relation between rates from two points of supply, to determine what proportion of the business shall move from one point as compared with the other. The purpose in both cases is to afford a fair opportunity for both, and let the purchaser of transportation in the first case or of the commodity involved in the second case make his own choice. As applied to the situation in hand a fair proportion is that proportion which the carrier can get upon an equality of rates.

On an equality of rates the business will divide itself according to the desires and interests of the shippers themselves. The law looks to an adjustment of rates which will encourage both rail and water competition. This provision is fully satisfied by an adjustment affording equal opportunity for both. Neither has the right to demand that the other be excluded entirely from any competitive area in which they may meet, or that from such competitive area either should be given preference through the creation of an adjustment which will increase the opportunities of one and diminish opportunities of the other. The limits of this competitive area will and should depend upon the rates which these two agencies may themselves make with some profit to themselves in free and open competition. That share which either may get under such equality of opportunity is the fair share to which it is entitled.

The rates proposed are intended to afford to the rail lines that equality of opportunity to which they think they are entitled to the extent that in their judgment traffic may be secured in competition with ocean lines at some profit. This equality of opportunity requires the extension of fourth section relief to business originating at interior producing points, at Chicago, as well as at the Coast. Competition is between the goods delivered at Pacific Coast terminal points.

In reaching its conclusions in this case, the Commission should not establish any relation between rates on traffic at intermediate points other than that established, first by the maintenance of reasonable rates at interior points and the establishment at terminal points of rates shown to be necessary to participate in business in competition with the water carriers, subject to the qualification as to cost; and, secondly, by the effect on the intermediate rates of coast combinations as maxima. The present rates at intermediate points are those which would result from the application of a rigid fourth section and have been approved by the Commission as reasonably low. They are too high to permit free movement by the rail routes to the terminal points because of the ocean competition there encountered. They should be reduced at those points to meet that competition

and for reasons in no wise affecting the traffic to intermediate points or the reasonableness of the rates under which that traffic moves. To the extent that the intermediate territory is within the zone of this influence through coast combinations, its rates would be reduced below their present levels, which is the same level as would result from the application of a rigid fourth section. There is no reason why the zone of that influence should be extended further. If the rail lines by reducing their rates could regain a part of this traffic at rates which would yield them some profit, thereby increasing aggregate net revenues, it is clear to me, that then the Commission, whose duty it is to take such steps as may be proper to promote efficient operation, should permit them to do so.

## Carriers Want Commission to Announce Rate Policy

WASHINGTON, D. C.

COUNSEL for the carriers were at work during the first part of the week in preparing the form of the petition to be filed with the Interstate Commerce Commission asking for a rehearing of the Western grain rate case, and also for a general inquiry by the commission "to ascertain whether, until a substantial reduction can be secured in the labor and other costs of operation, any further reduction in rates could lawfully be required, or with due regard to the transportation industry, is possible," in accordance with the resolutions adopted by the Association of Railway Executives at its meeting in New York on November 16.

Meanwhile, the commission on Monday, November 21, issued a formal order in the Western grain rate case specifically directing the roads to put into effect the reductions named in its opinion in the case on October 20, to become effective on or before December 27. In the original opinion the commission found the reductions named to be reasonable and said that it would expect the roads to put them in effect on five days' notice on or before November 20. The commissioners probably knew as a result of their conference with the railway executives on November 12 that the carriers did not propose to put the reductions into effect, but that it was proposed to ask for a rehearing of the grain case and to substitute a 10 per cent reduction on agricultural products generally throughout the country except in New England. It is believed, therefore, that the formal order was issued to create a tangible legal status on which the roads could ask for a rehearing and it appears to be generally believed also that the commission will grant the hearing and permit the substitution of the 10 per cent cut for the larger reduction ordered in the grain case. The order directs the roads to establish on not less than five days' notice rates for the interstate transportation of wheat and hay in carloads between points in the Western and Mountain-Pacific groups, which shall not exceed the rates in effect on August 25, 1920, by more than 12½ per cent between points in the Mountain-Pacific group, 20 per cent between points in the Western group where the increase under Ex Parte 74 was 40 per cent, 17½ per cent between other points in the Western group and 16 2/3 per cent between points in the Mountain-Pacific group and points in the Western group. The carriers were also ordered to apply to coarse grains rates which shall not be in excess of 10 per cent less than the rates on wheat and rates on grain products that shall not exceed rates made by continuing the relationship that now exists between said products and the grains from which they are respectively made, except that differentials subject to the percentage increases in Ex Parte 74 shall be reduced proportionately with the rates.

While there has been no announcement of what took place

at the conference between the executive committee of the Association of Railway Executives and the commissioners on November 12, it has been assumed that some sort of an informal understanding was reached between the railroads and the commissioners which, while unofficial, gives each party some sort of assurance as to what to expect from the other. It is, of course, denied that any agreement was reached, but there are indications that the discussion was sympathetic and it was stated at the time of the conference that the executive committee was to take back to New York a proposal to be acted upon by the member roads. The member roads then announced their intention of making a six months reduction on agricultural products and of asking the commission for a rehearing in the grain case and a general inquiry. The language of the resolution regarding the general inquiry leads to a belief that the railroads are hopeful that the commission, after such an inquiry, will make some general statement of what it believes will be a proper rate policy for it to follow under present conditions.

The commission has been flooded with requests for more or less general advances in rates and for a reopening of Ex Parte 74, which it has not made public, but which have been given publicity in occasional instances by the authors. Apparently a very large number of shippers throughout the country believe that there is still a chance that the commission will, by reopening Ex Parte 74, order a general reduction in rates and it has frequently been stated that a clear statement by the commission as to whether rates generally should or should not be expected to come down in the near future would do as much as any other thing to revive business, because so many people are holding off orders in the hope that rates will be reduced.

Although it is understood that the railway executives in agreeing to a reduction on agricultural products were influenced by a belief that such a reduction is more justified by economic reasons than reductions on other kinds of commodities, because the prices of agricultural products have been deflated more than those of most other articles, there has been some criticism that the carriers singled out a particular class of commodities for this reduction. For example, it has been claimed that the roads were doing so to conciliate the agrarian element in Congress that has delayed the passage of the funding bill and that has been insisting on a repeal of the rate-making sections of the transportation act. W. H. Chandler, president of the National Industrial Traffic League, has written a letter to Chairman McChord of the commission, saying that "any preferential treatment of commodities will be resented by a large mass of shippers whose rates are still at the highest war peak." He has also telegraphed to Chairman Cuyler of the executives' association, saying that whatever reduction is made should be applied generally without discrimination just as the advances were applied.

THE UNITED STATES POSTOFFICE DEPARTMENT has been devoting particular attention to the "perfect package" campaign, along with the express and railroad companies. Employees of this department are putting forth every effort to induce mailers and shippers to give more attention to the manner in which their goods are packed, the kind of containers used, and the writing or marking of adequate and legible addresses.

TWENTY-SIX PEOPLE KILLED, 190 injured and 586 automobiles destroyed is the grade crossing record on the Southern Pacific for the past nine months. Nearly 300 drivers ran in front of or tried to beat the train to the crossing; 126 ran into trains, instead of trains striking them; 76 stalled on the track, largely the result of waiting until on the track before shifting gears; 55 ran into and broke down crossing gates; 28 approached the track at high speed; and five ran down and injured crossing flagmen.



Galeswood Yard, Chicago, Milwaukee & St. Paul

# The Use of Wood in Freight Car Construction

## Is the General Use of All-Steel Construction Justified? The Advantages of Composite Design

By H. S. Sackett

Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul

**T**HE MOST IMPORTANT feature of transportation in relation to commerce is naturally the freight traffic; thus, in the evolution of steam locomotion the problem always has been the construction of freight cars to meet the requirements of economic operation. From the first type of horse drawn freight car operated on the Baltimore & Ohio, antedating the steam locomotive and moved over timber rails, to the present quasi-standard 100,000-lb. capacity box car designed during the war, wood has maintained its important place because of its inherent suitability for the purpose which has been indisputably established not alone by its service record during the nearly 100 years of railroad history, but ever since merchandise was first transported on sleds; even before the invention of wheels.

A growth from 35 miles of railroad in 1835 to a total of 370,000 miles in 1918, and the development from locomotives of 15½ tons previous to 1850 to the electric "King of the Rails" of 1920 weighing 550,000 lb., and the Santa Fe type weighing over 400,000 lb., are graphic illustrations of progress fully comparable with the unprecedented commercial advance of the United States during the same period.

### Developments in Car Construction

Car construction cannot boast of such intense application. Looking back through this phase of railroad history one can hardly escape the impression, that generally speaking, freight cars "just grow'd" like Topsy, at least up to about 20 years ago when the pendulum started on the swing toward the present extreme of super-heavy construction.

In 1867 the Master Car Builders' Association accepted 20 tons as the maximum capacity of box cars. Today the indications are that cars of 100,000 lb. capacity will soon be the standard. These changes naturally made obsolete the older types of equipment as the lighter construction became

entirely inadequate to meet the requirements of modern traffic. Thus was developed the quasi-standard type of steel underframe construction as typified by the double-sheathed box car, developed during the past three years.

At the present time, to go beyond this to the all-steel closed-top freight car is hardly good, conservative engineering practice. All-steel cars can, at best, be considered but experimental, as only about ten years of worth-while experience has been had with such equipment and during this period such authentic evidence as is available points to excessive maintenance as compared with composite cars.

Up to this time, furthermore, the steel car has been developed mainly by the railroads which serve the steel districts, and this fact is undoubtedly responsible for their ultra-development by such roads. Likewise, railroads traversing forested regions have held more closely to the wooden or composite cars. The desire to aid in marketing a local product, therefore, has doubtless been a strong factor in the development of the all-steel car.

In this connection too it is of interest to note the recent announcement of the Pullman Company of a return to the composite sleeping car, one of steel understructure with steel skeleton superstructure insulated and finished with wood. This combination makes a safe, strong and comfortable car and one which is certainly superior in all respects to the all-steel type.

In 1918, Z. B. Wilson, of the Southern Railroad, in the *Railway Review* stated, "Nothing has occurred in the past decade that would justify spending \$2,500 for an all-steel box car, while we can build a composite box car with a substantial steel underframe, with superstructure and ends reinforced with steel for \$1,250. The writer desires to say \* \*, that he is very much in favor of composition cars for the following reasons: (1) A greater proportion may be re-

paired at other than steel car shops; (2) the initial cost is less; (3) the cost of maintenance is less than half of all steel; (4) the sides do not bulge as those of all steel; (5) composite cars can be repaired in half of the time required for the all-steel, thereby materially increasing car efficiency."

However, this controversy is not new. In 1870 the first earnest discussion of the steel car is recorded in the proceedings of the Master Car Builders' Association for that year. About thirty years later we find the fruition of these debates and early studies in the steel center sill, to be followed by the all steel underframe, both of which are justified by experience, but like many reforms that are aimed to achieve perfection over night there seems to be no happy medium and we are now presented with *all steel everything*. There is one consolation in this all-steel craze, that our inbred respect for cattle and hogs, which evidently outweighs consideration for mere human comfort, will prevent the all-steel stock car.

The demands made upon freight carrying facilities have entailed changes in construction to meet new requirements. Among these factors is the high speed with which trains of great tonnage are today moved across the continent. Tractive effort has increased 3,000 per cent and with the increased cost and scarcity of labor has come fly-switching and

tate transportation facilities and avoid the serious difficulties and losses occasioned yearly by lack of cars.

However, aside from the matter of expediency and present financial considerations the steel underframe, wood superstructure double-sheathed car (in some cases with metal carlines and steel ends for closed-top cars) presents physical and economic advantages, which quite distinctly identify it as the most suitable for modern conditions. These advantages may be summarized as follows:

- (1) It is sufficiently rigid to withstand modern mechanical shock.
- (2) It is adaptable to special conditions of lading, climate and traffic, varying with the respective territory involved, without sacrificing the standard interchangeable features of the steel substructure, trucks, draft rigging and appliances.
- (3) It may be fully assembled at railroad shops, from materials (such as the lumber for superstructure) often locally available.
- (4) Trained labor is more available and less costly, and can be more evenly distributed than were the construction of all steel cars concentrated in the present manufacturing centers, which alone can most economically produce the all steel car.
- (5) Repairs can be made more rapidly, at less cost and at any repair yard.
- (6) It provides greater protection to a majority of the various classes of lading.
- (7) It is more readily suited to interchanges as it meets most



Railroad Administration Double-Sheathed 40-Ton Box Car

the hump track. It would be unreasonable to expect the all-wood cars of 20 to 30 tons capacity, weighing between 22,000 lb. and 27,000 lb. and in their prime during the last decade of the nineteenth century, to meet these changed conditions. Efficiency dictates scrapping such equipment and its replacement with modern construction designed to withstand the wear of present traffic. Maintaining obsolete rolling stock is wasteful, and when certain roads spend roughly as high as 35 per cent of the total value of their rolling stock for its maintenance and repair in one year, it is time to establish with positive clarity just how much may be expended for maintenance with safety to financial soundness.

#### Relative Advantages of the Double and Single Sheathed Box Car

So far, all-steel equipment has not been proved to be the most economical. No attempt is made to prophesy future developments, but with a design adopted which meets all present and future requirements within the range of vision, sound conservation compels the building of the largest number of freight cars for the least money in order to rehabili-

effectively the requirements of climatic extremes encountered within the four boundaries of the continent.

(8) The initial cost is less. Although the reproduction value (M. C. B. Rules, 1920) is approximately nine per cent less than that of the all steel car the difference in first cost invested at six per cent compound interest for 20 years, still gives the composite car an advantage of five per cent after deducting such loss, providing maintenance of the all steel car is not greater than that of the steel underframe and wood superstructure car.

(9) The depreciation (M. C. B. Rules, 1920) is the same as for the all steel car, namely three per cent.

(10) Shippers prefer wooden superstructure as packing of lading is more convenient and less costly, because precaution need not be taken against rusted side sheets, bulging ends, condensation from roofs, or leaks of bulk lading occasioned by holes in corroded plates.

(11) It is lighter by upwards of 1,000 lb. and therefore costs less to haul.

The single-sheathed, steel superstructure outside frame car must likewise suffer by comparison with the double-sheathed car. Its chief weaknesses are unsightliness after short usage, due to the unavoidable perforating with nail holes of the single thickness of longitudinal siding, as well as the consequent exposure of lading. Where such cars are

used for valuable or semi-perishable freight, extra packing is required, and in some instances cars must be sheathed with tarred felt or waterproof paper by shippers; hence, the general unpopularity of this type of car. For such loadings as bricks, paving blocks, castings, etc., it will do unless because of poor loading the heavier pieces go through the side, or break up the siding. In addition, the first cost is greater, and the saving in volume of lumber used is offset by the higher cost of the grade and dimension required.

An average single sheathed car would require about 1,500

wood superstructure against the problematical performance of the steel frame.

#### The Composite Gondola Car

Our discussion thus leads us to other types of cars, particularly, gondola, flat, stock and refrigerator cars. The latter are by their nature excluded from the possibility of all-steel construction. Gondola, coal and ore cars present different problems, but there is no question that the all-steel gondola still requires considerable development before it can

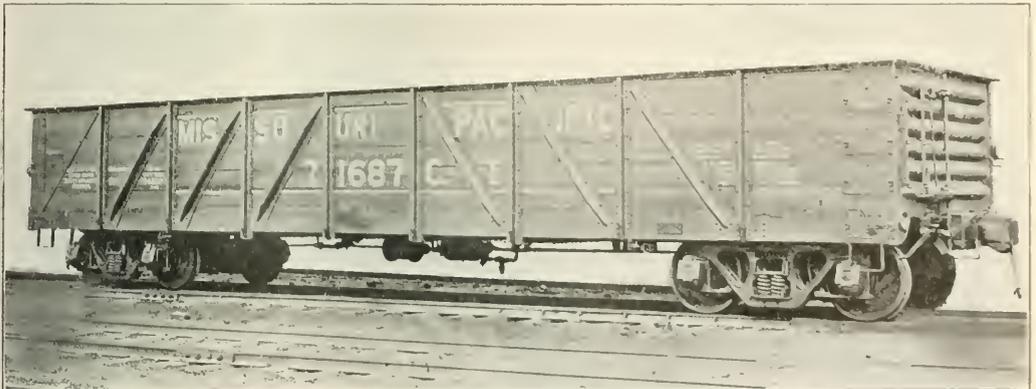


Modern Single-Sheathed, Steel Frame and All-Steel Box Cars

board feet of 1 $\frac{3}{4}$ -in. (rough 2-in.) dressed select, B and better, Southern pine sheathing; the double sheathed car requires about 1,700 board feet, No. 1 common, 1 $\frac{3}{16}$ -in. lining and 1 $\frac{3}{16}$ -in. B and better siding. The difference in quoted prices (September 1920) equals a saving of \$22.50 a car, which at 6 per cent compound interest during an average life of 20 years would represent \$72.15 per car. If applied to 100,000 box cars of the type recently ordered, this

be considered as a successful type. Flat cars are on the wane. Other types, such as tank cars and logging cars, are largely of private ownership and represent a comparatively small percentage of the total freight equipment, and do not materially affect the general question of efficiency in car construction.

Longer experience with all-steel gondola cars, particularly where used in bituminous coal service, indicates that de-



Composite Gondola Car

would amount to about \$7,215,000, enough to add over 2,000 double sheathed cars to the present equipment.

Whether the steel frame superstructure adds sufficient strength to the car, or materially increases its durability is largely guess work—a prophecy of future occurrences which the future alone can answer. At present it has not emerged from the experimental stage. Therefore, the problem is again one of comparative initial cost, and the known service of the

preciation is greater, maintenance more costly, and that they are consequently less economical than the composite car. In an article already referred to, Z. B. Wilson states that "the Southern Railway is operating a large number of both types (composite and all-steel coal cars) which were built in 1904 and 1905. These cars have been used almost exclusively in transporting coal. Both types are double hopper, and 100,000 lb. capacity. The average cost of repairs to 20 all-steel

cars was about \$666.31 while the average cost on the composite cars was \$240.97."

The Railway Mechanical Engineer of May, 1917, quotes the conclusions of William Queenan, assistant superintendent of shops, Chicago, Burlington & Quincy, as follows: "The composite type of car costs less to maintain than the steel gondola. The sides of composite cars do not bulge as do those of the steel car. Records show that while the composite car costs more to repaint than the steel car, it does not require painting as frequently. A large portion of the repairs to composite cars can be taken care of at other than steel car shops. Certain properties of coal cause corrosion to steel but do not affect wood."

In discussing freight car maintenance, L. K. Sillcox, then mechanical engineer of the Illinois Central, in the Railway Mechanical Engineer, October, 1917, stated: "It is simply a question of time until the greater part of a steel car must be replaced; renewals can only be economically and quickly carried out on a large scale for each car for the reason that corrosion is more or less uniform throughout each section of the structure and one part cannot be disturbed without equally effecting the adjacent one. As steel cars advance towards the time of their periodical overhauling many fail in service due to deterioration . . ."

Every road having steel equipment has had to deal with these conditions during the past decade. Even the most enthusiastic steel car men are now contemplating heavier construction and employing specially treated metal to counteract corrosion. The question again forces itself to our attention whether following this costly mirage much further is good practice when composite cars have proved their worth.

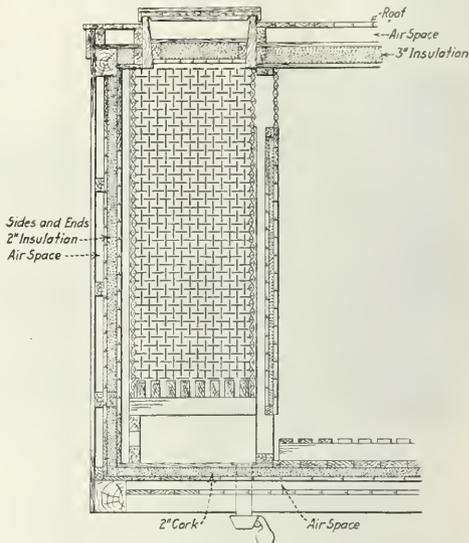
### Stock Cars

There can be no question that the composite stock car is both the most economical and most suitable. The wood superstructure presents sufficient protection to the lading and also a degree of comfort for the animals. There is the added advantage that all the wood in the superstructure may be thoroughly treated to make it both rot and vermin proof, and this feature permits the selection of lower grades of lumber which naturally adds considerably to the initial difference in cost between the composite type and an all steel car.

### The Refrigerator Car

Refrigeration of food products, both in storage and transit, has become the most important element in food distribution. Properly developed and applied, it unquestionably lessens

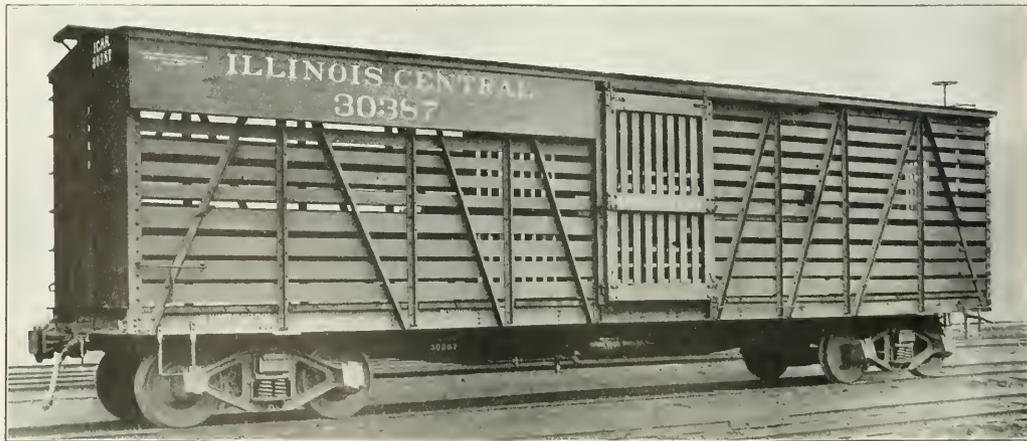
the average cost of food products and provides a normal flow of supplies to the nonproducing urban population, from the reserves accumulated from the surplus of seasonal production. Transporting perishable commodities in perfect condition would contribute greatly in cheapening the most necessary food products. Every dozen of eggs and each pound of meat, butter, fruit or vegetables spoiled in transit naturally



Longitudinal Section of Department of Agriculture Design of Refrigerator Car Insulation

increases the cost in proportion to the decrease in supply, as such loss must be equalized by higher prices for what is left in a salable condition. Therefore, the construction of a refrigerator car is perhaps of greater importance than any other type of car. As insulation is the most important requirement of a refrigerator car it is obvious that the wood body cannot be replaced.

The United States Department of Agriculture has done ad-



Modern Type of Stock Car Construction

SUGGESTIONS FOR LUMBER GRADES AND DIMENSIONS FOR NEW CARS AND REPAIR WORK

NEW CARS

	Roofing		Lining		Decking		Framing	
	Grade	Size, inches	Grade	Size, inches	Grade	Size, inches	Grade	Size
Box { Double sheathed, B and Better, .....	B and Better (outside), B and Better (inside), No. 1 Common (inside),	1 by 4 or 6	No. 1 Common	1 by 4 or 6	No. 1 Common, No. 1 Common, No. 1 Common, sq. edge.	2 or 2½ by 6 or 8	No. 1 Common, No. 1 Common, sq. edge.	As specified.
Box { Single sheathed, B and Better or Se- lect, sap stain, no defect.	B and Better (outside), B and Better (inside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	No. 1 Common, sq. edge.	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Refrigerator	B and Better (outside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	No. 1 Common, for sub-floor, All heart or No. 1 Common, treated.	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Stock	B and Better (outside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	Sq. edge and sound.	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Gondola	B and Better (outside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	No. 1 Common, 2 or 2½ by 6 or 8	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
f Double sheathed, No. 1 Common, .....	B and Better (outside), B and Better (inside), No. 1 Common (inside),	1 by 4 or 6	No. 1 Common	1 by 4 or 6	No. 1 Common, 2 or 2½ by 6 or 8	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
f Single sheathed, No. 1 Common, sap stain, no defect.	B and Better (outside), B and Better (inside), No. 1 Common (inside),	2 or 2½ by 6 or 8	No. 2 Common, sound knotted	1 by 4 or 6	No. 1 Common, 2 or 2½ by 6 or 8	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Refrigerator	B and Better (outside), No. 2 Common (inside),	1 by 4 or 6	No. 2 Common, sound knotted	1 by 4 or 6	No. 1 Common, 2 or 2½ by 6 or 8	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Stock	B and Better (outside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	All heart or No. 1 Common, treated.	2 or 2½ by 6 or 8	No. 1 Common, As specified.	
Gondola	B and Better (outside), No. 1 Common (inside),	1 by 4 or 6	B and Better	1 by 4 or 6	Sq. edge and sound.	2 or 2½ by 6 or 8	No. 1 Common, As specified.	

mirable work in its investigations into the subject, covering a period of over 15 years. Its efforts have finally resulted in a so-called standard refrigerator car, as represented by specifications formulated by the recent Railroad Administration. The conclusions arrived at by these exhaustive studies and the desirable features of an efficient refrigerator car were referred to in detail by Dr. M. E. Pennington, connected with the Food Research Laboratory, Bureau of Chemistry, United States Department of Agriculture, in a brochure in which are compiled a number of papers dealing with this subject.

The 4,000 new refrigerator cars recently built and placed in service by the Union Pacific, described in the *Railway Age*, issue of December 31, 1920, follow quite generally the details outlined by Dr. Pennington. In studying the details of construction it is interesting to note that the standard recommended by Dr. Pennington represents, excepting for a few innovations or improvements, practically the all-wood refrigerator car superimposed on the standard steel underframe. Thus we have complete co-ordination of wood and steel, achieving the maximum in efficiency and economy, under present conditions. This thought may well be applied to other equipment, and although there is no parallel in service conditions, there is a distinct analogy in construction costs and maintenance.

Passenger Cars

Passenger equipment if discussed in proper detail is worthy of special treatment, and is largely a question of combining safety with comfort. Careful analytical review of the entire problem indicates that the most economical passenger car for use under present conditions is one of strong steel underframe with steel skeleton superstructure, insulated and finished with wood. It is believed that such construction will give the maximum safety in the present heavy trains as well as a high degree of personal comfort to the passengers.

Greater Economy in Use of Wood

"Familiarity breeds contempt," is an oft repeated truism and possibly this explains the lack of more active interest on the part of car builders in the matter of using wood more economically and securing from it longer service in car construction. Ever since the first freight car—a hundred years ago—wood has been an inseparable and indispensable part of car construction, and because it was plentiful in the past and the best grades readily and cheaply available as was labor for repairs, little or no care has been used to protect it against the natural conditions of deterioration. All failures to this day are classed as mechanical where fully half of the light repairs could be avoided or retarded by employment of practical remedial measures.

On the basis of consumption previous to the war one and one-quarter billion board feet in round numbers were used for car construction annually, or about 3 per cent of the total annual production. This represents an average value of nearly \$45,000,000 at normal prices. A saving of about 25 per cent through increased service and decreased repairs would be a goodly item in addition to being real timber conservation.

Thus, in addition to the suggestion that elimination of wood in car construction is neither desirable nor practical, it may be said that lumber may be used more economically by paying closer attention to selection of grades and dimensions which fully answer the purpose but are cheaper, and protection of the lumber against such agencies as decay, insects, checking while in storage, etc. Timber conservation is vital to the nation, and most especially to the railroads, who, because of their prominent position, are obligated to lead in economic movements which are so potent in their beneficial influence. The basic principle of economic utilization—or popularly interpreted, timber conservation—underlies these suggestions of changes in specifications for car lumber which,

being sound, bring with them profit in the form of equivalent service at a saving in cost of material and maintenance.

Standardization has proceeded to where there is practically a standard covering grades and dimensions for the various parts of cars, such as siding, lining, roofing, decking, framing, etc. These standards, however, have not taken full cognizance of the frequent difficulties manufacturers encounter in endeavoring to conform their practices accordingly, or their utter inability to do so. The manufacturer of lumber is limited entirely by the manner in which nature provides the raw material, or rather, how the trees grow. Lumber cannot be cast in a mold, nor can it be forged to a drawing. Yellow pine, however, is produced in sufficient variety of grades and sizes to provide perfectly good car lumber quite plentifully if reasonable flexibility is allowed with regard to dimensions.

A large yellow pine mill questioned on the matter replied, "On account of the great number of patterns required by car builders, this mill has never attempted to supply any of this material, as we have found that it required too much special work and too much cutting loss." Loss is waste of material and money, because it must be paid for; its elimination therefore, means economy and conservation.

One of the fundamentals of standardization is to adapt available supplies to the required conditions, thus widening the market of supply by standardizing manufacture and developing economies that effect a reduction in production costs, resulting in stimulating competition and lower prices.

Another manufacturer suggested, "The greatest possible service that could be rendered the car builders and lumber manufacturers would be to adopt a single pattern that would serve for car siding, car lining and car roofing, and then make this pattern in standard lengths; that is to say, all lengths, using what would cut up to best advantage for roofing and siding, and the lengths that would not cut up, on the inside of the car as lining."

Where would the cost of lumber for common building purposes be, and how much greater would be our loss in timber devastation and waste if the present standards had disregarded the availability of the grades and dimensions specified? In drawing specifications for building lumber the dominating factor is to produce the greatest volume of usable stuff at the lowest cost and with the least waste. Reforms are still possible in that field and improvements are frequently accepted.

Specifications for car lumber have changed slightly during the last 50 years, but if the progress were more in line with the conditions manufacturers must contend with in order to supply the lumber to meet some of the most stringent requirements, freight cars might be a little cheaper and at least a greater volume of suitable material would be more generally available. Some builders are more concerned with appearances than with the service to be rendered. A knot in a piece of siding can cause as much comment from a railroad president as a buckled-up steel car.

On the other hand, it is equally as important that the railroad engineers be allowed the opportunity of saying what grade and quality of material will be needed to meet their requirements. If the producers and consumers of wood used by the railroads in car construction, therefore, could thus get together on common ground, it is believed standard grades could be developed which would represent a big step of progress toward both conservation and utility—meeting the contingencies of the lumber manufacturer on the one hand and the exacting needs of the railroad engineer, on the other.

CLEARLY, if by our investments abroad and our purchases of foreign goods, we can help to provide the world with the means to pay for our raw materials, our food, and our manufactures, the course of trade will soon be quickened.—*Guaranty Survey*.

## Railroad Securities Bill

### Postponed Again

WASHINGTON, D. C.

THE BILL to authorize the government to sell its railroad securities, taken from the railroads for additions and betterments made during federal control, has been forced over into the next session of Congress, which begins on December 4, because of the extent of the opposition to the bill by those who wish to embarrass the railroads in any way possible as well as by those who proposed to use the bill as a vehicle for amendments to the transportation act designed to bring about reductions in rates. Senator Cummins, who after having had the bill made the unfinished business of the Senate and after all the committee amendments had been adopted in committee of the whole, allowed it to be displaced by the Newberry-Ford election controversy, announced on November 17 that he had given up his efforts to have it passed at this session.

A number of proposed amendments to the bill were mentioned in last week's issue. On November 18 Senator Hitchcock of Nebraska proposed an amendment which he had drafted several days before to provide that the act should not take effect unless and until the railroads shall put into effect the reduction of freight rates on grain, grain products and hay in the west as required by the findings and decision of the Interstate Commerce Commission of October 20. At the time this amendment was proposed the railroads had not filed the grain tariffs which to become effective on November 20 should have been in by November 15, but had announced their intention of substituting a 10 per cent reduction on agricultural products and of asking a rehearing in the grain case. On November 19 Senator Ransdell of Louisiana also submitted to the Senate a proposed amendment providing that no portion of the fund arising from the sale of the railroad securities shall be used to settle with those carriers which have preferential contracts with foreign ship companies, so long as the contracts continue in force.

A number of senators who have no particular objection to the railroad securities bill are very anxious to vote for a bill to repeal the rate-making section of the transportation act, while some who are in favor of the repeal in something like the form of the Capper bill, on which the committee on interstate commerce has been holding hearings, would prefer to take up such legislation in an orderly way instead of dealing with it as a rider on the so-called "funding" bill. Chairman Cummins of the interstate commerce committee has been anxious to pass the "funding" bill and he has also expressed himself as possibly inclined to be in favor of restricting somewhat the power of the Interstate Commerce Commission to change state rates, but he does not believe in combining the two subjects. He has not expressed himself very definitely as to the 6 per cent rate-making provision, but he did say during a hearing that perhaps it was now immaterial as the 6 per cent provision expires on March 1.

Although the President has said on several occasions that he hoped for the passage of the bill at this session, it was stated at the White House on Tuesday that he does not now care particularly about its passage at this time, because market conditions are now such that it is possible to sell car trust certificates and go ahead with the settlements with the railroads one at a time, so that if Congress is not ready to act that fact constitutes no present hindrance to the program. Additional sales of the car trust certificates were made last week and on November 21 additional sales amounting to \$4,911,900 were announced. The purchasers were Salomon Bros. & Hutzler and Kidder, Peabody & Company. This makes a total of \$114,250,700 certificates sold to date, but the total amount of the certificates is not sufficient to complete the settlements.

# M. K. & T. Reorganization Plan Announced

Common Stock Without Par Value Contemplated. Fixed Interest Charges Reduced to \$4,917,717

REORGANIZATION managers of the Missouri, Kansas & Texas Railway Company, J. & W. Seligman & Co. and Hallgarten & Co., have completed the definite plan for the reorganization of the property, which has been accepted by directors of the company and the 18 committees representing securities dealt with under the plan. The plan was formally announced on Tuesday. The stockholders' participation in the plan is to be underwritten by a syndicate which Speyer & Co., J. & W. Seligman & Co., Hallgarten & Co., and the Equitable Trust Company have undertaken to organize. The plan is to be declared operative by the reorganization managers when in their judgment a sufficient amount of securities has been deposited.

Preparation of this plan has probably involved dealing with more numerous interests than any reorganization since that of the Southern Railway in 1894. The road consists of 1,553 miles of main line and 1,590 miles of branches, a total of 3,143 miles of road, exclusive of 229 miles used under trackage agreements. It has been in receivership since September, 1915, in which year the old company failed in its efforts to refund \$19,000,000 short term notes, although it had continuously earned its fixed charges. Active plans for reorganization were interrupted by the war and federal control.

## Outstanding Features of Plan

The outstanding features of the plan include the following:

(1) Reduction of the fixed interest bearing debt of the railroad from \$146,543,142 to \$100,320,913, and of the fixed interest charges (including sinking fund payments)

to provide \$18,420,000 new cash for reorganization purposes, of which \$4,042,000 is to be used to pay off receiver's certificates and bank loans, \$1,275,000 to pay deferred interest under the plan, \$1,000,000 to meet next year's equipment trust maturities, \$4,000,000 to provide the new company with a working balance, and \$8,103,000 is reserved for additions and betterments, and the expenses of reorganization.

The financial structure of the old company was such that the reorganization plan has had to deal with the owners of 18 bond and two stock issues. Small issues aggregating \$7,247,951 are left undisturbed. Some idea of what the plan will accomplish toward simplifying and solidifying the road's financial organization may be had from the fact that it reduces 18 bond issues to two, except to the extent that holders of bonds issued under the old first mortgages, which are not foreclosed, do not elect to deposit them under the plan. Except for that contingency, the new prior lien bonds will be substantially a first mortgage on the entire system, including terminals and rolling stock. That is true of few existing railroad mortgages.

## Treatment of Existing Securities

For each \$1,000 of principal of and interest accrued on existing securities, the plan offers new securities and cash as shown in the accompanying table:

Holders of the existing preferred stock, on payment of \$20 a share, of which \$8 is to be paid at time of depositing the old stock, and the remainder in three equal installments at intervals of not less than 30 days, are to receive per share

Existing securities	Maturity	Principal amount outstanding Dec. 31, 1920	Prior lien mortgage bonds, 5 per cent	Prior lien mortgage bonds, 4 per cent	Adj. mortgage bonds, 5 per cent	Preferred stock	Common stock (number of shares)	Cash
MISSOURI, KANSAS & TEXAS RAILWAY CO.								
First mortgage 4 per cent gold bonds	1990	\$39,999,500	\$500	\$500	.....	.....	.....	\$23.33
Second mortgage 4 per cent gold bonds	1990	20,000,000	.....	.....	\$1,192.50	\$64.16	.....	.....
First and refunding mortgage 4 per cent gold bonds	2004	9,992,000	500	250	503.33	.....	.....	.....
General mortgage 4½ per cent sinking fund gold bonds	1936	10,421,000	250	250	73.13	719.37	.....	.....
Two-year secured gold notes	1916	18,074,000	350	.....	525.06	525.00	.....	.....
First mortgage extension 5 per cent gold bonds	1944	3,253,000	.....	.....	500.00	666.67	1,666.67	.....
St. Louis Division first mortgage refunding 4 per cent gold bonds	2061	1,924,000	.....	.....	250.00	750.00	2.5	.....
KANSAS CITY & PACIFIC RAILROAD CO.								
First mortgage 4 per cent bonds	1990	2,500,000	500	500	.....	.....	.....	36.67
MISSOURI, KANSAS & OKLAHOMA RAILROAD CO.								
First mortgage 5 per cent gold bonds	1942	5,468,000	1,000	.....	.....	.....	.....	33.33
MISSOURI, KANSAS & EASTERN RAILWAY CO.								
First mortgage 5 per cent gold bonds	1942	4,000,000	750	.....	537.50	.....	.....	.....
Second mortgage 5 per cent gold bonds	1942	58,000	.....	.....	500.00	656.25	1,562.50	.....
MISSOURI, KANSAS & TEXAS RAILWAY CO. OF TEXAS								
First mortgage 5 per cent gold bonds	1942	4,505,000	750	.....	541.67	.....	.....	.....
DALLAS & WACO RAILWAY CO.								
First mortgage 5 per cent gold bonds	1940	1,340,000	1,000	.....	.....	.....	.....	73.33
WICHITA FALLS & NORTHWESTERN RAILWAY CO.								
First mortgage 5 per cent gold bonds	1939	2,998,000	1,500	.....	.....	.....	.....	.....
First lien collateral trust 5 per cent gold bonds	1925	838,000	500	.....	675.00	.....	.....	.....
First and refunding mortgage 5 per cent gold bonds	1940	3,000,000	250	.....	812.50	187.50	.....	.....
SOUTHWESTERN COAL & IMPROVEMENT CO.								
First mortgage 6 per cent trust bonds	1929	743,000	500	.....	800.00	.....	.....	.....
BOONVILLE RAILROAD BRIDGE CO.								
First mortgage 4 per cent gold bonds	1951	897,000	.....	1,400	.....	.....	.....	.....

from \$7,429,376 to \$4,917,717. In addition, the new company is to have \$57,500,000 5 per cent convertible adjustment mortgage bonds bearing a contingent interest charge of \$2,875,000, cumulative from January 1, 1925.

(2) Total capitalization of the old company, stocks and bonds, of \$248,095,000 to be replaced by the new company's bonds and preferred stock aggregating \$182,320,000 and 783,155 shares of its common stock without par value.

(3) Assessments of \$20 per share on the \$13,000,000 old preferred and \$25 per share on the \$63,283,257 old common

\$14 in 10 year prior lien mortgage 6 per cent bonds, \$6 in adjustment mortgage 5 per cent bonds, and one share of new common stock.

Holders of existing common stock, on payment of \$25 a share, of which \$10 is to be paid at time of depositing stock and the balance in three equal installments at intervals of not less than 30 days, are to receive per share \$17.50 in 10 year prior lien 6 per cent bonds, \$7.50 in adjustment mortgage 5 per cent bonds, and one share of new common stock.

It will be observed that the plan offers holders of the old

first 4s an increase in their coupon interest rate of one-half of one per cent, besides a 40-year maturity instead of the present 1990 maturity, which together give an additional income yield of over three-quarter per cent. Of this issue \$39,999,500 are outstanding. Five issues aggregating \$12,289,000 of existing bonds receive 100 per cent in fixed interest obligations of the new company. With these exceptions the principal of existing issues is largely scaled down in the new bonds bearing fixed interest.

Deposits of securities for the purpose of participating in the reorganization plan must be made with the various respective depositories named in the plan on or before January 7, 1922. The reorganization managers in their absolute discretion may determine whether or when a sufficient amount of the securities of the various classes shall have been deposited to render it advisable to declare the plan operative.

### Security Issues of New Company

The prior lien mortgage bonds will be limited to \$250,000,000 at any one time outstanding. They may be issued in series with different maturities and rates of interest and with such redemption or conversion features as the directors may determine at time of issue. Bonds presently issuable under this mortgage for reorganization purposes are: Series A, 5 per cent 40-year, redeemable at 105 and interest, \$52,942,752; Series B, 4 per cent 40-year, redeemable at par and interest, \$27,236,000; Series C, 6 per cent 10-year, redeemable at 102½ and interest, \$12,894,570. Additional bonds under this mortgage may be issued to the extent that the additions and betterments made on the system during Federal control may be funded or other settlement made with the Director General. The receiver states the amount of such additions and betterments is in the neighborhood of \$8,000,000. Such additional bonds would presumably be of Series C.

The adjustment mortgage will authorize a total of \$100,000,000 bonds outstanding at any one time. Within a limitation of 7 per cent these bonds may bear such interest rate and have such maturity as the directors shall determine at time of issue of any series, but the interest shall be payable prior to maturity only out of net income of the new company as defined in the accounting rules of the Interstate Commerce Commission, but to the extent of not less than 50 per cent of such income prior to January 1, 1925, and shall be cumulative from and after January 1, 1925.

Presently issuable under the adjustment mortgage are the following: In respect of existing securities dealt with under the plan for settlement of secured claims, or for other reorganization purposes, \$51,973,756; to be offered to stockholders, \$5,526,244. These bonds will be Series A, 5 per cent ranking for interest from January 1, 1922, maturing January 1, 1967, redeemable in whole or in part at par and accrued interest and convertible prior to January 1, 1932, into 7 per cent Series A preferred stock, par for par.

Preferred stock is authorized to the amount of \$200,000,000, of which \$24,500,000 is issuable for reorganization purposes as Series A bearing 7 per cent interest cumulative from and after January 1, 1928, and if allowed by law will be made redeemable in whole or in part at \$110 a share.

Common stock is authorized to the amount of 2,500,000 shares without nominal or par value, of which 20,322 shares are issuable under the plan for exchange of securities or other reorganization purposes and 762,833 shares will be offered to stockholders under the plan.

### Earnings and Condition of the Road

The announcement of the plan contains a reference to a letter to the reorganization managers in which the receiver, C. E. Schaff, calls attention to the fact that during the receivership capital expenditures on the property have

amounted to \$17,550,000 on roadway and structures, and \$11,450,000 on new equipment and improvements to existing equipment, a total of \$29,000,000. In addition, operating expenses have included maintenance charges amounting for the entire period to 41.03 of gross revenues, a ratio considerably higher than for the railroads as a whole, and undoubtedly including recovery of considerable arrears of maintenance from previous years.

Mr. Schaff goes into the nature of these improvements in some detail, and the changes in the condition of the track, revision of grades and alignment and locomotive power are all reflected in the following comparisons of operating efficiency:

	1920	1915	Inc.	Per cent
Average tons per locomotive,.....	498	353	145	41.19
Average tons per loaded freight car. 24.35	20.11	4.24	21.08	
Average tons per train inc. co. freight.	504	364	140	38.46

The announcement of the plan gives also further details of the property as follows:

"The present excellent condition of the system, and the efficiency with which it is being operated is also shown by comparing its transportation ratio with that of other South Western Lines, such as the St. Louis-San Francisco, Missouri Pacific and the Rock Island. The comparative figures are:

	Three Months Ended September 30, 1921	Six Months Ended September 30, 1921	Twelve Months October, 1920 to September, 1921
M. K. & T. Lines.....	30.65	34.29	37.13
Frisco Lines.....	35.03	38.44	40.08
Missouri Pacific.....	36.25	38.87	41.47
Rock Island Lines.....	36.42	39.37	42.60

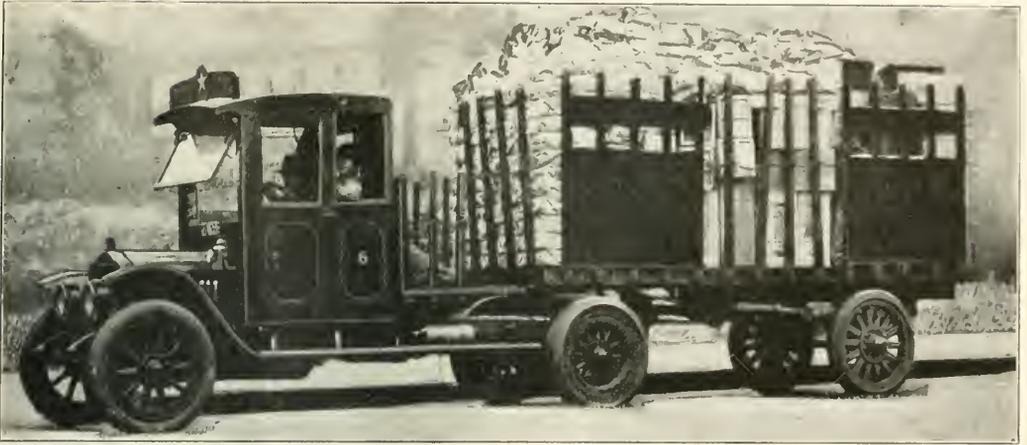
"Furthermore it should be noted that the transportation ratio (items resulting from federal operation excluded) for the Katy System for the twelve months ended September 30, 1921, as compared with the twelve months ended September, 1917, only shows an increase of 6.9 per cent, whereas the percentage of increase in the transportation ratios for the same period for the Rock Island Lines is 17.07 per cent; for the Frisco 21.97 per cent, and the Missouri Pacific 29.11 per cent.

"For the fiscal year 1915 the road's gross revenues were \$32,453,462, from which figure they have increased every year until for 1920 (calendar year) they stood at \$72,914,737, an increase in five and a half years of \$40,461,275, or 125 per cent. Much of this gain, of course, is due to higher rates, but the average density of freight traffic has also increased every year from 573,398 ton-miles per mile of road in 1915 to 873,342 in 1920, a gain of 52 per cent.

"Since the resumption of full private operation the road has shown an operating ratio of 80.19 per cent for the year ended August 31, 1921. In the same period the road earned, after deduction of expenses, taxes and rentals, a balance applicable to bond interest of \$9,715,009. This compares with the proposed fixed interest requirements of the new company, as stated above, of \$4,917,717, and with all interest charges, including that on the adjustment mortgage bonds, payable, if earned, of \$7,792,717."

Further details concerning the present status of the Missouri, Kansas & Texas were published in an article by Samuel O. Dunn, editor of the *Railway Age*, entitled "Progress of Missouri, Kansas & Texas Since 1913," which article appeared in two parts in the *Railway Age* of June 10, 1921, page 1321, and June 17, 1921, page 1385.

IN PART the present volume of business reflects merely seasonal production and trade, but when allowance is made for this condition it appears that substantial progress is being made toward normal business activity, which should be realized if the foreign and domestic clouds on the horizon are cleared.—*Guaranty Survey*.



A 2 1/2-ton Truck and 4-ton Trailer

## A Formula Covering Costs of Heavy Motor Trucking

Shows the Superiority of a Time Basis Over Ton-Miles or Truck-Miles for Computing Expenses

By Colonel Charles Hine

Late Motor Transport Corps, American Expeditionary Forces, France

**A** MOTOR TRUCK with a cargo capacity of five tons costs about \$5,000 and has a life of about five years. Its expectancy of productive work cannot ordinarily exceed five days a week or 260 days per year, the other days being idle time due to Sundays, holidays, shop work, painting and business shutdowns.

Good business procedure demands the setting up of an amortization account for every capital expenditure. A \$5,000 truck should be amortized on the basis of \$4,600 as the tires, costing about \$400, are expendable and, therefore, chargeable to operation. Depreciation over five years means \$920 per year and the interest charge at 8 per cent is, for each of the five years in succession, \$368, \$294.40, \$220.80, \$147.20, \$73.60; total interest, \$1,104; total principal and interest, \$5,704. For the convenience of a uniform amortization charge it is sufficiently accurate to divide this last total by five years and then by 260 working days which gives \$4.38 as a safe charge for amortization for each working day.

The wise purchaser of a truck will, at once, insure it against theft, fire, accident and liability for damage done to others. Because of heavy claims paid by insurance companies this item is increasing rather than decreasing and may be put at \$416 per year or \$1.60 per working day.

Another charge that begins to run with ownership is that for taxes, including license or registration. This item is also on the increase owing to a public demand that motor trucks contribute a larger share of the cost of highway maintenance. This may be estimated at \$520 per year or \$2.00 per working day.

A garage of some kind, public or private, is essential and, including the washing and inspection of a truck, costs about \$30.00 per month, \$360 per year, or \$1.38 per working day.

Assuming the owner to have only one truck and to be his

own driver a headquarters' office with telephone service, through which orders may be placed and from which business may be solicited, is necessary. For the owner of one truck this may be arranged with some office existing for other purposes by paying the proprietor, or a clerk, to act as truck representative which, including the use of the telephone, will cost about \$45 per month, \$540 per year, or \$2.07 per working day. As the owner expands his business and increases the number of his trucks he will, sooner or later, need an office of his own with expense for rent, light, heat, telephone, furniture, stationery and clerk hire. The continued allocation of \$2.07 per working day per truck should be sufficient for this item.

The owner should allow himself driver's wages which, with overtime, will run about \$35 per week or \$7.00 per working day. A helper, or his equivalent in loaders and unloaders, is needed and will cost \$25 per week or \$5.00 per working day.

The wise owner-driver, on buying his second truck, will cease driving and become a supervisor. As a supervisor he should continue to receive driver's wages and as owner he should also receive owner's profit. This means that each of the two trucks should be charged with a supervision cost equal to one half of driver's wages or \$3.50 per working day. As the trucks expand in number to a fleet more supervisors become necessary as do runabout cars for use in supervision. A continued charge of \$3.50 per truck per working day should cover supervision.

Constant Elements of Cost May Be

Equated in Miles or Mile-Hours

All of the foregoing elements of cost are designated herein as constant elements because they are assumed as functions of

time and as being independent of miles run or tons hauled. Amortization is allocated by time units rather than by distance units because of the wide variations in commercial mileage and of the still rapid development of a young art. A new truck, well housed and cared for, left standing idle for five years might be nearly as good as new and yet be much depreciated in value because of better trucks then on the market.

Insurance, taxes and garage are manifestly functions of time.

The elements of office, driver, helper, and supervision are allocated by time in the belief that no enterprise can long prosper where skilled and faithful men are ruthlessly laid off whenever business slows down. Society, for its own protection, is demanding that industry be so organized and profits be so adjusted as to insure continuity of employment to a normal number of tried and qualified employees.

These constant elements may, for convenience, in comparison, be equated in miles or mile-hours where warranted by sufficiently constant and uniform mileage performance.

**Variable Elements of Cost May Be Equated in Days or Hours**

The five remaining elements of operating cost—cargo insurance, fuel, lubrication, tires, and repairs—are designated herein as variable elements because they are assumed as functions of cargo and distance.

Cargo insurance, because of large claims paid by insurance companies, is increasing in rate. In some cases the rate is said to be nearly prohibitive. This element is the most difficult to estimate and is assumed at \$4.57 per working day.

Fuel consumption varies with highway, trucks, cargoes, repairs and drivers. It runs from 4 mi. to 7 mi. per gal. of gasoline at a cost of from 4 cents to 7 cents per mi., 6 cents per mi. being a safe normal.

Lubrication requires a gallon of oil costing about 80 cents for every 150 mi., which with some special lubricants gives a normal cost of something like 1/2 cent a mile.

Tires cost from \$400 to \$600 a set with varying guarantees by manufacturers as to mileage. Five cents a mile may be assumed as a safe normal.

Repairs, including a periodic overhaul, are found by experience to be about 2 cents a mile. In congested city districts, with many sharp turns and much stopping and starting, it may be found that repair cost increases relatively faster than mileage and varies with time rather than distance.

These five variable elements may, for convenience in comparison, be equated in days or hours where warranted by sufficiently constant and uniform time performance.

Intraurban trucks often make only 20 mi. or less per working day and often handle only 20 tons of cargo. Interurban and suburban trucks seldom exceed 100 mi. per day.

A trip of about 50 mi. and return, or a total of 100 mi., is normally the limit which can be undertaken and permit return to the home garage the same working day. Longer trips usually necessitate an allowance for garage en route and for meals, if not also lodging, for driver and helper. Traffic is seldom balanced in direction. A 5-ton truck is lucky to handle 8 tons in a trip of 50 mi. and return.

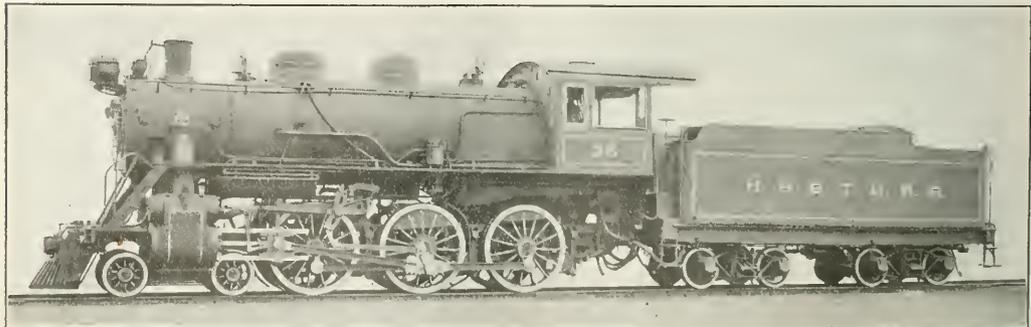
From these practical assumptions there is derived the table designated herein as a typical formula. It is intended as a rough guide in estimating costs of heavy trucking. Based on high, rather than on low, figures of cost it is offered as a safe maximum. Application in a given case with known and actual values substituted for the assumed values will perhaps show the total cost as 10 per cent to 25 per cent lower than the total of the typical formula.

TYPICAL FORMULA COVERING COSTS OF HEAVY MOTOR TRUCKING  
Conditions. \$5,000 Truck, 5 Tons, 5 Years, 5-Day Week, 260 Working-Days  
Year, 9-Hour Day

	Dollars per working day (9 hours)	Cents per truck mile, 100 mi.-day (8 tons)	Cents per truck mile, 20 mi.-day (20 tons)
Amortization	4.38	4.38	21.90
Insurance	1.60	1.60	8.
Taxes	2.	2.	10.
Garage	1.38	1.38	6.90
Office	2.07	2.07	10.35
Driver	7.	7.	35.
Helper	5.	5.	25.
Supervision	3.50	3.50	17.50
Cargo insurance	4.57	4.57	22.85
Fuel	6.	6.	6.
Lubrication	0.50	0.50	0.50
Tires	5.	5.	5.
Repairs	2.	2.	2.
Total	45.	45.	171.
Per hour	5.		
Per ton-mile		11.25	34.20

It is apparent that it is better for a truckman to base his costs on days than on miles. Neither the ton-mile nor the truck-mile is a safe unit for a truckman. As compared with a railway his tons and his miles are relatively too few to absorb the wide fluctuations in individual cargoes and hauls.

It is further apparent that any device like a demountable body or other form of unit container which reduces the standing time of truck must increase tonnage handled per truck per day, and therefore reduce the cost per ton.



Ten-Wheel Passenger Locomotive for Huntingdon & Broad Top Mountain

Two of these locomotives have lately been delivered by the Baldwin Locomotive Works. They are designed to make a 52-mile run on a road with 13-deg. curves and 1.86 per cent grades in two hours, making 20 intermediate stops. The locomotives weigh 175,000 lb., of which 132,000 lb. are on the driver, have a tractive effort of 28,000 lb., cylinders 21 in. by 26 in., 66 in. drivers, boiler pressure 190 lb., evaporative heating surface 1,987 sq. ft., superheating surface 489 sq. ft. and grate area 42.5 sq. ft.

# Henry Ford Is Right—and Wrong\*

## Principal Change Made on D., T. & I. Is Increase in Earnings Derived from Motor Traffic

By Walker D. Hines

Former Director General of Railroads

**H**ENRY FORD'S attitude on railroad problems, as set forth in the November Nation's Business, appeals strongly to the American people. His face is turned towards the future, and he confidently proposes reforms which are in the public interest. But the beguiling charm of his genius makes it all the more important to weigh with care his criticisms and proposals.

At present we have the results of only six months of Mr. Ford's management of the D., T. & I., the months of March to August of the present year. It is impossible to formulate with certainty conclusions of controlling value from the six months' operation of any railroad, but as to Mr. Ford's railroad, the one thing about which we can be certain is that his small railroad has become an adjunct to his big motor plants, and that this has completely changed the railroad's earning capacity and has put it in a class entirely apart from railroads in general in this country.

### What Ford Ownership Meant

A favorable earning capacity for a railroad depends, of course, on its costs, but even before that it depends on an adequate volume of business that pays a satisfactory revenue and admits of being handled under favorable operating conditions. It is in these respects that Mr. Ford has wrought the one certain metamorphosis in the character of the D., T. & I., and he has done it simply because he has turned over to it the great and steady traffic to and from his factories. In addition to a large inbound movement, his plants give the D., T. & I. probably more than 5,000 cars of high-class outbound traffic per month—a traffic that earns an unusually good revenue and that has the rare advantage of being received, handled and delivered, in solid trainload lots, so as to minimize the heavy costs of terminal handling and so as to get the maximum service out of the train—and all this over the northern part of the railroad, which is understood to have the best operating conditions.

Mr. Ford denies that this change is important, because he says the railroad had an even greater tonnage in the past. But he strangely overlooks the fact that the tonnage in the past earned a much smaller rate and could not be handled from origin to destination on the Detroit, Toledo and Ironton in solid trainload lots.

In the past the traffic of the D., T. & I. has appeared to be peculiarly lacking in all good points, but overnight it finds itself blessed with a large additional traffic of extraordinary desirability which more than offsets the diminution in tonnage which the D., T. & I. has suffered during the present long and serious slump in business.

By purchasing this railroad Mr. Ford has done what was the equivalent of bringing practically every competing railroad system in the country to the door of his factory, and that is an advantage which no competing manufacturing plant enjoys. What he can do through this means in getting for his railroad increased divisions of through rates remains yet to be ascertained, because it is not at present known, but the impression prevails that he has secured increased divisions. A shipper who does not own a railroad must pay the published tariff rate which is known to his competitors, and he cannot lawfully get any concession from the carriers.

But when he owns his own railroad he can get in the shape of an increase in the division received by his railroad out of the through rate a concession which is not published in the tariffs or reported, unless in exceptional cases, to the Interstate Commerce Commission. Certainly there is a tremendous inducement for especially large divisions when the shipper can offer to a large number of competing railroads the tempting bait of high-class traffic in trainload lots.

There are probably other advantages for his railroad growing out of his position as a shipper. For example, it would be strange if Mr. Ford could not force his connections to take his desirable traffic at such hours in the day or night as to save his railroad (and as to put on the connecting railroad) the succeeding day's rental or per diem of \$1 per day per freight car. Likewise he is apparently able to force his connection to supply special service by accepting traffic from his road within a few minutes after they receive it.

The fact that under such circumstances the railroad has turned long-standing adversity into a certain measure of prosperity is the most natural thing in the world, and in itself proves nothing whatever for the Ford railroad policies, which are too new to admit of measuring their economic value—and indeed some of the most important and interesting of these policies did not become effective until the very end of the six-months period and even now some of them are still entirely in the realm of discussion.

Mr. Ford states that he has speeded up the movement of traffic on his railroad and that other railroads should do likewise. This brings into interesting relief the fundamental difference between the railroads in general and the D., T. & I. in its new role of Ford plant facility.

The great element in the slow movement of freight traffic is the time consumed in the terminals. It is highly important to reduce terminal work and to cut out delay in the terminals. The United States Railroad Administration gave special attention to this subject and found the most cordial attitude on the part of railroad officers generally to its efforts in this direction. It inaugurated in September, 1919, special local terminal committees, with representation of the shippers as well as of the railroads, and sought to put into effect all practical suggestions looking to the elimination of factors leading to delay or unnecessary work. Similar efforts have been continued since the resumption of private control.

### Better Ideas Welcome

Every additional impetus of improvement is to be welcomed, whether through consolidation of terminals or terminal handling, movement of trains without breaking them up at intermediate terminals, increased promptness in effecting deliveries between connecting railroads, elimination of delays as, for example, delays in loading or unloading, or on account of billing or because of slowness in repairing cars developing defects in transit. Any new thoughts which Mr. Ford can originate and justify will be gladly seized upon by the railroad fraternity, in my opinion. But apparently the principal way in which he copes with the terminal problem is to put the terminal burdens on his connections by requiring them to take the traffic off his tracks within 20 minutes. What happens after that is not his problem, but theirs. They are no doubt willing to do this as a special

\*Abstract of article in Nation's Business for November, 1921.

service in his particular case in order to get his traffic (and to maintain, if necessary, special terminal crews for this purpose), but it does not follow that they can do the same thing in all cases.

Mr. Ford also says that he has been able to speed up the delivery of the traffic from his factories by from 7 to 14 days. He says this enables him to reduce his working capital by about \$30,000,000.

It is clear he does not mean that he has reduced the time of movement over his own railroad by from 7 to 14 days. In fact, this traffic does not move on his own railroad except for a short distance in most cases—say from 70 to 100 miles. What he must mean is that he demands of his connections as the price of giving them his traffic that they speed up the delivery to final destination. Here again his connections may be willing to do this in order to get his traffic, but it does not follow that they can do the same thing for all of Mr. Ford's competitors or for the general public, and the question again arises whether the railroads may not at times be forced to delay other traffic in order to give Mr. Ford the special fast movement which he demands and which his special position enables him to obtain. It is clear that Mr. Ford's railroad does not supply the ideal field for experiment as to fast train movement, because the haul on his railroad is too short and his traffic is too special in character to present the problems which exist on the railroads generally.

**Where Did the Speeding Up Occur?**

If we were to judge by the average car miles per day, we would have some question as to whether he has made sustained progress in speeding up the handling of the traffic over his own line. These averages for the last six months, March to August of this year and last year, were as follows:

Month	1920	1921	Month	1920	1921
March	26.5	27.8	June	10.9	25.1
April	9.6	26.3	July	18.5	21.6
May	10.7	27.3	August	26.9	20.7

It is fair to say, however, that this average of car miles per car per day is by no means conclusive of the speed obtained in the movement of cars actually handling traffic, because the average is based on all the cars which happen to be on the railroad at the time, including surplus cars. Thus in the time of a slump in business such an average goes down, and in time of heavy business the average goes up, regardless of the actual speed of the cars containing loads.

However, despite the unique situation of the D. T. & I. at the present time, it is to be confidently expected that Mr. Ford will make numerous improvements in operation which can be followed to advantage on the railroads generally. The promotion of contentment, and consequently of increased efficiency on the part of the employees, the elimination of unnecessary employees (including lawyers), the resort to more direct action and the cutting out of lost motion in the settlement of claims, the getting rid of obsolete or needless reports and statistics, the development of the standing and authority of the local station agents, are all things which are pre-eminently desirable, and it is to be earnestly hoped that Mr. Ford can throw new light on how to accomplish them.

It must be again emphasized that it is yet too early to know what economies Mr. Ford can achieve even with all those advantages which put his railroad in a class entirely apart from the railroads in general. The results of operation for the six months, March to August, 1921, do not indicate a steady upward trend in his net. The figures are as follows:

	Operating revenue	Operating expenses	Operating income
March	\$439,052	\$352,970	\$76,252
April	697,491	395,816	291,605
May	744,406	422,328	311,302
June	713,527	376,383	327,003
July	744,498	444,794	285,329
August	763,840	548,246	197,234

These figures, in connection with those above given for the months of March to July, emphasize anew that the prin-

cipal factor in the net is the greatly increased gross, notwithstanding a smaller tonnage.

The country will certainly be the gainer if Mr. Ford can design lighter locomotives which will do the same work as the existing heavy locomotives, and if he can design lighter freight cars which will do the same work as the existing freight cars and which will be strong enough to be hauled and switched (as they would have to be) in the same trains and cuts of cars with the existing heavy equipment throughout the country, on all sorts of grades and curves and under all sorts of conditions.

It is not clear what Mr. Ford means by eliminating the unproductive stockholder. I cannot imagine he means that existing stock should be confiscated. If he means that for the future stock should not be issued except for appropriate value which has been or is to be put into the property, that seems to be assured by the Transportation Act. If he means that it is desirable to encourage the ownership of stock by employees and by people who live in the communities through which the railroads run, that certainly is an ideal which I believe the public and railroad people would like to see realized. The closer we can get to a condition where the people who use and work on the railroads themselves own the railroads and help to finance them, the better it will be for the country. If Mr. Ford can develop some new methods of accomplishing this result, he will certainly render an important service by doing so. It is seriously questionable, however, whether this movement ought to be carried to the extent of promoting the control of common carriers by large industrial enterprises.

While speaking of the promotion of the ownership of railroad stock and the financing of railroad necessities by the railroad employees and the people living in the communities along the railroads, I would like to suggest that in order to accomplish such an object it is most important that the government avoid making frequent and hasty changes in its railroad policy.

**"Contrary to the Public Interest"**

For example, it would be a detrimental move if the government in this difficult and transitional period should repeal the authority the Interstate Commerce Commission possesses for the protection of the interstate situation over intrastate rates, or should repeal the duty of the commission to fix rates sufficient, within practicable limits, to pay a fair return on railroad property. Through such repeals the chance of securing more widespread popular ownership of railroad securities and greater participation by the general public in railroad financing would be rendered much more remote, and the necessity for restoring at high cost to highly specialized financial experts for assistance in railroad financing would become greater than ever.

In conclusion I wish to express my personal opinion that it is contrary to the public interest for a large shipper like Mr. Ford to own and operate a railroad by means of which he has a powerful leverage for obtaining special consideration from the common carriers of the country. But as long as this is permitted by law, we can at least congratulate ourselves that the present combination is in the hands of a genius who is willing to turn his railroad into a laboratory for the making of the experiments and I shall be surprised if some of the experiments do not turn out to be valuable from the standpoint of railroad companies in general.

Surely with his remarkable record in economical production and with his extraordinary personality he can impress his spirit and his methods upon 450 miles of railroad with about 2,000 employees so as to obtain substantial economies. Some of them should be practical examples for the 250,000 miles of railroad with their 2,000,000 employees, but their problems are by no means as simple and they cannot enjoy the unique advantages which the Ford railroad enjoys.

deg. <sup>o</sup>; between adjoining track centers. The distance from the center of the turntable to the line of the smoke jacks is 119 feet 6 inches. A full complement of modern wheel pits has been provided, the construction including a driver drop pit, an engine truck pit and a tender truck pit.

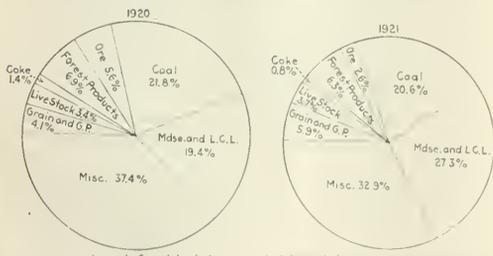
The two rear corners of the building have been utilized for the boiler and engine room layout and the machine shop and blacksmith shop. In the former case a room 42 feet 11 inches by 40 feet houses three locomotive-type boilers and a washout plant. Coal is supplied by a hopper track and trestle at the rear which discharges into a large concrete hopper directly adjacent to the boiler room. The pump or engine room adjoining this contains the water pumps, air compressors and electric generator for lighting current. The other corner contains an irregularly-shaped machine shop fully equipped with the latest type machinery necessary for making running repairs. Its maximum dimensions are approximately 74 feet by 40 feet. Other facilities include a locomotive foreman's office, an engineer's registering office, a general office, a locomotive supply room, an arch brick room, tool rooms and a modern lavatory and wash room, all within the walls of the building.

Ample ventilation and light are provided by the sash windows in the three monitors and by the numerous large windows in the side walls. The generator mentioned furnishes current for electric lights. Heating is provided by steam coils on the side walls and in the engine pits.

The Hornepayne enginehouse and terminal layout were constructed by the Canadian National's own forces, the design and construction being carried out under the supervision of George C. Briggs, then architect of the eastern lines and now architect of the western lines, to whom we are indebted for the information contained in this article.

### Freight Car Loading

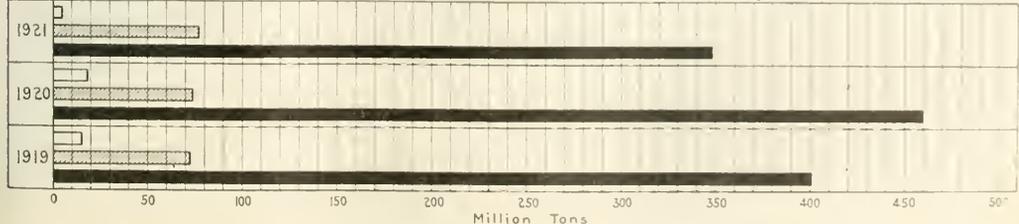
THE NUMBER of cars loaded with revenue freight during the week ended November 12 shows another large drop, according to the weekly report of the Car Service Division of the American Railway Association, due largely to



Legend: Complete circle represents, total loaded. Sectors of circle represent proportion of commodity indicated to total.

### Revenue Freight Loaded, Cumulative—January 1 to November 5

NOTE: In considering the trend of beehive coke production it should be borne in mind that the decrease in 1921 reflects not only the decreased demand, due to the depressed state of the iron and steel industry, but also the decrease of beehive coke over operation of the last ten years, due to the rapid increase in the by-product coke ovens during the war period and since.



Cumulative Production of Coal—Tons, January 1, to November 5

the effect of the Armistice Day holiday and election day in several states. The total was 753,046, as compared with 829,722 the week before, 927,586 in the corresponding week of 1920 and 808,304 in 1919. There were decreases as compared with the preceding week in the loading of all classes of commodities except livestock, which increased from 31,126 to 34,269. There was also a large increase in the freight car surplus during the period from November 8 to 15 to 140,189, as compared with about 93,000 the week before. Of the total surplus 51,527 were box cars and 56,086 were coal cars.

### Sprague Train Control to be Tested On New York Central

A CONTRACT HAS this week been signed between the New York Central Railroad Company and the Sprague Safety Control and Signal Corporation for an intensive test of the latter's system of auxiliary train control on a section of main-line southbound express track No. 2 between Ossining and Tarrytown on the electric division.

This contract is the result of negotiations initiated last February by the Joint Committee on Automatic Train Control of the Bureau of Safety of the Interstate Commerce Commission and the American Railway Association, at which time President A. H. Smith, in response to a suggestion by the Joint Committee consented to a test of the system under suitable conditions provided details could be arranged to mutual satisfaction.

This proposal came at a time when the late Public Service Commission (Second District) of New York, had under consideration a proposal to inaugurate tests of a somewhat different character, and was the result of a decision by the joint committee, acting in view of the new conditions created by the mandatory power given to the Interstate Commerce Commission in the Transportation Act, 1920, to test a limited number of devices or systems.

Following the affirmative response of President Smith, the engineering representatives of the Interstate Commerce Commission, the American Railway Association, the New York Central and the Sprague Corporation held a number of meetings to determine the location, extent and character of the tests; and from the locations considered that on the main track between Signal 3002 at Ossining ("PF") and Signal 2652 at Tarrytown ("OW") 3 1/2 miles, was selected for the installation of track apparatus.

The test determined upon is exceptional, in that instead of a number of equipments being mixed in with the regular traffic and normally subjected to only occasional operation, the experimenters will have a section of track all to themselves. A large number of tests covering every variety of operating conditions will be carried out, practically continuously, for several months, on a reserved section of main track where the highest speed is permissible, and where the equip-

ment can be subjected to a combination of adverse conditions.

While the details of the equipment have not been made public, it is understood that the system, which is of the intermittent magnetic impulse type, embraces in its track elements a series of brake application and differential brake determining magnets fixed in each block well below the heads of the running rails. From these magnets, under the control of the signals and hence of the traffic conditions, momentary magnetic impulses are transmitted to sensitive receivers on the locomotive to initiate primary and secondary brakings. The braking can be either service or emergency, and of varying degrees; under speed control, and with or without enforced stops.

The location selected and the methods prescribed for the tests will afford a critical test of the possibilities of automatic train control. Being in the electric division the running rails are used for power as well as for signal currents, and the track elements will be subject to whatever possible interference there may be, not alone from the direct current flowing in the running and third rails, but from any alternating currents used in the signal installation.

Over these tracks will operate not only the steam locomotive under test but likewise heavy electric locomotives and multiple unit electric trains, thus subjecting the track magnets to a variety of extraneous influences. Upon the present normal-clear alternating-current automatic block signal system will be superimposed a direct current "normal danger" track magnet system, the current for which will be derived from the alternating current transmission circuits.

The track on which the tests are to be conducted will normally be kept entirely free from all other traffic for eight hours a day, from 9 a. m. to 5 p. m., for not less than five days a week, during which time all traffic will be handled on the remaining tracks, this arrangement being, of course, subject to emergency traffic conditions. The setting aside of a section of main line track on a railroad of the first class, in its busiest zone, for several hours a day and for several months, and the tuning up of this track so that speeds as high as 70 miles an hour can be made during the tests, was so radical a departure that the contract was only finally concluded after it had been passed upon by the board of directors of the railroad company; an augury of the serious character of the tests to be undertaken. Preparations for the test have been under way for some time, and it is expected that operations can be begun early in January.

## Report on Gould (Ohio) Collision

**I**N A REAR COLLISION of westbound trains on the Pennsylvania Railroad in tunnel No. 5, at Gould, Ohio, seven miles west of Steubenville, on September 25, one engineer and one conductor were killed; six mail clerks and three trainmen were injured, and the road was blocked 28 hours. This collision was due to a false indication of a semi-automatic block signal, this false indication having been due to a ground in one of the wires controlling it. The Interstate Commerce Commission has issued a report, dated October 19, and signed by W. P. Borland, Chief of the Bureau of Safety, giving this as the cause, and detailing the surroundings and the circumstances.

The situation of the signals, as related to the tunnel, is indicated in the sketch below, in which WP indicates the western portal of the tunnel and EP the eastern portal. The signal stations between which the collision occurred are SX on the east and NA on the west, and the signal at fault was No. 13. The signalman at NA should have put the lever of this signal in the normal (stop) position after the passing of the leading train, and thereby he would have averted the collision; but he followed his usual practice of waiting until after the train should pass signal 16 (near his cabin, as

indicated in the sketch) before restoring the lever to the normal position.

NA	16	WP	EP	13	SX
----	----	----	----	----	----

The tunnel is 3,320 ft. long, and its eastern end is a half mile west of Gould station. Signal cabin NA is 1,350 ft. west of the western portal of the tunnel, and signal 13 is 2,275 ft. east of the eastern portal.

The leading train was a freight, extra 7468, consisting of locomotive, 32 cars and caboose. It passed SX at 11:01 a. m. and was moving, in the tunnel, at about seven miles an hour when it was struck, the grade in the tunnel being ascending at about 75 per cent.

The following train was No. 11, consisting of seven mail cars and one combination car (no passengers) hauled by two locomotives. It passed SX at 11:07 a. m., six minutes late, and collided with the freight at about 30 miles an hour, wrecking the caboose and seven cars of the freight train. The ventilating fan of the tunnel was not in operation, the power having been cut off to allow linemen to work on the wires, and there was considerable smoke in the tunnel. The marker lights on the caboose of the freight were not burning; but it is stated that probably they would have been invisible.

The testimony concerning the position of the arm of signal 13 would indicate that the abnormal condition was intermittent; but there is no doubt that it was in the 45-degree position for train No. 11, giving that train right to proceed expecting to be stopped at signal No. 16.

The report contains a diagram showing the signal circuits as far east as Mingo Junction. The false closing of the relay controlling signal 13 was dependent in part on the position of circuit closers on signals and signal levers at SX, which is more than two miles east of signal 13. As the circuit breakers changed position according to whether the signal (or the lever) was in the normal position or otherwise, the effect on signal 13 was intermittent.

About six minutes ahead of the freight train, westbound train No. 1219 had passed, and the operator at NA noticed that the repeater in his cabin moved from horizontal to clear while the train was in the tunnel. This had happened before, so he supposed that the instrument was out of order and sent for a repairman. On the approach of freight 7468 the repeater again seemed to be in normal working condition; but after about five minutes it again assumed the clear position wrongfully, the freight being still in the tunnel. The operator thought the trouble was with the repeater instead of the signal and it did not occur to him that he ought to restore the lever to its normal position and thus hold signal position of circuit closers on signals and signal levers at SX, 13 in the stop position. The interlocking at NA is inspected weekly, and the relays, electric locks, etc., are subject to an additional inspection monthly. The wiring at the cabin had been tested for resistance within two weeks.

Tests made by the road's signal department on the afternoon of the accident showed faulty conditions (grounds) in electric wires at five places, one of which was not located.

There was a severe electric storm at about 2 a. m. on the date of the accident and the assistant supervisor of signals thought it possible that some of the faults were due to lightning, the only protection against lightning provided in these circuits being pin-point arresters across the relay coils.

The conclusion of the report is not clear as to how far this view is accepted by the inspector, the report saying that "if these grounds existed for any considerable period of time prior to the accident, they should have been discovered by careful inspection and test, and corrected."

Rule 99 requires that when a train is liable to be overtaken by another train, the flagman must throw off lighted fuses at proper intervals; and the report says that if, when the freight reduced its speed in the tunnel, a fusee had been thrown off "it is believed that it would have provided a material safeguard."

# Hearings on Bills to Repeal Rate Making Rule

Witnesses for Railroads and Security Owners' Association  
Oppose Efforts to Repeal Percentage Rule

WASHINGTON, D. C.

REPRESENTATIVES of the National Association of Owners of Railroad Securities have alternated with those of the Association of Railway Executives during the past week in testifying before the Senate committee on interstate commerce in defense of the rate-making provisions of the transportation act which have been under attack by the state railroad commissioners and by Clifford Thorne and S. H. Cowan, representing western grain and livestock shippers. Only a few senators have attended the hearing.

Edgar E. Clark, until recently chairman of the Interstate Commerce Commission, appeared as one of the witnesses for the Security Owners' Association on November 19 and strongly urged that the rate-making provisions of the act be given a fair trial. He also replied to some of the criticisms of the commission and of the law made by the previous witnesses who had demanded their repeal. "The act is a great big constructive piece of legislation," Mr. Clark said, "enacted by Congress in a broad spirit and a desire to be helpful. Insofar as it has had an opportunity to be tested it has been helpful. It has done no one any real harm and any fear of danger from it is apprehension as to what some one may do or say under it. This law is right, and deserves a fair trial. If it has been misconstrued there is a remedy for it, and that question is now before the Supreme Court."

## Edgar E. Clark's Testimony

"I want to make it clear, to begin with," said Mr. Clark, "that in requesting me to appear, Mr. Warfield has made no suggestion whatever as to what position I should take; he simply asked me to come here and say what I think.

"It is doubtful if any single piece of legislation has been the subject of more comprehensive, patient and exhaustive hearings by the committees of both houses of Congress or of more exhaustive analysis by the conferees, than this transportation act. It is a piece of constructive legislation. Two provisions of it are under attack here, as to which I have been asked to express my views. One is the so-called rule for rate-making, the other is the power of the Interstate Commerce Commission to remove discrimination against interstate commerce."

Mr. Clark gave an outline of the history of rate-making from 1887, when the government decided on the policy of regulation, down to the present time, and showed that prior to the passage of the transportation act the commission lacked power as an administrative tribunal to secure results such as can be accomplished under the transportation act. Turning to the rule of rate-making, he said: "The Constitution of the United States has never guaranteed any capital invested in a public utility, any particular percentage of return, or in fact any return whatever. But it has said and does say that the owners of that utility shall not be deprived of the opportunity to earn a fair return upon the value of the property which they devote to the public use. We have a long and unbroken line of decisions of the highest courts in the country that that is the law of the Constitution . . . The rule for rate making which is here under attack, is only a statutory declaration of that constitutional provision . . . Congress was, I think, very cautious and very conservative in determining what should be taken as a reasonable return on the value of the property for the two-year period succeeding the enactment of the law. It is significant that while fixing that return of 5½ per cent, with an additional authority upon the commission to increase it to 6 per cent, in the same act the Congress provided that the carriers should pay to the

government 6 per cent interest on money loaned by the government to the carriers, and should pay 6 per cent on the indebtedness of the carriers to the government which accrued during the period of government control."

Mr. Clark called attention to the fact that prior to the enactment of this law the association of security owners was anxious that Congress should declare a policy, as a rule of law to be followed by the Interstate Commerce Commission, and to control the commission in the performance of its administrative duties. "That rule of policy," said Mr. Clark, "laid down by the Congress, is in exact accord with a long line of decisions of the highest courts of the land, and in harmony with a long line of proceedings, with which the Congress was, of course, familiar."

Referring to the effort on the part of those criticising the act to repeal the principle of making rates based on the grouping of carriers, Mr. Clark asserted that this grouping had not only been established for years by the actual practice of the commission in the past in various cases, but was desirable as a general policy if Congress desired to sustain the agencies of transportation as a whole.

"The outstanding, fundamental purposes of Congress in enacting this legislation, as I see it," asserted Mr. Clark, "is that the public welfare should be paramount over all other considerations and so in the action of the commission that I have just discussed and in its other action the commission has, as directed by Congress, given special consideration to the necessities of the welfare of the commerce of the country, and of the public."

## Roads Await Normal Business

With reference to the attitude of the security owners Mr. Clark said: "Now, as I have come in contact with the members of this association of security owners, I have been impressed with their conservative views. They realize that even with that rate-making provision in the act, there is no possibility of the railroads getting that measure of return until the railroads of the country, and the business of the country, have adjusted themselves so that that can be done under reasonable rates."

Senator Poindexter asked Mr. Clark: "What justification is there, Mr. Clark, for the assertion that the present conditions are the result of that provision as to guaranty?"

Mr. Clark: "Absolutely none."

Senator Poindexter: "That has been asserted throughout the country, that there is this provision as to guaranty of a profit to this particular industry, while others do not have it."

Mr. Clark: "When that statement is made, Senator, I regard it as being made in the absence of a knowledge of the facts, or with the purpose to misrepresent the facts. That it is not a guaranty is evidenced by the phraseology of the act itself, to start with; and by the interpretation that has been placed upon the act by the commission and by the railroad owners."

Denying specifically that the transportation act required the making of any rate which is unreasonable in fact, Mr. Clark quoted qualifying provisions and asserted that those fully repudiate the suggestion that the act contemplated the increase of rates without reasonable reference to the movement of traffic under them and asserted that in no instance are the shippers required, because of anything in the act, to pay an unreasonable rate, either individually or as a whole.

The other point covered by Mr. Clark related to the proposal to deprive the Interstate Commerce Commission of

ment can be subjected to a combination of adverse conditions.

While the details of the equipment have not been made public, it is understood that the system, which is of the intermittent magnetic impulse type, embraces in its track elements a series of brake application and differential brake determining magnets fixed in each block well below the heads of the running rails. From these magnets, under the control of the signals and hence of the traffic conditions, momentary magnetic impulses are transmitted to sensitive receivers on the locomotive to initiate primary and secondary brakings. The braking can be either service or emergency, and of varying degrees; under speed control, and with or without enforced stops.

The location selected and the methods prescribed for the tests will afford a critical test of the possibilities of automatic train control. Being in the electric division the running rails are used for power as well as for signal currents, and the track elements will be subject to whatever possible interference there may be, not alone from the direct current flowing in the running and third rails, but from any alternating currents used in the signal installation.

Over these tracks will operate not only the steam locomotive under test but likewise heavy electric locomotives and multiple unit electric trains, thus subjecting the track magnets to a variety of extraneous influences. Upon the present normal-clear alternating-current automatic block signal system will be superimposed a direct current "normal danger" track magnet system, the current for which will be derived from the alternating current transmission circuits.

The track on which the tests are to be conducted will normally be kept entirely free from all other traffic for eight hours a day, from 9 a. m. to 5 p. m., for not less than five days a week, during which time all traffic will be handled on the remaining tracks, this arrangement being, of course, subject to emergency traffic conditions. The setting aside of a section of main line track on a railroad of the first class, in its busiest zone, for several hours a day and for several months, and the tuning up of this track so that speeds as high as 70 miles an hour can be made during the tests, was so radical a departure that the contract was only finally concluded after it had been passed upon by the board of directors of the railroad company; an augury of the serious character of the tests to be undertaken. Preparations for the test have been under way for some time, and it is expected that operations can be begun early in January.

## Report on Gould (Ohio) Collision

**I**N A REAR COLLISION of westbound trains on the Pennsylvania Railroad in tunnel No. 5, at Gould, Ohio, seven miles west of Steubenville, on September 25, one engineer and one conductor were killed; six mail clerks and three trainmen were injured, and the road was blocked 28 hours. This collision was due to a false indication of a semi-automatic block signal, this false indication having been due to a ground in one of the wires controlling it. The Interstate Commerce Commission has issued a report, dated October 19, and signed by W. P. Borland, Chief of the Bureau of Safety, giving this as the cause, and detailing the surroundings and the circumstances.

The situation of the signals, as related to the tunnel, is indicated in the sketch below, in which WP indicates the western portal of the tunnel and EP the eastern portal. The signal stations between which the collision occurred are SX on the east and NA on the west, and the signal at fault was No. 13. The signalman at NA should have put the lever of this signal in the normal (stop) position after the passing of the leading train, and thereby he would have averted the collision; but he followed his usual practice of waiting until after the train should pass signal 16 (near his cabin, as

indicated in the sketch) before restoring the lever to the normal position.

NA	16	WP	EP	13	SX
----	----	----	----	----	----

The tunnel is 3,320 ft. long and its eastern end is a half mile west of Gould station. Signal cabin NA is 1,350 ft. west of the western portal of the tunnel, and signal 13 is 2,275 ft. east of the eastern portal.

The leading train was a freight, extra 7468, consisting of locomotive, 32 cars and caboose. It passed SX at 11:01 a. m. and was moving, in the tunnel, at about seven miles an hour when it was struck, the grade in the tunnel being ascending at about 75 per cent.

The following train was No. 11, consisting of seven mail cars and one combination car (no passengers) hauled by two locomotives. It passed SX at 11:07 a. m., six minutes late, and collided with the freight at about 30 miles an hour, wrecking the caboose and seven cars of the freight train. The ventilating fan of the tunnel was not in operation, the power having been cut off to allow linemen to work on the wires, and there was considerable smoke in the tunnel. The marker lights on the caboose of the freight were not burning; but it is stated that probably they would have been invisible.

The testimony concerning the position of the arm of signal 13 would indicate that the abnormal condition was intermittent; but there is no doubt that it was in the 45-degree position for train No. 11, giving that train right to proceed expecting to be stopped at signal No. 16.

The report contains a diagram showing the signal circuits as far east as Mingo Junction. The false closing of the relay controlling signal 13 was dependent in part on the position of circuit closers on signals and signal levers at SX, which is more than two miles east of signal 13. As the circuit breakers changed position according to whether the signal (or the lever) was in the normal position or otherwise, the effect on signal 13 was intermittent.

About six minutes ahead of the freight train, westbound train No. 1219 had passed, and the operator at NA noticed that the repeater in his cabin moved from horizontal to clear while the train was in the tunnel. This had happened before, so he supposed that the instrument was out of order and sent for a repairman. On the approach of freight 7468 the repeater again seemed to be in normal working condition; but after about five minutes it again assumed the clear position wrongfully, the freight being still in the tunnel. The operator thought the trouble was with the repeater instead of the signal and it did not occur to him that he ought to restore the lever to its normal position and thus hold signal position of circuit closers on signals and signal levers at SX, 13 in the stop position. The interlocking at NA is inspected weekly, and the relays, electric locks, etc., are subject to an additional inspection monthly. The wiring at the cabin had been tested for resistance within two weeks.

Tests made by the road's signal department on the afternoon of the accident showed faulty conditions (grounds) in electric wires at five places, one of which was not located.

There was a severe electric storm at about 2 a. m. on the date of the accident and the assistant supervisor of signals thought it possible that some of the faults were due to lightning, the only protection against lightning provided in these circuits being pin-point arresters across the relay coils.

The conclusion of the report is not clear as to how far this view is accepted by the inspector, the report saying that "if these grounds existed for any considerable period of time prior to the accident, they should have been discovered by careful inspection and test, and corrected."

Rule 99 requires that when a train is liable to be overtaken by another train, the flagman must throw off lighted fuses at proper intervals; and the report says that if, when the freight reduced its speed in the tunnel, a fuse had been thrown off "it is believed that it would have provided a material safeguard."

# Hearings on Bills to Repeal Rate Making Rule

Witnesses for Railroads and Security Owners' Association  
Oppose Efforts to Repeal Percentage Rule

WASHINGTON, D. C.

REPRESENTATIVES of the National Association of Owners of Railroad Securities have alternated with those of the Association of Railway Executives during the past week in testifying before the Senate committee on interstate commerce in defense of the rate-making provisions of the transportation act which have been under attack by the state railroad commissioners and by Clifford Thorne and S. H. Cowan, representing western grain and livestock shippers. Only a few senators have attended the hearing.

Edgar E. Clark, until recently chairman of the Interstate Commerce Commission, appeared as one of the witnesses for the Security Owners' Association on November 19 and strongly urged that the rate-making provisions of the act be given a fair trial. He also replied to some of the criticisms of the commission and of the law made by the previous witnesses who had demanded their repeal. "The act is a great big constructive piece of legislation," Mr. Clark said, "enacted by Congress in a broad spirit and a desire to be helpful. Insofar as it has had an opportunity to be tested it has been helpful. It has done no one any real harm and any fear of danger from it is apprehension as to what some one may do or say under it. This law is right, and deserves a fair trial. If it has been misconstrued there is a remedy for it, and that question is now before the Supreme Court."

## Edgar E. Clark's Testimony

"I want to make it clear, to begin with," said Mr. Clark, "that in requesting me to appear, Mr. Warfield has made no suggestion whatever as to what position I should take; he simply asked me to come here and say what I think."

"It is doubtful if any single piece of legislation has been the subject of more comprehensive, patient and exhaustive hearings by the committees of both houses of Congress or of more exhaustive analysis by the conferees, than this transportation act. It is a piece of constructive legislation. Two provisions of it are under attack here, as to which I have been asked to express my views. One is the so-called rule for rate-making, the other is the power of the Interstate Commerce Commission to remove discrimination against interstate commerce."

Mr. Clark gave an outline of the history of rate-making from 1887, when the government decided on the policy of regulation, down to the present time, and showed that prior to the passage of the transportation act the commission lacked power as an administrative tribunal to secure results such as can be accomplished under the transportation act. Turning to the rule of rate-making, he said: "The Constitution of the United States has never guaranteed any capital invested in a public utility, any particular percentage of return, or in fact any return whatever. But it has said and does say that the owners of that utility shall not be deprived of the opportunity to earn a fair return upon the value of the property which they devote to the public use. We have a long and unbroken line of decisions of the highest courts in the country that that is the law of the Constitution . . . The rule for rate making which is here under attack, is only a statutory declaration of that constitutional provision . . . Congress was, I think, very cautious and very conservative in determining what should be taken as a reasonable return on the value of the property for the two-year period succeeding the enactment of the law. It is significant that while fixing that return of 5½ per cent, with an additional authority upon the commission to increase it to 6 per cent, in the same act the Congress provided that the carriers should pay to the

government 6 per cent interest on money loaned by the government to the carriers, and should pay 6 per cent on the indebtedness of the carriers to the government which accrued during the period of government control."

Mr. Clark called attention to the fact that prior to the enactment of this law the association of security owners was anxious that Congress should declare a policy, as a rule of law to be followed by the Interstate Commerce Commission, and to control the commission in the performance of its administrative duties. "That rule of policy," said Mr. Clark, "laid down by the Congress, is in exact accord with a long line of decisions of the highest courts of the land, and in harmony with a long line of proceedings, with which the Congress was, of course, familiar."

Referring to the effort on the part of those criticizing the act to repeal the principle of making rates based on the grouping of carriers, Mr. Clark asserted that this grouping had not only been established for years by the actual practice of the commission in the past in various cases, but was desirable as a general policy if Congress desired to sustain the agencies of transportation as a whole.

"The outstanding, fundamental purposes of Congress in enacting this legislation, as I see it," asserted Mr. Clark, "is that the public welfare should be paramount over all other considerations and so in the action of the commission that I have just discussed and in its other action the commission has, as directed by Congress, given special consideration to the necessities of the welfare of the commerce of the country, and of the public."

## Roads Await Normal Business

With reference to the attitude of the security owners Mr. Clark said: "Now, as I have come in contact with the members of this association of security owners, I have been impressed with their conservative views. They realize that even with that rate-making provision in the act, there is no possibility of the railroads getting that measure of return until the railroads of the country, and the business of the country, have adjusted themselves so that that can be done under reasonable rates."

Senator Poindexter asked Mr. Clark: "What justification is there, Mr. Clark, for the assertion that the present conditions are the result of that provision as to guaranty?"

Mr. Clark: "Absolutely none."

Senator Poindexter: "That has been asserted throughout the country, that there is this provision as to guaranty of a profit to this particular industry, while others do not have it."

Mr. Clark: "When that statement is made, Senator, I regard it as being made in the absence of a knowledge of the facts, or with the purpose to misrepresent the facts. That it is not a guaranty is evidenced by the phraseology of the act itself, to start with; and by the interpretation that has been placed upon the act by the commission and by the railroad owners."

Denying specifically that the transportation act required the making of any rate which is unreasonable in fact, Mr. Clark quoted qualifying provisions and asserted that those fully repudiated the suggestion that the act contemplated the increase of rates without reasonable reference to the movement of traffic under them and asserted that in no instance are the shippers required, because of anything in the act, to pay an unreasonable rate, either individually or as a whole.

The other point covered by Mr. Clark related to the proposal to deprive the Interstate Commerce Commission of

jurisdiction to remove undue preferences and prejudices and unjust discrimination against interstate commerce or interstate shippers or localities. After correcting various inaccurate suggestions and misrepresentations which had been made to the Senate committee, Mr. Clark said:

"I assert that in no case in which the Interstate Commerce Commission has been called upon to exercise that power—and there have been many of them from all sections of the country—has it failed or omitted to find specifically what would be a reasonable maximum interstate rate as a basis for the removal of the discrimination.

"So that all of these statements that have been made here that either affirmatively declare or intimate that the commission has been deciding these cases without consideration of the reasonableness of the rates, both state and interstate, are based in an entire misunderstanding of what has been done—they are inaccurate, erroneous.

"I want to say with emphasis, Mr. Chairman, that any insinuation that the Interstate Commerce Commission has decided any one of these cases without accordng a full hearing to the people who wanted to be heard, is very far from the fact.

"I want to correct another impression that seems to have been gleaned from what has been said here, that the Interstate Commerce Commission has held that a mere difference between the state and the interstate rates constitutes undue prejudice or undue discrimination. The commission never held it in any case."

#### Little Opposition to Increases When Ordered

Mr. Clark said that the commission in Ex Parte 74 had undertaken as best it could to meet the requirements of the law. Everybody knew, he said, that there must be a substantial increase in rates and there was no particular criticism of its action until it became apparent a few months later that the reaction from war conditions had set in so rapidly that liquidation must take place, and then there were complaints as to the rates. Mr. Clark said he had the greatest sympathy for the producers of agricultural products who blamed the rate increase for their troubles but "they were simply mistaken." He had no sympathy, however, for "the price profiteer hiding behind the camouflage of increased rates."

"What is to be gained by repealing this provision of the law?" Mr. Clark asked. Certainly, he said, Congress is not going to do a vain thing. He felt safe in saying that even if the rate-making provisions of the law had not been enacted and other conditions were what they were, the decision in Ex Parte 74 would not have been substantially different.

Mr. Clark pointed out that of the 13 men who acquiesced in the decision in Ex Parte 74 eight were or had been state commissioners. However, he said, there was no unanimity of opinion among the state commissioners and it seemed to him beyond room for argument that if chaotic and intolerable rivalry between the states is to be avoided there must be vested some authority to settle those controversies when they arise.

"I want to deny," he said, "that the Interstate Commerce Commission has ever acted with any thought or desire of extending its jurisdiction or of dispossessing the state commissions. It has plenty of work to do without looking for more. The act gave specific authority to the commission to co-operate with the state commissions as recommended in the annual reports of the commission to Congress, and it invited the state commissions to sit with it in the biggest rate case ever heard in the world. Why, then, is the Interstate Commerce Commission accused of trying to dispossess the state commissions?"

Referring to the charges that state rates were "frozen" as the result of the orders of the commission in the intrastate cases, Mr. Clark said that a two-year order did not indicate that the commission expected no change for two years. It

thought that if adjustments could be made that would remove the discrimination, he said, it would strike its order from the books. If a rate had no relation to interstate commerce, he said, and there is no discrimination, the commission will take its hands off. It has no intention of passing upon the reasonableness per se of intrastate rates. He added that in some cases the state commissions were restrained from changing their rates by court injunctions. If bills such as the Capper and Nicholson bills now before the committee were passed, he said, the effect would be to repeal the Shreveport case doctrine and every district court in the United States would become a regulator of rates.

#### H. A. Scandrett Testifies

Enactment of the Capper or similar bills repealing the rate-making section of the act and amending the statute so as to prohibit the Interstate Commerce Commission from adjusting state rates would nullify the Shreveport doctrine and repeal all orders involving intrastate rates that have been issued by the commission, thus resulting in general chaos so far as rates are concerned, Henry A. Scandrett, commerce counsel for the Union Pacific System, told the Senate committee.

Mr. Scandrett said the bills are revolutionary and if enacted would mean the complete reversal of the transportation act as well as the interstate commerce act and "deprive the Interstate Commerce Commission of any power over discriminatory state rates."

"Do you believe it would modify the doctrine laid down in the Shreveport case?" Senator Poindexter asked.

"It would absolutely nullify it," the witness answered. "Under the Supreme Court opinion in the Shreveport case, the commission has authority to adjust state rates where it is found that they discriminate against interstate rates," he said.

"Every order issued by the commission affecting state rates would be stricken off under the Capper bill if enacted and the present rates would be made unlawful," Mr. Scandrett said. "That is, every order would be thus nullified, no matter whether it was issued before or after the enactment of the Transportation Act."

"It would mean, then, 48 different commissions to create 48 different rates?" asked Senator Fernald of Maine.

"Absolutely and would create 48,000 discriminations," Mr. Scandrett replied.

#### Discrimination Against Interstate Traffic

Mr. Scandrett said that should the bills be enacted, interstate shippers would be powerless to obtain redress from discriminations. Indicating the importance of this to shippers, Alfred P. Thom, general counsel of the Association of Railway Executives, pointed out that interstate shipments constitute approximately 85 per cent of the total freight traffic carried by the railroads.

To repeal the orders of the Interstate Commerce Commission against discriminations in state rates would not only result in chaos but would also result in "guerrilla warfare" among the states in the matter of rates, with discriminations always being against the interstate shipper. Such proposed legislation if enacted, he said, would represent "backward steps, steps that should not be taken."

For a state to order the railroads, the witness said, to charge passengers one rate of fare when traveling within its borders and the Interstate Commerce Commission to permit carriers to charge another rate for interstate travel is a discrimination in violation of the Interstate Commerce Act.

"While there is competition between persons and localities," Mr. Scandrett said, "yet these advantages and prejudices would be undue and unreasonable even if it were otherwise. The burden imposed by the carrier is unequal and this the law forbids unless there is such dissimilarity in

the circumstances and conditions as warrants a difference in the fare.

"We are at a loss to understand the reason why the state commissions oppose action by the Interstate Commerce Commission, which placed state and interstate passengers' fares on a relatively fair basis. Some of the state commissions have undertaken to defend a situation which, if it arose within the state, would, I am sure, have received their very swift and very emphatic condemnation. If, for instance, with circumstances and conditions substantially similar, a railroad undertook to impose one basic fare between two points within the state and a substantially different fare between two other points also within the same state, it is inconceivable that it would be permitted to do so. The state commission would undoubtedly hold that the practice would be preferential and prejudicial as between both persons and localities. The situations presented to the Interstate Commerce Commission were on all fours with the illustration since these imaginary state lines afford no ground for distinction and there is no other difference. Just as the state commission would unquestionably say that the carriers' proposal could not be entertained, so was the Interstate Commerce Commission forced to say that the situation was intolerable and to order its correction.

### Transportation Act Unfairly Criticized

"No legislation of Congress has been more severely or more unfairly criticized than the Transportation Act. This criticism has been unfair because it has charged to that act all of the evils which were the necessary aftermaths of the great war. The act has been condemned without a fair trial and in fact without any trial.

"The charge that the provisions in the act on this subject are responsible for the very difficult times through which we are passing in so far as the transportation question is concerned cannot be sustained. On the contrary, I assert that these provisions in the law are in no wise responsible for our present troubles."

Mr. Scandrett denied that the Interstate Commerce Commission had misinterpreted the law. He said that the conferees on the bill had struck out the language authorizing the Interstate Commerce Commission to change rates which caused an "undue burden" on interstate commerce, but had adopted the much broader term "unjust discrimination against interstate commerce." While the bills on their face, he said, would leave the Interstate Commerce Commission some jurisdiction over state discriminations, he said, as a practical matter they are so drawn as to actually nullify any such power and one would even set aside all orders of the Interstate Commerce Commission superseding intrastate rates since the Shreveport decision.

### S. Davies Warfield's Testimony

S. Davies Warfield, president of the National Association of Owners of Railroad Securities, said that the proposed legislation, if adopted, would reopen the whole question of government ownership of the railroads. The security owners believe that this legislation, which includes the pending Capper bill and amendments which have been offered to the railroad securities bill, would destroy confidence in railroad securities and would defeat the purposes of the transportation act, one of which was to make possible the financing of the railroads other than by the government.

"If the great investing institutions," Mr. Warfield said, "are thus notified that Congress and the commission are not at least endeavoring to secure the stated reasonable return on public service property, taken in the aggregate, then the opportunity of the carriers to secure money from permanent investing sources to supply this public service will be greatly limited, and it is a grave question whether it will not reach

the extent of requiring government railroad financing through taxation.

"If Congress adopts the suggestion that regulated railroad freight rates shall go down as the unregulated prices of commodities go down, unaccompanied by the requirement that freight rates shall go up as the prices of commodities go up—impracticable of accomplishment—such a policy can only be adopted, if at all, by frankly adopting at the same time the policy of supplying the deficit by taxation. Would not the operation of the railroads under such a policy become a governmental function and inevitable losses be supported by taxing all the people? No such result can be attained under private investment in railroad securities and under private operation.

"If Congress shall decide that the bare requirements essential to the transportation of an article of commerce by rail are not to be regarded as a necessary part of its cost delivered at its destination or where sold then the government should sustain the loss incident to such a policy.

"If the farmer or the owner of a private business—unregulated and free to pursue any policy in management, distribution or competition, whether sound or unsound—can secure the declaration by Congress, in effect, that their products over which Congress has no control either as to production or price, shall be carried by a railroad, privately owned but regulated by the government in its every sphere of activity for less than will produce the reasonable return now contemplated by the act, such a declaration can only be considered as a notice that railroad properties can no longer be expected to be supported through the investment of funds held in trust or by private investors.

"If the conclusion is reached that the products of any particular section of the country or of any industry should be transported, without such products bearing their just proportion of the revenue essential to operate the transportation system, as a whole, it would appear that the time has come when the loss incident to such a policy should be met by taxation. The considerations underlying such a policy would be political in character and should be supported by political authority which would be responsible for results and for the waste incident thereto or impaired service that might result.

"If the pressure upon this committee by those opposing the transportation act should result in the destruction of the machinery provided in the act for the co-ordination of the work of state commissions with that of the Interstate Commerce Commission, no policy can be adopted by the latter under which any measure of return on the aggregate value of railroad property could properly be provided for, whether named in the act or left to be named by the commission. When the government has provided regulatory agencies to regulate rates and wages, not to provide at the same time for the adjustment of intrastate rates that burden the interstate structure, would produce conditions difficult to meet through means other than by taxation."

### Rates Still Being Lowered

Mr. Warfield pointed out that the railroads "have lowered and are still reducing rates, in the interest of reconstruction, not in the interest of the railroads, and when less than half the return called for by the act is realized." He said the shippers did not realize what substantial reductions are being made.

Continuing, Mr. Warfield said: "It is reliably estimated that on the volume of traffic handled last year the saving to shippers and the corresponding loss to the carriers will amount to approximately \$214,000,000 per annum, which is approximately two-fifths of the total net railway operating income of all Class I railroads for the year ended August 21, 1921. With an estimated increase of 5 per cent in the

volume of business for 1922, the total railway operating income would be approximately \$834,000,000 if these reductions had not been made; these reductions will, however, reduce this amount by \$214,000,000 or approximately one-fourth of what would otherwise have been paid by the shippers and received by the carriers. The figures named would result in a return of 3.3 per cent on the commission's tentative valuation of the carriers as a whole. Unless there are substantial reductions made in railway operating costs it is evident that sufficient net operating revenue would not be received to maintain transportation."

Officials of mutual savings banks, representing the various sections of the country, attended the hearing and filed a protest against changes in the transportation act which would repeal the financial rate-making provisions and the provision relative to the Interstate Commerce Commission having jurisdiction over intrastate rates conflicting with the interstate structure. The paper filed was read and put in the record by George E. Brock, president of the National Association of Mutual Savings Banks of the country and also president of the Home Savings Banks, Boston, Mass., who stated the action taken was on behalf of all the mutual savings banks. There were also present representatives of leading life insurance companies.

### Testimony of W. L. Fisher

"Does this committee propose to countenance conditions that will inevitably lead to government ownership of the railroads without at least an attempt to put in effect the program of intensive economies in railroad administration presented before this committee by representatives of the Association of Security Owners in January, 1919, and again in June, 1921, that will save hundreds of millions of dollars for the carriers?" asked Walter L. Fisher, of Chicago, who is one of counsel of the National Association of Owners of Railroad Securities.

"No expert is required," said Mr. Fisher, "to understand the proposals made by the security owners that by the use of the National Railway Service Corporation, organized by this association, great savings will be made that will mean substantial reductions in freight rates through the acquisition and handling of equipment for the railroads by the service corporation.

"You have asked the question," said Mr. Fisher, "how can freight rate reductions be met? We answer, adopt the program of the security owners and the farmers of the country and shippers, through the hundreds of millions of dollars of savings to be gained thereby, will get what they want in reduced freight rates without bringing this country into government ownership.

"You have placed a measure in the Transportation Act to guide the commission in rate-making. Why has this committee not considered putting into effect the other suggestions of the security owners for economies which will make large savings in railroad operation?

"A board of competent engineers and experts has been at work for months for the association in amplifying the plans which were laid before this committee. Mr. Warfield yesterday stated that if the people of the country expect rate reductions every time prices go down, private ownership must cease and taxation of the people must supply this deficit.

"Do you propose to consider changes in the Transportation Act that the much worried shipper may ask until you have at least paid some attention to the offers of the security holders to raise great sums of money to help the situation in the public interest in reciprocation for your having adopted the suggestion of the measure of return which is now part of the transportation act?"

Mr. Fisher related the history of the terminal situation in Chicago and the difficulties there in getting the representa-

tives of the railroads to agree to joint facility uses which, he said, would mean millions of dollars saving to the railroads and hence to the shippers, and would give facilities in Chicago to which that city was entitled and had the right to demand.

### F. H. Wood Appears Before Committee

On November 22 F. H. Wood, of the Southern Pacific, continued his testimony, describing in detail the evidence presented by the roads in various state cases to show that they had specifically proved discrimination against persons, places and particular classes of traffic. Senator Cummins pointed out that there is no disposition on the part of the committee to change the rule of the law relating to state discrimination as the committee thought it had been written in the law, but it has been alleged that the commission has misinterpreted the law, and that it is the duty of Congress to redraft it so it cannot be misunderstood. "That is all there is in this hearing," he said, "the question whether there has been such a misinterpretation of our language that it needs clarification. We do not intend to change the doctrine of the Shreveport, Illinois and Nebraska cases, and I do not think there is now any disposition on the part of the committee to restrain the power of the commission to remove clear cases of undue discrimination."

Mr. Wood said that he was answering the claim that had been made that the federal commission before raising state rates had taken into consideration only the mere fact of a difference in rate levels. Mr. Wood denied that state regulation of intrastate rates has been "frozen" as claimed, except in states which insisted on independent action so strongly as to try to maintain a rate level lower than that for interstate traffic or in other states. In the states which recognized with the Interstate Commerce Commission the necessity for a general increase in rates without delay, he said, the state authorities are functioning as freely as ever in the adjustment of local rates and the other states have it within their power even now to get the Interstate Commerce Commission to withdraw its general orders if they will refrain from insisting on violating the law. He said the action of many states was as much a violation of the interstate commerce act of 1887 as of the transportation act of 1920.



Courtesy of Goldwyn Pictures

Filming a Motion Picture on a Moving Train

# Selecting Designs for Electric Locomotives\*

Tests Indicate that Non-Symmetrical Wheel Arrangement  
Is Essential for Best Performance

By A. W. Gibbs

Chief Mechanical Engineer, Pennsylvania

THE EQUIPMENT available for testing included a wide variety of steam locomotives, and four electric locomotives.

The steam passenger locomotives selected were, one of the 4-4-0 or American type (Fig. 1), the other of the 4-4-2 or Atlantic type (Fig. 2).

The electric locomotives were Nos. 10,001 (Fig. 3) and 10,002 (Fig. 4) already described; No. 10,003, or American

as to facilitate its operation into Grand Central Terminal, New York.

Considered from various standpoints these locomotives ranked as follows:

As regards wheel-base:	Total wheel-base	Distance center to center of trucks
Electric loco. 10,003.....	20 ft. 7 in.	17 ft. 6 in.
Electric loco. 028.....	22 ft. 6 in.	14 ft. 6 in.
Steam, American type (4-4-0).....	22 ft. 9½ in.	19 ft. 6 in.
Electric, 10,001 and 10,002.....	26 ft. 7 in.	17 ft. 7 in.
Steam, Atlantic type (4-4-2).....	30 ft. 9½ in.	
Steam, Atlantic type (4-4-2).....	30 ft. 9½ in.	

As regards center of gravity:	Vertically	Longitudinally
Electric loco. 10,002.....	42½ in. above rail	3½ in. from center
Electric loco. 10,001.....	45½ in.	Centrally
Electric loco. 028.....	55 in.	Centrally
Electric loco. 10,003.....	55 in.	1 in. ahead of front drivers
Steam, American type (4-4-0).....	63 in.	10½ in. ahead of front drivers
Steam, Atlantic type (4-4-2).....	73 in.	41½ in. ahead of rear drivers

Thus, if length of wheel-base is to govern, the Atlantic type steam locomotive is the best, and the American type electric, 10,003, should be the worst. If height of centre of gravity is to be the deciding factor, the Atlantic steam loco-

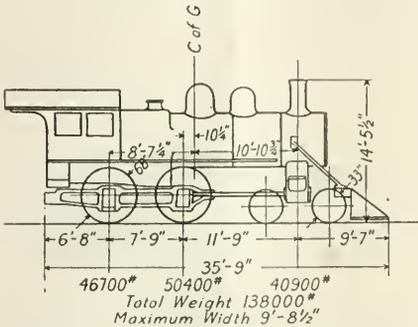


Fig. 1. American Type (4-4-0) Locomotive

type, that is, with two pair of driving wheels and a four-wheel truck (Fig. 5); and No. 028, a brand-new locomotive belonging to the New York, New Haven & Hartford, which consisted of two four-wheel trucks pivotally connected to the body which carried the draft attachments (Fig. 6).

The drives of Nos. 10,003 and 028 were very similar, consisting of a quill drive (type C).

Locomotive 10,003 was arranged for a.c. operation, which

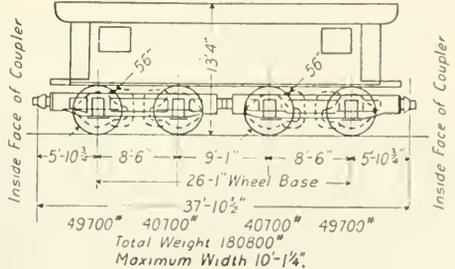


Fig. 3. Electric Locomotive No. 10,001, Geared Drive, Type B

motive is still the best, and the articulated quill-drive electric 10,002 the worst.

As the object of the trials was to determine stability at express speeds, very few of the runs were made at lower ones, but it is fair to say that with any type of locomotive, steam or electric, not much disturbance should be expected at low speed, consequently progressive speeds were selected up to the maximum speed capacities of the various locomotives.

## Results of Tests

The runs with the steam locomotives went off very smoothly. Typical records are shown at different speeds for each type (Figs. 7 and 8). The maximum speed for the 4-4-0 type was 83 miles per hour, and for the 4-4-2 type, 95 miles per hour. It is not to be understood that these are practical operating speeds.

When the electric locomotives were run the story was very different, as will be seen from the diagrams (Fig. 9). The record for the geared locomotive, 10,001 (type B), shows severe oscillation with either end leading, there being three

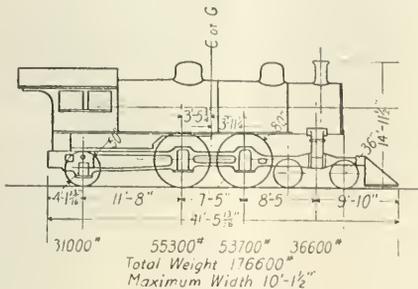


Fig. 2. Atlantic Type (4-4-2) Locomotive

necessitated provision for d.c. control operation, which was placed in a separate car that always accompanied the locomotive.

No. 028 was arranged with double control, a.c.-d.c., so

\*This is the second and concluding part of an abstract of a paper read before the Franklin Institute, Philadelphia. The previous article in the issue of November 19, page 987, described the methods used for testing the locomotive and discussed electric locomotive drives.

rather pronounced peaks at about the same space interval. The maximum depth of impressions would indicate a lateral severity about double that with steam locomotives. It is probable that had the ties been arranged to record impres-

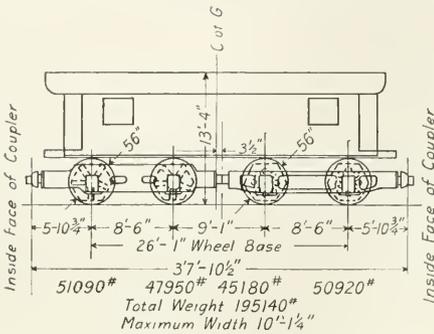


Fig. 4. Electric Locomotive No. 10,002, Quill Drive, Type C  
sions at each end, intermediate impacts would have been shown on the opposite rail.

With 10,002, articulated quill drive, the records both of

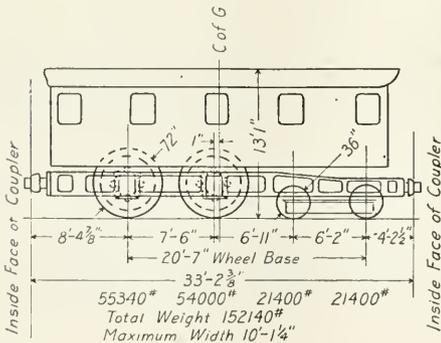


Fig. 5. Electric Locomotive No. 10,003, Quill Drive, Type C

depth of impressions and of the seismograph were decidedly the worst of all the locomotives under trial (Fig. 10). While runs were being made with this locomotive the tangent approach track began to spread, with results shown in Fig. 11.

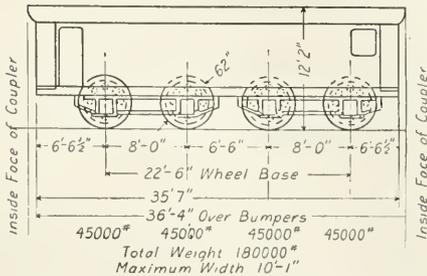


Fig. 6. Electric Locomotive No. 028, Quill Drive, Type C, with Pivoted Truck

The greatest spread was 7/8-in., which caused kinking of the rail and bending of the spikes as shown in Fig. 12. The same thing happened in varying degree where runs were made with different locomotives coupled together, but only when

locomotive 10,002 happened to be one of the combination. With the non-articulated locomotive, 028, the readings both of the impressions (Fig. 13) and of the seismograph showed a very much better performance, and so far as this set of tests went, the locomotive could not be considered bad. It was, however, tried only on the tangent track after the completion of the tests on the curve. The subsequent history of this type of locomotive in service showed that as wear accumulated the lateral oscillation became serious, so much so that the locomotives were changed by the addition of a third carrying axle to each truck, thus forming a non-

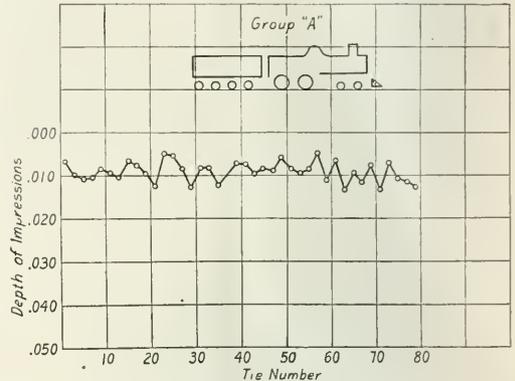


Fig. 7. Record of Run Made with American Type (4-4-0) Steam Locomotive at a Speed of 83.5 Miles Per Hour on Curve

symmetrical arrangement and at the same time providing a longer wheel-base. It is probable that the smoothness of the diagram for this locomotive was largely due to the absence of end play of the axles in their boxes.

The last of the electric locomotives, 10,003, was in fact

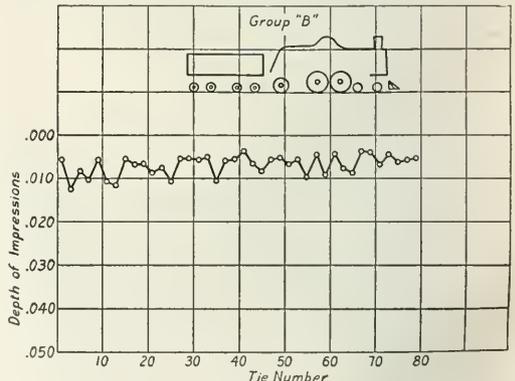


Fig. 8. Steam Locomotive, Atlantic Type (4-4-2), Speed 95.7 Miles Per Hour on Curve

an eight-wheel American-type locomotive, and the records on both curve and tangent at once put it in the class of the best steam locomotives (Fig. 14). As originally constructed the leading truck had free lateral motion, and an extensive set of runs in both directions showed that while the free swing was an advantage when the truck led, it was a disadvantage when it trailed, and that the best compromise was with truck rigid laterally.

These Franklinville tests concluded with runs of different

combinations of locomotives coupled together. Apparently when the locomotives were coupled, the number of impressions was increased without material increase in the depth.

It appeared that in all combinations, including the articu-

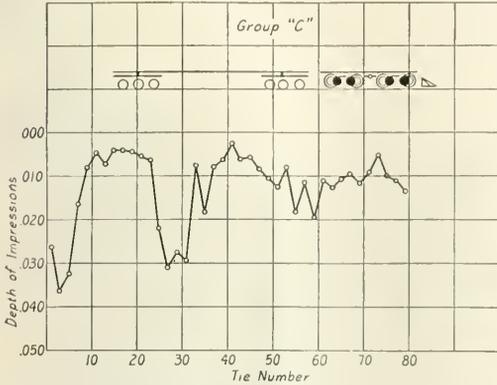


Fig. 9. Electric Geared Locomotive No. 10,001, Speed 71.5 Miles Per Hour on Curve

lated quill-drive locomotive 10,002, the riding of the companion locomotive was worse than when operated by itself.

The influence of the approach track had a very marked effect on the results. It was evident that for best results the recording track should have been very much longer to record the resonant type of oscillations from their origin through

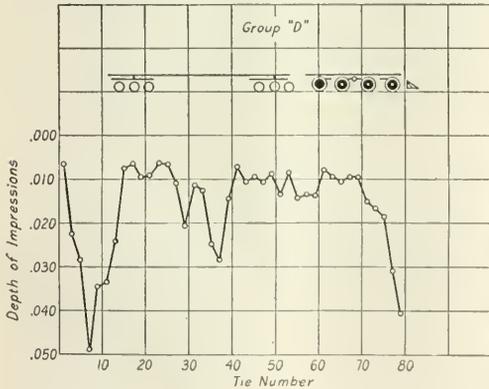


Fig. 10. Electric Locomotive No. 10,002, Speed 68.3 Miles Per Hour on Curve

their development to the final dampening. It was evident that ties should have been arranged to record on each end.

The severity of the impacts from the impressions measured statically is indicated by the following notes on rail pressures at speeds above 60 miles per hour:

GROUP A—STEAM LOCOMOTIVE  
No. 6034, Type D-16b (4-4-0)

Maximum readings of 6 runs, speeds between 60.07 and 83.2 M.P.H.  
At 60.07 M.P.H.—Impression .0135 in.—Pressure 7,250 lb.  
At 80.0 M.P.H.—Impression .0141 in.—Pressure 7,580 lb.  
Average—74.3 M.P.H.—Impression .0123 in.—Pressure 6,610 lb.

GROUP B—STEAM LOCOMOTIVE  
No. 6020, Type E-2 (4-4-2)

Maximum readings of 7 runs, speeds between 59.6 and 95.7 M.P.H.  
At 71.2 M.P.H.—Impression .0129 in.—Pressure 6,930 lb.  
At 80.8 M.P.H.—Impression .0159 in.—Pressure 6,550 lb.  
Average—74.4 M.P.H.—Impression .0123 in.—Pressure 6,500 lb.

GROUP C—ELECTRIC LOCOMOTIVE No. 10,001  
Forward, No. 2 End Ahead

Maximum readings of 6 runs, speeds between 61.1 and 71.3 M.P.H.  
At 71.3 M.P.H.—Impression .0272 in.—Pressure 14,620 lb.  
At 67.9 M.P.H.—Impression .0193 in.—Pressure 10,370 lb.  
Average—64.5 M.P.H.—Impression .0165 in.—Pressure 8,870 lb.

Reversed, No. 1 End Ahead

Maximum readings of 4 runs, speeds between 60.9 and 70.1 M.P.H.  
At 62 and 70.1 M.P.H.—Impression .0289 in.—Pressure 15,530 lb.  
At 69.7 M.P.H.—Impression .0298 in.—Pressure 16,490 lb.  
Average—65.7 M.P.H.—Impression .0267 in.—Pressure 14,350 lb.

GROUP D—ELECTRIC LOCOMOTIVE No. 10,002

Maximum readings of 4 runs, speeds between 60.8 and 68.1 M.P.H.  
At 62.8 M.P.H.—Impression .039 in.—Pressure 20,960 lb.



Fig. 11. Tangent Track Kinked by Electric Locomotive No. 10,002

At 66.9 M.P.H.—Impression .0311 in.—Pressure 16,720 lb.  
Average—64.4 M.P.H.—Impression .0291 in.—Pressure 15,640 lb.

GROUP E—ELECTRIC LOCOMOTIVE No. 10,003 (4-4-0)  
Forward, Bolster Free

Maximum readings of 8 runs, speeds between 60.8 and 88.3 M.P.H.  
At 63.3 M.P.H.—Impression .0123 in.—Pressure 6,610 lb.



Fig. 12. Spikes Bent as Result of Lateral Impact on Tangent Tracks

At 72.38 M.P.H.—Impression .0125 in.—Pressure 6,720 lb.  
Average—74.1 M.P.H.—Impression .0113 in.—Pressure 6,070 lb.

Forward, Bolster B1 ckel

Maximum reading of 6 runs, speeds between 60.0 and 83.9 M.P.H.  
At 75.1 M.P.H.—Impression .0179 in.—Pressure 6,620 lb.  
At 83.9 M.P.H.—Impression .0193 in.—Pressure 10,370 lb.  
Average—73.5 M.P.H.—Impression .0149 in.—Pressure 8,010 lb.

Reversed, Bolster B1 ckel

Maximum readings of 6 runs, speeds between 60.0 and 83.9 M.P.H.  
At 65.8 and 70 M.P.H.—Impression .0115 in.—Pressure 6,180 lb.  
At 68.2 M.P.H.—Impression .0117 in.—Pressure 6,290 lb.  
Average—74.04 M.P.H.—Impression .0106 in.—Pressure 5,700 lb.

Reversed, Bolster Free

Maximum readings of 5 runs, speeds between 60.4 and 77.5 M.P.H.  
At 68.9 M.P.H.—Impression .0289 in.—Pressure 15,530 lb.  
At 70.2 M.P.H.—Impression .0281 in.—Pressure 15,100 lb.  
Average—68.9 M.P.H.—Impression .0236 in.—Pressure 12,700 lb.

GROUP F—NEW HAVEN ELECTRIC LOCOMOTIVE No. 028

Maximum readings of 9 runs, speeds between 60 and 88.3 M.P.H.  
 At 70.7 and 72.6 M.P.H.—Impression .0197 in.—Pressure 16,370 lb.  
 At 70.8 M.P.H.—Impression .0180 in.—Pressure 10,000 lb.  
 Average—71.7 M.P.H.—Impression .0149 in.—Pressure 9,000 lb.

The outstanding fact seemed to be the superior performance of the locomotive with the non-symmetrical wheel arrangement over that with the double four-wheel motor-driven trucks. The articulated truck arrangement was undoubtedly the worst of the combinations, but how much was due to low centre of gravity and how much to the articulation setting up a snaking motion was not definitely shown.

It is to be noted that one of the double-truck motor-driven locomotives and one with two driven axles and leading truck had the same height of centre of gravity, and the latter arrangement was decidedly the better. The comparison is the more interesting because in both of these locomotives the same quill-drive type is used.

The action as the result of the tests was the condemnation

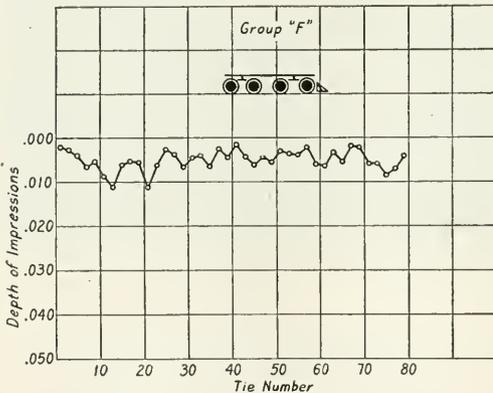


Fig. 13. Record of Impressions with Electric Locomotive No. 028 on Tangent, Speed 88.3 Miles Per Hour

of both types of articulated electric locomotives and the preparation of an entirely new design.

The new design consisted of two eight-wheel American-type locomotives coupled back to back, each driven by one motor in the cab and coupled by cranks and rods to a jack-shaft placed in the horizontal axis of the driving wheels, and coupled to them by rods, as in this case of steam locomotives (Fig. 15). In this design were embodied not only the non-symmetrical wheel spacing of each semi-unit, but also the elevation of the centre of gravity of the spring-borne portion. This design was completed and locomotives built and tested in time to start the operation of the New York

terminal in 1910, and the locomotives have satisfactorily performed that service ever since.

It is not claimed that the question of stability is fully understood. The selection of available wheel arrangements was very limited, but prompt decision was imperative. It is felt that this investigation should be considered as only a starting point for a much more extensive one, which should

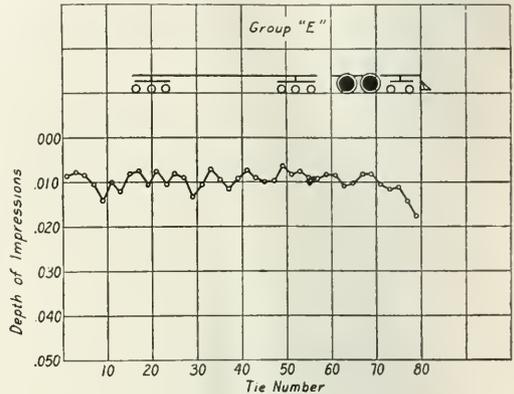


Fig. 14. Record of Impressions with Electric Locomotive No. 10,003, Speed 82.6 Miles Per Hour

determine the most desirable arrangements of wheels, of height of centre of gravity, and method of motor drive.

So far as this particular investigation was concerned, the question of electric system was not involved, but, of course, a full discussion of the characteristics of steam and electric locomotives cannot ignore such questions.

Since this set of tests with single-ended ties, other series have been made in which the ties were arranged to record at each end. More ties were used so as to lengthen the test track. As for the equipment, the test included different methods of coupling the semi-units or electric locomotives; also studying the effect of depressions purposely placed in the approach track, the effect of different amounts of end clearance in the axle boxes, variation in the amount of counterbalancing in steam locomotives, etc. The whole accumulation of data is too voluminous to be included in one paper. Although considerable practical information of value has resulted from the various trials, there is much work yet to be done before the questions of stability are really understood. It is to be regretted that the selection of electric locomotives did not include greater variations in the wheel-base, the method of articulation and height of centre of gravity, but it is believed that the work already done is a very good starting point for future investigations.

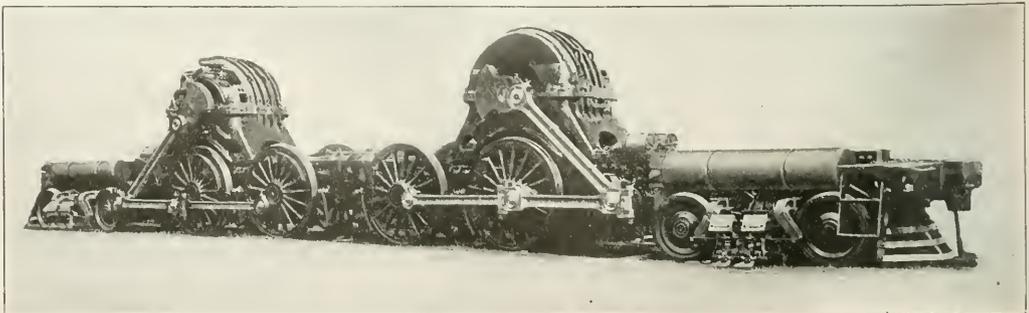


Fig. 15. Chassis of Electric Locomotive Finally Adopted

# General News Department

The Chicago & North Western will charge the dependents of employees half the regular suburban fare, the new ruling becoming effective January 1. Dependents of employees heretofore have been given passes.

A deficiency appropriation has been reported to the House of Representatives which provides for an additional appropriation of \$300,181 for the Interstate Commerce Commission to enable it to carry out the additional functions imposed by the transportation act.

John Barry, identified as one of the principals in the Dearborn station mail robbery at Chicago, and believed to have been implicated in the hold-up of an Illinois Central train at Paxton, Ill., on November 7, has been taken into custody at Chicago and his capture, it is believed, will clear up many of the recent mail robberies in the middle west.

The Signal Section of the American Railway Association, according to an announcement of the Committee of Directors, is to hold its annual meeting next year on June 14, 15 and 16, at Monmouth Hotel, Spring Lake, New Jersey. Spring Lake is on the New York & Long Branch, 10 miles south of Long Branch and 55 miles from New York City.

## Hearings on Bill to Abolish Cost of

### Acquiring Land in Valuation Estimates

The House committee on interstate and foreign commerce has been holding hearings on a bill introduced by Representative Sweet to amend the valuation law to strike out the requirement that the commission report the cost of acquisition of land. Testimony has been given by representatives of the carriers and by John E. Benton, representing the state commissions. The hearings were postponed on November 22 until the next session of Congress.

## New Shop Craft Rules To Be

### Announced By Labor Board

New rules regarding the working conditions of shop employees are to be announced by the Railroad Labor Board in time to be placed in effect before December 1, according to a recent announcement made at the Board's headquarters at Chicago. The inclusion of these new rules in the agreements formed between the various carriers and their shop employees will end the long controversy over the shop crafts national agreement, all of the points in dispute having been disposed of by this and previous rulings of the Board.

## Five Santa Fe Officers Killed

In the derailment of a motor inspection car near Wickenburg, Ariz., on November 22, W. H. Oliver, engineer of the Coast Lines Grand Division of the Atchison, Topeka & Santa Fe, with four division officers was killed, and several persons were injured. The car is said to have been filled to its capacity of fourteen persons. The dead, besides Mr. Oliver, are: William Matthie, division superintendent; H. C. Storey, assistant division superintendent; William Bowman, roadmaster and J. A. Jaeger, assistant division engineer. The accident happened, according to those on board the car, when an axle broke at a curve. The car plunged down an eight-foot embankment and was overturned.

## Bangor & Aroostook Leases Car Shops

The car shop of the Bangor & Aroostook at Houlton, Me., which normally employs between 30 and 40 men, has been leased to A. E. Astle, Houlton, Me., who will make repairs to cars on a contract basis. This action was taken because output had been unsatisfactory and the size of the

shops did not warrant additional expense for supervision. The railroad estimates that the new arrangement will effect a saving to the company in labor costs of approximately 10 per cent.

## Urges Strike Referendum Among

### Women in Employees' Families

Following an address before the Ohio Newspaper Women's Association at the Hotel Sinton, Cincinnati, Ohio, on November 13, by Allen Rogers, publicity director of the Cleveland, Cincinnati, Chicago & St. Louis, the association passed a resolution directing the secretary of the organization to write to the railroad brotherhoods, the Railroad Labor Board and the railway executives as well as other bodies, presenting the plea that when strike questions arise the strike vote referendum should include the women members of the families of the union men involved, as well as the workers themselves.

## North Western Shop Employees

### Agree to Five-Day Week

The shop employees of the Chicago & North Western have agreed with officers of that carrier to accept a lay-off of one day each week in order to avoid a reduction in forces made necessary, according to the management, because of light business. The men were informed recently that a 10 per cent cut in the shop forces would be necessary and the men were offered an opportunity to choose between retaining a full force on a five-day per week basis or retaining 90 per cent of the force on a six-day per week basis. The employees voted to accept the five-day week.

## Hawkinsville & Florida Southern Discontinues

The Hawkinsville & Florida Southern Railway, which has been operated by R. B. Pegram, receiver, has discontinued business, passenger trains having been taken off on November 15, and freight trains on November 22. This discontinuance of operation was authorized by the Interstate Commerce Commission, as heretofore noted, and also by the Superior Court of Bibb County, Georgia. The line extends from Hawkinsville, Ga., southward to Camilla, Ga., 95 miles. Seven of the intermediate towns (as well as the terminus) have other railroad connections, as follows: Pope City, 18 miles from Hawkinsville; Pitts, 25 miles; Double Run, 31 miles; Worth, 42 miles; Ashburn, 46 miles; Sylvester, 63 miles and Bridgeboro, 76 miles.

## Clearing of Labor Board's Docket in Sight

The following announcement was made by the Railroad Labor Board on November 21:

"The Railroad Labor Board has disposed of exactly six times as many cases in the last few months as it did in the first period of its existence. The Board was organized in April, 1920. It disposed of 100 cases from April 15 to November 30, 1920. In the same period this year—April 15 to November 15, 1921—it disposed of exactly 600 cases. The round numbers, by an unusual coincidence, represent the actual number of cases carried through to a final decision.

"The increased number of cases disposed of indicates not only the greater rapidity of the Board's work but also how its volume has increased.

"With the recent disposal of 200 cases and the prospect that the new adjustment boards will handle a large amount of the grievance cases which have heretofore been brought before the Board, the clearing of the Board's docket may be said to be in sight."

Operating Statistics of Large Steam Roads—Selected Items for the Month of September, 1921,

Region, road and year	Average miles of road operated	Locomotive-miles		Car-miles		Ton-miles (thousands)		Locomotives on line daily					
		Train-miles	Principal and helper		Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Service-able	Un-service-able	Per cent un-service-able	Stored	
			Light	Heavy									
<b>New England Region:</b>													
Boston & Albany.....	1921	394	222,944	243,619	31,104	4,355	68.8	217,599	87,374	133	28	18.8	...
1920	997	307,910	319,929	31,546	5,269	68.1	292,210	132,723	121	31	25.6	...	
Boston & Maine.....	1921	2,469	509,592	568,885	48,773	11,634	73.0	570,463	235,666	336	123	26.8	42
1920	2,469	745,082	827,275	86,385	15,105	71.0	539,036	384,579	374	96	20.5	1	
N. Y., N. H. & H.....	1921	1,960	409,359	444,155	29,366	10,322	71.4	567,400	215,283	75	19.6	44	...
1920	1,965	538,570	560,115	40,050	11,751	74.7	610,438	290,804	307	81	19.7	...	
<b>Great Lakes Region:</b>													
Delaware & Hudson.....	1921	880	316,197	415,561	31,014	8,213	64.3	525,997	261,416	275	45	12.3	121
1920	881	416,610	593,593	39,519	10,859	67.2	738,833	392,054	258	39	14.7	19	
Del., Lack. & Western.....	1921	995	508,856	629,732	119,170	15,688	68.7	854,488	393,990	298	56	15.8	45
1920	997	561,967	684,343	131,898	17,263	70.2	984,036	489,639	313	79	18.2	...	
Erie (inc. Chic. & Erie).....	1920	2,259	1,019,253	1,156,496	65,233	33,911	65.1	2,001,461	889,240	560	178	24.1	35
1921	2,259	1,147,179	1,300,091	47,727	36,521	64.2	2,237,151	1,028,636	578	113	16.4	8	
Lehigh Valley.....	1921	1,430	582,490	640,254	61,403	16,635	63.9	1,009,738	471,334	423	120	22.0	121
1920	1,429	594,646	662,107	63,213	17,014	65.9	1,053,982	533,551	413	182	30.6	92	
Michigan Central.....	1921	1,929	418,093	452,525	34,532	13,846	66.9	727,114	329,752	325	87	27.1	101
1920	1,826	572,872	598,611	20,162	18,227	73.8	981,668	456,503	327	83	20.2	...	
New York Central.....	1921	5,655	1,679,163	1,860,340	134,651	60,063	55.1	3,406,024	1,461,923	1,015	605	37.4	233
1920	5,646	2,136,566	2,461,979	186,860	77,057	62.5	4,759,069	2,253,459	(1)	(1)	(1)	(1)	
N. Y., Chic. & St. L.....	1921	572	328,555	359,944	8,802	10,119	68.9	523,418	203,499	118	49	27.3	46
1920	573	418,093	452,525	8,811	12,033	75.0	625,800	296,942	115	46	28.5	13	
Perce Marquette.....	1921	2,196	350,212	360,485	6,652	8,788	67.8	488,415	220,577	162	42	20.5	12
1920	2,208	373,240	380,993	1,119	9,285	74.7	502,760	254,437	159	39	19.7	...	
Pitts. & Lake Erie.....	1921	228	74,487	78,523	6,066	2,547	64.6	176,853	61,283	54	32	37.1	13
1920	229	664,033	171,042	8,903	6,474	68.1	439,878	272,678	66	13	16.8	...	
Wabash.....	1921	2,418	574,617	640,735	8,797	16,307	71.0	855,519	370,177	280	67	19.4	44
1920	2,418	641,881	659,697	8,497	18,424	77.0	973,094	474,144	268	68	20.2	6	
<b>Ohio-Indiana-Alley-hay region:</b>													
Baltimore & Ohio.....	1921	5,185	1,610,416	1,728,245	131,716	41,319	64.2	2,597,992	1,287,832	1,103	368	26.5	222
1920	5,154	2,115,904	2,368,405	116,071	55,924	65.8	3,810,866	2,050,026	1,029	290	15.3	16	
Central of N. J.....	1921	679	227,477	303,625	39,842	6,142	61.0	389,338	195,970	204	56	17.6	14
1920	679	332,240	356,857	34,101	6,785	65.0	437,753	224,564	223	46	21.0	...	
Chicago & Eastern Ill.....	1921	1,131	234,017	237,042	3,721	5,659	62.4	346,611	173,221	125	48	27.8	42
1920	1,131	308,773	320,237	5,757	7,663	67.5	471,682	232,383	140	52	27.3	1	
C., C., C. & St. L.....	1921	2,382	628,903	651,439	3,000	17,513	60.2	1,107,625	514,993	302	143	32.2	33
1920	2,394	748,866	784,493	4,288	21,287	63.7	1,350,868	634,010	298	71	19.2	...	
Elgin, Joliet & Eastern.....	1921	837	89,389	97,057	5,044	2,737	65.7	203,086	109,370	99	9	8.2	40
1920	836	159,837	177,699	13,132	4,911	76.2	352,744	196,137	93	13	12.5	...	
Long Island.....	1921	395	48,480	50,811	8,211	533	60.2	126,787	59,499	36	11	23.6	1
1920	395	43,265	56,349	12,980	508	44.2	61,008	10,390	38	9	9.1	19	
Pennsylvania System.....	1921	10,877	3,898,149	4,230,621	306,502	102,249	64.6	6,790,417	3,405,133	2,628	851	24.5	691
1920	10,839	5,149,256	5,704,540	445,916	134,889	67.3	8,998,624	4,897,584	2,218	833	27.3	13	
Phila. & Reading.....	1921	1,120	513,232	574,749	66,531	12,337	63.3	848,505	442,325	374	79	21.7	163
1920	1,119	653,603	760,595	106,151	15,790	63.6	1,086,026	598,308	290	91	23.9	7	
<b>Peachblow Region:</b>													
Chesapeake & Ohio.....	1921	2,548	633,978	697,906	20,164	17,846	57.1	1,396,955	745,595	458	105	18.7	124
1920	2,520	887,009	974,766	26,964	26,960	59.3	1,053,354	1,120,448	407	103	23.7	...	
Norfolk & Western.....	1921	462	127,835	142,266	27,787	4,974	59.7	133,688	66,545	63	12	13.0	103
1920	2,189	861,272	1,107,099	43,329	24,307	61.9	1,867,919	1,038,750	501	179	26.3	56	
<b>Southern Region:</b>													
Atlantic Coast Line.....	1921	4,886	478,893	480,905	6,127	10,321	68.3	525,630	212,076	297	123	29.2	72
1920	4,888	561,291	564,003	8,787	12,342	71.4	639,654	284,943	302	137	31.2	...	
Central of Georgia.....	1921	1,968	204,668	215,531	2,304	4,347	73.7	220,072	98,136	115	20	14.5	25
1920	1,913	262,668	264,709	4,925	5,011	73.1	266,085	129,026	108	19	14.6	...	
I. C. (inc. Y. & M. V.).....	1921	6,151	1,520,231	1,527,024	31,219	41,849	68.8	2,544,299	1,156,839	717	94	11.6	11
1920	6,151	1,936,475	1,942,068	35,514	49,342	65.3	3,160,256	1,515,198	681	109	13.8	15	
Louisville & Nashville.....	1921	1,090	1,457,063	1,463,633	6,573	15,978	62.1	1,678,927	800,266	588	96	16.8	37
1920	5,024	1,597,333	1,735,825	60,177	27,847	65.3	1,759,322	896,425	542	113	17.2	...	
Seaboard Air Line.....	1921	3,537	360,279	371,693	7,211	7,796	75.3	375,768	161,669	170	91	34.9	4
1920	3,537	422,531	429,357	10,253	9,229	74.3	485,173	226,293	171	90	34.5	2	
Southern Ry.....	1921	6,942	1,165,697	1,186,721	27,886	25,965	71.1	1,315,603	550,426	897	209	20.3	64
1920	6,942	1,513,312	1,543,218	41,849	30,897	65.9	1,733,636	764,814	898	210	19.0	1	
<b>Northwestern Region:</b>													
C. & N. W.....	1921	8,342	1,606,528	1,658,635	24,916	34,360	62.1	2,005,483	820,553	790	281	26.2	28
1920	8,323	1,877,307	1,916,279	24,148	41,962	66.0	2,451,760	1,230,583	698	237	25.3	...	
C., M. & St. P.....	1921	1,692	1,605,958	1,649,643	63,233	38,920	62.5	1,822,958	882,629	597	123	20.5	132
1920	10,626	1,881,448	1,898,827	86,663	46,863	67.6	2,573,126	1,201,832	676	280	29.3	2	
C., St. P., M. & O.....	1921	1,276	325,402	341,803	14,268	6,373	73.3	334,575	146,995	151	61	28.9	18
1920	1,276	336,630	353,054	15,718	6,767	78.1	344,603	162,392	160	46	22.0	19	
Great Northern.....	1921	8,163	936,678	960,266	31,793	26,134	63.4	1,577,667	745,349	590	198	25.1	166
1920	8,163	1,421,105	1,481,148	40,022	32,660	61.6	2,022,443	980,363	576	191	26.6	33	
M., St. P. & S. Ste. M.....	1921	4,359	495,685	527,098	8,101	11,298	69.0	580,968	267,296	335	59	14.5	10
1920	4,227	577,480	583,054	6,930	12,806	70.1	690,385	331,038	345	75	18.2	26	
Northern Pacific.....	1921	6,408	908,227	954,811	60,223	25,395	64.2	1,490,234	657,601	567	160	22.9	12
1920	6,411	1,054,622	1,111,050	73,033	32,620	65.5	1,650,201	793,260	513	132	19.0	...	
Ore.-Wash. R. R. & Nav.....	1921	2,205	238,000	241,917	34,203	5,754	70.0	347,282	172,763	126	31	19.9	...
1920	2,146	249,837	277,554	33,266	6,114	72.3	343,103	172,047	121	37	23.5	...	
<b>Central Western Region:</b>													
Atch., Top. & Santa Fe.....	1921	9,762	1,739,406	1,858,609	94,273	47,214	63.2	2,410,451	979,648	762	210	21.6	82
1920	9,762	1,764,119	1,849,968	67,796	47,013	62.0	2,471,597	1,062,832	885	243	26.3	...	
Chicago & Alton.....	1921	1,010	359,557	366,791	3,208	7,864	62.5	470,827	215,337				

Compared with September, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Cars on line daily			Per cent un-service-able	Gross tons per train, excluding locomotive and tender			Net tons per train	Net tons per car	Net ton miles per car-day	Car-miles per car-day	Net ton miles of road and tender	Pounds of coal per 1,000 gross tons, including locomotive and tender	Passenger ton-miles	Passenger ton-car-miles
	Home	Foreign	Total		Stored	Per cent un-service-able	Per cent un-service-able								
<b>New England Region:</b>															
<b>Boston &amp; Albany.....</b>	1921	3,197	4,088	7,285	7.9	578	976	392	20.1	400	28.9	7,233	206	302,876	2,092,453
1920	703	7,913	8,616	4.3	.....	949	431	25.2	513	29.9	11,291	206	324,479	2,095,855	
<b>Boston &amp; Maine.....</b>	1921	17,724	13,096	30,810	21.0	1,724	1,119	462	20.3	255	17.2	3,182	144	898,436	5,134,820
1920	7,839	28,565	36,404	9.3	.....	1,126	516	25.5	352	19.5	5,192	.....	961,785	5,671,780	
<b>N. Y., N. H. &amp; H.....</b>	1921	24,441	14,741	39,182	25.9	1,480	1,036	527	22.2	366	22.2	6,671	181	1,680,747	10,000,000
1920	9,713	33,516	43,229	9.4	.....	1,133	540	24.7	224	12.1	4,934	186	1,226,683	7,961,442	
<b>Great Lakes Region:</b>															
<b>Delaware &amp; Hudson.....</b>	1921	10,521	5,239	15,760	13.5	324	1,664	877	31.8	553	27.0	9,998	182	197,626	1,113,353
1920	4,350	13,073	18,423	6.3	.....	749	941	36.1	291	14.8	14,840	18	20,835	1,168,098	
<b>Del., Lack. &amp; Western.....</b>	1921	17,459	8,362	25,821	15.7	623	1,679	723	25.1	507	29.5	13,174	164	501,387	3,796,663
1920	5,316	20,382	25,698	5.0	.....	1,751	871	28.4	365	31.9	16,375	.....	502,944	3,799,254	
<b>Erie (inc. Chic. &amp; Erie).....</b>	1921	37,013	16,591	53,604	21.4	4,484	1,964	872	26.2	653	31.9	13,123	137	679,427	5,093,716
1920	9,627	47,793	57,410	6.4	.....	1,171	897	28.2	597	33.0	15,440	144	764,394	5,366,496	
<b>Lehigh Valley.....</b>	1921	30,669	8,686	39,355	14.2	1,918	1,733	809	29.7	395	22.0	10,984	155	354,474	2,801,360
1920	10,265	26,372	36,637	9.4	.....	1,773	897	31.4	485	23.3	12,185	176	378,587	3,053,689	
<b>Michigan Central.....</b>	1921	18,772	14,269	33,041	22.4	1,65	1,640	643	20.6	288	20.9	5,207	119	589,613	5,694,157
1920	4,652	26,978	31,630	7.5	.....	1,714	927	25.0	481	27.1	8,365	.....	625,309	5,784,565	
<b>New York Central.....</b>	1921	89,974	49,286	130,260	20.9	6,283	2,028	871	24.3	374	23.6	6,617	116	2,570,706	20,556,322
1920	31,603	124,504	156,167	7.4	.....	2,227	1,055	29.2	481	26.3	13,303	.....	2,626,590	21,297,777	
<b>N. Y., Chic. &amp; St. L.....</b>	1921	4,434	4,681	9,115	16.0	642	1,593	6.0	19.9	745	54.8	11,873	101	86,904	556,694
1920	1,603	10,461	12,064	7.5	.....	1,497	710	24.7	820	44.5	17,286	.....	86,266	589,151	
<b>Pere Marquette.....</b>	1921	11,087	12,051	23,138	18.2	200	1,395	630	25.1	318	18.3	3,348	134	319,448	1,659,013
1920	4,410	19,868	24,278	6.6	.....	1,717	1,082	36.7	17.9	.....	.....	.....	368,067	1,412,312	
<b>Pitts. &amp; Lake Erie.....</b>	1921	19,521	7,913	27,434	38.6	1,199	2,374	1,360	39.8	123	4.8	14,813	85	110,842	551,629
1920	3,709	21,596	25,305	12.5	.....	2,801	1,662	42.1	359	12.5	40,766	.....	112,273	599,976	
<b>Wabash.....</b>	1921	12,221	11,348	23,569	9.2	618	1,489	644	27.7	524	32.5	5,104	148	512,784	2,841,856
1920	5,362	22,466	27,828	7.8	.....	1,516	739	25.7	568	28.7	6,537	160	557,582	3,013,339	
<b>Ohio-Indiana-Allegheny region:</b>															
<b>Baltimore &amp; Ohio.....</b>	1921	67,695	32,097	99,792	11.7	3,471	1,613	800	31.2	430	21.5	8,290	176	1,382,663	8,971,358
1920	26,145	84,434	110,579	6.5	.....	1,801	969	36.7	618	25.6	13,260	.....	1,354,551	8,953,350	
<b>Central of N. J.....</b>	1921	19,427	8,075	27,502	18.3	1,198	1,429	719	31.9	238	12.8	6,627	164	362,495	1,822,833
1920	6,531	17,997	24,528	14.0	.....	1,348	676	33.5	305	14.2	11,929	.....	368,067	1,854,835	
<b>Chicago &amp; Eastern Ill.....</b>	1921	14,238	3,425	17,663	13.0	2,000	1,481	740	30.6	327	17.1	5,105	153	216,957	1,450,218
1920	5,356	9,638	14,994	14.2	.....	1,528	807	32.5	554	25.4	7,343	.....	233,269	1,494,969	
<b>C., C. &amp; St. L.....</b>	1921	16,279	16,601	32,880	11.3	262	1,713	819	29.4	522	29.9	7,206	128	683,329	4,278,836
1920	8,974	49,286	58,260	6.6	.....	1,842	1,504	38.9	258	18.0	8,828	.....	768,116	4,830,465	
<b>Elgin, Joliet &amp; Eastern.....</b>	1921	10,398	2,951	13,349	7.7	938	2,272	1,224	40.0	273	10.4	3,338	.....	.....	.....
1920	8,688	5,434	14,122	7.7	.....	2,204	1,229	39.8	464	16.6	7,856	.....	.....	.....	
<b>Long Island.....</b>	1921	1,997	3,576	5,573	4.5	166	718	281	22.2	74	5.5	10,899	315	222,991	1,341,050
1920	1,997	4,877	6,874	6.0	.....	563	200	20.5	64	4.8	878	.....	224,768	1,396,443	
<b>Pennsylvania System.....</b>	1921	215,613	69,040	284,653	15.4	50,417	1,742	873	33.3	399	18.0	10,435	135	5,432,259	27,415,229
1920	104,922	191,379	296,301	3.3	.....	1,748	951	36.3	551	22.5	15,062	.....	5,476,788	37,445,414	
<b>Phila. &amp; Reading.....</b>	1921	26,228	11,387	37,615	5.8	7,273	1,653	863	34.5	393	17.8	11,387	159	490,351	2,249,371
1920	7,927	31,798	39,725	5.2	.....	1,662	915	37.9	502	20.8	17,819	.....	518,355	2,445,922	
<b>Pennsylvania Region:</b>															
<b>Chesapeake &amp; Ohio.....</b>	1921	39,774	10,549	50,323	10.3	800	2,204	1,176	41.8	494	20.6	9,553	125	436,313	2,503,426
1920	14,184	26,630	40,814	10.6	.....	2,315	1,263	41.6	915	37.2	14,821	.....	432,858	2,498,432	
<b>Norfolk &amp; Western.....</b>	1921	33,616	5,784	39,400	9.5	3,850	2,062	1,115	40.5	626	25.9	11,102	163	399,796	2,634,346
1920	16,155	21,331	37,486	6.9	.....	2,169	1,206	42.7	924	34.9	15,820	.....	399,631	2,820,061	
<b>Southern Region:</b>															
<b>Atlantic Coast Line.....</b>	1921	21,671	6,400	28,071	23.6	.....	1,104	445	20.2	252	18.3	1,446	132	672,594	3,980,392
1920	7,420	17,642	25,062	10.9	.....	1,140	538	23.1	379	23.0	1,943	.....	717,256	4,427,329	
<b>Central of Georgia.....</b>	1921	4,369	3,167	7,536	14.3	.....	1,075	479	21.6	344	27.3	1,714	151	303,967	1,447,330
1920	1,640	5,400	7,040	4.2	.....	1,013	491	27.7	505	26.9	3,339	.....	232,849	1,482,770	
<b>I. C. (inc. Y. &amp; M. V.).....</b>	1921	42,759	20,083	62,842	11.7	2,980	1,674	771	27.6	614	33.7	6,269	126	1,397,822	8,008,778
1920	13,416	44,146	57,562	5.1	.....	1,632	782	20.7	877	43.8	8,210	.....	1,368,595	8,308,775	
<b>Louisville &amp; Nashville.....</b>	1921	39,556	18,594	58,150	28.2	91	1,145	516	30.9	481	25.5	5,313	158	911,880	5,348,161
1920	16,441	31,165	47,606	11.2	71	1,101	535	31.8	626	31.1	5,882	.....	888,034	5,312,895	
<b>Seaboard Air Line.....</b>	1921	11,943	6,907	18,850	18.0	.....	1,046	447	20.7	288	18.0	2,888	.....	3,009,999	1,800,000
1920	4,126	13,192	17,318	10.1	.....	1,148	536	24.5	436	23.9	2,132	175	539,997	2,922,414	
<b>Southern Ry.....</b>	1921	38,512	19,730	58,242	13.1	1,108	1,129	481	21.6	321	20.9	2,691	197	1,283,469	7,651,453
1920	15,861	40,039	55,900	3.9	.....	1,146	505	24.8	456	28.0	3,673	.....	1,433,477	9,096,490	
<b>Northwestern Region:</b>															
<b>C. &amp; N. W.....</b>	1921	47,977	26,601	74,578	9.3	.....	1,248	511	23.9	367	24.7	3,279	160	1,600,517	10,475,580
1920	29,494	52,072	81,566	7.9	.....	1,306	650	29.1	409	26.0	4,889	.....	1,694,979	10,996,437	
<b>C., M. &amp; St. P.....</b>	1921	48,640	27,915	76,555	17.9	1,555	1,378	612	25.4	428	26.9	2,980	152	1,492,184	9,496,435
1920	21,740	43,900	65,640	7.4	.....	1,403	616	30.6	411	35.2	3,770	.....	1,403,289	9,524,748	
<b>C., St. P., M. &amp; O.....</b>	1921	4,079	12,293	16,372	13.3	942	1,028	482	23.2	299	18.0	3,838	157	3,000,000	18,000,000
1920	2,515	10,014	12,529	10.6	.....	1,024	482	24.0							

### Seven Per Cent of Nation's Workers Engaged in Transportation

The Department of the Census has issued a summary of preliminary occupation statistics for the United States for 1920, which shows 3,066,305 persons in the United States as gainfully occupied in transportation industries or 7.4 per cent of the total persons gainfully occupied, of which 2,852,043 were males, or 8.6 per cent of the males gainfully occupied. The number of females engaged in transportation was 214,262, or 2½ per cent of the gainfully occupied females. The number of females occupied in the various transportation industries had increased 106,596 in 1910.

### Reopening of West Albany Shops

The New York Central has leased its repair shops at East Buffalo and at Toledo, as noted last week. No action has been taken toward opening the shops at Collingwood, Ohio.

The company has this week reopened the passenger car shops at West Albany, N. Y., a meeting of 616 employees having voted almost unanimously to accept the proposition of the company to resume work on a piece-work basis. These men evidently are convinced that they will do as well working directly for the company, or better, than if they were to go into the employ of a contractor. The employees have established a committee which is empowered to conduct any necessary negotiations with the superintendent of motive power.

It is understood that the piece-work rates will average about 25 per cent more than was paid, at piece-work rates, for similar work in 1917. These shops have been closed about 10 months.

### The Santa Fe's Safety Record

The Safety Department of the Atchison, Topeka & Santa Fe reported on October 31 that 35 men have been killed and 7,109 injured in the various departments of the system during the first nine months of this year. If the monthly average is maintained for the last quarter of this year the total killed will be 47, a marked decrease from the previous year regardless of the reduction in forces of last summer, for during 1920 66 were killed and 9,792 injured. The bulletin, in discussing the figures, says: "Aren't you willing to agree that it would be a wonderful thing if we can keep our 1921 total at not over 40? Is there anything in the world you wouldn't be willing to do to show a net saving of 26 lives under our best previous year? Are you going ahead doing things yourself and seeing your partner doing things you know are against rules and are not to be done, or are you going to stop both?"

### Pennsylvania Veterans

The Pennsylvania System Veteran Employees' Association, General Office, Philadelphia, organized in February last, with a membership of 1,335 officers and employees located in the General Office, Philadelphia, who have been in the employ of the road 21 years or more, held its first annual banquet at the Bellevue Stratford Hotel, Philadelphia, on Thursday evening November 17. Among those present were the president, vice-presidents and a large number of other officers of the Pennsylvania System, all of whom are members of the association. There were also representatives from upwards of 50 veteran employees' associations of the various divisions throughout the Pennsylvania system.

Addresses were made by Edward W. Bok, of Philadelphia, Elisha Lee, vice-president of the Pennsylvania, and James C. Rogers, president of the association. Charles Hanson Towne, of New York City, read a poem, written by himself for this occasion.

### Long, Runs of Passenger Locomotives

on the M. K. & T.

What is believed to be the longest regularly assigned run in the United States for steam passenger locomotives was inaugurated by the Missouri, Kansas & Texas on November 6, as a result of 11 months' experience in operating its oil burning locomotives in through runs of 400 miles each between Denison

and San Antonio, Tex. Oil fuel having recently been adopted on the line between Denison, Tex., and Parsons, Kan., the plan has been adopted of operating trains No. 5 and No. 6, two of the heaviest on the line, with a single locomotive each way between San Antonio and Parsons, a distance of 678 miles. These trains regularly handle from 10 to 12 cars and frequently are required to handle extra cars. They have been operated on time since the establishment of the long runs. Formerly, the locomotives were changed on these trains at Denison, Tex., and five locomotives were required to handle the runs. Under these conditions, the locomotives made a daily average of 266 miles each. Under the present plan, three locomotives are required to handle these runs, each making a daily average of 452 miles. Proper care of the locomotives at the terminals is considered the most important factor in insuring the success of the long runs, and in this case each locomotive has a minimum of 12 hours time at each terminal. The locomotives are required to take on fuel only once en route.

### Railroad Returns for September

The Interstate Commerce Commission's summary of returns for September for 200 Class 1 roads is as shown in the table. The Detroit, Toledo & Ironton is not included, its report not having been received.

	GROSS AND NET RECEIPTS FOR SEPTEMBER AND NINE MONTHS		September	
	1921	1920	1921	1920
Average number of miles operated.	234,938.36	234,685.81	234,818.11	234,220.55
Revenues:				
Freight .....	\$354,052,825	\$438,882,228	\$2,887,125,811	\$3,019,834,654
Passenger .....	\$100,679,514	\$129,857,710	\$893,592,448	\$951,907,779
Mail .....	7,370,281	7,888,630	71,198,953	125,545,910
Express .....	10,417,319	11,744,382	70,510,865	115,533,520
All other transportation .....	14,687,655	16,339,330	120,824,477	112,344,672
Incidental .....	9,952,196	13,734,386	89,597,615	111,526,712
Joint facility—Cr.	639,116	694,843	5,759,157	5,723,553
Joint facility—Dr.	144,053	215,820	1,254,664	1,744,253
Railway operating revenues	497,654,853	618,925,580	4,137,354,662	4,440,992,579
Expenses:				
Maintenance of way and structures .....	72,556,272	94,571,896	579,275,431	787,432,175
Maintenance of equipment .....	103,540,033	133,925,264	945,168,064	1,163,804,441
Traffic .....	6,846,230	6,505,151	63,516,478	52,649,319
Transportation .....	177,556,916	254,856,925	1,734,737,815	2,102,951,343
Miscellaneous operations .....	4,030,580	5,452,984	37,601,725	46,191,414
General .....	13,076,907	14,791,871	127,253,185	127,337,835
Transportation for investment—Cr.	499,221	383,597	4,428,684	3,483,174
Railway operating expenses	377,107,817	509,720,494	3,483,124,014	4,276,883,353
Net revenue from railway operations	120,547,036	109,205,086	654,230,648	164,109,226
Railway tax accruals	26,465,986	24,233,856	209,580,854	206,642,912
Uncollectible railway revenues .....	92,825	79,050	900,971	833,400
Railway operating income	93,988,225	84,892,180	443,748,823	43,367,086
Equipment rents—Dr. balance .....	4,689,243	3,494,384	39,372,553	23,369,629
Joint facility rent—Dr. balance .....	2,124,881	1,722,150	12,991,551	13,892,535
Net railway operating income .....	87,174,101	79,675,646	391,384,719	80,629,250
Ratio of expenses to revenues (per cent) .....	75.78	82.36	84.19	96.30

NOTE.—Excludes Detroit, Toledo and Ironton, report not having been filed at date of compilation.

<sup>1</sup>Includes \$2,941,179, sleeping and parlor car surcharge.

<sup>2</sup>Includes \$2,179,734, sleeping and parlor car surcharge.

<sup>3</sup>Includes \$24,694,452, sleeping and parlor car surcharge.

<sup>4</sup>Includes \$2,436,898, sleeping and parlor car surcharge.

### Commission to Determine Construction of

### Interlocking Directorate Clause

The Interstate Commerce Commission has announced a hearing at Washington on November 30 as to the construction to be placed on the clause in Paragraph 12 of Section 20-a of the commerce act, which authorizes the commission to permit railroad officers or directors to hold positions with more than one carrier after finding "that neither public nor private interests will be adversely affected thereby." The order for the hearing says that question has arisen regarding the construction of this proviso. The commission has already issued a number of authori-

zations to officers and directors to hold positions with more than one carrier where the other carriers are affiliated or subsidiary companies, but apparently it intends to reach some general decision as to the extent to which interlocking may be not opposed to the public interest.

E. N. Brown is authorized to hold until further order of the commission, the office of chairman and member of the board of directors of the St. Louis-San Francisco, Kansas City, Fort Scott & Memphis, Kansas City, Memphis & Birmingham, chairman and member of the executive committee of the St. Louis-San Francisco and chairman and member of the board of directors and executive committee of the Pere Marquette. Jules S. Bache has been authorized to hold office as officer and director of the Minneapolis & St. Louis; Ann Arbor, Manistique & Lake Superior, and Toledo, St. Louis & Western. Richard Billings is authorized to hold office as president and director of the Woodstock and director of the Boston & Maine. Charles H. Worcester has been authorized to retain his office as director and member of the executive committee of the Minneapolis & St. Louis, president and director of the Ann Arbor and the Manistique & Lake Superior, chairman of board and director of the Middletown & Unionville and director of the Tennessee, Alabama & Georgia. F. A. Chamberlin has been authorized to serve as director of the Minneapolis & St. Louis and president and director of the Minneapolis Eastern; A. F. Banks as president and director of the Elgin, Joliet & Eastern and other roads, and S. M. Rogers as director and vice-president of the Elgin, Joliet & Eastern and other roads. Other officers of the Elgin, Joliet & Eastern have been given similar authority. R. H. Kurrie has been authorized to act as president and director of the Chicago, Indianapolis & Louisville and the Kentucky & Indiana Terminal.

### Amendments to Mail Pay Orders

The Interstate Commerce Commission has issued an amendment to its order in the railway mail pay case in response to a petition filed on the joint behalf of the postmaster general and the railroads, in which it prescribes the rate of 40% cents for each mile of service by 70-foot storage car. The amendments are as follows:

It is ordered that there be added to Section 3 the following:

The fair and reasonable rate of payment for transportation of mail matter on and after December 1, 1921, for each mile of service by a 70-foot storage car is 40 5/8 cents. The rules governing service by a 60-foot storage car shall apply to service by a 70-foot storage car.

It is further ordered that the first paragraph of Section 4 be modified to read as follows:

Where authorizations are made for cars or apartments of the standard lengths of 60, 30 and 15 feet, and the railroad company is unable to furnish such cars or apartments of the length authorized, but furnishes cars or apartments of lesser length, but which are accepted by the department to be sufficient for the service payment shall be made only for the actual space furnished and used, the compensation to be not exceeding pro rata of that provided for the standard length authorized. The postmaster-general may accept cars and apartments of greater length than those of the standard requested, but no compensation shall be allowed for such excess lengths except that where an oversize car is furnished storage units may be authorized therein on either the basis of actual measurement or count of sacks and outside packages, whichever may be more practicable, provided that in no case shall payment be made for more than the actual length of the car.

It is further ordered that Section 8 be modified to read as follows:

That during the fiscal year beginning July 1, 1921, and ending June 30, 1922, excepting the month of December, 1921, each carrier shall be paid for all emergency service required and performed on all trains having regular authorizations on each route, except emergency service required and performed in 30-foot and 60-foot authorizations, for which payment shall be made as at present provided, the same amounts each month as accrued on account of 3-foot, 7-foot and 15-foot units of emergency service, storage and closed-pouch, authorized and performed during the month of April, 1921, where the emergency authorization were less than fifty per cent of the trips, and where the authorizations were for fifty per cent or more of the trips the appropriate higher unit shall be regularly authorized from July 1, 1921.

During the month of April, 1922, and in the same month for each succeeding year during the continuance of this order, a record of the emergency service, storage and closed pouch, actually performed in 3, 7 and 15 foot units on each train of each route shall be kept, and upon the basis of where the emergency authorization shall be made for each month of the succeeding fiscal year beginning July 1, excepting for the month of December in the same manner as prescribed above for the fiscal year beginning July 1, 1921, both as to payment of emergency service and increases to the higher regular units of service performed.

For the month of December in any year payments shall be made for sixteen days on the basis above prescribed at one-half of the monthly rate as above ascertained and for fifteen days beginning December 17 on the basis of the emergency service actually performed.

By mutual agreement between the postmaster-general and any carrier a different month than April may be selected as the basis for the pay for such emergency service required of and performed by said carrier.

## Traffic News

The Phelps Dodge Corporation, New York City, announces the appointment (effective December 1) of F. W. Pullen, as traffic manager in place of G. W. Feakins, resigned.

The National Association of Sand and Gravel Producers has asked the Interstate Commerce Commission to make an expedited investigation into the level of freight rates on sand, gravel and crushed stone between points in the western states.

The Transportation Club of Peoria, Ill., will hold its annual banquet at the Jefferson Hotel, on December 8. The speakers of the evening will be C. H. Markham, president of the Illinois Central and J. H. Beek, executive secretary of the National Industrial Traffic League.

Rates on tin plate from eastern points to the Pacific Coast will be reduced as soon as the tariffs can be published and made effective. The present rates of \$1.835 from New York, \$1.665 from Pittsburgh, and \$1.585 from Cincinnati will be reduced to \$1.20 from all points.

Shippers of Toledo, Ohio, have filed a petition with the Ohio Public Utilities Commission attacking industrial switching charges in the Toledo district, claiming that since 1915 the charges have been increased from 16 cents a ton to 42 cents or more than 200 per cent.

The West Coast Lumbermen's Association has applied to the Interstate Commerce Commission for lower freight rates and simplified tariffs, holding that the continued existence of the lumber industry of the North Pacific coast depends upon the ability of the industry to market its products freely.

The New England Homestead, a prominent agricultural newspaper, has sent to the Interstate Commerce Commission a telegram complaining of the reduction of freight rates for Western farmers. It says that New England farmers must pay high rates to get their products to market, while the West and South are subsidized to dump their surplus into New England at 10 per cent less cost. The dispatch says: "The excuse for not reducing rates on produce moving wholly within New England, is that our New England railways are so poor they can't afford it. Why are they so poverty stricken? Partly because for years they have been under an expense of \$25,000,000 annually in furnishing Eastern terminal service for Western lines."

### Coal Production

Observance of Armistice Day was the principal cause of a sharp drop in coal production during the week ended November 12, according to the weekly bulletin of the Geological Survey. The output of bituminous is estimated at 8,466,000 net tons, as against 9,315,000 tons the week before.

### Neosho Plan on Central of Georgia

Seventeen cities along the lines of the Central of Georgia have inaugurated the "Neosho or Golden Rule Sales Plan" of co-operative merchandising and community advertising. For the past two months representatives of the railway have accompanied Gurney R. Lowe, exponent of the plan, in establishing it in different progressive communities. In this plan there is a monthly auction sale of things the farmer wants to sell; and on the same day an offer of genuine bargains by the business houses of the city, on a non-competitive basis; the whole advertised co-operatively; the whole plan working toward a better relation between town and country. Cities adopting the plan are Rome, Carrollton, LaFayette, Newnan, Cuthbert, Americus, Statesboro, Millen, Waynesboro, Tennille, Milledgeville, in Georgia; Opelika, Alexander City, Andalusia, Eufaula, Sylacauga and Florala, in Alabama.

### Senators Enter a Rate Controversy

A protest, signed by 11 United States senators from the Middle West, against the alleged refusal of the eastern and western railways system to follow up their reduction of export rates on steel and steel products to North Atlantic ports by concurring in similar reductions to southern ports has been filed with the Interstate Commerce Commission. The petition was made in behalf of Middle Western shippers, and was signed by Senators McKinley and McCormick of Illinois, Willis of Ohio, Spencer and Reed of Missouri, Kenyon of Iowa, Townsend of Michigan, New and Watson of Indiana, and Capper and Curtis of Kansas.

In addition to protesting against the action of the roads in refusing to grant the same reduction to Gulf and south Atlantic ports, the petition also directs the attention of the commission to a reported plan of the roads to include other commodities in the "preferential" reductions, "thereby further injuring the shippers in the territory referred to." The action by the railways, the petition says, constitutes a grave menace to the commercial interests of the entire Middle West "that can only serve to cripple the expansion of the foreign trade of the United States." The commission is asked "to lend the full measure of its protection" to prevent the roads from carrying their program into effect.

### Rate Hearings Begin at Chicago

The transcontinental rate hearings opened at Chicago before Examiner Disque of the Interstate Commerce Commission, on November 17. Edward Chambers, vice-president in charge of traffic of the Atchison, Topeka & Santa Fe, was the first witness for the carriers and made a general statement of the history of transcontinental rates which is printed elsewhere in this issue. Mr. Chambers, on the completion of his statement, was cross-examined by attorneys for both sides. He held, under examination, that users of water routes should help bear the burden of up-keep of those routes of travel and stated that if Congress removed the Panama Canal toll, it would most certainly lead to another application for a hearing by the transcontinental carriers, providing that the boat lines passed the reduction on to the shippers. As Mr. Chambers left the stand he was asked by the examiner what the transcontinental carriers proposed to do in case the commission denied their application, and answered, that such a possibility had not been considered. Paul P. Hastings, member of the standing rate committee of the Transcontinental Freight Bureau, followed Mr. Chambers on the stand, and presented exhibits in support of the carriers' stand. In all cases, he said, the transcontinental carriers rates were somewhat higher than the port-to-port water rate plus the rail haul to the port and the switching movement, drayage, etc., to compensate the carriers for superiority in service. On the morning of the second day, Mr. Hastings discussed in detail each of the 80 items contained in Countiss' application No. 19. He presented his discussion with material showing the principal producing points, rail rates from those points to the Atlantic and Gulf ports and the water rates beyond to the Pacific coast. These rates were also shown to be above the rail and water rates. In some cases, however, as with canned goods from Pittsburgh and west, it was shown to be less. Mr. Hastings said that if the application before the commission seeking proportional rates from western trunk lines and southern territory to the Gulf ports should be granted, the transcontinental carriers would ask for a suspension.

Examiner Disque on November 15, took testimony for and against the fourth section application of the Transcontinental Freight Bureau. The first hearing was on the re-opened fourth section application, No. 8835, involving rates on sugar from California to Chicago, St. Louis and the Missouri river, in which the commission granted permission to the transcontinental carriers to disregard the fourth section of the act. J. F. Abbott, appeared as attorney for the applicants and T. J. Norton as counsel for the transcontinental carriers. Little was accomplished at the hearing and the way now points to the New Orleans, La., hearing which will be held later.

ONE HUNDRED AND FIFTY ADDITIONAL MEN are to be added to the New York Central locomotive shop forces at West Albany, N. Y., this increase in force to take place as fast as competent men can be obtained.

## Commission and Court News

### Interstate Commerce Commission

The Interstate Commerce Commission has rendered a decision in the complaint of the Arizona and other state commissions in which it finds that the passenger fares between points in Arizona, Nevada and New Mexico and between those points and points in other states are not unreasonable, unjustly discriminatory or unduly prejudicial.

The Interstate Commerce Commission has rendered a decision in part 2 of the case involving rates to, from and between points south of the Ohio river, including the Mississippi valley. Part 1 of this case related to class rates and part 2 to commodity rates. The proposed revision of commodity rates designed to eliminate deviations from the long and short haul provision of the fourth section in the construction of rates primarily affecting Mississippi valley points and Nashville, Tenn., is found not justified except as indicated more particularly in the decision. The railroads are required to cancel the suspended schedules in so far as they are found not justified and to file new schedules establishing rates in accordance with maximum bases prescribed in the opinion. The proceeding is discontinued. The commission has also modified its order in this case of October 10 to make the rates therein ordered effective on January 15, 1922, instead of January 1.

### State Commissions

The Illinois Commerce Commission completed hearings, November 19, on objections to the increase which became effective a short time ago in express rates on certain commodities, and granted leave to the American Railway Express Company to file an answer to the objections within 30 days.

The Public Service Commission of Alabama has received from the railroads their proposals for a general revision of freight rates in Alabama; and has set December 12 as the date on which testimony will be heard in support of the proposals. The main purpose of these new tariffs is to secure uniformity of bases as between different states and as between intrastate rates and interstate. It was stated in behalf of the railroads in the presentation of the tariffs that probably the new rates would make no material addition to the revenue of the carriers as a whole.

## Court News

### Cattle Guard Statute—Injury to Cattle

The Idaho statute (Comp. St. 1919, § 4815) makes it the duty of railroad companies to maintain a cattle guard only where the railroad crosses a public highway or public traveled road. In an action for damages to live stock, alleging violation of the statute, the Idaho Supreme Court holds that it is not sufficient to prove that the railroad did not maintain such a cattle guard. In addition to that, it must be shown that because of such failure the cattle got on the track.—Bliss v. Oregon Short Line (Idaho) 200 Pac. 721.

### Contributory Negligence at Crossing Not

#### Excused by Speed Ordinance

The Missouri Supreme Court holds that an automobilist who could have seen an approaching train for half a mile, had he looked, when 50 feet from a familiar crossing in a city, but did not look, after passing all obstructions to his view, until about 12 or 15 feet from the crossing, was guilty of contributory negligence, barring recovery, when struck by the train. He was not excused from looking or listening or entitled to rely on the presumption that the speed of the train would be reduced from 30 to the ordinance limit of 12 miles an hour as it approached the crossing.—Alexander v. St. Louis-San Francisco (Mo.) 233 S. W. 44.

## Foreign Railway News

### Australian Railways Show Deficit

The annual report of the government railways of South Australia for the fiscal year ended June 31, 1921, shows a deficit of \$2,733,550 (£ to \$ at par). This loss was due to increased costs—primarily wages—which increased rates were not sufficient to cover. The lines total 2,333 miles, of which some 1,209 miles are of 3 ft. 6 in. gage and 1,124 of 5 ft. 3 in. gage. The New South Wales Railways for the same period showed a deficit of \$2,200,653. The mileage of these lines is 5,043.

### Northwestern of Peru Taken Over by Government

By executive decree of August 31 the Peruvian Government will acquire the control and administration of the Northwestern Railway of Peru, the main line of which connects the towns of Ancon and Huacho—a distance of about 90 miles, according to Commerce Reports. The sum involved in the transaction is said to be approximately \$3,500,000. Two other short branches of the road run from Huacho to Sayan and from Huaral to Chancay—distances of 34 and 8 miles respectively. The road is now owned by a British company.

### German Rail Employees Object to Private Operation

The activities of Hugo Stinnes, the German industrial magnate, which have been directed toward bringing the control of the government railways into his hands, are objected to strongly by the German railway unions, according to the New York Evening Post. Stinnes promises to do away with thousands of superfluous employees if the railways are entrusted to him, abolish the eight-hour day and reduce wages so the railways will be operated at a profit. The unions have served notice on the minister of railways that such a change will not be permitted and that the Socialist party, which is in control in the Reichstag, will not sanction it.

### Gas to Be Abolished on French Trains

LONDON.

M. le Trocquer, Minister of Public Works of France, has sent a circular letter to all railway companies instructing them to take immediate steps to abolish the use of gas in the lighting of trains. Gas lighting, he says, must be abolished on all express trains by January 1, 1923, and on all suburban trains by January 1, 1924. Returns are to be called for from railway companies showing from time to time how far the transformation of the lighting system has progressed. Coal fires for the heating of trains are to be done away with within a period of two years. The letter concludes by asserting that the directors of the companies will be held personally responsible in the event of accidents in any way attributable to neglect of this admonition. This is a sequel to the Batignolles tunnel accident, in which several coaches of a train caught fire and many persons were killed.

### Improvement in Service on Italian Railways

Passenger-train service on the Italian State Railways is to be greatly improved, according to Commercial Attaché MacLean, Rome. Beginning with November, the railway administration announced marked improvement in the running time of trains between Rome and other principal cities of Italy. The number of trains has been increased and schedules have been adopted which will eliminate delay in making connections. Beginning October 26, communication between Rome and Berlin was shortened by six hours, two trains following the Bologna-Bremer route and covering the distance in 40 hours, instead of 46 as heretofore.

To stimulate passenger traffic, the railways have instituted the sale of a document authorizing the purchase of tickets at half price on special groups of railway lines and also on steamship lines managed by the railways. These tickets are valid for three, six, or twelve months and for journeys not

exceeding 62 miles; also for journeys having no fixed limits, at special rates. Tickets are issued to two members of one firm at an increased cost of one-third.

### Operating Results of French Railways for 1920

LOSS.

The 1920 operating results of the six important railway systems in France, namely: the Nord; Est; Paris, Lyons & Mediterranean; Paris-Orleans; Midi, and Etat, have recently been made public. They show a very disastrous deficit, the average operating ratio for the entire six roads being 135 per cent, that for the State Railway being 153 per cent, which is the largest of the six.

The ratio of charges on capital to expenses for this period was 12 per cent. For the year 1920 the gross deficit resulting from operation and charges on capital for all six roads amounted to 3,007,500,000 francs, which at a normal rate of exchange is \$601,300,000. For the seven years, 1914 to 1920, inclusive, the total gross deficit amounts to 5,574,400,000 francs, or \$1,114,880,000, there having been a loss during each year of that period.

The following table shows the relative increases in numerous items of expense for the year 1920 as compared with the year 1919:

Increase in number of operative locomotives.....	5.8 per cent
Increase in power of operative locomotives.....	17.5 per cent
Increase in number of freight cars.....	15.5 per cent
Increase in capacity of freight cars.....	22 per cent
Increase in operating ratio.....	116 per cent
Increase in traffic receipts.....	167 per cent
Increase in passenger receipts.....	106 per cent
Increase in operating expenses.....	470 per cent
Increase in cost of wages.....	340 per cent
Increase in number of employees.....	40 per cent

\*This does not include receipts from the handling of war traffic.

In commenting on the results as disclosed by this return, the Revue Generale des Chemins de Fer et des Tramways says in part:

"The financial situation of the railways is serious. What will happen to them in the future? Are we justified, under present conditions, in anticipating an early increase of receipts or a reduction of expenses?"

"As regards the (1920) receipts, these were affected very severely by the strike in the month of May, and later, in the last months of 1920, by the falling off in traffic which was the natural consequence of the decreased industrial and commercial activity of the country. Some day this situation must improve and then a considerable increase in receipts may be looked for. But when will this be? No one can tell, and it would be rash to prophesy at a time when there is no sign of recovery.

"It appears, however, that a decrease in costs may be expected from the alterations in the mode of applying the eight-hours act, which the railways, in agreement with the Minister of Public Works and in conformity with the wish lately expressed by the Finance Commission of the Senate, have decided to make.

"Taking everything into account, it seems clear that the chance of a reduction in expenditure is greater than the chance of an increase. But this improvement in the financial situation of the railways can only be pursued and obtained on one condition, namely, that the credit which the companies now enjoy is maintained and consolidated and that nothing should be done to injure it.

"This credit remained intact during the whole period of the war and continues to be excellent in spite of the deficit burdening the railways. It is indispensable to the state, since the companies borrow partly on its account, and it will in future be all the more necessary to the companies on account of the fact that they will have to have recourse to numerous emissions of shares in order to improve and strengthen their plant and undertake the electrification of their lines. Any measure which would weaken the credit of the companies, increasing their burdens, would have a disastrous effect on their financial condition.

"Now this credit cannot be maintained in its present favorable situation and cannot be improved except by passing promptly the bill for the reorganization of the railways, at present before parliament. This bill, by settling the difficulties created by the war and putting an end to the temporary system under which the railways are at present being operated, gives the companies security for the future, and by that fact alone strengthens their credit. This bill will give confidence to capitalists and enable the companies to obtain the enormous capital they will require in order to meet the demands of traffic in the future."

## Equipment and Supplies

### Locomotives

THE COPPER RIVER & NORTHWESTERN is inquiring for 5 Mikado type locomotives.

THE GREEN BRIAR & EASTERN has ordered 1 Mikado type locomotive from the Baldwin Locomotive Works.

THE TAIWAN ELECTRIC POWER COMPANY is inquiring through Mitsui & Company, New York, for 2 light locomotives.

THE PITTSBURGH PLATE GLASS COMPANY, Zanesville, Ohio, has ordered from the American Locomotive Company, 1, 4-wheel switching locomotive. This locomotive will have 13 by 20 in. cylinders, and a total weight in working order of 65,000 lbs.

THE MEXICAN PETROLEUM COMPANY, 120 Broadway, New York, has ordered from the American Locomotive Company, 1, 4-wheel switching locomotive. This locomotive will have 14 by 22 in. cylinders, and a total weight in working order of 79,000 lbs.

### Freight Cars

THE MISSOURI PACIFIC is inquiring for the repair of 1,000, 30-ton box cars.

THE GREAT NORTHERN is inquiring for 500, 50-ton composite cars and 1,000, 40-ft. stock cars.

THE BELT RAILWAY COMPANY, Chicago, is inquiring for repairs on 300 National dump cars.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY is inquiring for 100 refrigerator car steel underframes.

THE CHICAGO GREAT WESTERN is inquiring for repairs on 100 refrigerator cars and 150 National dump cars.

THE CHICAGO & ALTON has awarded a contract for the repair of 150 gondola cars to the Streets Company, Chicago.

THE CHICAGO, BURLINGTON & QUINCY inquiries call for 2,500 box cars, 3,000 general service, 500 stock, and 1,300 refrigerator cars.

THE LIVE POULTRY TRANSIT COMPANY, Chicago, has given a contract for 100 poultry cars to the American Car & Foundry Company.

THE CHICAGO, BURLINGTON & QUINCY has awarded a contract for the repair of 300 50-ton gondola cars to the General American Car Company, Chicago.

THE DELAWARE, LACKAWANNA & WESTERN, reported in the *Railway Age* of October 29 as inquiring for 500 box cars has ordered this equipment from the American Car & Foundry Company.

### Passenger Cars

THE GREAT NORTHERN is inquiring for 35 passenger cars.

THE CHICAGO & NORTHWESTERN is inquiring for 9 baggage cars, 5 combination baggage and mail, 20 coaches and 10 smoking cars.

THE CHICAGO, BURLINGTON & QUINCY inquiries call for 54 passenger cars, 5 chair, 12 baggage, 22 mail, 19 mail and baggage and 12 dining cars.

### Iron and Steel

MITSUI & COMPANY, New York, are inquiring for 900 tons of 16-lb. rail, also for 1,200 tons of 60-lb. rail and another lot of 700 tons of 60-lb. rail, all for export to Japan.

## Supply Trade News

THE F. C. RICHMOND MACHINERY COMPANY, 117 West Second street, Salt Lake City, Utah, has been appointed representative of the **Orton & Steinbrenner Company**, Chicago.

F. T. Coup in charge of the Milwaukee, Wis., office of the **Wagner Electric Manufacturing Company**, St. Louis, Mo., has been appointed district manager, in charge of its Cincinnati, Ohio, office, 20 East Ninth street.

THE COMBUSTION ENGINEERING CORPORATION, New York, recently opened two branch offices, one at 216 Latta Arcade, Charlotte, N. C., in charge of T. E. Nott and the other at Seattle, Wash., where the company is represented by the **Fryer-Barker Company**, 1133 Henry building.

**Manning, Maxwell & Moore, Inc.**, New York, will remove its Philadelphia, Pa., office during November from the Lincoln building, to larger quarters in the Pennsylvania building at Fifteenth and Chestnut streets. The company will also remove its Boston, Mass., office about December 1 from 10 High street to the Textile building, 99 Chauncey street.

### Pullman and Haskell & Barker Merger

Stockholders of the Pullman Company will hold a special meeting in Chicago on December 20, to vote on the following amendments to the charter of the company:

Increasing the capital stock from \$120,000,000 to \$135,000,000 and increasing the number of directors from nine to twelve and electing the same. To authorize directors to purchase all assets of the Haskell & Barker Car Company, Inc., and pay therefor \$275,000 in cash and 165,000 shares of the capital stock of the Pullman Company, and in case of adoption of the amendment increasing capital stock, authorize the board to issue and deliver direct to the Haskell & Barker Company 150,000 shares of the increase.

The \$275,000 cash payment is equal to \$1.25 a share on the Haskell & Barker stock, which, it is expected, will be distributed as an extra dividend.

### Trade Publications

**HIGH SPEED METAL SAWS.**—The Peerless Machine Company, Racine, Wis., has recently issued a circular containing a complete revision of list prices of its line of high speed metal saws. These prices mark a return to the 1918 basis.

**AIR LIFTS.**—The Sullivan Machinery Company has issued bulletin No. 71-G describing air lift pumping systems manufactured by that company. This is a revision and explanation of the previous bulletin covering the same subject. In addition to describing air lift pumping equipment, the bulletin gives extensive tables relating to hydraulic constants, pipes, and other mathematical information of value in connection with the solution of hydraulic problems.

**RADIAL WALL DRILL.**—The Pawling & Harnischfeger Company, Milwaukee, Wis., has recently issued Bulletin No. 206, describing its No. 6 radial wall drill which has been designed to meet the demand for a simple and effective machine for drilling, reaming and countersinking large unwieldy pieces. Examples of interior and exterior drilling of large steel drums and the drilling and reaming of structural material are shown in the bulletin, also dimension drawings.

**RAILROAD TAXES** in New Jersey are this year so high that the principal railroad companies have filed with the State Board of Taxes and Assessment, formal objections to the valuations of the board upon first and second class property. The assessment, as established by the board is \$415,773,910, which the roads say, is excessive. The board will give a hearing, but not before December 15. The assessment of \$415,773,910 is an increase of \$25,544,-

## Railway Construction

**ALASKA RAILWAY COMPANY.**—This company has applied to the Interstate Commerce Commission for permission to issue 2,500 shares of stock to provide funds for the extension of its main line from the present terminus.

**AMERICAN RAILWAY EXPRESS.**—This company will construct a one-story express building, 21 ft. by 100 ft., costing approximately \$25,000 at Lima, Ohio.

**ATCHISON, TOPEKA & SANTA FE.**—This company will construct a coal chute at Amarillo, Tex.

**CANADIAN PACIFIC.**—This company has awarded a contract to Anglin-Norcross, Ltd., Quebec, for the construction of a 17-story addition to the Chateau Frontenac, its hotel at Quebec. The structure will be of brick, stone and steel—fireproof construction—and will cost in the neighborhood of \$3,500,000.

**CHICAGO, OTTAWA & PEORIA.**—This company, in conjunction with the Chicago, Rock Island & Pacific, LaSalle county and the state of Illinois, contemplates the construction of a viaduct over its tracks and those of the Rock Island at Moriarity Hill, near Ottawa, Ill.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company has awarded a contract to T. S. Leake & Company, Chicago, for the construction of a mill building at Pratt, Kan.

**CHICAGO UNION STATION CO.**—This company is accepting bids for four water tube boilers to be installed in its boiler house at Chicago, two boilers to have not less than 6,000 sq. ft. of heating surface and the remaining two not less than 3,000 sq. ft.

**ILLINOIS CENTRAL.**—This company received bids on November 17, for the construction of a freight house at West Frankfort, Ill., to cost about \$50,000.

**ILLINOIS CENTRAL.**—This company is receiving bids for the construction of a frame storehouse at Clinton, Ill.

**MISSOURI PACIFIC.**—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a pumping station and water treating plant at Fort Scott, Kan.

**YUCCA—BOULDER CANYON LINE.**—The construction of an electric railway from a point on the Atchison, Topeka & Santa Fe Coast Lines, near Yucca, Ariz., north to Boulder Canyon on the Colorado river, via Oatman, Ariz., and Katherine, is contemplated. G. P. Mohler of Needles, Cal., is interested in the project.



The Chateau Frontenac, the C. P. R. Hotel at Quebec, As It Will Look When Addition Noted Above Is Completed

## Railway Financial News

**BALTIMORE & OHIO.**—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous years as follows:

	1920	1919
Railway operating income (September 1 to December 31)	\$6,977,754	.....
Compensation accrued for federal control period (January and February, 1920; year 1919)	4,803,697	\$28,031,147
Guaranty (March 1-August 31)	15,189,722	.....
Total other corporate income	5,399,859	5,221,419
Gross corporate income	31,834,154	52,266,717
Interest on funded debt	21,960,591	19,640,622
Total deductions from gross corporate income	24,588,673	23,686,695
Net corporate income	7,245,481	8,580,022
Income applied in redemption of funded debt	3,500,000	.....
Income appropriated for additions and betterments	.....	1,750,190
Dividends on preferred stock (4 per cent per annum)	2,354,531	2,354,531

**CENTRAL OF NEW JERSEY.**—*Sells Coal Stock for \$32,500,000.*—This company has sold its 169,788 shares of Lehigh & Wilkes-Barre Coal Company stock to a syndicate among whose members are a number of minority stockholders of the coal company, some independent coal interest, and the Burns Brothers interests. The syndicate manager is Jackson E. Reynolds, vice-president of the First National Bank, who is a director of the coal company and has been identified with it for 20 years.

The total consideration to be received by the seller is, in round figures, \$32,500,000. The dates of payment of the instalments are December 6, 1921, July 1, August 1, September 1 and October 1, 1922. The first payment will be about \$10,000,000.

The sale of the Lehigh & Wilkes-Barre coal stock was in accordance with the United States Supreme Court decree of April 6, 1920. This decree dissolved the combination of the Reading Company, the Philadelphia & Reading Railway, the Philadelphia & Reading Coal Company, the Central Railroad of New Jersey and the Lehigh & Wilkes-Barre Coal Company.

**CHESAPEAKE & OHIO.**—*Dividends Resumed.*—This company has declared a dividend of 2 per cent., payable January 3 to stock of record December 2. This is the first payment made since December 31, 1920. From 1917 to 1920 the road's regular rate was 4 per cent annually, but on May 30, 1921, the company deferred action on the regular 2 per cent semi-annual dividend, due June 30.

**CHICAGO & EASTERN ILLINOIS.**—*Reorganization Plan Operative.*—Kuhn, Loeb & Co., reorganization managers, have given notice that the plan and agreement for the reorganization of the Chicago & Eastern Illinois, dated March 31, 1921, are now operative. The details of the reorganization plan were given in the *Railway Age* of April 8, 1921, page 913.

**CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.**—*Dividends Declared.*—This company has declared a regular quarterly dividend of 1¼ per cent on the preferred stock, payable December 1 to stock of record November 22. A semi-annual dividend of 3 per cent and an extra dividend of 3½ per cent were declared on the common stock, payable December 27 to stock of record December 6. This extra dividend compares with 2½ per cent paid last June.

*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1-December 31)	\$17,580,902	.....
Operating expenses (March 1-December 31)	13,935,513	.....
Net revenue from operations	3,645,389	.....
Taxes	519,487	.....
Operating income (March 1-December 31)	3,125,902	.....
Standard return (January and February, 1920; year 1919)	590,173	\$3,541,440
Total non-operating income	154,359	110,043
Gross income	4,546,757	3,651,482
Deduct—rent for leased lands	1,218,954	1,147,571
Interest on equipment obligations	175,040	144,413
Total deductions from gross income	1,818,122	1,649,616
Income	.....	.....
5 per cent on preferred stock	122,670	122,670
13 per cent on common stock	388,730	388,730
Balance carried to credit of profit and loss	1,267,265	800,082

The revenues and expenses in detail and the principal traffic statistics for 1920 compare with 1919 as follows:

OPERATING REVENUES			
	1920	1919	
Freight .....	\$15,347,954	\$11,871,984	
Passenger .....	4,369,250	3,598,768	
Total operating revenues.....	\$21,118,821	\$16,313,686	
OPERATING EXPENSES			
Maintenance of way and structures.....	\$2,406,504	\$2,610,342	
Maintenance of equipment.....	5,699,341	5,188,286	
Traffic .....	361,039	275,589	
Transportation .....	7,893,040	6,922,979	
General .....	490,794	413,659	
	\$16,993,255	\$15,499,095	
Net revenue from operations.....	4,125,566	814,591	
Taxes .....	595,559	652,310	
Total operating income.....	3,527,855	155,596	
Miles of road operated.....	338	336	
PASSENGER TRAFFIC			
Number of passengers carried.....	1,762,132	1,635,023	
Number of passengers carried one mile.....	149,359,030	132,047,224	
Average distance hauled per passenger (miles).....	84.76	80.76	
Average receipts per passenger per mile (cents).....	.293	.273	
FREIGHT TRAFFIC			
Number of revenue tons carried.....	6,695,999	4,682,999	
Number of tons carried one mile.....	1,425,608,322	1,094,293,911	
Average distance hauled per ton (miles).....	212.90	233.67	
Average receipts per ton per mile (cents).....	1.08	1.09	

**DENVER & RIO GRANDE.**—*Stockholders' Suit for \$200,000,000.*—The stockholders' protective committee has caused to be served on former directors and officials of the company summons in a suit in the Supreme Court of New York to recover \$200,000,000 for alleged losses to the stockholders growing out of misfortunes of the road extending over a period of five years and ending in the sale of the property to satisfy a judgment. The defendants named are George J. Gould, Edward T. Jeffery, Arthur Coppel, Edwin Gould, Kingdon Gould, Edgar L. Marston, Benjamin F. Bush, Edward L. Brown, Edward D. Adams, Finley J. Shepard, Harrison Williams, Benjamin B. McAlpin, George G. Haven, Henry U. Mudge, James Horace Harding, Harry Bronner, Charles C. Huit, John H. McClement, Alvin W. Krech, Alexander R. Baldwin and the Denver & Rio Grande Railroad Company.

The complaint among other things specifically charges the following:

That in February, 1915, the defendants entered into a conspiracy to wreck the Denver & Rio Grande, and to cause all its properties to be wiped out and absorbed by adverse interests. That as an initial step the conspirators caused and permitted a default to be made in the interest payable March 1, 1915, on Western Pacific first mortgage, and although the Denver had ample cash and other resources to protect Western Pacific against such foreclosure they interposed an answer on the same day as suit for foreclosure was filed, admitting all the allegations of the bill.

Judgment demanded in the complaint is as follows:

(1) That the defendant and each of them be required to account for and to make restitution of all the moneys, properties and funds of the Denver & Rio Grande Railroad Company, of which the Denver & Rio Grande Railroad Company has been wrongfully and unlawfully disinvested and divested, and for all loss and damages which the Denver & Rio Grande Railroad Company and its stockholders have sustained in the premises, aggregating \$200,000,000; and that the defendants be adjudged to account for and to pay to the defendant, the Denver & Rio Grande Railroad Company, or to these plaintiffs for the use of the Denver & Rio Grande Railroad Company the amount of said loss and damages.

(2) That the plaintiffs have such other and further relief as may be agreeable to equity and good conscience, besides the costs and disbursements of this action.

The complaint was prepared by Arthur M. Wickwire and Daniel W. Blumenthal, counsel for the protective committee.

Alvin W. Krech, president of the Equitable Trust Company, who is named as one of the defendants in the action, brought by the stockholders, made the following statement:

So far as concerned the claim that I conspired with the directors of the Denver Company or the directors of the old Western Pacific Company to cause these companies or either of them to default in the performance of their obligations, or to accomplish anything else to the detriment of those companies, there is not only no foundation for the statement, but the circumstances under which it has been made are such that I have no doubt whatever that its falsity is known to the attorneys filing this suit. Most of the matters set forth in the complaint have been before the courts in various proceedings. The entire claim so far as I am concerned is predicated on the theory that obligations assumed by the Denver and the old Western Pacific Company were not valid. As a matter of fact the validity of these obligations has been established and finally determined by the federal courts of this circuit, of the ninth circuit and of the eighth circuit.

**EDMONTON, DUNVEGAN & BRITISH COLUMBIA.**—*New Director.*—Vernon W. Smith, minister of railways for the province of Alberta, was, on November 22, elected a director. Mr. Smith succeeds Charles Stewart, former premier of Alberta, who resigned from the directorate when his party was defeated in the provincial election.

**HOCKING VALLEY.**—*Dividends Resumed.*—This company has declared a dividend of 2 per cent, payable December 31 to stock of record December 9. Although not declared as for a stated period, this dividend corresponds to the dividend which had been declared semi-annually before last June, when the usual declaration was omitted.

**LIVE OAK, FERRY & GULF.**—*Authorized to Abandon Line.*—This company has been authorized by the Interstate Commerce Commission to abandon a branch of its line 2 miles long in Taylor County, Fla.

**MISSOURI, KANSAS & TEXAS.**—*Reorganization Plan.*—See article on another page of this issue entitled "M. K. & T. Reorganization Plan Announced."

## Payments to Railroads

Payments by the Treasury to railroads on account of federal control and the Transportation Act of 1920 from July 1 to October 31, 1921, amounted to \$37,949,751, as compared with \$264,040,418 in the corresponding period of 1920, according to a statement issued by the Treasury Department.

## Tentative Valuations

The Interstate Commerce Commission has issued a number of additional tentative valuations. It finds that as of 1916 the final value of the property used by the East Jersey Railroad & Terminal Company was \$475,890 and the owned property \$359,390. For the Paris & Mt. Pleasant the commission found a final value as of 1918 of \$813,771. For the Rock Island Frisco Terminal, 1915, the final value of owned property was given as \$2,035,988 and of the used property \$2,089,674. For the Pickens Railroad as of 1916, the commission found a final value of \$126,426 and of the Virginia Southern as of 1916 a final value of \$127,551.

The tentative valuation of the Chicago, Indianapolis & Louisville as of 1915 gives a final value of the owned property, 509 miles, of \$27,272,707 and of the used property, 583 miles, which includes 64.8 miles of the Indianapolis & Louisville and 9.4 miles of the Indiana Stone Railroad, a final value of \$31,495,358. The stock of the leased lines is owned by the Chicago, Indianapolis & Louisville. Its outstanding capitalization as of the valuation date was \$33,710,930. The investment in road and equipment as stated in the carrier's books was \$37,225,989, but the commission says that if certain readjustments were made this would be reduced to \$36,424,870, of which \$27,453,353 represents the par value of securities issued or assumed. The cost of reproduction less depreciation of the owned property was placed at \$22,938,569 and of the used property at \$25,393,900. The company also owned securities of non-carrier companies of a par value of \$5,832,353 and a book value of \$4,013,296.

## Dividends Declared

Canadian Pacific.—Common, 2½ per cent, quarterly, payable December 31 to holders of record December 1.

Chesapeake & Ohio.—2 per cent, payable January 3 to holders of record December 2.

Chestnut Hill.—\$0.75, quarterly, payable December 5 to holders of record November 20.

Cincinnati, New Orleans & Texas Pacific.—Common, 3 per cent; common (extra), 3½ per cent; both payable December 27 to holders of record December 6. Preferred, 1¼ per cent, quarterly, payable December 1 to holders of record November 22.

Hocking Valley.—2 per cent, payable December 31 to holders of record December 9.

Philadelphia, Germantown & Norristown.—\$1.50, quarterly, payable December 5 to holders of record November 20.

Tuckerton Railroad.—(Special), \$1, payable December 1 to holders of record November 19.

ON JULY 31, 1921, the Interstate Commerce Commission had 1,919 employees under the classified civil service; the Railroad Administration had 1,327 and the Labor Board had 76.

ASBESTOS ROCK to the amount of 3,123,370 tons was mined in the province of Quebec during 1920, according to the annual report of the Department of Mines. From this quantity 170,500 tons of merchantable fiber was secured. Of this amount only 1,026 tons were rated as Crude No. 1, but this class alone was valued at \$1,513,439. The total value of asbestos products was \$14,749,048.

## Railway Officers

### Executive

**Edward W. Mason**, general manager of the Western Pacific, has been elected vice-president and general manager in charge of operation and maintenance. **Charles Elsey**, treasurer of the company, has been elected vice-president and treasurer in charge of finance, accounting, real estate and insurance.

**D. W. Pontius**, general manager of the San Diego & Arizona, with headquarters at San Diego, Cal., has been elected vice-president and general manager of the Pacific Electric, a subsidiary of the Southern Pacific, with headquarters at Los Angeles, Cal., to succeed H. B. Titcomb, who has been elected president of the Southern Pacific of Mexico and the Arizona Eastern, as noted in the *Railway Age* of September 24 (page 600). Mr. Pontius has been connected with the Southern Pacific for about thirty years, filling successively the positions of telegraph operator, station agent, trainmaster and district freight and passenger agent. From 1908 until February 1, 1911, he was traffic manager of the Los Angeles Pacific Railway, and then, with the consolidation of the seven electric lines in southern California to form the Pacific Electric, he became traffic manager of the latter company. In December, 1917, he was elected general manager of the San Diego & Arizona, which position he was holding at the time of his recent appointment.

### Financial, Legal and Accounting

**F. M. Angellotti** has been appointed general counsel of the Western Pacific, succeeding **A. R. Baldwin**, who has been elected president of the Western Pacific Railroad Corporation. **W. G. Bruen** has been appointed secretary, succeeding Charles Elsey, who has been elected vice-president.

### Operating

**A. W. Thompson** has been appointed car accountant of the Louisville & Nashville, with headquarters at Louisville, Ky., succeeding Edward L. Hill, whose death was noted in the *Railway Age* of October 29 (page 858).

**A. T. Mercier**, superintendent of the Portland division of the Southern Pacific, with headquarters at Portland, Ore., has been appointed general manager of the San Diego & Arizona, with headquarters at San Diego, Cal.

**B. B. Hickman**, general agent, freight department, of the Terminal Railroad Association of St. Louis and the St. Louis Merchants Bridge Terminal Railway, has been promoted to general superintendent of the latter company, succeeding J. A. Mathewson, promoted.

**C. H. Buford**, superintendent of the Sioux City and Dakota division of the Chicago, Milwaukee & St. Paul, with headquarters at Sioux City, Iowa, has been transferred to the Terre Haute division (formerly the Chicago, Terre Haute & Southeastern Railway), with headquarters at Terre Haute, Ind., succeeding **M. J. Griffin**, who has been appointed assistant superintendent of that division. **E. F. Rummel**, assistant superintendent of the Chicago Terminal division, will succeed Mr. Buford, and will be succeeded by **N. A. Meyer**, who is at present assistant superintendent of transportation of lines east of Moberidge, S. D.

**C. F. Donnatin**, whose promotion to superintendent of the San Joaquin division of the Southern Pacific, with headquarters at Bakersfield, Cal., was announced in the *Railway Age* of October 15 (page 743), first entered the service of that road as a call boy and was soon promoted to station agent and telegrapher. From that position he was transferred to the construction department as a brakeman. After

working in that department for some time, he was transferred to the operating department, and was later promoted to conductor. Since that time he has been promoted successively to yardmaster, trainmaster, and assistant superintendent of the Los Angeles division, with headquarters at Los Angeles, Cal., which position he was holding at the time of his recent promotion.

**John A. Mathewson**, whose appointment as general manager of the Terminal Railroad Association of St. Louis, was announced in the *Railway Age* of November 19 (page 1018), was born in 1866 at Sardinia, New York. He entered railroad service at the age of 15, in the machine shops of the Grand Rapids & Indiana. His next railroad position was with the Northern Pacific, for which road he worked as a switchman, and he held the same position at different times for various other roads, including the Michigan Central, the Grand Trunk and the Chicago, Rock Island & Pacific. He entered the service of the Terminal Railroad Association of St. Louis, 26 years ago as a switchman, and was promoted successively to yardmaster, trainmaster and, in 1918, to superintendent of the St. Louis Merchants Bridge Terminal Railway, a subsidiary company, which position he was holding at the time of his recent promotion.

### Mechanical

**G. W. Lillie** has been appointed superintendent of motive power of the Denver & Salt Lake, effective October 16, succeeding **M. B. McPartland**, resigned to enter the service of another railroad company.

**G. E. Passage**, assistant division master mechanic of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., has been promoted to master mechanic of the Terre Haute division, with headquarters at Terre Haute, Ind., succeeding **J. A. Richards**, who has been assigned to other duties.

### Engineering, Maintenance of Way and Signaling

**William Gerig**, assistant chief engineer of the Alaskan Engineering Commission, has resigned to engage in private engineering practice.

**George H. Harris**, whose appointment as assistant chief engineer of the Michigan Central, with headquarters at Detroit, Mich., was announced in the *Railway Age* of November



C. H. Harris

19 (page 1018), was born at Toledo, Ohio, on July 17, 1878. Upon leaving the University of Michigan in 1902, he entered the employ of the Pennsylvania on its Chicago Terminal division. He left that road in 1903 to become an assistant division engineer of the Michigan Central with headquarters at Jackson, Mich., and, in 1905, he was promoted to division engineer with headquarters at Niles, Mich. From 1907 to 1910 he was in charge of the grade separation work of the Michigan Central and the Chicago, Rock Island & Pacific, at Joliet, Ill. He was appointed division engineer at St. Thomas, Ont., in 1910, and was transferred to Detroit, Mich., in 1912. In 1914 he was promoted to engineer of track and maintenance of way and from 1917 to 1919 he acted as assistant chief engineer, with headquarters at Detroit, necessitated by J. F. Deimling, assistant chief engineer, becoming acting chief engineer during the absence of Colonel Webb in military service in France. He returned

to his former position in May, 1919, in which capacity he was serving at the time of his recent promotion.

**James F. Deimling**, assistant chief engineer of the Michigan Central, with headquarters at Detroit, Mich., has been promoted to chief engineer with the same headquarters, succeeding Col. Geo. H. Webb, whose death was noted in the *Railway Age* of November 12 (page 964). Mr. Deimling was born on November 18, 1867. He entered railroad service in March, 1886, as a rodman on the Missouri Pacific, which position he left in September of that year to become assistant engineer with the W. V. McCracken Construction Company. He re-entered railroad service in November, 1887, as assistant engineer of the Chicago & West Michigan, with headquarters at Grand Rapids, Mich., and in 1890 he was appointed assistant engineer of the Detroit & Lansing, which position he held until March, 1897, when he became engineer maintenance of way, of the Lake Superior & Ishpeming, and chief engineer of the Marquette & Southern. He entered the service of the Pere Marquette on June 1, 1904, and was, successively, track engineer with headquarters at Detroit, until July 1, 1905, and division engineer maintenance of way with headquarters at Grand Rapids, until February, 1906, at which time he was promoted to chief engineer with headquarters at Detroit. In October, 1912, he resigned to become engineer of construction of the Michigan Central, with headquarters at Detroit. In December, 1913, he was promoted to assistant chief engineer, which position he was holding at the time of his recent promotion. Mr. Deimling served as acting chief engineer from June, 1917, to May, 1919, during Colonel Webb's absence due to war service.



J. F. Deimling

### Traffic

**George F. Meighan** has been appointed traffic manager of the St. Louis & Hannibal, with headquarters at Hannibal, Mo.

**Charles Hamilton** has been appointed district passenger agent of the Wabash, with headquarters at Philadelphia, Pa., effective November 15.

**Charles W. Barber** has been appointed general agent in the traffic department of the Akron, Canton & Youngstown, and the Northern Ohio railways, with headquarters at Pittsburgh, Pa.

**S. R. Stevenson** has been appointed general agent, freight department, of the Terminal Railroad Association of St. Louis and the St. Louis Merchants Bridge Terminal Railway, succeeding B. B. Hickman, promoted.

**George Linn** has been appointed grain agent of the New York Central (Buffalo and East) with headquarters at New York. He will also be responsible for the operation of the New York Central and West Shore grain elevators in New York Harbor, effective November 1.

### Purchasing and Stores

**S. J. DeGraeff** has been appointed storekeeper of the Southern Pacific of Mexico with headquarters at Empalme, Sonora, Mexico.

**F. G. Prest**, purchasing agent of the Northern Pacific, with headquarters at St. Paul, Minn., has been made director of purchases, a newly created office, with the same headquarters,

and R. J. Elliott, assistant purchasing agent with headquarters at St. Paul, Minn., will succeed Mr. Prest.

### Obituary

**H. J. Phelps**, general passenger agent of the Illinois Central, with headquarters at Chicago, died at his home in that city on November 20.

**Axel S. Vogt**, formerly mechanical engineer of the Pennsylvania, Eastern lines, died on November 11 of heart disease. Mr. Vogt was born on January 19, 1849, at Christianstad, Sweden, and was educated in the public schools. He began railroad work in June, 1874, with the Pennsylvania at Altoona and remained with that road until 1882, when he went with Schutte & Koehring, Philadelphia, Pa. In November, 1883, he returned to the service of the Pennsylvania as assistant engineer of tests. On March 1, 1887, he was promoted to mechanical engineer, and remained in that position until February 1, 1919, when he retired. Since his retirement he was connected with the Baldwin Locomotive Works for a short time in an advisory capacity.



Axel S. Vogt

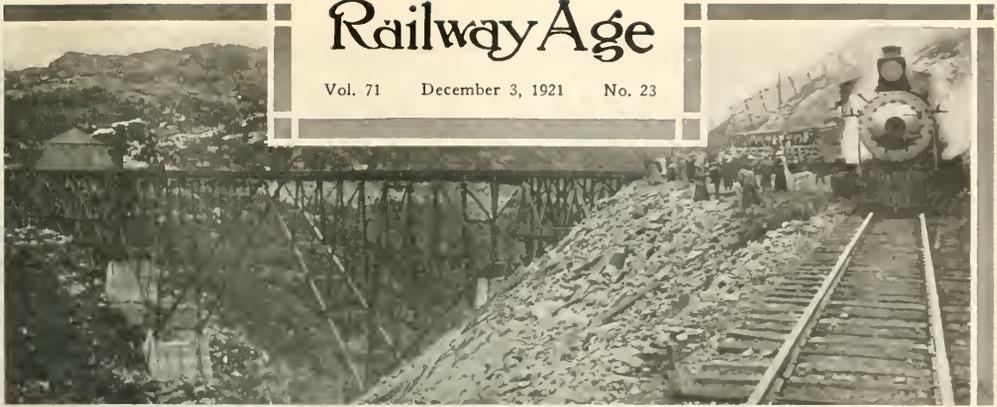
**Edward A. Chenery**, superintendent of telegraph of the Missouri Pacific, with headquarters at St. Louis, Mo., whose death was mentioned in the *Railway Age* of November 12 (page 964), was born on the Atlantic Ocean on October 17, 1859. He entered railroad service as a telegraph operator on the Grand Rapids & Indiana in November, 1872. He continued in that capacity until January, 1879, when he entered the service of the Galveston, Harrisburg & San Antonio, with which company he was successively telegraph operator, dispatcher, car accountant and secretary to the general superintendent. In June, 1886, he resigned to become secretary to the general superintendent of the Union Pacific, with headquarters at Omaha, Neb. The following year he became superintendent of telegraph of the Terminal Railroad Association and the St. Louis Merchants Bridge Terminal Railway, with headquarters at St. Louis. In May, 1903, he left the above companies to become superintendent of telegraph of the Missouri Pacific, which position he was holding at the time of his death. During the federal control of the roads, Mr. Chenery was general superintendent of telegraph of all the lines in the southwestern region with headquarters at St. Louis. For many years, Mr. Chenery was actively engaged in the work of the Association of Railway Telegraph Superintendents and served as its president during the year 1905-1906. Since the activities of this Association have been incorporated under the Telegraph and Telephone Section of the American Railway Association, he has been a member of the Committee of Direction.



Edward A. Chenery

# Railway Age

Vol. 71 December 3, 1921 No. 23



Cantilever Bridge at White Pass, Alaska.—Photo from Underwood & Underwood, N. Y.

## Contents

**Wage Statistics for July on New Basis** ..... 1085  
 The First Official Figures Available Showing How Wages Have Declined Under the July 1 Decrease.

**Prices Still Much Higher Than Railway Rates** ..... 1089  
 Detailed Statistics Over a Period of Thirty Years Show Freight Charges Are Now Relatively Much Lower Than Commodity Prices.

**Lackawanna Success the Result of Supervision, Part II** ..... Page 1097  
 How the Road Handles Its Coal and Manifest Freight—Utilizing Signals in Facilitating Train Movement, by Charles W. Foss and James G. Lyne.

### EDITORIALS

**Are You Making a Place for Yourself** ..... 1073

**Electric vs. Steam Locomotive Maintenance** ..... 1073

**Improved Dining Car Service** ..... 1073

**The Lessons of a Year Ago** ..... 1073

**Britain's Equipment Exports** ..... 1074

**The M. K. & T. Reorganization** ..... 1074

**Production Milling Operations** ..... 1074

**Electrical Power Distribution** ..... 1074

**The Railroads Must Defend Themselves Better** ..... 1075

**Tonnage vs. Net Earnings** ..... 1075

**The Evolution of Contract Agreements** ..... 1076

### NEW BOOKS

**LETTERS TO THE EDITOR**

**The Golden Rule in Railway Work** ..... 1077

**The Use of Boiler Compounds** ..... 1077

**Why Railroad Officers Go to Washington** ..... 1078

### GENERAL ARTICLES

**The Preventive Treatment of Car Lumber**, by H. S. Sackett ..... 1079

**Avoiding Waste in the Operation of Locomotives**, by W. Elmer ..... 1081

**A Recent Development in Mail Coaches** ..... 1084

**Wage Statistics for July on New Basis** ..... 1085

**Labor Board Completes New Rules for Shop Crafts** ..... 1087

**Commission Asks Views on Common Officers and Directors** ..... 1088

**Prices Still Much Higher Than Railway Rates** ..... 1089

**Commission Orders General Rate Inquiry** ..... 1093

**Lackawanna Success the Result of Supervision, Part II**, by C. W. Foss and J. G. Lyne ..... 1097

**Hearings Before Senate Committee Continued** ..... 1103

**Baltimore & Ohio Completes Large Bridge Project**, by P. G. Lang, Jr. .... 1105

**The Farm Nineteen Train Order**, by E. W. Weston ..... 1107

**Freight Car Lending** ..... 1108

**Chilean Railroad Electrification Program** ..... 1109

**Electrification of English Railways** ..... 1110

**Edgar Steel Car Seals** ..... 1111

**Semi-Automatic Arc Welding Lead** ..... 1111

**Apron Attachment Facilitates Use of Air-Dump Cars** ..... 1112

### GENERAL NEWS DEPARTMENT ..... 1113

Published weekly and daily eight times in June by the

**Simmons-Boardman Publishing Company, Woolworth Building, New York**

EDWARD A. SIMMONS, *President*

HENRY LEE, *Vice-Pres. & Trans.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building  
 PHILADELPHIA: 407 Bulletin Bldg.  
 CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON: England, 34, Victoria St., Westminster, S. W. 1.  
 Cable address: Draisemac, London  
 NEW ORLEANS: Maison Blanche Annex

WASHINGTON: Home Life Bldg.

### Editorial Staff

SAMUEL O. DUNN, *Editor*  
 ROY V. WRIGHT, *Managing Editor*

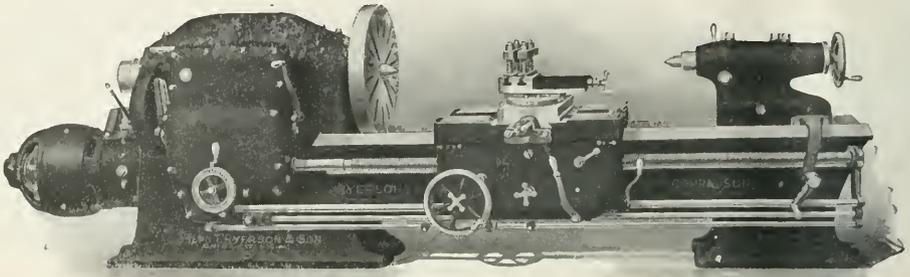
E. T. HOWSON	A. F. STUBING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	L. L. WOODWARD
H. F. LANE	K. F. KILLENBURGER	J. E. COLE
R. E. TRAVER	ALBERT H. OEHLEH	T. C. JAYNE
C. H. PECK	F. W. KRAEGER	J. H. DUNN
W. S. LACHER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOVCH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York and in other cities other than New York, payable in advance and postage paid, United States, Mexico and Canada, \$6.00. Foreign Countries (except in daily editions), \$8.00. Foreign subscriptions may be paid through our London office in 2 s. d. Single copies, 25 cents.

WE GUARANTEE, that of this issue, \$750 copies of the Railway Age, that of the 8,500 copies of the 1921-22 year were printed in the United States, 54 were provided for counter and press companies, 65 were mailed to advertisers, and 65 were mailed to subscribers, 65 were provided for new subscribers, 500 copies list in the mail and office use; that the total circulation for the year to date were 483,000, an average of 8.55 copies a year.



The Ryerson-Conradson Motor Drive eliminates all belts, tension idlers and chain drives with their consequent trouble and inefficiency.

## A Flood of Repair Work

There are over 12,500 locomotives awaiting repairs that will take over 24 hours.

Are the shops ready to care for such a flood with increasing traffic and winter ahead?

In the Ryerson-Conradson Railroad Lathe is a modern tool such as every shop needs for quick, low cost locomotive repairs.

Rapidity of output is a controlling feature of design.

For example, all gears are constantly in mesh, so speed and feed changes can be made without stopping the machine or fear of stripping gears.

Such advantages speed locomotive repairs.

*There are others our bulletin  
1301 tells about. Ask for it.*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

One problem confronting the executives of the small railways and, in a certain measure, the heads of the large roads as well, is to find lines of advancement

**Are You Making  
A Place  
For Yourself?**

for men whose work has been confined to certain special fields. This predicament also arises with respect to the regular operating positions when a man of exceptional ability develops faster than the other members of the staff. Some executives have solved this problem by a ruthless elimination of the less brilliant superior to make room for his more intelligent and aggressive subordinate, but except in cases of demonstrated incompetency this policy cannot be pursued consistently without becoming a bad influence on the esprit de corps. A more reasonable way to extend opportunity for promising material is to afford a greater scope of usefulness by a gradual widening of authority and responsibility. In short, make the place fit the man. A trainmaster may be given the title of assistant superintendent; a roadmaster may take over the duties of trainmaster in addition to his own, or a bridge engineer may be made principal assistant engineer with certain added responsibilities. As a matter of fact, this is being done and has been done for a long time and explains in part the diversity in the forms of railway organization in this country. The lesson in this to the aspiring young officer who feels that he is hiding his light under a bushel is to take the initiative in widening his own responsibilities, by doing more than is expected of him whenever the opportunity offers insofar as this may be done without causing friction in the organization to which he belongs.

Among the remarkable figures given in the report on the proposed superpower system are those dealing with the maintenance of electric locomotives.

**Electric vs. Steam Locomotive Maintenance** The cost of repairs, including engine-house expenses, for steam locomotives is assumed to average 42.6 cents per locomotive mile. For the electric locomotive equated to the same weight on drivers, a comparative figure of 8.26 cents per mile is given, or less than one-fifth the cost for the steam locomotive. The data from which the cost of maintenance of the electric locomotives was derived pertained only to direct current installations and included a total of but 196 locomotives. There is reason to doubt whether these figures are truly representative of what may be expected in extensive electrification. The conditions on the roads selected are probably unusually favorable for economical maintenance. This seems to be borne out by a comparison with roads whose maintenance figures are not given in the report. The maximum repair cost per mile shown for any of the electric locomotives included in the report is 16.7 cents, but for three roads not cited the cost in 1919 was 18.7 cents, 41.4 cents, and \$1.44 per mile, respectively. The last figure shows conclusively that electric locomotives are not always notable for their low maintenance costs. To use this as typical would be unfair, but it is likewise unfair to compare the maintenance of electric locomotives on short runs and in passenger service with that of steam locomotives in all classes of service. Most of the electric locomotives have been in use such a short period that

repairs are still lower than normal. It is difficult to prove just what the relative repair costs would be on a fair basis of comparison but the authors of the superpower survey must furnish additional evidence before their claim that the cost of maintenance of electric locomotives is one-fifth the cost for steam locomotives can be accepted as fact.

In dynamic times like the present, real accomplishment along lines not pressing daily for solution is only too likely to pass unnoticed. The improvement in dining car service on a number of roads in recent months is a case in point.

### Improved Dining Car Service

The same or better meals at lower prices are being offered to the traveling public on a number of roads, so that now it is possible for a traveler to dine quite as well at the same or less cost than he could at the average restaurant of the better class. Few railroad officers are ignorant of the fact that good dining car service is a builder of business. They should not fail, therefore, in spite of the pressure of other business to recognize and appreciate improvement when their dining car departments bring it about. There seems to be a tendency in the direction of the table d'hote and plate dinners and more moderate prices in place of the rather expensive a la carte service. The popularity of these innovations can easily be proved by talking with the passengers on any road where they have been put into effect. The interest and appreciation of superior officers doubtless have gone a long way in assisting the dining car departments to bring about these changes. Further improvement is possible on some roads and the subject is one which commends itself, at least from time to time, to the attention of every super-vising officer.

During the last two weeks in October of this year the railways of the United States handled over 95 per cent of the maximum number of car loads of freight they ever moved. In fact in the St. Paul-Minneapolis terminals and in numerous other areas, the traffic actually exceeded that of the record period of a year ago. This traffic was moved with an ease which stood out in marked contrast with the congestion which threatened to paralyze the transportation industry of the country in the fall of 1920. This year's record was made with a much smaller number of cars in service and with a quarter of a million less employees. This indicates that the lessons of the congestion of a year ago have not been forgotten and that the measures which were introduced at that time are still effective. It would be unfortunate indeed if the roads should forget those lessons which they learned during the period of the most intensive operation in their history and lapse back into their old practices. Conditions then forced the roads to exert every effort to move traffic expeditiously to prevent blockades. Economical operation requires adherence to those same methods now. The increasingly urgent demand for the reduction in rates can be met only by the adoption of every possible means for promoting

### The Lessons Of a Year Ago

economy in operation: Railway officers must of necessity keep their organizations on the alert during the period of normal annual seasonal decline in traffic, which we are now entering, to insure that equally economical operation is secured as the pressure of traffic is relieved.

Great Britain has little cause for complaint on the score of her exports of railway equipment and supplies. In September of this year her exports of locomotives were valued at \$3,843,896, while for the same month last year they totaled only \$1,913,965 in value. During the same month of the current year the exports of locomotives from the United States were valued at \$1,493,050 as against \$4,105,405 in September, 1920. Thus in the short space of a year Great Britain has, in the face of a world-wide depression, greatly increased her exports of locomotives while our exports, which a year ago were much greater than those of Great Britain, have fallen off sharply. In the matter of freight cars and trucks Britain has not been quite so fortunate—September of this year showing \$2,535,180 as against \$3,269,390 for September, 1920—but even in this the decline is much less marked than that in American freight car exports. The secret of Britain's success as an exporter of railway materials and supplies is not hard to find—British capital is invested heavily in foreign railways and British railway men operate a large proportion of the railway mileage in foreign countries, especially in South America. It would be difficult to persuade an American that our extensive methods of railroading, and equipment designed to meet such operation, are not better suited to most of these countries than are Britain's intensive methods and "dinky" equipment. British investors have not hesitated, however, to put their savings into foreign railways and it is fair to expect that these British owned and operated roads should purchase equipment of British design. Such action is, moreover, cumulative—in favor of the British manufacturer. Mere envy of the success of Britain's leadership in the foreign railway field, however, is valueless. What we must do if we want an extensive foreign business is to emulate her example in financing and operating railways in foreign countries.

The reorganization plan of the Missouri, Kansas & Texas announced last week (*Railway Age*, November 26, page 1043) reduces the fixed interest bearing debt of the old company from \$146,543,142 to \$100,320,913. The fixed interest charges are reduced from \$7,429,376 (inclusive of sinking fund payments) to \$4,917,717. The plan proposes, in addition, the issuance of \$57,500,000, 5 per cent, convertible adjustment mortgage bonds bearing a contingent interest charge of \$2,875,000 cumulative from January 1, 1925. This reorganization plan is regarded as conservative. It relates to a railroad the operations of which have been characterized recently by marked progress. It is hardly necessary to discuss of what this progress has consisted as an effort was made to point it out in the columns of this paper in the articles entitled "Progress of Missouri, Kansas & Texas Since 1913," which appeared in the issues of June 10, 1921, page 1321, and June 17, 1921, page 1385. It is interesting to bring the facts up to date in a measure by noting that the net railway operating income for the Missouri, Kansas & Texas itself in the first nine months of 1921 was \$4,490,887 as compared with \$3,285,619 in the first nine months of 1920. The Missouri, Kansas & Texas of Texas, which incidentally had a standard return of about \$600,000, in the first nine months of 1921 had a net railway operating in-

come of \$1,677,038. In the first nine months of 1920, the Texas lines had a deficit of \$6,616,599. The M. K. & T. itself, for the nine months had an operating ratio of 80.1; its transportation ratio was but 36.6. The road at present is handling considerably less business than it was handling at this time last year. Nevertheless, it has succeeded in keeping up its train load and even exceeding the average for 1920, the latter fact being particularly true of the Texas lines. Bad-order cars on November 1 averaged but 7.1 per cent as against an average for the country of 15.0 per cent. These are merely a few of the outstanding facts, but they are sufficient to augur well for the operations of the road under the proposed plan.

There is a wide field for the greater use of milling machines in railroad shops where the work involves duplicate machine operations on many locomotive and car parts. The milling machine is particularly adapted for this work because of the large proportion of power actually used in removing metal, the continuous cutting action, and the high production of milling cutters each of which has numerous cutting points and edges. Both high production and accuracy of work are features of the modern milling machine which is designed to stand up under heavy cuts at high speeds. A four-head, planer type miller recently installed in the Beech Grove shops of the Big Four is used for milling the shoe and wedge ways on locomotive driving boxes, an operation performed in one-quarter of the time formerly required on a planer. Crosshead shoes, assembled in the crossheads, are milled in approximately one-third of the time formerly required. Before installing the milling machine four planers were kept busy on driving boxes and crossheads, but this work is now done on the miller in three days a week, the machine being free the remainder of the time for other work. It is unnecessary to point out the resultant saving in labor cost and there is also a considerable saving in floor space. The results secured are a strong argument for the installation of milling machines in many shops where the machine departments are not only congested but prove the limiting factor in shop output. The above conclusions do not in any way indicate that the day of the planer as an efficient, effective tool for performing certain machine operations has passed. For many operations the planer is the more adaptable tool and in other cases it would be difficult to get milling cutters of the required shape to perform the particular operations desired. Then, again, where only a single part is to be machined or where possibly the number of duplicate machine operations is small, it would not pay to make or buy milling cutters and adjust them in a milling machine. Experience has demonstrated, however, that the use of planers in repair shops for planing large numbers of driving boxes, crossheads, shoes and wedges and similar work is decidedly uneconomical. For machining these parts in quantity at a minimum cost of labor and time the milling machine is by far the more efficient tool.

In view of the growing demand for electrical power for the illumination of stations, the operation of pumping plants and similar purposes, it is becoming increasingly advisable for the railroads to look well into the future when providing power. As an example, one road has designed its signal transmission line to provide sufficient additional power for the illumination of the stations in the smaller towns, the lighting of a number of the switch lamps and a reserve for emergency lighting at accidents and washouts. At another point

### Britain's Equipment Exports

### Production Milling Operations

### Electrical Power Distribution

on this same road a coal chute is operated by a 15 h.p. motor connected to the signal power line. If a transmission line is being planned it is necessary that these additional power requirements be considered to provide sufficient capacity to prevent an excessive reduction in the line voltage when the motor is starting, for otherwise the automatic block signals might be released momentarily to the "stop" indication. The load factor, the distance from the motor to the sub-station and the power capacity available, are all questions entering in the problem. The economies resulting from the use of automatic electrically-controlled machinery at isolated points are so large as to warrant thorough investigation. It would, therefore, appear advisable to call a conference of the several officers concerned before any transmission line is designed.

## The Railroads Must Defend Themselves Better

NO CAREFUL OBSERVER can doubt that public opinion is much less friendly to the railroads than two years or even one year ago. The change which has occurred is illustrated by the alteration in the attitude of public men in Washington, by what many newspapers are saying and by what many people outside the railroad business are saying in private conversation.

Everybody is criticizing the present rates of the railroads. Some publications and persons recognize the fact that high labor and other high costs have made the present rates necessary, and that substantial general reductions of rates will be impracticable until costs of operation are reduced. Unfortunately, however, many publications and persons not only do not recognize the actual facts regarding the situation, but either willfully or ignorantly misrepresent them. Never in ten years has there been so much misleading or downright false propaganda disseminated against the railroads as now. It is being charged throughout the country that the salaries of their officers are grossly excessive; that they are wasting hundreds of millions of dollars through grafting contracts with outside concerns; that the valuation placed on their properties by the Interstate Commerce Commission is \$5,000,000,000 to \$7,000,000,000 too much, and that they are being guaranteed by the government, and are actually receiving a 6 per cent return on "watered" capitalizations and valuations. These and almost innumerable other fabrications have been put in circulation and are being persistently repeated. The effects being produced on public sentiment are bad.

This propaganda is coming mainly from two general sources. It is coming, first, from men like Clifford Thorne and Glenn E. Plumb who make a living by misrepresenting railway affairs, and from public men such as Senator La Follette whose political stock in trade consists of misrepresentations of all large industries, especially the railroads. It is coming, secondly, from the heads of the railway labor organizations and from literally hundreds of thousands of railway employees whose purpose is the promotion of the Plumb plan. Many persons who were not receptive to this kind of propaganda a few months ago have been made receptive to it by antagonism to the railroads which they first began to feel because they believed that high railway rates were injuring them.

It is to the selfish interest of the entire nation that this malicious, false and selfish propaganda against the railroads be refuted. It is especially to the interest of the owners and managers of the railroads that it be refuted. And, in fact, it is being refuted. But, unfortunately, those who are engaged in spreading this propaganda are far more numerous, and are working actively in many more

communities, than are those who are answering it. Therefore, the propaganda is daily becoming more wide-spread and effective.

The *Railway Age* has said before, and now earnestly repeats, that the remedy is available to the managements of the individual railroads and should be applied chiefly by them. Various organizations of the railroads, most of them branches of the Association of Railway Executives, are engaged constantly in preparing data and arguments which completely refute the reckless calumnies constantly being circulated by those who desire to destroy private ownership and management of railroads. The trouble is that not enough is being done through the organizations of most of the individual railroads to get the facts about the railway situation presented to the people in their territories. Thousands of the employees of almost every railway are assiduously engaged in poisoning public sentiment in their various communities. In most cases the managements of the railroads are doing little or nothing to supply an antidote for this poison.

There are railways in every part of the country which, through special departments established and maintained for that purpose, are doing effective work to nullify the effects of the anti-railroad propaganda being carried on. This ought to be true, however, not merely of only part, but of all of the railroads. Not a single false or misleading statement regarding railway management or railway regulation should be allowed to be published anywhere without an answer to it being promptly sent to the paper in which it appears, with a request for publication of the answer. But there are literally thousands of such misrepresentations appearing in the press, not only every month or every week, but almost every day, and a few men scattered here and there cannot possibly answer them all. The amount of work done to get to the public the truth about the railroads ought to be equal to the amount of work done to get to it misrepresentations of them, but it is not anywhere near equal to it.

The preponderance of the propaganda against the railroads over that being carried on in their defense is so great that it is becoming a serious menace to all fair and reasonable regulation, and to private ownership and management. The duty of the railway managements to the owners of their securities, and their duty to the public, demand that many of them shall awaken to the situation that is developing and deal with it more effectively.

## Tonnage vs. Net Earnings

THE MEASURE of success which a management achieves in the operation of a railway property is reflected in the minds of its stockholders and the public at large by its net operating income, rather than by the amount of traffic which it handles. Obviously this income is dependent upon the difference between the amount which the road receives for the transportation of the various commodities and what it costs to haul them. As a common carrier, a road must of necessity try to handle all traffic that is offered to it. However, a large part of the tonnage of almost every road is competitive and is secured by direct solicitation. It is in the selection of the traffic which it sets out to solicit that a road can exercise a discretion which will be reflected in its net earnings. The traffic department can do much to promote the interests of its road in such matters. Unfortunately, the success of this department as a whole and that of its individual solicitors is too often measured by the amount of tonnage secured rather than by the profit which the road can earn from it. One of the most marked evidences of this incorrect viewpoint prior to federal control was the active solicitation of traffic for movement over other than the most

direct or economical routes. From the standpoint of the public any such movement which adds to the cost of transportation constitutes an economic loss. While it is true that the out-of-pocket cost of handling such traffic, in addition to that already moving, is less than the average of all, an analysis of this indirect movement of traffic will show many instances where such freight is being hauled at an actual loss to the road on even this basis. With unified control and the elimination of competition during the war, the incentive for such routing was eliminated and it was greatly reduced. Since the return of the roads to individual competitive operation, this tendency has again asserted itself and the limited traffic during the current year has given it added impetus. The result is that some of the old practices are again in vogue. This condition calls for increased supervision by executive and traffic officers to eliminate this waste and to promote the interests of the roads themselves. It also calls for the recasting of the units of measure of the success of the traffic solicitors in order that profit from transportation rather than tonnage shall be the primary consideration.

## The Evolution of Contract Agreements

**T**HE CONSTRUCTION contract is the product of evolution. In the early days of modern construction work, the contract form was the work of the individual and such semblance of uniformity as prevailed at that time arose from the fact that few men are of a truly original turn of mind with the result that they abstracted largely from each other's documents. As organizations of architects and engineers were formed, a natural development was the drafting of uniform contracts to meet the common opinion of the men engaged in a particular class of construction. Classic illustrations of this are the uniform contracts of the American Institute of Architects and of the American Railway Engineering Association. The best thought of groups of men interested in these two classes of work was brought to bear in establishing certain standards of practice and while the resulting instruments are not used in their entirety by all persons naturally falling within these two groups, they have had profound influence in thoroughly establishing certain usages.

A step further in advance has been the co-operation between builders and architects as carried out in some of the larger cities through the promulgation of uniform contracts which now have the formal recognition of established bodies representing both of the parties to such agreements, and because of the high degree of standardization now obtained as regards particular classes of work, the contractor is afforded a reasonably well-established understanding of what is expected of him.

A new situation has arisen because of the development in more recent years of a class of large contractors who engage in many kinds of construction. More recently the dearth of railway construction and the enormous growth of highway building has led many firms of railway contractors to take up highway work. As a consequence, many contractors are now compelled to deal with a variety of contract forms and have thus been brought face to face with a need for a still greater degree of standardization of contract agreements. This has given rise to the organization of a joint committee on standard contract forms to be comprised of representatives of both the designers and builders in all lines of work who will combine their efforts in an endeavor to formulate standards for those portions of the construction agreements which are applicable to all classes of work.

It is believed that representatives of the American Railway Engineering Association and the railway contractors will play an important part in this work. In no class of large scale construction has practice been more thoroughly established by accepted usage over a greater period of years.

The representation of railway men and railway contractors should, therefore, be of distinct value on this committee. At the same time, the railways can derive no small degree of benefit from the work that such a committee can do through the greater degree of uniformity in the contracts which individual railways now use in the carrying out of work of different classes.

## New Books

*Proceedings of the American Wood Preservers' Association for 1921.* 500 pages. Illustrated. 6 in. by 9 in. Bound in cloth. Published by the American Wood Preservers' Association, George W. Hunt, secretary, Madison, Wis.

This volume contains the proceedings of the seventeenth annual meeting which was held at the Hotel St. Francis, San Francisco, Cal., on January 25-27. Among the reports included in these proceedings which are of particular interest to railway men were those on the effect of the zinc chloride process of preservation on the strength of timber, the service tests on treated ties, the layout of switch-tie yards, and inspection. Of particular interest and value was the elaborate report on the San Francisco Bay marine piling survey in which were included the results gained up to that time from the detailed study of the action of various forms of wood-boring insects on piling in railway and other docks in that harbor. The proceedings also include a large amount of data regarding the quantity of wood treated and the preservatives used in the United States during 1920.

*Waste In Industry.* By the Committee on Elimination of Waste in Industry of the Federated American Engineering Societies. 409 pages, illustrated, 6-in. by 9-in. Bound in cloth. Published by the McGraw-Hill Book Company, New York.

As indicated by the title, this book deals with the problems of industrial waste, and includes in detail the report of the committee of the Federated Engineering Societies on this subject. The results of the committee's investigations and their findings are presented in three parts which consist of a summary of the reports; six chapters covering the six industries of building construction, men's ready-made clothing, boot and shoe, printing, metal trades and textile; and seven chapters dealing with various classes of labor problems, safety first problems, health conservation and other general matters. The reports indicate that wastes in industry are due chiefly to low production resulting from faulty management; interrupted production; restricted production brought about by labor or managements; and lost production caused by accident, ill health, etc. While not covering the railway field directly there is much of interest to the railway man for the reason that many of the wastes in each industry show somewhat of a general similarity, and thus may apply in varying degrees to conditions in the railway work.

*Code Numbers on Interline Forms.* December 1921 Edition. 20 pages. 6 in. by 9 in. Bound in paper. Published by Railway Accounting Officers Association, 1116 Woodward Building, Washington, D. C. Price 5 cents.

This booklet is a list of the code numbers devised by the Railway Accounting Officers Association and intended to be printed on the various interline forms just preceding the name of the carrier issuing the form. The code numbers assist in the sorting of interline forms and eliminate many possibilities for error which exist by reason of the similarity of names. The use of the code numbers will eliminate the labor of coding by those carriers that need such information when using mechanical devices and the code number of the carrier issuing the form, when printed as indicated, will tend to eliminate errors which might otherwise be made by code clerks.

## Letters to the Editor

*[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]*

### The Golden Rule in Railway Work

PENNSYLVANIA.

TO THE EDITOR:

The communication entitled "Big Stick vs. Golden Rule" which appeared in your issue of November 26, was read with much pleasure. In my opinion it struck the right note in the present industrial situation. The writer had the privilege, some weeks since, of addressing a meeting of subordinate officers, in which he talked about the labor troubles and discussed causes and possible remedies. After appealing for a restoration of the old spirit of a generation or two ago, the following was said in conclusion:

"How can this be brought about? By fair and equal treatment; even-handed justice; mutual confidence; faithful performance of duty with service cheerfully rendered, and finally, a spirit of uniform courtesy and of kindly consideration to be shown between and among all classes of workers—management as well as rank and file. The common principles of Christian charity properly applied could easily accomplish all this.

"In the last analysis it means simply this; that men and women of all degrees in their relations with each other must be governed by these principles which were promulgated (by being lived) by Him, who came into this world, taught the principles of right living, suffered, died and rose again; and while He spake as no other man ever did, was Himself a working man.

"In other words we have, all of us, simply got to align our lives with these principles and give the spirit of Christianity a real chance in this world, or the world cannot be saved industrially, economically, morally, spiritually or in any other way."

Nothing new in the above, just the same old truths; but after 50 years' experience in the railroad work, seeing and in more or less close touch with the great changes in that work during this time, it is my intense conviction that the only solution of the present troubles lies along these lines.

AN OLD RAILROADER.

### The Use of Boiler Compounds

CHICAGO.

TO THE EDITOR:

The article entitled "The Interior Treatment of Boiler Waters," by C. R. Knowles, superintendent of water service of the Illinois Central, which was published in the *Railway Age* of November 12, should be read by every railway officer who has to do with operating or mechanical maintenance problems. Mr. Knowles has shown considerable courage in placing before your readers facts which are not generally taken into consideration, during a discussion of the subject of water treatment. The remarkable lack of uniformity of opinion, on the part of those responsible for trunk line locomotive operation, would not be so evident if every officer concerned would read this article thoroughly.

It may be a shock to some who have authorized expenditures of hundreds of thousands of dollars for treating plants, to learn that these treating plants do not produce pure water. However, it should be of some comfort to these gentlemen to be informed that absolutely pure water, even if it were obtainable, would not be, in all respects, a good boiler water.

If it were, it would probably be unnecessary for the United States Navy, for instance, to purchase large quantities of boiler compound, as it does, to be used in water which is almost 100 per cent distilled.

So far as compounds are concerned, it is frequently pointed out that practically all of them are based on soda ash, and several large railroads take the position that since this is true, they may as well use the raw soda ash. It would be just as logical for them to assume that since the major ingredient used in the making of bread is flour, we may as well do away with the bread, and eat the raw flour.

Within the past few days, the writer was a passenger on a railroad which operates throughout with raw soda ash as a water treatment. In a distance of 90 miles, the blow-off cocks of the locomotive of this train were opened 22 times, for periods averaging 10 seconds each. This blowing was necessitated by the foaming tendency of the water, due to the use of soda ash, and for the purpose of changing out as much of the concentrated solids in the boiler as possible. Multiplying this amount of blowing by at least four times, to obtain the corresponding figure for freight locomotive operation, and reducing it to pounds of fuel, we have a fuel wastage, through blow-off cocks, which is startling.

If, by this means, we are getting rid of the solids which had been precipitated out of the water by the treatment, the situation would not be so bad, but we do not get rid of any considerable quantity of solids by blowing locomotives which are working. Solids are expelled through the blow-off cocks when they are open, after settlement of the water, either after a long wait on the siding, or after the fires are knocked in the locomotive terminal. In the case of one railway, which had been using raw soda ash for years, this situation was brought to the attention of higher executive officers on an inspection tour by the error of an engineer in opening the blow-off cock on the windward side, by which means he succeeded in painting the varnished equipment of the train a beautiful white from one end to the other.

A properly designed boiler compound was put into service on this trunk line, with the result that the boilers are being maintained in a cleaner condition and the blowing is all done in the terminal, under supervision of those responsible for the maintenance of the boilers. The saving in fuel was far more interesting to those responsible than was the appearance of the train. A ten-second blow, after the water is settled, is more than equivalent to the blowing which had previously been done while the locomotive was working.

If, as Mr. Knowles points out, only six per cent of the water used in locomotive boilers is at present the production of treating plants, the importance of the proposition of interior treatment by means of compounds cannot be otherwise than tremendous. Yet we find a tendency among water engineers to bend all of their efforts towards obtaining treating plants, and then towards obtaining the best service therefrom, while only haphazard consideration is given to the treatment of the vastly greater quantity of water used which cannot be the product of treating plants.

Those who consider the use of internally-applied compounds a haphazard method, in that this class of treatment cannot be properly adapted to the water sources used in the boilers, forget the fact that while this is true, scale already formed can be attacked by a given compound, even though the waters which formed this scale are made up from many sources greatly varying in their characteristics. In the use of boiler compounds we have more a boiler treatment than a water treatment, since their use results in attacking and throwing down scale already precipitated by the high temperature.

Let us put it this way. Proper treatment of water in the wayside plants throws out of the water certain impurities which would form scale before the water enters the boiler. Boiler compounds, used internally, attack scale after it has been thrown out of solution by heat. In the end the boilers

themselves tell the story, which should guide us, and it should make little difference to those responsible for these boilers which method is theoretically or chemically correct provided they are kept clean by the most economical means.

L. F. WILSON,  
Vice-President, The Bird-Archer Co.

## Why Railroad Officers Go to Washington

OMAHA, Nebraska.

TO THE EDITOR:

I have read carefully George N. Brown's article on "How to Better Bad Railroad Conditions," in the *Railway Age* of November 5, page 905. One must consider that it applies almost wholly to rates, and does not cover the operating problems or expenses that are so closely interwoven with earnings. Granted that many railroad officers spend considerable time in Washington, let us consider why.

The period of "regulation" dates back to 1907, as stated by Mr. Brown, and the regulation has increased in volume steadily during the 14 years since that time. This regulation by governmental authority for several years had to do mostly with the earnings of railroads. In an effort to secure an understanding of the justice (or injustice) of rates, it was quite necessary for railroad officers to put in much time in securing information and data bearing on questions that were brought out by applications for reductions or increases and to make arguments before the tribunal having authority to make final decisions.

Mr. Brown says: "About that time complaints by shippers began to increase rapidly and the commission was continually engaged in adjusting rates and rules and rate relationships."

Quite true; and why? Because industries through their associations and organizations began immediately to apply to the authority created by law for changes in rates that would benefit their particular business or extend and enlarge the territory in which they could operate with profit in competition with other industries. They felt that they could secure the relief or benefit by argument before the commission with less effort than to discuss or argue their applications with officers or individual railroads where (in a great number of cases) the rates asked for were sectional and general of application and affected several railroads. It was easier to make argument before an examiner for the commission, or the commission, than to the railroad rate-making bodies, since they would immediately have their case before the proper authority established to pass finally on the matter. This required the railroad officers to attend hearings, give testimony, make explanations, file information and data and to likewise make application to the commission for changes in rates, a natural consequence of having the authority to decide vested in a centralized tribunal.

There is much that the writer does not know or understand about rates or rate making, as I am, and have always been, in the operating department. Perhaps I can best explain my thought by making a comparison.

The Railroad Labor Board, authorized by law to consider wages, working rules and conditions, and "disputes" between the managements and employees, is having the same experience as did the Interstate Commerce Commission as to the "increase in complaints" and is "continually engaged in adjusting rates and rules," except that their decisions have to do with the expenditures of the railroads rather than earnings. The board recently called attention to the large number of "disputes" that had been filed for consideration and stated as its opinion that many of them could have been avoided by co-operation between officers and employees. Quite true. However, when Decision 119 was rendered by the board there was a painstaking, earnest effort made by

the railroad managers to meet with the recognized representatives of the employees for each craft or class and discuss proposed modifications of rules and working conditions as instructed by the board, applying the principles laid down by it as a basis for discussion. What was the result? Days of preparation of data, drafting of rules, correspondence with the authorized representatives of employees, conferences, argument, discussions, explanations as to the meaning of rules proposed and their application, comparisons with the national agreements, modification of proposals, further discussion and finally, after much delay, the "dispute." Then in a good many cases the representatives of employees declined to join in a submission to the board, saying "we have nothing to refer, the national agreement suits us." Then came the ex-parte submission to the board by the railroad officers to comply with their instructions or the joint submission where the representatives of employees would join.

I wonder if any member of the board would say to the railroad officer, as did the commission to the traffic manager, "I say to you that wherever your rules and regulations are unjust and unfair, you have the undoubted right to change the same. Make the proper change and advise the (board) why you did it."?

Hardly. They said just the contrary, "No changes in rules or working conditions are to be made without the approval of this board."

Truly it may be said, "It has become the settled habit of many railroad officers to spend most of their time in Chicago or riding to and from Chicago." Why? Just so long as there is any authority by law to regulate wages, working rules and conditions it is (and I fear will be) impossible to secure by agreement with the representatives of employees any change in wages or rules, unless the change increases compensation, or at least does not reduce it.

I make no criticism of the position they take. Human nature is the same the world over. Argument must be made before the tribunal having authority to decide, and this requires the railroad officers to spend much time in Chicago. Is it necessary? Was it necessary for them to spend time in Washington? Why do we have commercial associations? Why farmers organizations? Why manufacturers associations? Apply the same restrictions to business concerns that the railroads are now subjected to and create a commission to regulate the prices they shall receive for their products. How soon would the officers of these business interests apply for increases? How soon would the public apply for reductions? Go further and create a board to regulate wages and working conditions. How long would it be before the employees would ask for increases or changes, or the officers of the businesses interested ask for reductions? Would the officers "get back to their jobs and stay there"?

The railroads manufacture only one commodity—transportation. Under present regulation, if all the "railroad managers should get back to their jobs and stay there," would we not find very soon that we were manufacturing an article that could be marketed only at a loss—a considerable loss? It is only by carefully watching the cost of manufacture and being aggressive and efficient in selling the product that any business can succeed, so what more necessary than consistent effort to keep the cost of production down, or the sale price up to a point where reasonable profit can be taken, or at least one balance the other to avoid failure and bankruptcy. So long as the greater part of the cost of manufacture or production, and all the selling price, is controlled by tribunals established by the government, what more natural than a consistent effort to have the one reduced, or the other increased, by these tribunals in order that the railroads can show reasonable profits?

Under these conditions, should railroad officers stay away from Chicago, or Washington?

W. F. THIEHOFF,  
General Manager, Chicago, Burlington & Quincy.

# The Preservative Treatment of Car Lumber

Practical Results So Far Obtained Suggest the Desirability of an Extension of the Practice

By H. S. Sackett

Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul

**A** SIGNAL VIRTUE of wood which alone makes it more suitable for general car construction than steel is the readiness with which it may be protected against natural deterioration or decay by chemical treatment. This is accomplished before placing in the structure with positive assurance that it will be serviceable for the full mechanical life of the part. Steel must be continually painted with rust- and acid-resisting paints to protect it against early failure because of corrosion.

Prior to the last few years very little attention has been given to the influence on car maintenance of decay in wood

section of the country where wood equipment still predominates it may be significant.

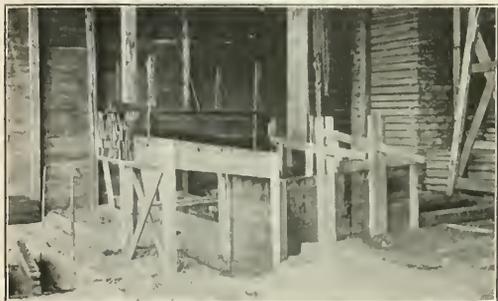
It was shown that of a total of 265,666 individual parts or pieces replaced, 82.3 per cent failed directly because of decay, and 17.7 per cent represented mechanical failure. The repairs were distributed approximately as shown in the accompanying table.

DISTRIBUTION OF REPAIRS OR RENEWALS OF WOOD CAR PARTS BY CAUSES  
Causes of failure

Description of part	Causes of failure	
	Decay, per cent	All other causes, per cent
Draft timbers.....	0.0	100.0
End sills.....	34.4	65.6
Deadwood.....	7.4	92.6
Long sills.....	68.0	32.0
Sub-sills.....	26.2	73.8
End posts.....	32.4	67.6
Coal car sides.....	80.1	19.9
Running beards.....	97.3	2.7
Roofing.....	100.0	0.0
Sillings.....	89.5	10.5
Lining.....	89.1	10.9
Decking.....	95.4	4.6
Grain strips.....	96.5	3.5

The types of cars included in this investigation, which constituted the regular run of bad order cars turned in at this shop, were distributed as follows: box, 223; coal, 87; ballast, 23; flat, 20; refrigerator, 19; stock, 17; tank, 10.

These data when submitted to car builders, have caused



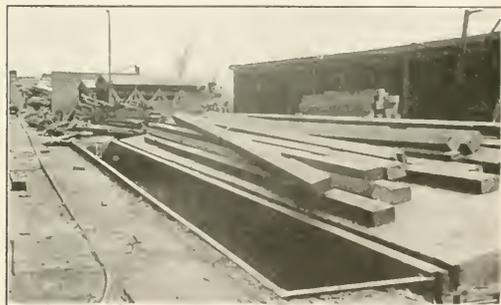
Small Tank for Creosoting No. 1 Common Yellow Pine Decking and Roofing; 250 to 400 Pieces Per Charge Immersed 30 Min.; Repairs Caused by Decay Already Reduced More Than 50 Per Cent

members of freight cars. Car builders were prone to charge a great majority of failures to mechanical causes. It developed during an exhaustive investigation conducted for a period of two years by a special committee of the American Wood Preservers Association, that the contrary was more to the point.

Analysis of a questionnaire distributed through the Master Car Builders' Association indicated that at least 30 per cent of all repairs to freight cars of all-wood or composite construction were directly due to decay.

This information was, of course, generally based on the experience of the car foremen who supplied it, and it may be assumed that but little care had been given to gathering data that would be conclusive. An effort was made, therefore, to check the estimated figures as provided in the committee report\* for which purpose a special clerk was placed by one of the committee members in a western car repair shop, whose experience could give accurate judgment as to whether decay or mechanical failure was the primary cause for the respective repair or replacement.

An interesting fact developed incidentally in this investigation was that during the month that this special inspection was in force 1,100 steel cars and 399 wood cars were repaired at the shop in question. As the shop is located in a



Open Tank Creosoting Plant for Treating No. 1 Common Yellow Pine Car Sills; Treated Sills Show No Decay After Four to Six Years' Service

much astonishment and, perhaps, some doubt. There may be circumstances which would not allow of their application, in toto, to all other shops in the country. However, there is no record of a similarly thorough investigation at any other point, and it is prudent to give very careful consideration to the facts here disclosed.

The main fact that is gleaned from these data is that the preservative treatment of car lumber is necessary as a matter of straight economy and essential as a conservation measure. This is merely another instance where reasonable precaution—maximum efficiency in utilization—would materially increase the durability of cars as a whole and reduce the cost of maintenance, thus in many cases making unnecessary the substitution of more costly steel equipment. In

\*See the proceedings of the American Wood Preservers' Association for 1919.

other words, in the past we have not obtained the maximum service from wood because of our negligence in applying comparatively inexpensive remedial measures and have, therefore, not really learned the ultimate value of wood for the several purposes under consideration.

It is true that certain changes in present shop practices must precede the introduction of treated timber in car construction; but that is a comparatively unimportant detail when the more costly changes which the adoption of all steel equipment would necessitate are considered. The latter would not only entail new shop practices but complete reorganization and almost entirely new tools and equipment or rather, duplication of machinery because the composite cars built during the last five years or so would require maintaining the present shops for their repair. Consequently, by following lines of least resistance and choosing the lesser of two evils, if they are to be considered such, immediate adoption of treated car material is a good policy and fits in well with the present desire and need for economy, wherever that may be practically applied.

Treated material can be used in practically every type of car. Whenever creosoted timber is not suitable because of the fear of contaminating lading, the lumber may be treated with zinc chloride, sodium fluoride, etc. Methods of treatment are standardized and each standard treatment has its



Condition of Stenciling Applied to Creosoted Surface After Eighteen Months' Service; Surface Prepared by Applying One Coat of Pure Shellac

own record of achievement under suitable circumstances. There exists no insurmountable obstacle to the practice of wood preservation in car construction.

Refrigerator cars have been in service for between 7 and 10 years with treated sills. At first they were brush treated with creosote and when this had proved worth while the sills were creosoted by the open tank process. To the treated sills were added creosoted sub-flooring and roofing for the undercourse. More important still, never have the owners received a complaint that lading has been contaminated, although some cars of the latter type have been in meat service for over a year.

When speaking of treated timber for freight cars one naturally thinks first of stock cars, and these surely provide the greatest opportunity for saving in this direction. Stock cars with creosoted sills and decking have been in service for about 12 years without a single repair due to decay, where untreated stock car decking fails in from 4 to 6 years and sills in from 5 to 8 years. However, this is not the limit to which treated materials can be used in this type of car. Practically the entire car should be treated, from sub-sills (on steel underframe cars) to the roof. Where stenciling is necessary that can be applied to special boards, or it can be taken

care of by the use of metal numerals and signs, the cost of which would be a small item in comparison to the saving derived from the use of treated lumber.

Coal cars, flat cars, logging cars, caboose and housing cars all offer the same opportunity for economy by protecting the wooden parts against decay. Of box cars the sub-sills and nailing strips may be creosoted and the decking treated with sodium fluoride or zinc chloride where proper facilities are available. It may also be that other parts of box cars could be treated with these latter preservatives, but on that point there exists too little information at this time to allow a definite recommendation.

The particular advantage in addition to obtaining increased service is that preservative treatment allows the use of lower grades of wood, especially the presence of a goodly percentage of sapwood. In fact, sapwood is a partial advantage as it is more absorbent, takes treatment more readily and, therefore, gives greater protection to the stick.

Some shops are applying creosote oil to points of contact of sills, posts, etc., and the specification for the box cars developed during the war required treatment at such points with either paint or creosote. This is a step in the right direction, although paint cannot be considered a preservative in that it does not possess the necessary toxic qualities to inhibit the development of wood destroying fungi, or to kill the spores thereof that may be present on the surface and in the checks of the timber. However, it must be remembered that the value of any preservative treatment is in proportion to its thoroughness. Practically all car shops could equip themselves at little expense to employ the open tank process, and some roads operating pressure treating plants could arrange for the treatment of car material at these plants. The means for the practice of wood preservation, either by the use of surface treatments, the open tank process, or by employment of material treated at commercial or railroad plants with the standard pressure processes, are available in such varied form that no reasonable excuse can be advanced for continuing the abuse and waste of wood due to preventable decay. No repair yard, carpenter shop, or construction point along the railroad but can secure a barrel of creosote and a brush and at least partially protect such wood as it used against decay. As to the technical information involved, that likewise is readily obtainable and can be assembled by every engineering department and reduced to practical instructions to the workmen to bring about the desired results. Consequently, no extended discussion of these details need occupy us at this time. Suffice it to repeat that this is one means by which railroads can save enormous sums now expended for repairs that could be postponed or prevented were the lumber given the proper opportunity to serve its full period of mechanical usefulness by the simple expedient of reasonable protection against decay, applied before placing in the structure.

JAPANESE OWNED RAILWAYS in China have recently given manufacturers in Japan orders for cast iron pipe totaling 3,000 tons.

THE FREIGHT CLAIM DIVISION, A. R. A., has issued a circular for the benefit of receiving clerks containing the following: *Don't Accept Shipments for Transportation in barrels overloaded; in packages without marks; in packages insecure or weak; in packages with loose boards; in packages with improper tags; in packages requiring recoopering; in packages with contents rattling; in packages with insufficient nails; in packages with old consignment marks; in fibre boxes where edge seams are torn; in packages illegibly or not properly marked; in packages without rope, contents protruding; in fibre boxes with flaps not glued or sealed; in second-hand fibre boxes, unless in perfect condition; in packages with the name of consignee or the destination abbreviated; and in fibre boxes which are tied with rope, the flaps not glued or sealed.*

# Avoiding Waste in the Operation of Locomotives\*

## Determining the Most Economical Tonnage for a Given Division— Avoiding Excessive Delays at Terminals

By William Elmer

Superintendent Middle Division, Pennsylvania Railroad

LOCOMOTIVES are classified into major groups as freight, passenger, shifting and work locomotives. There are 65,000 locomotives on the railroads of the United States and half of them are in freight-train service. Thirty-two thousand and eighty locomotives earned a freight revenue of \$4,325,078,860 in 1920, or an average of \$135,000, per locomotive per year. Each engine made an average of 59.3 miles per day or 1,800 miles per month. The average freight engine earned for its owners \$370 per day or \$6.25 per mile run. This is at the rate of \$15.40 per hour or about 26 cents per minute. The striking thing in the group of facts above presented is the figure of 59.3 miles per day made by the average freight locomotive. How can we excuse an average mileage for all the freight locomotives in this country of less than 60 miles per day? We can picture the average freight locomotive rolling along the rails at 15 miles per hour and that means less than four

data a true profile may be plotted, showing the elevations above sea level and the actual grades; but this profile will not be fully representative of the resistances encountered by moving trains until it has been transformed into an equivalent compensated profile by superimposing the curve resistance on top of the grade resistances for each direction of traffic. We can imagine a railroad so full of sharp curves that a very considerable resistance would be experienced by a moving train. Many experiments have been tried in an effort to find how much resistance various curves offer to a moving car, and we will take 1 lb. per ton of 2,000 lb. per degree of curve. The resistance due to grade is fortunately an exact mathematical quantity—20 lb. per ton for each 1 per cent of grade. Therefore each degree of curve offers the same resistance as a 0.05 per cent grade. A 0-deg. curve has the same resistance as a 0.3 per cent ascending grade. A grade which is climbing upward at the

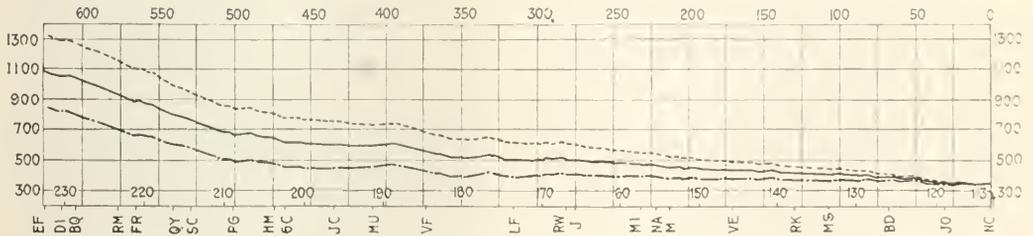


Fig. 1—Actual Profile of a Division and Equivalent Profiles, Eastbound and Westbound

hours out of each twenty-four actually moving trains. The locomotive spends its entire time either in the hands of the transportation department moving trains or ready to move trains, or in the hands of the motive power department being repaired and prepared. Roughly we may say that the engine is in the hands of each of these departments about half the time. Of course there is avoidable waste in each.

Taking up first the transportation department, there are two broad inquiries which may be made:—(a) Are the engines properly loaded? (b) Are they properly used? Assuming that suitable engines have been furnished the transportation department, or taking the engines on any division as we find them, how are we to know when they are properly loaded? If a dynamometer car is available, road tests may be run to determine the drawbar pull of the engines and to measure the resistance of trains of various make-ups on the ruling grades at the desired speeds. In the absence of this facility it may be desirable to outline the procedure.

### Are the Engines Properly Loaded?

A track chart of the road is necessary, giving the distances from the starting point to the beginning and ending of each curve and tangent, with the degree of curve, and elevations of points where the grade changes. With these

rate of 26.4 ft. per mile or 0.5 per cent and has in it a 0-deg. curve, or 955 ft. radius, will therefore have superimposed on the true grade of 0.5 per cent the equivalent resistance of a 0.3 per cent grade due to the 0-deg. curve, or a total equivalent grade of 0.8 per cent. Of course, to a train coming down this hill, the equivalent grade would be the difference between these values, or 0.2 per cent.

A typical equivalent profile is shown in Fig. 1, in which the solid line is the actual profile, the dotted line above it the equivalent west-bound grade and the dot and dash line below it the equivalent east-bound grade.

Having determined the equivalent grade, it will be necessary to decide whether it can be operated as a momentum grade or not. If the length of the grade or other physical conditions on the approach prevent attaining any considerable speed, the dead pull of the locomotive will have to be depended on to get the train over. The tractive power of a locomotive is readily calculated from a very simple formula where  $p$  is the boiler pressure in pounds per square inch by gage,  $d$  the diameter of cylinders,  $l$  the length of stroke and  $D$  the diameter of the driving wheels, all in inches. For a simple two-cylinder engine, tractive power  $= 0.85pd^2l/D$ . When a locomotive is moving, some of its tractive power is used to overcome friction of the engine and tender, and on a grade some more is needed to lift its weight against gravity, and at speeds of more than six or eight miles per hour the boiler becomes a factor in

\* Abstracted from a paper entitled "Avoidable Waste in the Operation of Locomotives and Cars," to be presented before the Railroad Division of the American Society of Mechanical Engineers, New York, December 6.

its inability to furnish enough steam to follow the pistons with full pressure under long cut-off conditions, so that some more complicated formula becomes necessary in the calculation of the tractive power required for moving trains. Besides the resistances due to curves and grades, trains are affected by journal and flange friction, wind, rolling resistance, temperature, etc.

It is a well-known fact that trains cannot be loaded on tonnage alone. One hundred empty cars weighing 20 tons each would be a 2,000-ton train, and might overload an engine to the stalling point, whereas the same engine on the same grade would handle twenty-five 80-ton cars with no trouble. The number of axles is the important factor, and in order that a long empty train may have the same resistance as a short loaded train, it is necessary to use a factor for each car, known as the adjustment factor. This factor will vary with the different physical conditions met with on different divisions.

Having discovered the adjustment factor for any given division, and knowing the principal types of freight engines in use on that division, it is well to construct tractive power-speed curves for the various engines, and plot on the same sheet adjusted-tonnage train-resistance curves on various level and compensated-grade tracks, so that the intersection

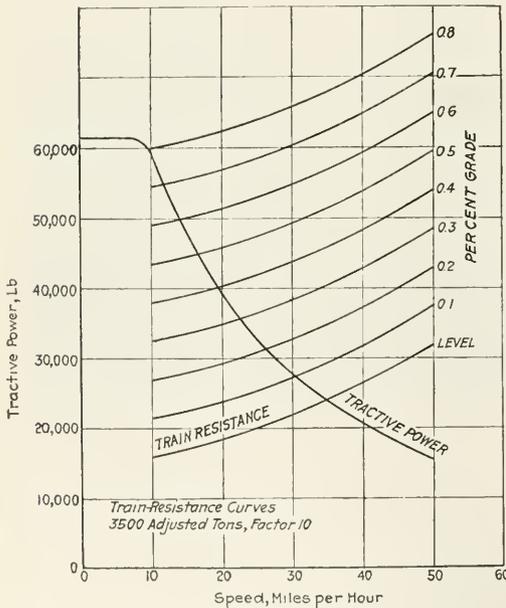


Fig. 2—Tractive Power and Train Resistance Plotted to Show Limit of Speed on Various Grades

of the tractive power curve with any given grade will show the speed that could be maintained with a full-tonnage train on that grade. A sample curve is shown in Fig. 2.

It will be noted that the curve showing train resistance on a level track intersects the tractive power curve a 35 miles per hour, consequently this is the maximum speed the locomotive in question can maintain on straight level track with a train of 3,500 adjusted tons. On a grade of 0.8 per cent, the maximum speed is 10 miles per hour.

After having completed the above described investigations and having before us the equivalent profiles and the speed curves on various grades, we can lay out a schedule of the

running time between the various towers, adding the necessary time to cover the initial and final terminal delay, water stops, coal and fire-cleaning stations, interference from passenger trains, etc., and bearing in mind the overtime limit based on a speed of 12½ miles per hour for the distance between terminals and the time the crew is on duty.

Now comes the crux of the whole matter. After the tonnage has been established, what are the results on the road? Do the trains lose so much time sponging or setting off cars with hot boxes, or draw heads out or brake rigging down, or due to interference from other trains that they cannot get over the road without excessive overtime? If the dispatching and terminal and road supervision are all that they should be and a record has been made for a sufficient period from which may be drawn reliable conclusions, we can de-

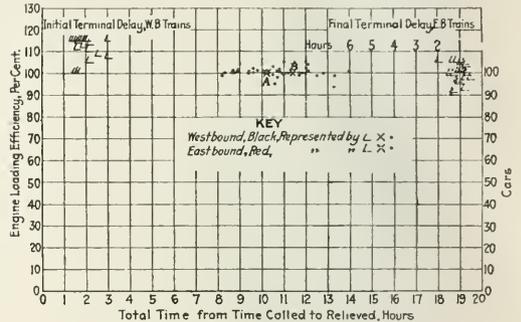


Fig. 3—Chart Showing Elapsed Time of Trains and Terminal Delays

termine whether the overtime is excessive;—in which event the tonnage should be decreased, or if the majority of the trains get over the road within the overtime limit, that the tonnage should be increased.

Fig. 3 is a graphical report showing each morning the performance of each of the previous day's trains, both slow and fast freight, plotting the time on duty from called to relieved against the percentage of the full tonnage loading of the engine utilized. This gives the train master, road foreman of engines and superintendent a review of the preceding day's operations, and any falling away from the standards set up on the part of the subordinate officials whose duty it is to properly load the trains is quickly brought to light.

Each dot or circle represents a train, its position vertically indicating on the scale at the left the percentage of the full capacity of the engine utilized, and its position across the sheet, read from the scale of hours at the bottom, shows the time the train crew was on duty. The small circles represent east-bound trains and the dots west-bound trains. The extreme left-hand dot shows a west-bound train which was 99 per cent of the full adjusted-tonnage rating of the engine, and made the run over the division in 8 hrs. 12 min. from the time the crew were called to report for duty until they were relieved from duty at the opposite terminal. It includes initial and final terminal delay.

The average of all the circles is shown by the cross at .1, and its position shows that the average of all the east-bound trains that day were loaded to 100 per cent and the average time was 10½ hours. The cross at B shows that the average loading of west-bound trains was also 100 per cent and the time just under 11½ hours. The characters near the left-hand margin indicate the class of engine hauling the west-bound trains, the number of cars being shown on the scale at the right, and the time from called to passing

out of the yard being read on the scale of hours at the bottom.

After keeping these daily sheets for several months, the location of all the crosses may be recorded on a sheet of tracing cloth, or a composite of all the small circles may be made on one tracing, and through the center of gravity of all the dots a curve may be drawn. This will show for any point on the curve the average time for the trains corresponding to that tonnage loading. These curves are shown in Fig. 4.

**The Most Economical Train Loading**

The curves in Fig. 4 having been prepared, the data shown in Table I may be calculated. Column 1 gives the percentage of engine loading, from 120 per cent down to

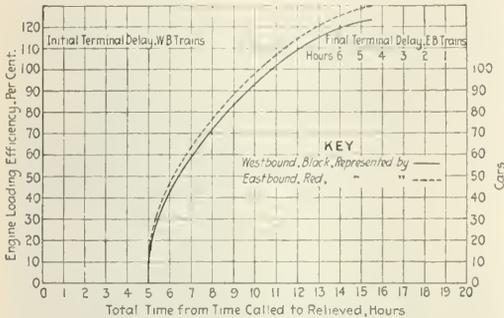


Fig. 4—Effect of Tonnage on Time Crew Is on Duty

80 per cent. The average flat tons in the east-bound and west-bound trains having been recorded each day on the sheets shown in Fig. 3 and the percentage of the engine loading being also available for each day, a summary may be run up at the end of the month and a comparison drawn as to the number of flat tons per train which would corre-

spond to a 100 per cent tonnage train. This has been shown for the west-bound trains at the head of column 2. This amount multiplied by the percentages in column 1 gives the tons per train in column 2. From the load-time curves in Fig. 4 may be read the average time for a west-bound train loaded to 120 per cent of the engine rating, etc., and these times recorded in column 3. The summary mentioned above will also show, by extension, the total gross tons moved each day, and the average of this figure is at the top of column 4. The number of trains which it would be necessary to run to move the average day's business may be found by dividing this number of tons by the proposed

tons per train in column 2 and the result recorded in column 4. The same process is followed to obtain the figure at the top of column 5 as explained for column 4 and as there will usually be the same number of east-bound and west-bound trains in order to avoid running power and crews light, the tonnage per east-bound train will be found by dividing the total tons to be moved per day by the trains per day shown in column 4 and the results recorded in column 5. The total time on duty for the crews in making a round trip is shown in column 8. It has been determined that on the division under consideration, engines are off the road and in the hands of the motive power department about 24 hours for every round trip they make. Consequently, 24 hours should be added to the times shown in column 8 to give the total time of an engine for a round trip as in column 9. The number of round trips made in column 4, multiplied by the number of hours per round trip in column 9 will give the total number of engine hours shown in column 10, and these figures, divided by 24 hours in the day, will give the number of engines assigned to the service as recorded in column 11.

As the average distance run by these trains is 128.2 miles and the overtime speed basis is now 12½ miles per hour, the time per trip is 10¼ hours and for the round trip 20½ hours. Consequently, the overtime per round trip is found by subtracting 20½ from the times shown in column 8, and the result entered in column 12. We now pay time and a half time for overtime in freight-train service, therefore the number of hours shown in column 12 multiplied by 1½ gives the overtime hours for which we have to pay at the regular hourly rates, and these figures are entered in column 13. Multiplying by the number of trains per day in column 4, we have the total number of punitive overtime hours per day shown in column 14. The total wages paid to the engine and train crews in slow freight service and with the class of engine under discussion now amounts to \$3,975 per hour, and the figures in column 14 multiplied by this sum gives the total overtime cost per day as shown in column 15. The straight-time hours per day is the product of the 20½ hours for one round trip times the number of trips in column 4

TABLE I—METHOD OF CALCULATING COST WITH VARIATIONS IN TRAIN LOADING

Per cent engine loading, W.B.	Tons per train W.B. (1) <sup>1</sup> 2400 × (1)	Time called to relieve W.B., Curve	No. of trains 48000 ÷ (2)	Tons per train, E.B. (4) 140,000 ÷ (4)	Per cent engine loading, E.B., Curve	Time called to relieve E.B., Curve	Time crews, in duty 1 R.T., hours (3) × (7)	Total time of engine 1 R.T., hours (8) + 24	Engine hours, (9) × (4)	No. of engines required (10) ÷ 24	Overtime hr. per train R.T., (8) - 20½	Punitive overtime, hr. per train R.T., (12) × 1½	Total punitive overtime, hr. per day (13) × (4)	Overtime, cost per day (14) × 3.975	Straight time, cost per day (4) × 20½	Straight time, cost per day (16) × 3.975	Total wages per day (15) + (17)	Value of engines at 60c. per hour (18) × 0.60	Total engine and wage cost per day (18) + (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
120	2880	12.93	16.667	8400	120	14.38	27.11	51.11	851.85	35.49	6.61	9.92	165.34	657.23	341.67	1358.14	2015.36	511.11	2526.47
115	2760	12.11	17.391	8055	115	13.60	25.11	49.11	854.07	35.59	4.61	6.92	120.35	478.39	356.56	1417.17	1895.56	512.44	2408.00
110	2640	11.40	18.182	700	110	12.33	23.53	47.53	864.19	36.61	3.03	4.55	82.73	328.85	372.73	1481.60	1810.48	518.51	2328.96
105	2520	10.78	19.048	7350	105	11.41	22.19	46.19	879.83	36.66	1.69	2.54	48.38	199.31	390.48	1552.16	1744.47	527.90	2272.37
100	2400	10.21	20.00	7000	100	10.77	20.98	44.98	899.60	37.28	.48	0.72	44.50	37.24	410.10	1629.75	1686.99	539.26	2267.75
95	2280	9.67	21.053	6650	95	10.19	19.86	43.86	923.38	38.47	...	...	...	431.59	1715.71	1715.71	554.5	2269.74	
90	2160	9.16	22.222	6300	90	9.67	18.83	42.83	951.77	39.66	...	...	...	455.55	1810.81	1810.81	571.06	2381.87	
85	2040	8.70	23.529	5950	85	9.18	17.98	41.98	987.75	41.6	...	...	...	486.34	1917.31	1917.31	592.85	2509.66	
80	1920	8.26	25.00	5600	80	8.70	16.96	40.96	1024.00	42.67	...	...	...	512.50	2037.19	2037.19	614.40	2651.59	

<sup>1</sup>2400 × (1) = 2400 multiplied by value in Column (1).

spond to a 100 per cent tonnage train. This has been shown for the west-bound trains at the head of column 2. This amount multiplied by the percentages in column 1 gives the tons per train in column 2. From the load-time curves in Fig. 4 may be read the average time for a west-bound train loaded to 120 per cent of the engine rating, etc., and these times recorded in column 3. The summary mentioned above will also show, by extension, the total gross tons moved each day, and the average of this figure is at the top of column 4. The number of trains which it would be necessary to run to move the average day's business may be found by dividing this number of tons by the proposed

and is shown in column 16. This at the rate of \$3,975 per hour gives the total straight time cost per day shown in column 17, and adding the overtime cost in column 15 gives the total wages cost per day in column 18.

Modern Mikado locomotives of the size under consideration are worth \$47,750 apiece, and taking interest at 6 per cent, depreciation at 4 per cent and insurance and taxes together at 1 per cent, we have fixed charges of \$5,256 per locomotive per year, or \$14.40 per day or 60 cents per hour. Column 19 shows the value of the engine hours in column 10 and the sum of the wages cost in column 18 gives the total engine and wage cost shown in column 20. It will be

noted that this cost is a minimum at 100 per cent loading. The limits are rather narrow and an error of 10 per cent in overloading or underloading would cause a loss of \$100 per day or \$3,000 per month on the amount of business handled on the division under consideration.

This method of working out the most economical tonnage for loading the freight engines of any division is based on actual practicable performance in everyday operation. The treatment considers the value of the locomotive, taking account of interest, depreciation and taxes; the relationship between straight-time and overtime rates for road crews; the quickening up of the time of the trains by a reduction of tonnage and the increase of the time the crews are on duty by an increase in tonnage. When these matters have been studied in the light of the recorded facts, we are in a position to answer the question, Are the engines properly loaded?

#### Are the Engines Properly Used?

So far as the motive power department is concerned it is important to have reliable reports which present promptly to the responsible operating officers, on the succeeding day if possible, all the pertinent facts concerning the performance of the locomotives available. These reports should cover not only the utilization made of the serviceable locomotives but also of all those laid off for repairs, both in the roundhouses and the back shops. The more promptly the work is done the more engines will be available for service and the smaller will be the number required to be purchased and to bear interest and depreciation charges. To this end the facilities at the engine terminals should be ample to inspect the incoming locomotives and send the reports to the dispatcher, who can at once call a crew in case the engine has only light work which can be completed by the time the crew reports.

The fire-cleaning pits and facilities for handling ashes, coal, sand and water should be in duplicate at important points. At one well-known freight-engine terminal it is possible to clean the fires and prepare for service 400 locomotives per day. Hot-water systems for washing and filling boilers save time, and drop tables or unwheeling hoists should be provided for handling driving wheels, spring rigging and driving-box repairs. Ample jib or overhead cranes should be installed in all important enginehouses, as the rods, pumps, pistons, smokebox fronts, etc., of modern locomotives are now so heavy that mechanical appliances must be used to reduce the cost of handling and save time in running repairs. The enginehouse referred to above at times furnishes the power for ten eastbound trains in two hours and at the same time ten to fifteen engines an hour for westbound trains. An operation of this magnitude requires close supervision in order to avoid waste of power and loss in efficiency.

(The remainder of Mr. Elmer's paper, which deals with the utilization of cars, will appear in a later issue.—EDITOR.)

### A Recent Development in Mail Cranes

UNDER THE NAME of the "White Heron" mail crane, there has recently been developed a type of crane for use on railroads which embodies a number of unusual features in the construction and operation of equipment of this character. A particularly prominent feature of this device is the absence of the familiar ladder as a part of the construction. The crane consists simply of a length of scrap rail which extends vertically from the ground beside the track and carries two pouch arms so arranged as to collapse against the vertical standard when the pouch is released and so attached to the rail and connected with a cable as to permit of their being projected from the vertical standard for the receipt or delivery of the sack.

For the latter purpose, each of the two sack arms is attached to a collar which fits the rail section, the two col-

lars in turn being fastened together by a plate which fits over the head of the rail and maintains them, one below the other, at the proper distance apart for the mail pouch. Each of these collars is also provided with a lug to prevent the lower pouch arm from being raised above the horizontal position and to prevent the upper arm from falling below this position. Each arm is made of a strip of metal bent U-shaped with the open end pin-connected to the collars. The arrangement of these arms and the collars is such that, aside from holding the pouch securely in position by reason of the tendency of the upper arm, on the one hand, to raise to the vertical position because of the weight of the lower arm, transmitted as it is through the metal plate connecting the collars, and the tendency, on the other hand, of the lower arm to drop from gravity, these arms assume a



Raising the Mail Pouch to Delivery Position

Position of Crane Arms After Delivery

position against the vertical standard immediately upon the release of the sack.

As shown in the illustration, the arms are lowered to permit of attaching the mail pouch from the ground level, in the one case, and raised to the proper position for the delivery of the mail pouch to the mail train, in the other case, by means of a cable passing over a pulley fixed to the top of the vertical standard and extending down to a point where it may be slipped over a bolt in the rail and pad-locked. Each arm has a delivery hook which is attached in such a way that, in the case of the top arm, the hook shifts slightly downward as well as horizontally and in the case of the lower arm, the hook shifts slightly upward, thus providing for such a converging movement of the two hooks as will facilitate the removal of the sack and reduce the strain to a minimum.

This crane has been approved by the government railway mail service and one is said to be giving satisfactory service at Bovina, Miss., on the Alabama & Vicksburg, where the mail is picked up at speeds ranging from 30 to 50 miles an hour. Among the points mentioned in its favor, aside from the absence of any ladder or platform and the facility with which the mail pouch may be removed, are the inexpensive but dependable nature of the construction, the clearance it affords to traffic and its independence of vibration from trains from the fact that it is erected on the ground rather than on the ties. T. A. White, Oklahoma City, Okla., and T. M. Heron, Vicksburg, Miss., are the inventors, jointly, of the device.

# Wage Statistics for July on New Basis

Number of Classes Increased from 68 to 148—Number of Employees in July 22 Per Cent Less Than Year Before

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has issued its summary of monthly reports of employees, service and compensation for Class I steam roads, including 13 switching and terminal companies, for the month of July, which gives the first official figures on the earnings and service of railroad employees under the wage reduction order of the Railroad Labor Board which became effective on July 1. It also represents the first summary compiled by the commission under the new rules governing the classification of steam railway employees, which were designed to meet the needs of both the Labor Board and the commission and under which the number of reporting divisions or classes has been increased from 68 to 148 and an analysis of the hours of service and compensation has been introduced. The quarterly statement on this subject, heretofore published, is discontinued and comparison of the old and new statistics is necessarily impaired. The increased number of classes does not result from a mere subdivision of the classes used in the old form, but is the outgrowth of an exhaustive classification study conducted by the Labor Board.

The total number of employees in service at the middle of the month was 1,634,872, as compared with 2,111,280 in July, 1920, a reduction of 476,408, or 22 per cent. In June, 1921, the number was 1,586,872. The falling off in traffic this year as compared with last year is also reflected in a reduction in the number of hours and days worked, although the statistics on this point are not comparable. The total compensation for the month was \$214,339,385, which gives an average of \$131 for the month, for the employees in service at the middle of the month, although all did not work full time.

## Average Earnings by Classes

The average earnings and time worked per employee are given by classes as follows:

Reporting division	Time worked per employee (days or hours)		Total earnings per employee
	Straight time	Over-time	
1. Executives, general officers, and assistants.....D	25	*	\$523
2. Division officers, assistants, and staff assistants.....D	27	*	322
3. Architectural, chemical, and engineering assistants (A).....D	25	*	236
4. Architectural, chemical, and engineering assistants (B).....D	25	*	185
5. Subprofessional engineering and laboratory assistants.....D	24	*	144
6. Professional and subprofessional legal assistants.....D	23	*	166
7. Supervisory or chief clerks (major departments).....D	25	*	177
8. Chief clerks (minor departments) and assistant chief clerks and supervising cashiers.....D	25	*	151
9. Clerks and clerical specialists (A).....D	185	3	157
10. Clerks (B).....D	189	4	125
11. Clerks (C).....D	187	6	104
12. Mechanical devices operators (office).....D	169	1	106
13. Stenographers and secretaries (A).....D	185	*	147
14. Stenographers and typists (B).....D	176	*	114
15. Storekeepers sales agents, and buyers.....D	202	3	159
16. Ticket agents and assistant ticket agents.....D	216	9	166
17. Traveling auditors or accountants.....D	25	*	199
18. Telephone switchboard operators and office assistants.....D	179	2	76
19. Messengers and office boys.....D	24	*	62
20. Elevator operators and other office attendants.....D	207	7	86
21. Lieutenants and sergeants of police.....D	29	*	170
22. Patrolmen.....D	254	4	143
23. Watchmen (without police authority).....D	231	14	106
24. Supervising traffic agents.....D	25	*	294
25. Traffic agents, advertising, and development agents.....D	25	*	213
26. Fire prevention, smoke, and time-service inspectors, and office building superintendents.....D	26	*	181
27. Claim agents and claim investigators.....D	24	*	204
28. Real estate and tax agents and investigators.....D	25	*	206
29. Examiners, instructors, and special investigators.....D	26	*	210

Reporting division	Time worked per employee (days or hours)		Total earnings per employee
	Straight time	Over-time	
30. Miscellaneous trades carriers (other than plumbers).....D	184	3	136
31. Motor vehicle and motor car operators.....D	196	6	206
32. Teamsters and stallion men.....D	186	7	112
33. Janitors and cleaners.....D	195	*	77
34. Roadmasters and general foremen (M. of W. & S.).....D	27	*	244
35. Assistant general foremen (M. of W. & S.).....D	27	*	197
35. Supervising maintenance of way inspectors and inspectors.....D	292	2	188
37. Maintenance of way inspectors.....D	269	*	173
38. Bridge and building gang foremen (skilled) (M. of W. & S.).....D	269	4	111
39. Gang and building carpenters.....D	191	4	119
40. Bridge and building ironworkers.....D	186	6	118
41. Bridge and building painters.....D	188	*	114
42. Masons, bricklayers, plasterers, and plumbers.....D	194	6	149
43. Skilled trades helpers (M. of W. & S.).....D	193	5	96
44. Regular apprentices (M. of W. & S.).....D	180	4	89
45. Portable steam equipment operators (M. of W. & S.).....D	194	23	158
46. Portable steam equipment operator helpers (M. of W. & S.).....D	191	32	108
47. Pumping equipment operators.....D	237	5	85
48. Gang foremen (extra gang and work-train laborers).....D	20	11	57
49. Gang foremen (bridge and building, signal and telegraph laborers).....D	197	3	152
50. Gang or section foremen.....D	206	6	111
51. Laborers (extra gang and work-train).....D	192	6	77
52. Track and roadway section laborers.....D	195	4	74
53. Maintenance of way laborers (other than track and roadway) and gardeners and farmers.....D	190	5	77
54. General foremen and supervising inspectors (signal, telegraph, and electrical transmission).....D	26	*	218
55. Assistant general foremen (signal, telegraph and electrical transmission) and signal and telegraph instructors.....D	26	*	118
56. Gang foremen (signal and telegraph skilled trades labor).....D	206	6	157
57. Signalmen and signal maintainers.....D	196	11	160
58. Linemen and ermmen.....D	201	4	153
59. Assistant signalmen and assistant signalmaintainers.....D	193	6	126
60. Signalmen and signal maintainer helpers.....D	192	6	106
61. General foremen (M. E.).....D	27	*	261
62. Assistant general foremen and department foremen (M. E.).....D	27	*	77
63. General foremen (stores).....D	25	*	170
64. Assistant general foremen (stores).....D	25	*	189
65. Equipment, shop, and electrical inspectors (M. E.).....D	26	*	262
66. Material and supplies inspectors.....D	25	*	188
67. Gang foremen and gang leaders (skilled labor).....D	217	6	217
68. Blcksmiths.....D	180	6	148
69. Boiler-makers.....D	180	15	132
70. Carmen (A).....D	184	6	154
71. Carmen (B).....D	178	*	141
72. Carmen (C).....D	188	11	141
73. Carmen (D).....D	185	1	131
74. Electrical workers (A).....D	187	17	171
75. Electrical workers (B).....D	209	10	167
76. Electrical workers (C).....D	171	17	134
77. Mechanicians.....D	18	13	153
78. Molders.....D	16	1	128
79. Sheet-metal workers.....D	185	12	157
80. Skilled trades helpers (M. E. and Stores).....D	185	14	115
81. Helper apprentices (M. E. and Stores).....D	18	4	111
82. Regular apprentices (M. E. and Stores).....D	17	*	89
83. Gang foremen laborers (shops, engine houses, power plants, and stores).....D	204	10	159
84. Chief train list testers (railroad stations).....D	21	21	114
85. Laborers (shops, enginehouses, power plants, and stores).....D	14	11	84
86. Common laborers (shops, enginehouses, power plants, and stores).....D	169	6	82
87. Stationary engineers (steam).....D	3	15	157
88. Stationary firemen and boiler makers (steam and electrical plants).....D	214	23	121
89. Coal passers and water fillers (steam station).....D	17	21	114
90. Chief train list testers (railroad stations) (railroad stations).....D	21	21	114
91. Station agents (supervisory—major stations—non-telegraphers).....D	21	*	241
92. Station agents (supervisory—smaller stations—non-telegraphers).....D	17	*	142
93. Station agents (non-supervisory—smaller stations—non-telegraphers).....D	21	*	142
94. Station agents (telegraphers and telegraph chief telegraphers and teleclerks).....D	21	28	144
95. Chief telegraphers and teleclerks.....D	21	28	144
96. Clerk-telegraphers and clerk-teleclerks.....D	21	28	144
97. Telegraphers, teleclerks, and teleclerks.....D	21	28	144
98. Station masters and assistant station masters.....D	21	*	187
99. Supervising baggage agents.....D	21	*	166
100. Baggage agents and assistants.....D	225	10	135

Reporting division	Time worked per employee (days or hours)		Total earnings per employee
	Straight time	Overtime	
101. Baggage, parcel room, and station attendants..	222	8	103
102. General foremen (freight stations, warehouses, grain elevators, and docks).....	199	10	165
103. Assistant general foremen (freight stations, warehouses, grain elevators, and docks).....	194	8	146
104. Gang foremen (freight stations, warehouses, grain elevator, and dock labor).....	201	10	135
105. Callers, loaders, scalers, sealers, and perishable freight inspectors.....	180	4	96
106. Truckers (stations, warehouses, and platforms)	194	4	91
107. Laborers (coal and ore docks and grain elevators)	181	17	102
108. Common laborers (stations, warehouses, platforms and grain elevators).....	191	9	84
109. Stewards, restaurant and lodging-house managers, and dining car supervisors.....	236	10	151
110. Chefs and first cooks (dining cars and restaurants).....	237	12	133
111. Second and third cooks (dining cars and restaurants).....	235	11	94
112. Waiters and lodging-house attendants.....	238	10	64
113. Camp and crew cooks and kitchen helpers.....	226	12	74
114. Barge, lighter, and gasoline launch officers and workers.....	254	17	146
115. Deck officers (ferryboats and towing vessels).....	230	10	199
116. Engine-room officers (ferryboats and towing vessels).....	224	10	197
117. Deck and engine-room workers (ferryboats and towing vessels).....	227	8	127
118. Deck and engine-room officers and workers (steamers).....	255	5	91
119. Flooting equipment shore workers and attendants.....	229	8	115
120. Transportation and dining service inspectors..D	26	*	196
121. Parlor and sleeping car conductors.....	266	9	161
122. Train attendants.....	225	8	96
123. Bridge operators and helpers.....	249	4	114
124. Crossing and bridge flagmen and gatemen...D	30	*	78
125. Foremen (laundry) and laundry workers.....	197	4	86
126. Yardmasters and assistants.....D	28	*	258
127. Switch tenders.....	239	1	129
128. Outside hostlers.....	228	6	168
129. Inside hostlers.....	221	8	147
130. Outside hostler helpers.....	222	7	128
131. Road passenger conductors.....	189	18	233
132. Assistant road passenger conductors and ticket collectors.....	165	50	198
133. Road freight conductors (through freight).....	163	23	167
134. Road freight conductors (local and way freight)	202	46	218
135. Road passenger baggage men.....	196	20	176
136. Road freight brakemen and flagmen.....	182	16	156
137. Road freight brakemen and flagmen (through freight).....	165	21	119
138. Road freight brakemen and flagmen (local and way freight).....	193	45	163
139. Yard conductors and yard foremen.....	210	5	176
140. Yard brakemen and yard helpers.....	190	4	146
141. Road passenger engineers and motormen.....	172	17	250
142. Road freight engineers and motormen (through freight).....	168	23	190
143. Road freight engineers and motormen (local and way freight).....	195	58	251
144. Yard engineers and motormen.....	205	7	184
145. Road passenger firemen and helpers.....	166	16	180
146. Road freight firemen and helpers (through freight).....	153	21	129
147. Road freight firemen and helpers (local and way freight).....	193	49	183
148. Yard firemen and helpers.....	197	6	136

\*Less than one day or hour.

In an explanatory note the commission says:

This July statement has been delayed owing to the necessity of investigating many inconsistencies in the carriers' reports, but

such delay with the initial report was to be expected in view of the detailed nature of the schedules.

It will be noted that the number of employees in each class is given in two columns. The number at middle of month represents the count of the employees in service on a particular day, including those on vacation or sick leave, and all subject to call for duty whether actually at work on the day of the count or not. The number of full-time positions, in classes other than those in train and engine service, represents the number of employees required to man the service if each employee worked the full number of days or hours of the regular assignment and in addition such an average amount of overtime as is shown by the summary for each occupation. In the case of train and engine service, the number of men required to perform the work, if there were no sick leave, vacations, or "extra" men, is more nearly represented by an average of the four counts of men actually on duty during the month.

The term *straight time* refers to the time of the regular assignment as distinguished from overtime. Overtime is in some cases paid for at the same rate per hour as for straight time, and in other cases, a higher, or so-called *punitive rate*, is paid. It may be noted that in some reporting divisions the statistics show a lower rate per hour for overtime than for straight time. In the cases of passenger engineers and passenger firemen this is explained principally by the fact that for such employees 5 hours represent a basic day while overtime is computed at one-eighth of the daily rate.

It will be observed that the forms do not distinguish the overtime hours actually worked from the overtime hours paid for, although straight time actually worked is shown separately. This is explained by the desirability of reducing the number of columns to a minimum. In the classes relating to train and engine service, there is a separate column for straight time paid for, the reporting of which, however, to save clerical expenses, is not required for road freight employees.

This information can be approximated for these employees by dividing the total miles paid for by 12.5, since under the dual system of miles and hours, the pay for eight hours is equal to the pay for 100 miles.

Column 7, in reporting divisions not relating to train service, represents *time paid for and not worked* and includes such items as payment for holidays, absence on definite leave and vacations. In train service, column 7 relates to the *constructive hours* paid for which do not represent actual train service and for which mileage is not allowed. Such "constructive hours" should not be taken as equivalent to time paid for and not worked, as they frequently represent some additional service.

The columns relating to overtime and time paid for and not worked are not regarded as applicable to general and division officers. The straight time reported in such cases generally represents the regular number of working days in the month.

For a fuller explanation of the terms used, reference should be made to the printed rules and classification.

Preceding the summary of the number of employees, their service, and compensation as reported, there are presented certain averages based on the summary. These show the average straight time, average overtime, and average total compensation per employee per month. These averages are based on the number of employees shown in column 2 of the summary. If the number of full time positions were used as a divisor, the time as well as the earnings per man would be in most cases considerably increased.

The report also gives a recapitulation by groups of employees and a detailed statement showing for each reporting

RECAPITULATION BY GROUPS OF EMPLOYEES

	Employees		Hours or days				Compensation			
	Number of employees at middle of month (a)	Number of full time positions (b)	Straight time actually worked (c)	Overtime paid for (d)	Straight time compensation (e)	Overtime compensation (f)	All other compensation (g)	Total compensation (h)		
I. Executives, officials and staff assistants..D	15,155	15,078	394,471	31	\$6,317,228	\$278	\$37,046	\$6,354,552		
II. Professional, clerical.....D	47,178	46,030	1,175,927	7,866	8,029,388	38,181	257,455	8,315,024		
III. Maintenance of way and structures.....D	4,604	4,591	123,117	228	24,838,026	544,283	2,081,213	27,419,066		
IV. Maintenance of equipment.....D	368,720	356,491	72,125,852	1,894,215	31,500,139	941,072	68,839	32,510,050		
V. Transportation (other than train, engine and yard).....D	14,451	14,259	388,836	1,211	3,449,996	9,400	109,157	3,568,553		
VI (a). Transportation (yardmasters, switch tenders, and hostlers).....D	416,535	407,938	82,972,133	4,798,005	50,841,657	3,980,266	1,266,933	56,088,856		
VI (b). Transportation (train and engine).....H	181,326	176,568	38,316,942	1,523,517	20,636,077	972,207	259,956	21,868,240		
All employees.....D	114,882	112,876	3,069,959	24,098	22,983,513	93,850	527,711	23,605,074		
H	1,519,990	1,422,499	293,248,876	14,839,035	169,075,621	11,945,304	9,713,386	190,734,311		
Total number of employees and compensation.....	1,634,872	1,535,375			\$192,059,134	\$12,039,154	\$10,241,097	\$214,339,385		

D—Daily basis.

H—Il-lurly basis

\*Average of four counts made per month of men actually working.

division the number of employees, straight time actually worked, overtime paid for at pro rata rates and at punitive rates, time paid for but not worked, and the compensation paid for straight time, pro rate overtime and punitive overtime and for time not worked. The recapitulation is given at the bottom of the opposite page.

For the group of transportation employees there is a separate table showing some additional information. The number of employees varied from 249,002 on the 7th of the month to 252,158 on the 28th, while the number in service at the middle of the month was 289,383. The

straight time actually worked was 53,005,499 hours and the straight time paid for (not including road freight employees) was 33,101,312 hours. The overtime paid for was 5,589,533 hours and the constructive allowances 1,449,918 hours, making a total of 63,709,133 service hours. The grand total compensation was \$50,339,739, which included \$38,849,058 for straight time actually worked, \$5,439,168 for overtime and \$1,031,168 for constructive allowances. The miles actually run were 503,807,261 and the miles paid for but not run were 80,831,300. The trips for which not less than a minimum day was paid were 6,248,163.

## Labor Board Completes New Rules for Shop Crafts

Revised Provisions "More Elastic," According to Tribunal—  
Effective December 1

THE remainder of the disputes between the carriers and their shop employees as to the working rules which are to supersede the provisions of the Shop Crafts' National Agreement have been disposed of by the Railroad Labor Board with the promulgation of numerous additional rules which are to be included in the agreements formed between the individual carriers and their shop employees. The new rules are effective December 1.

Some difficulty was experienced by the Board in preparing its decision. However, the following summary, including an abstract of the new provisions, was announced by the Board on November 29:

Decision effective December 1.

Number of men affected—about 400,000 employed at present—about 450,000 under normal traffic conditions.

Estimated saving to railroads—only actual operation can tell, but may reach \$50,000,000 per year.

Nature of decision—Revision of National Agreement.

(1) Rules are made more elastic to secure greater efficiency and economy.

(2) Many criticisms of the national agreement are met by the decision, but all the demands of the managements are not granted. Older rules sanctioned by experience are retained.

(3) The principle of collective bargaining and union recognition embodied in the Transportation Act is retained in the new rules, but representation of minorities in grievance cases is provided for, thus doing away with that part of national agreement criticized as forcing the "closed shop" on the railroads. This is more theoretically than actually important, as practically all shops are unionized and unions are recognized and represented by the men in the negotiations leading up to present decision.

The Board members believe the present decision the most important work of the Board to date. It is designed to provide a permanent code of shop rules to stabilize that part of railroad industry.

### The Changes Ordered

A complete new set of rules and working conditions to supersede the provisions of the shop crafts National Agreement was announced by the Labor Board on December 1. These new rules are to be applied on all carriers and so constitute the restoration of the principle against which the carriers have been fighting for over a year, namely, the universal application of rules and working conditions regardless of varying local conditions. In general the new rules are those of the National Agreement revised in places to eliminate some of the more flagrant injustices pointed out by representatives of the carriers in the hearings which extended from January to April of this year.

The new overtime rules announced in the *Railway Age* of August 27 (page 419) and the seventeen rules promulgated by the board last October and announced in the *Railway Age* of October 22 (page 789) embody the most radical revisions

contained in this new "National Agreement." Of the 186 rules of the shop crafts agreement 99 are to be continued indefinitely, according to this decision.

Fourteen rules are eliminated, minor changes—principally in the wording—have been made in fourteen others, no mention is made of three of the old rules, one rule is promulgated and but 48 rules changed so as to eliminate specific injustices pointed out in the hearings or to make the rules more elastic. All of the qualification rules for the various classes of shop men, with the exception of a slight change in the case of electrical workers, have been retained in the new code. Similarly, the National Agreement rules relating to the classification and services of apprentices, the eligibility of helpers for promotion to helper apprentices and the differential rules for autogenous welders have been perpetuated. The rules relating to the duties of helpers and to the consist of wrecking crews have been modified but slightly.

Of the rules eliminated the most important is National Agreement Rule 24 relating to court duties of employees and expense therefor. Many of the changes made to meet the specific objections of the carriers are in the form of a slight alteration of the wording which will leave the rule open to even more interpretations than were the more specific rules of the old agreement. For instance, Rule 122 of the National Agreement reads "blacksmiths sent out on the road to do blacksmiths' work will be accompanied by helpers." The new rules simply add to the existing rule the words "when necessary."

On the other hand, several changes have been made which undoubtedly will result in better conditions. Rule 27, for instance, has been changed so that shop forces may be reduced to 40 hours per week before reductions in the force are made, a 48-hour notice being required. In the restoration of forces the regular hours must be restored before additional men are taken on.

Several of the rules have been changed to permit minority groups of employees or individuals the same rights as the employees or employee represented by an organization. Rules 37 and 38, which the carriers claimed made any system of discipline impossible, have been altered so as to give the railroads suspension privileges pending hearings, provided that if it is found that suspension was unwarranted the employee will be reinstated with unimpaired seniority and pay for time lost.

Another important change included in the new code is contained in Rule 40 which creates three classes of apprentices—regular, helper and special. Provisions are made for three-year special apprenticeships for young men with technical school training. These apprentices, however, must be in-

cluded in the total number of apprentices in computing the ratio of apprentices to mechanics. Still another important change made in answer to the objections of the carriers is illustrated in Rules 32 and 33 which have been changed so that men at outlying points may be permitted to perform repair work or work other than that listed for their craft instead of necessitating the temporary transfer of an employee at heavy expense. Likewise the necessity for having six men do a simple piece of work which was formerly performed by one man is partly obviated by certain changes in the rules which state, for example, that a machinist can do any connecting or disconnecting of wires, couplings or pipes necessary to complete his task instead of waiting for another worker of another craft.

### Some Changes for Economy

In general, the changes of this character in the rules are such as to make for more economical and efficient operation when compared with conditions as pictured by representatives of the carriers during the hearings, but the actual results which these changes will produce cannot be estimated until they have been in operation for some time. In its general instructions accompanying this new code the Board orders that its provisions shall apply on all carrier parties to the dispute except where an agreement has already been reached with the employees, in which case the rule agreed upon shall prevail.

Similarly the rules eliminated by the Board will terminate except where the carrier and the employees have already reached an agreement upon these points. The formulation of a preamble or caption to the new code is remanded to the carriers and their employees.

In the cases where the Board has failed either to eliminate the old rule or formulate a new rule the point is referred to the individual carriers and their own employees for further negotiation on the grounds that "the Labor Board believes that certain subject matters now regulated by the rules of the National Agreements may not be covered in all localities by rules of general application and require further consideration by the parties directly concerned." This constitutes the only recognition in the decision of the justice of the carriers' plea for consideration of the widely varying local conditions which cause uneconomical and inefficient situations when working rules are applied universally. The decision closes with the statement that those rules which are reproductions of similar rules in the National Agreement "are not to be understood as carrying with them the interpretations placed upon them by the Railroad Administration, by the Adjustment Boards or by other agencies acting under said administration."

### Shopmen Ask for Increased Wages

While the carriers throughout the country are announcing proposed reductions in the wages of their employees and calling conferences with representatives of the various classes of workers in accord with the terms of the Transportation Act, the officers of the six shop crafts affiliated with the American Federation of Labor are preparing demands for wage increase of five cents an hour above the rates established by the Board in July, 1920, and 13 cents an hour above the existing rates of pay for shop employees. It is reported that these demands are to be presented to the executives of the individual carriers by the general chairmen of the organizations on each road when conferences are held on the proposal of the executives for a further wage reduction. The only explanation of this move, which appears to be solely strategical, is credited to B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, who stated that this increase was requested because "we feel that the Transportation Act allows us a living wage and rates equal to those paid in similar industries outside of the railroad shops."

## Commission Asks Views on Common Officers and Directors

WASHINGTON, D. C.

**A** HEARING FOR the purpose of receiving views as to the interpretation of Paragraph 12 of Section 20-a of the interstate commerce act, which provides that no person shall hold the position of officer or director of more than one carrier, unless such holding shall have been authorized by the commission upon showing that neither public nor private interests shall be adversely affected thereby, was held at Washington before Commissioners Meyer, Eastman and Potter of the Interstate Commerce Commission on November 30. W. A. Colston, director of the commission's Bureau of Finance, said that the commission had formed no opinions on the subject, but as the law apparently gave the commission no standard, it desired to have a discussion of every phase of the subject. The bureau has made a study of the literature on the subject for the purpose of considering the various views that have been advanced as to the propriety of interlocking directors and officers.

Alfred P. Thom, counsel for the Association of Railway Executives, said that apparently the bureau had considered everything but the law, and he proposed to discuss that. He said the purpose of Congress was that men should not be exposed to improper temptations resulting from a duality of fiduciary relations, but that the commission is not charged with responsibility except where there is a conflict in such fiduciary relations. He did not think it was intended that the commission should inquire into the fitness of a man to hold the positions to which he had been elected or his ability to perform his duties as those things were the responsibility of the stockholders.

Commissioner Meyer asked whether in a case of a man who had been connected with various railroads and had caused trouble everywhere he went, the commission should not consider his personal character in passing on his application to hold more than one position. Mr. Thom said he thought that it was most important that the principle should be recognized that the commission's only responsibility was to ascertain whether the relationship between the carriers was such that a man holding positions with more than one road would be confronted with a hurtful conflict of fiduciary duty. Commissioner Potter asked whether in a doubtful case the commission should not be influenced by the well known integrity of a man to allow him to serve where it might not do so in another case. Mr. Thom insisted that the jurisdiction must be based on the relation between the carriers, and it follows, he said, that the commission has nothing to do under this section of the law with the relation of the individual to other financial institutions that are not carriers, particularly as that question is taken care of in another section of the law. In the case of a large railroad system, he said, whose common management is recognized as desirable, there is a presumption that common management ought to be allowed. In some cases, he said, the presumption is in favor of allowing common officers or directors, while in others the presumption is the other way, as, for example, where there is substantial competition between the carriers. But if the presumption is against common directors there may be other conditions which the commission may consider to justify authorization for the continuance of the practice.

The question was also discussed by R. S. Lovett, S. T. Bledsoe, Newman Erb and M. L. Bell.

DOUBTLESS if we are to remain a creditor nation we must some day reverse our merchandise trade balance, for we cannot go on indefinitely selling abroad merchandise in so much greater amounts than can be offset by our purchases of foreign goods and services.—*Guaranty Survey*.

# Prices Still Much Higher Than Railway Rates

Detailed Statistics for Over Thirty Years Show Freight Charges Are Now Relatively Much Lower Than Commodity Prices

**A**RE RAILWAY freight rates too high? Practically everybody, including railway officers, will answer this question in the affirmative. But no rational conclusion can be drawn as to whether the rates charged for any service, or the prices charged for any commodity, are too high or too low unless they are measured by standards of recognized validity. The universally accepted standards for measuring the reasonableness of rail-

it will soon begin a general investigation to determine whether, and to what extent, if any, further reductions in railway rates are justified. It is very doubtful if any witness who appears before the commission will claim that the present operating costs of the railways are so low as to justify substantial reductions in the rates on any commodity or class of commodities. Several important proceedings for reductions of rates have been begun before the commission. It has rendered decisions in some of these cases. In every instance the most important data and arguments presented by those asking reductions have been intended to show that the rates should be reduced because they impose an undue burden on business.

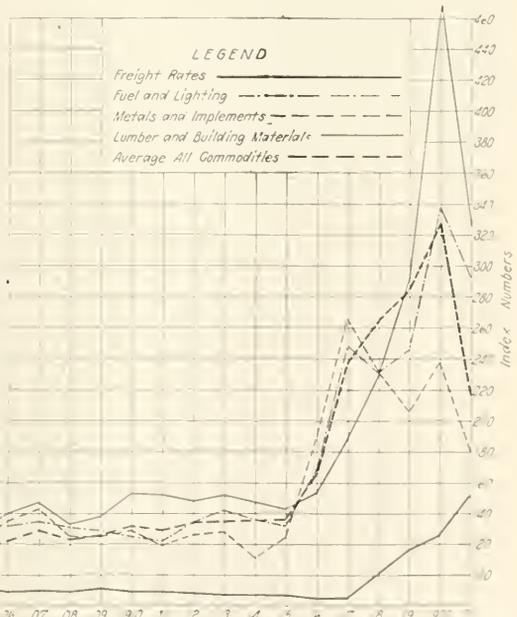
But why do they impose an undue burden? Because, as is claimed, the rates are so high in proportion to the prices that producers can get for their commodities that the shippers cannot afford to pay them. In other words, the contention really is that the great reductions in the prices of most commodities which have occurred since 1920 have made it impossible for most commodities to "bear" the present rates.

What evidence is there that most commodities, at the prices at which they are now selling, cannot "bear" the

RELATION OF FREIGHT RATES TO WHOLESALE PRICES, 1890-1921

Year	AVERAGE 1890-1899 = 100											Year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
1890-99	100	100	100	100	100	100	100	100	100	100	100	1890
1890	110	110	112	114	105	119	111	110	111	110	113	1890
1891	109	122	116	111	103	112	108	104	110	109	112	1891
1892	107	112	104	109	101	106	103	103	106	106	106	1892
1893	104	108	110	107	100	101	102	100	105	106	106	1893
1894	102	96	100	96	92	91	96	90	106	106	96	1894
1895	100	93	95	93	98	92	94	88	96	94	94	1895
1896	96	78	84	91	104	94	93	93	94	91	90	1896
1897	95	85	88	91	96	87	90	94	90	92	90	1897
1898	99	96	94	93	95	86	96	107	92	92	93	1898
1899	86	100	98	97	105	115	106	111	95	98	102	1899
1900	87	110	104	107	121	121	116	116	106	110	110	1900
1901	89	117	106	101	120	112	117	115	111	107	108	1901
1902	89	131	111	102	134	117	119	114	112	114	113	1902
1903	91	119	107	107	149	118	121	113	113	114	114	1903
1904	93	126	107	110	133	110	123	119	112	112	113	1904
1905	91	124	109	112	129	123	128	109	109	113	116	1905
1906	89	124	113	120	132	135	140	101	111	121	122	1906
1907	90	137	118	127	135	143	147	110	118	127	129	1907
1908	89	133	121	117	131	125	133	110	114	120	123	1908
1909	91	153	125	120	129	125	138	112	112	126	126	1909
1910	89	165	129	124	125	129	153	117	112	133	132	1910
1911	89	162	131	120	122	119	152	120	111	131	129	1911
1912	88	171	140	121	134	126	148	123	114	133	134	1912
1913	87	164	137	124	142	128	152	124	118	137	135	1913
1914	87	169	141	122	136	111	147	125	117	136	135	1914
1915	87	172	142	124	132	124	143	141	117	136	136	1915
1916	85	200	173	159	169	189	153	197	136	164	167	1916
1917	85	310	241	224	249	266	188	245	170	212	238	1917
1918	101	361	259	296	231	232	229	274	231	264	265	1918
1919	116	384	288	324	246	206	293	222	278	297	286	1919
1920	125	358	323	374	338	238	468	260	432	323	328	1920
1921*	152	202	199	237	292	180	324	213	319	226	216	1921
July, 1921	149	189	184	222	261	160	304	202	277	204	200	1921

\*Average first six months, 1921.  
 Column 1—Index figures, average rate per ton per miles based on reports of the Interstate Commerce Commission.  
 Columns 2, 3, 4, 5, 6, 7, 8, 9, 10, 11—Index figures of the Bureau of Labor Statistics, Department of Labor, 1890-1913. (See page 499, 1913 Statistical Abstract of the United States.) Index figures, 1914-1920, same source. (See page 57, 1920 Statistical Abstract), converted to base 1890-99 = 100. Index figure first six months 1921 Bureau of Labor Statistics.



Relation of Average Freight Rate to Average Wholesale Prices of Fuel and Lighting, Metals and Implements, Lumber and Building Materials and All Commodities. Average 1890-1899 = 100.

way rates are, first, what it costs the railway under efficient operation to render the service for which the rates are charged, and, secondly, what the shippers and receivers of the commodity transported can afford to pay for its transportation.

The Interstate Commerce Commission has announced that

present rates? Practically the only evidence introduced in support of this proposition is, first, that the traffic of the railways has greatly declined since 1920, and, secondly, that the present rates of the railways are relatively much higher in proportion to the prices of most commodities than they were immediately before and in the years immediately fol-

lowing the commencement of the war in Europe. Because there has been a heavy decline of railway business since 1920 it is constantly charged that the present rates have "killed" the traffic. But the best measure of what rate any commodity can bear is the price for which it sells. Therefore, the question whether the rates have become higher than the traffic can bear is, in substance, equivalent to the question whether rates have been advanced too much in proportion to the market prices of commodities.

As already indicated, most persons in discussing this question compare the differences between the present railway rates and the rates charged in the years from 1913 to 1917 with the differences between the present prices of commodities and the prices that commodities commanded in the years 1913 to 1917. If these comparisons are fair and reasonable, the present railway rates are too high in proportion to the present prices of commodities. The average railway rate per ton per mile is now only about 75 per cent higher than it was in the years from 1913 to 1917. On the other hand, the average wholesale price of all commodities is now only about 50 per cent higher than in 1913, although somewhat lower than in 1917.

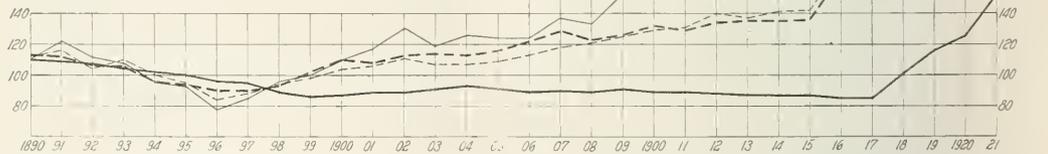
**Why Compare "Pre-War" Rates and Prices?**

But why compare the railway rates and the prices of the year 1921 with the rates and prices of 1917, or even 1913, to determine whether the general level of railway rates is reasonable at present compared with the general level of commodity prices? Where is the evidence that the rates the railways were allowed to charge from 1913 to 1917 were fair and reasonable in proportion to the prices of commodities in those years? If in those years the rates were unreasonably low compared with the prices of commodities, it necessarily follows, of course, that between those years and the year 1921 the rates should have been advanced more than prices, and that rates should at present be higher relatively to prices than they were in 1917 or 1913.

Now, as a matter of fact, the railways from the year 1910 to 1917 never admitted that the rates they were permitted to charge were reasonable in proportion to the prices of com-

reasonable and should be taken as a basis for determining whether the advances in rates made since then have been relatively too great as compared with the advances in commodity prices.

Why did the railways from 1910 to 1917 constantly contend that their rates were too low? They did so on the ground, first, that the wages they had to pay for labor and the prices they had to pay for fuel and materials had been increasing so much for some years, while railway rates had been declining, that the rates had become unreasonably low in proportion to railway expenses; and, secondly, on the ground that the increases in prices and profits in industry and commerce in general had made it practicable for producers and shippers of most commodities to afford to pay higher rates. Both the contentions made by the railways and the findings made by the Interstate Commerce Commission in 1914 and in 1917 render it imperative, if any fair judgment is to be formed regarding the relative reasonableness of the rates now charged by the railways and the present prices of commodities in general, to consider not merely the



Relation of Average Freight Rate to Average Wholesale Prices of Farm Products, Food and All Commodities. Average 1890-1899=100

modities, the wages of labor, etc., during that period. On the contrary, the railways constantly contended during that period that their rates were relatively too low. They tried to secure a general advance in 1910. They tried again to secure a general advance in 1914. They tried again to secure a general advance in 1917.

Furthermore, in 1914 the Interstate Commerce Commission in the 5 per cent rate case specifically held that the rates of the railways in eastern territory were too low. Again in 1917 it held that the rates of the railways in eastern territory were too low. The railways in eastern territory handle practically half the traffic of the country. Therefore in 1914, and again in 1917, the Interstate Commerce Commission specifically held that the rates charged on half the traffic of the country were too low.

Both the contentions made by the railways at that time and the decisions of the commission show the unfairness of any assumption that the relationship between railway rates and commodity prices in any year from 1910 to 1917 was

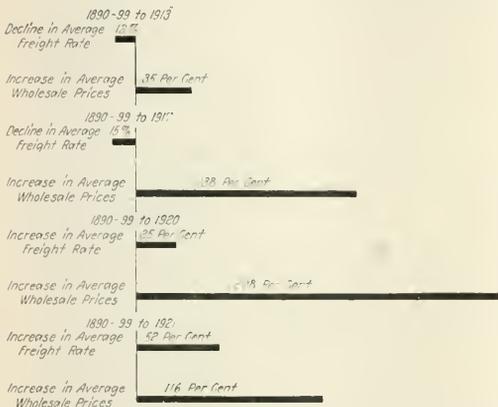
changes in rates and prices which have occurred since 1917, or even since 1913, just before the war in Europe began, but to consider the changes in rates and in commodity prices which began long prior to 1913 and have continued up to the present time.

**Rates Declined, Prices Advanced, Before 1913**

Fortunately, official data for making these comparisons are available. A measure of the changes in railway rates as a whole which have occurred is afforded by the changes which have occurred in the average receipts per ton per mile. The average receipts per ton per mile are a "weighted average" of all the rates charged, and we have statistics of the Interstate Commerce Commission showing average receipts per ton per mile since 1888. Furthermore, the Bureau of Labor Statistics has compiled average wholesale prices of nine large groups of commodities for all years from 1890 down to the present time. The statistics of the Bureau of Labor regarding changes in wholesale prices formerly were

based upon average prices in the ten-year period 1890 to 1899, inclusive. The average prices of those ten years were taken as 100 per cent. Subsequently, the Bureau of Labor took the average prices of the year 1913, the year before the Great War began in Europe, as a basis, and its statistics regarding prices since then have been based upon the prices of 1913. It is a comparatively simple matter to put its figures for the years since 1913 on the same basis as those for the preceding years.

This has been done in the accompanying table, entitled "Relation of Freight Rates to Wholesale Prices." This table shows the changes in average wholesale prices which have occurred in the years from 1890 to 1921, the average prices of the ten years 1890-1899 being taken as 100 per cent. The table also shows in Column 1 the changes which have occurred in average railway rates, the average receipts per ton per mile in the ten years 1890-1899 being also taken as 100 per cent. The graphs showing the changes in average rates and in average prices which are presented herewith are based upon this table, and they show even more strikingly



**Increases and Decreases in Average Freight Rates Compared with Increases in Average Wholesale Prices All Commodities from Average for Period 1890-1899 to 1913, 1917, 1920 and First Six Months of 1921**

than the table the comparative changes in average railway rates and average prices which have taken place in a period of over 30 years.

The table and the graphs both show that the average railway rate per ton per mile declined in every year from 1890 to 1899. The wholesale prices of most commodities also declined from 1890 to about 1897. From that time on the average railway rate per ton per mile showed a generally downward tendency, although there were occasional fluctuations upward. From 1898 onward the general tendency of wholesale prices of commodities was always upward.

It was in 1910 that the railways first sought to make a general advance in rates. At that time the average rate per ton per mile was 11 per cent less than it had averaged in the years 1890-1899. On the other hand, the average wholesale price of all commodities had increased 32 per cent. The cost of fuel and lighting had increased 25 per cent, that of lumber and building materials 53 per cent, and that of metals and implements 29 per cent. The railways being large purchasers of fuel, lumber and metals, the advances in the prices of these things had appreciably affected their operating expenses. But this was not the main thing that affected their expenses. The prices of foodstuffs had increased 29 per cent, those of cloths and clothing 24 per cent,

and those of house furnishings 12 per cent. These advances in prices, as well as some others, had increased the cost of living of railway employees and brought about great movements for advances in wages which had been successful. It was these advances in wages, which were indirectly forced upon the railways by the increases in commodity prices in general, that most unfavorably affected their operating expenses.

The railways were unsuccessful in their efforts to secure the advances in rates asked for in 1910. On the contrary, their average rates per ton per mile continued to decline. In 1913 their average rate was 13 per cent less than in 1890-1899, while average prices of all commodities had advanced 35 per cent higher. These facts show clearly why it is utterly unfair to take the average rates and the average prices of 1913 as a starting point in discussing the average rates and the average prices of the year 1921. The average wholesale price of farm products had increased 64 per cent since 1890-1899, while the average railway rate had declined 13 per cent. Did the farmer have any moral right permanently to benefit from a relationship between railway rates and prices of farm products which resulted from a 13 per cent decline in the former and a 64 per cent advance in the latter? The average price of lumber and building materials had advanced 52 per cent. Where did the producers and shippers of lumber and building materials get any right, moral or economic, after railway rates had declined 13 per cent and their prices had advanced 52 per cent, to claim that the relationship between railway rates and prices established by these changes was a fair and normal relationship and should be perpetuated? And yet all arguments and deductions which are based on comparisons of the railway rates and prices which prevailed immediately before the beginning of the war in Europe are predicated on the indefensible assumption that the relations which then existed between railway rates and prices were fair and normal relations.

**Prices Up 165 Per Cent Before  
All Rates Were Advanced**

It was subsequent to the year 1913, however, as the table and the illustrations show, that the most extraordinary divergences of railway rates and commodity prices occurred. In the year 1917, the last before government control of railways was adopted, the average railway rate was 15 per cent less than in the period 1890-1899. On the other hand, the average wholesale price of all commodities showed an increase of 138 per cent, farm products had increased 210 per cent, metals and implements 166 per cent, and fuel and lighting 149 per cent. It was not until 1918, when the total increase in average wholesale prices had been 165 per cent, that a general advance in rates applying to all the railways of the country finally was made. The next and final general advance in rates was made in 1920. In that year average prices reached the highest point ever attained, being 228 per cent higher than the average for 1890-1899. The prices of farm products had increased 258 per cent, and the prices of lumber and building materials 368 per cent.

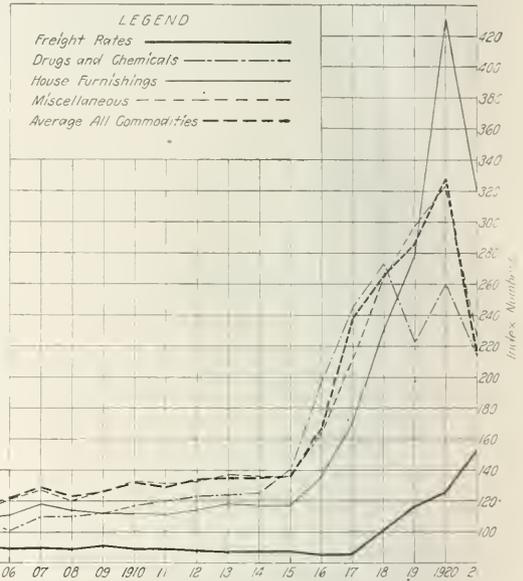
What is the final result at the present time in the year 1920 of all the changes, both increases and decreases, which have occurred in average rates and average prices? The curves in the graphs end with figures showing the comparative position of railway rates and prices in the first six months of 1921. The bottom row of figures in the table show where average rates and prices had arrived in July, 1921, the latest time for which the various statistics are available. The average railway freight rate was then 49 per cent more than the average for the years 1890-1899. At the same time, in spite of the great decline in prices within the last year, the average wholesale price of all commodities was still 100 per cent higher than in 1890-1899. The aver-

age price of farm products was still up 89 per cent, of fuel and lighting 161 per cent, and of lumber and building materials 204 per cent. At the present time the average railway rate is lower, compared with the average railway rate of 1890-1899, than is the average price of any large group of commodities compared with the average price of the same period. To state the matter in another way, at the present prices of commodities the producer or owner of almost any commodity can buy far more railway freight transportation with any given amount of that commodity than he could have bought with it at the average prices of 1890-1899.

**Prices 76 Per Cent Higher Than in 1910—Rates Only 65 Per Cent**

Perhaps objection will be made to going back to 1890-1899 to get a starting point for comparing increases in railway rates and commodity prices. Let us, then, compare the relationship between average rates and prices in a later period of ten years with the present relationship between them. Never in any decade in history did the traffic of the railways increase relatively faster than in the ten years from 1900 to 1910. The total increase in freight traffic between those years was over 80 per cent. This shows conclusively not only that the relationship between rates and prices during that period was such that the traffic could easily bear the rates charged, but that it was highly conducive to the development of the industry of the country and the traffic of the railways. How much higher, then, are average railway rates and average wholesale prices at the present time than they were on the average in this ten years from 1900 to 1910? *The average railway freight rate in July was 65½ per cent higher than it was then, while the average wholesale price of commodities was 76 per cent higher.* In other words, relatively to wholesale prices the average railway freight rate is today substantially lower than it was when the industry of the country was developing and the traffic

percentage higher than it was then while the railway rate is a certain other and larger percentage higher. But all reasoning of this kind is unfair and fallacious, and of all the conclusions to which it leads the most fallacious is the conclusion that commodities at present prices cannot bear the present rates. Unquestionably, as a result of the horizontal percentage advances in rates which have been made within recent years, there are rates which are higher than the traffic easily can bear. Unquestionably, also, there ought to be some general reductions of rates if first the operating costs of the railways can be correspondingly reduced. But, taken as a whole, the present scale of freight rates is relatively low compared with the present general scale of commodity prices, and, taking rates as a whole, there is abso-



**Relation of the Average Freight Rate to Average Wholesale Prices of Drugs and Chemicals, House Furnishings, Miscellaneous Commodities and All Commodities. Average 1890-1899=100.**

of the railways was growing as rapidly as was ever known.

The data given demonstrate beyond all question that, on the whole, the railway rates of this country are now relatively lower as compared with the prices of commodities than they were until there began a few years before the commencement of the Great War in Europe the general advance in prices which had attained considerable momentum speed even before the war began, and which, before the present railway rates were fixed, had carried average prices 228 per cent higher than they were in the years from 1890-1899.

Why, then, is there so much complaint that rates are now too high in proportion to prices, and that the traffic cannot bear them? This complaint is entirely due to the fact that prior to a little over a year ago prices for years had been increasing more than railway rates, and that, in consequence, in a long period of years producers and shippers became accustomed to doing business on rates which had become extremely low compared with prices. When producers and shippers now complain about the relations between rates and prices they usually say that in 1913 or 1916, or some year prior to 1918, the price they received for their commodity was a certain amount and the railway rate on it was a certain amount, and that now the price is only a certain

amount and the railway rate is a certain other and larger percentage higher. But all reasoning of this kind is unfair and fallacious, and of all the conclusions to which it leads the most fallacious is the conclusion that commodities at present prices cannot bear the present rates. Unquestionably, as a result of the horizontal percentage advances in rates which have been made within recent years, there are rates which are higher than the traffic easily can bear. Unquestionably, also, there ought to be some general reductions of rates if first the operating costs of the railways can be correspondingly reduced. But, taken as a whole, the present scale of freight rates is relatively low compared with the present general scale of commodity prices, and, taking rates as a whole, there is abso-

**Why the Farmer Is Suffering**

The greatest complaints about the present railway rates come from the farmers. The statistics and graphic charts presented herewith reveal some very interesting facts regarding the situation in which the farmer finds himself. They show that for years he benefited by very great increases in his prices, which were accompanied by actual reductions in rates, and that his present prices are relatively much higher than the present average railway rate. On the other hand, the average prices of all other classes of commodities, except foodstuffs of which the farmer himself is the principal producer, and of metals and implements, are relatively higher, and in the cases of fuel and lighting and of lumber and building materials, relatively much higher, than the prices of farm products. In other words, while the farmer is making the loudest complaints about the railway rates he has to pay, every other class of producers in the country is charging him relatively higher prices for the commodities they sell him than the railways are charging him for the transportation service that they render him.

# Commission Orders General Rate Inquiry

## Railroads Propose Present Relief for Agriculture, Followed by Further Reductions When Wages Are Cut

WASHINGTON, D. C.

THE Interstate Commerce Commission on November 23 ordered an investigation "to determine whether and to what extent, if any, further general reductions in the rates, fares and charges of carriers by railroad applicable in interstate or foreign commerce can lawfully be required by order or orders of the commission under Section 1 or other provisions of the interstate commerce act, upon any commodities or descriptions of traffic." And on November 29 the commission amended its order by adding at the end the following: "and also to determine what will constitute a fair return from and after March 1, 1922, under Section 15-a (3) of the interstate commerce act." The provision in the law providing for a 5½ per cent return expires on that date and the commission is directed to state the percentage to apply from that time.

All carriers by railroad subject to the interstate commerce act were made respondents to this proceeding, the state authorities were notified and the proceeding was assigned for hearing at Washington on December 14.

The order of the commission was issued on its own motion, but it was in accordance with a request made in a petition filed on the same day by the Association of Railway Executives asking also for a reopening of the case in which the commission ordered reductions in the rates on grain, grain products and hay in the Western and Mountain-Pacific districts and for permission to put into effect as a substitute a general 10 per cent reduction in rates on agricultural products, as proposed in the resolution adopted by the roads at the meeting in New York on November 16. The only explanation given by the commission was the following statement:

The commission has acted recently in two litigated proceedings looking to general reductions in rates.

The first was based on complaint by producers of live-stock and confined to rates in the western district. The reductions recommended became effective in September. Various applications for modification or extension of the findings were argued on November 8.

The second was an investigation instituted in July into the rates on hay and grain in the western district. Many state commissions intervened. The findings are reported in 64 I. C. C., 85. An order thereunder, effective December 27, on five days' notice, was served on November 21. Meantime, petitions have been filed by representatives of various interests asking the institution of investigations, more or less general in scope, with a view to effecting reductions in rates on various descriptions of traffic, and the carriers have indicated their intention to effect immediate reduction of 10 per cent in the rates in all districts on designated products of the farm and the ranch.

All petitions have received careful consideration, but it has seemed to the commission that its investigation should not be confined to any particular descriptions of traffic and should be distinct from and without prejudice to proceedings on complaint already filed or hereafter to be filed. The order now issued is intended to elicit whatever information may be lacking as a guide for the commission in its further action, and is along lines under consideration by the commission for some time past.

The proposal of the railroads is to give some assistance at this time to the agricultural industry as most deserving of relief and to make further reductions on other commodities as soon as further reductions are made possible by the proposed wage reduction in such manner as the commission may determine. This is in accordance with the resolution adopted by the executives when the wage cut was proposed.

The hearing is expected to give the railroads an opportunity to contend that the commission under the law cannot under present conditions order general reductions in rates except on the theory that the reductions would so stimulate traffic as to increase earnings instead of reduce them, but

that if and when further reductions are to be made they should be made on those commodities which the commission may select as entitled to precedence. It is also likely to afford a field day to the representatives of shippers who are demanding rate reductions. It is believed also that some general pronouncement of policy by the commission may result which will remove much of the uncertainty which now exists and which in many cases is causing the withholding of orders in the hope that rates will soon be reduced.

The railroad petition in the grain case asked:

1. For approval of a program for the relief of agriculture in all sections of the United States through the medium of a reduction in carload rates on the following products of agriculture and products of animals, namely: wheat, corn, oats, other grain, flour and meal, hay, straw and alfalfa, unmanufactured tobacco, cotton, cotton seed and products, except cotton seed oil and cotton seed meal, citrus fruits, other fresh fruits, potatoes, other fresh vegetables, dried fruits and vegetables, horses and mules, cattle and calves, sheep and goats, hogs, poultry, eggs, and butter and cheese, and wool, as set forth and more specifically described in the resolution of the Association of Railway Executives, adopted on November 16, 1921.

2. For special permission to make effective said reduction in freight rates on the commodities named as soon as may be and upon one day's notice.

3. For an order re-opening this proceeding and the order herein entered on the 21st day of November, 1921, and for a reconsideration thereof to determine whether the findings therein affecting the Western District, insofar as they are inconsistent with the general program for the relief of agriculture in all sections of the United States above mentioned, should be modified and for a modification thereof.

4. For an order instituting an investigation to determine whether, until a substantial reduction can be secured in the labor and other costs of operation of these petitioners, any further reduction in rates can be lawfully required or, with due regard to the transportation industry, is possible.

The statements made in support of the petition were:

### A Plan for the Relief of Agriculture

That the delay in putting into effect the reduction suggested by this Honorable Commission in its report in this case has been due to a diligent effort on the part of these petitioners to mature a plan for the relief of agriculture in all sections of the United States, more comprehensive than that embraced in this single proceeding.

In view of the difficulty and magnitude of the problem, of the many and diverse interests involved, and of the necessity for agreement and co-ordination among carriers differently situated in relation to the problem, the delay which has occurred will, the carriers trust, be fully appreciated and understood by this Honorable Commission.

There was and is an insistent demand from many sources for a reduction in rates. The demand is for a general reduction and embraces not only the rates on the commodities above mentioned but on practically all other commodities. In considering this demand and desiring to deal with it in a sympathetic and helpful manner, it was necessary for the carriers to consider the conditions which bear a substantial, and in many respects a controlling, relation to the subject. It was necessary to consider carefully the revenue conditions of the carriers themselves, because, entirely aside from the interest and rights of the owners of the properties, the carriers sustain so important a relationship to the public welfare and are so essential to the service of the public that it was necessary for them to consider how far anything that might be proposed would impair their capacity to perform their public service, and it was accordingly necessary for them to give careful consideration to the effect of any proposal upon their operating revenues.

### Railway Income Still Inadequate

The result of operations of the Class I roads for the calendar year 1920 was a net railway operating income of about 62 million

lions of dollars as against a normal in other years of more than 900 millions, and even this amount of 62 millions included back mail pay received from the government for prior years of approximately 64 millions, thus showing, when the operations of that year alone are considered, an actual deficit before making any allowance for either interest or dividends.

The interest requirements of these roads amounted for that year to approximately 475 millions of dollars.

The corresponding result of operations of the carriers showed, for the calendar year 1920, in the Western, Eastern and Southern districts respectively, the following net railway operating income:

Western .....	\$118,970,768
Eastern (including Pocahontas Region)....	77,475,261 (deficit)
Southern .....	20,768,914

For the first nine months of the calendar year 1921, the net railway operating income of the Class 1 roads, taken as a whole, amounted to \$391,384,719, being only 2.9 per cent of the value of their properties as determined by this Honorable Commission, in July, 1920, for the purposes of rate-making, in a proceeding entitled "Ex Parte 74."

The corresponding results of operation of the carriers in the several districts, Western, Eastern and Southern, showed for said period of nine months the following net railway operating income, namely:

		Rate earned (annual basis)
		per cent
Western .....	\$195,118,646	3.4
Eastern (including Pocahontas Region)...	167,146,720	2.7
Southern .....	29,119,353	1.9

The foregoing were the operating results notwithstanding the fact that the carriers as a whole were compelled to reduce their expenditures for maintenance of way and equipment for the said nine months' period \$426,793,121 below what was expended for these purposes during the corresponding period of nine months of the previous year; the reduction in such expenditures in the several districts being as follows:

Western .....	\$178,357,201
Eastern .....	208,349,365
Southern .....	40,086,555

The policy of rigid economy made necessary by these results, and the consequent cutting to the bone of the upkeep and maintenance of the properties, was at the price of neglecting, and for the time deferring, work which must hereafter and in the near future be done and paid for.

The condition of postponed maintenance is illustrated by the fact that, as of September, 1921, over 16 per cent, or 374,431 in number, of freight cars were in bad order needing repairs, as against a normal of bad order cars of 160,000.

From the foregoing it is apparent that the figures of operating results as shown by the reports, are unduly large to the extent that they take no note of the enormous bills charged up against the future, and which must soon be paid, for deferred maintenance.

It is obvious that, even under these circumstances of omitted and deferred maintenance, the rate of return of 5½ or 6 per cent, fixed by the Transportation Act for the first two years after March first, 1920, has not been even approximated—much less reached, the actual result being less than one-half of the prescribed return.

This unhappy and discouraging result has been largely brought about by the expenses of operation, and in analyzing these it will be found that by far the largest contributing cause is the labor cost.

**Labor Cost**

Labor costs constitute three-fifths or more of the expenses of operation.

On the first day of January, 1917, when the government took charge of wages in the Adamson Act, the labor cost of Class 1 carriers had not in any year exceeded the sum of about 1,463 millions of dollars. In 1920, when governmental authority made the last wage increase, the labor cost of these carriers was about 3,698 millions for the year, or, if continued throughout the year instead of for only eight months during which the wage increases were in effect, the labor cost, on the annual basis, would have been largely in excess of 3,900 millions of dollars.

In the light of these figures, it is manifest that the recent

reduction by the Labor Board of wages, estimated at from 10 to 12 per cent, in no sense meets or solves the problem of labor costs, and in no way makes it possible for the carriers to afford a reduction in their revenues.

Notwithstanding this, however, the carriers have, since the rate increase in Ex Parte 74, made many hundreds of thousands of reductions in freight rates, these reductions having resulted, according to the best estimates which can be made from available data to a reduction in the revenue of the carriers amounting to from 175 millions to 200 millions of dollars a year on the basis of normal business.

It is obvious, from the opposition of shippers to a level of rates which is not now sufficiently high to provide for the labor and other costs of operation and to afford even a moderate support to the transportation industry, that these costs impose upon transportation a burden substantially greater than it can bear.

The only practical method of obtaining relief from these excessive labor costs is through an order of the Labor Board which can be rendered only after a hearing of the parties.

In a wise administration of the responsibilities of management, it was necessary for the facts herein enumerated to be borne in mind and carefully weighed in forming a judgment as to the duty of the carriers in respect to the demand for a reduction in rates.

**Rate Reductions Unwarranted**

**Until Costs Are Lowered**

From the foregoing general outline of the circumstances of the carriers it is clearly apparent that, without a substantial reduction in costs, the transportation industry is in no condition to afford any reduction whatever in its revenues.

It is urged, however, that a reduction in rates will stimulate traffic and that increased traffic will protect the carriers from loss growing out of the reduction in rates. It was the duty of the carriers to give respectful and earnest consideration to this suggestion. It is, of course, manifest that it has no basis except a basis of conjecture, and that an adverse result of the experiment would be disastrous not only to the railroads but to the public whose supreme need is adequate transportation. There can be no escape from the conclusion that it is a serious question, whether the railroad managements should venture voluntarily to place these instrumentalities of commerce, so essential to the public welfare, at the hazard of such an experiment.

It is, however, represented to them that the wheels of industrial activity in all branches of business have been slowed down to a point which brings depression and distress to the entire public and that something must in the public interest be done to start them again in motion. It is urged that some interest must take the risk of the first step to relieve the industrial congestion which is holding business back and down, and the railroads are urged to take this first step, and to rely upon public opinion to bring about promptly the necessary reduction in operating costs, including a just reduction in the abnormally high cost of labor.

It is represented to the carriers that the only just method is to apply horizontally any reduction that is made so that all users of transportation may share equitably and alike in the advantage incident to a reduction of rates, and the precedent of the horizontal increase in rates made in Ex Parte 74 is cited to justify this demand.

**An Economic Problem**

It seems, however, to your petitioners that the situations then and now are substantially different. Then the problem was a revenue problem—a problem of producing revenue sufficient to support transportation up to the standard of efficiency deemed necessary in the public interest, and, manifestly, it was equitable and proper to distribute ratably the incidental burden.

Now the problem is to find a means of aiding in a vast economic readjustment, and to relieve serious economic distress—not as a right, but as a matter of high and wise expediency and in a way that will best promote the public welfare.

Inasmuch as there is no opportunity or possibility of giving relief to all, there should, in the judgment of your petitioners, and it is believed in the disinterested judgment of the public, be a resort to wise selection, and whatever is done should be

applied where it will bring the greatest relief and do the most good, considering the question from the broad standpoint of the advantage and interest of the general public.

In considering the economic needs of the various classes of industry, it is represented to your petitioners, and they believe it to be true, that the deflation since the war in the prices of agricultural products to the producers has been greater by far than in any other industry. This decline has not been confined to any particular agricultural products or to any particular section of the country, but is general, resulting primarily from two major causes—the condition of foreign credit and the condition of domestic markets. These conditions constitute a serious obstacle to the resumption of normal activities and it is not believed by your petitioners that the present agricultural depression is caused to any appreciable degree by the existing level of freight rates, or would be relieved to any substantial extent by any reduction in such rates that can be made.

But the demand for a reduction in freight rates on the products of the farm is most insistent and it seems to be a matter of general concession that no industry is as much in need of a reduction in its expenses as agriculture.

This Honorable Commission, in its recent report in this cause, at page 99, although dealing with only a portion of the country, and with reductions on only a part of the agricultural products, thus stated the situation: (Here is quoted an extract from the commission's opinion in the grain case.)

The carriers do not feel justified in remaining rigid and uncooperative in the face of this suggestion and of a public demand which is so insistent and so extensive as to amount, for all practical purposes, to a fixed public opinion.

### Present Reduction Should Not Be Concentrated on Western Grain

Your petitioners, however, submit that, if there is to be a reduction in rates for the benefit of agriculture, there seems little justification for confining such reductions to rates on grain, grain products and hay, nor to any particular section of the country. The economic reasons in favor of reductions apply with equal force to other products of the farm and to other territorial sections. The demand on the part of the agricultural public for a reduction in freight rates is not confined to the commodities covered by this proceeding and is not confined to the Western District. The commission and the carriers have been, or will be, confronted by the necessity of meeting the demand for a wider application among agricultural products of proposed reductions and for a more extensive territorial application of them. It is not apparent how this demand can be successfully distinguished from the action taken by the commission in this cause, and yet a general application of the scale of reductions ordered in this case to other agricultural products and to other territories of production, would involve a loss of revenue to the carriers which would seriously impair their capacity to perform their public obligations.

Actuated by these considerations, the railroads represented by the Association of Railway Executives, which include the respondents in this cause, being desirous of manifesting a sympathetic attitude toward the public demand for a reduction in rates and of making a substantial contribution to the relief of existing industrial congestion and depression, and to the economic readjustment essential in the public interest, and at the same time realizing the serious and disastrous consequences of a failure of the experiment they are about to make, not only to the railroads themselves but to the public dependent upon them for the means of transportation and for the facilities of doing business, have determined to ask this Honorable Commission for leave to put into effect as promptly as may be, the following program:

"1. A reduction, for an experimental period of six months, of 10 per cent in car load rates on wheat, corn, oats, other grain, flour and meal, hay, straw and alfalfa, unmanufactured tobacco, cotton, cottonseed and products except cottonseed oil and cottonseed meal, citrus fruits, other fresh fruits, potatoes, other fresh vegetables, dried fruits and vegetables, horses and mules, cattle and calves, sheep and goats, hogs, poultry, eggs, butter and cheese, and wool, any reduction in such rates made since September 1, 1920, to constitute a part of this 10 per cent; it being understood that the proposed reduction of 10 per cent shall not apply to the movement of such traffic wholly within New England, and that if the reduction of

wages, referred to in the next succeeding paragraph hereof, is put into effect prior to the expiration of the said experimental period, this limitation of six months shall not apply to the said reduction in rates. It should be noted that the loss of revenue resulting from this reduction would all come out of the net revenue of the carriers.

"2. The necessary steps under the law, including, in case of failure to agree in conference, an application to the United States Railroad Labor Board, to be filed as promptly as possible, for a reduction in wages of employees, with the understanding that, concurrently with such reduction in wages, the benefit of the reduction thus obtained shall, in a manner approved by this Honorable Commission, be passed on to the public in the reduction of existing railroad rates, except in so far as such reductions in rates shall have been made in the meantime."

The reason for the exclusion of traffic moving wholly within New England, from the benefit of the immediate reduction proposed in rates, is due to the special distress of the New England carriers.

### Further Reductions to Be Determined by Commission

It will be noted that the effect of this proposal will be an immediate reduction in car load rates on the products of agriculture and the products of animals which are mentioned, but, as soon as and to the extent that a reduction in wages is obtained from the Labor Board on the proposed application, a further reduction in rates (except as meanwhile put into effect), to be distributed among the users of transportation in such manner as this Honorable Commission may determine.

The proposal thus deals immediately, and without waiting for a reduction in operating costs, in the manner stated, with the needs of agriculture and undertakes to make further reductions not confined to agriculture as soon as further reductions are made possible by the proposed reduction in wages.

Your petitioners, in view of the condition and of the special needs of the transportation industry do not believe that any further reductions in rates than those herein mentioned, should be made until there is a reduction in operating costs. They further submit that there is no justification for treating grain, grain products and hay preferentially or for giving special and preferred advantage to the territory covered by the order in this cause, and that the measure of reduction recently ordered by this Honorable Commission can not be extended to the other products of agriculture or throughout the country without serious injury and hardship to the transportation industry.

Your petitioners, therefore, respectfully ask for an inquiry by this Honorable Commission to ascertain whether, until a substantial reduction can be secured in the labor and other costs of operation, any further reduction in rates than that herein proposed can lawfully be required, and with due regard to the transportation industry, is possible, and that meanwhile a rehearing be ordered in this cause, that meanwhile the order in this cause be suspended and that meanwhile permission may be given to your petitioners to make effective on one day's notice the proposed 10 per cent reduction in freight rates on the commodities and under the conditions set out in this petition.

The petition was filed by J. N. Davis, Fred H. Wood, Kenneth F. Burgess and Alfred P. Thom.

### Program for Rate Hearing

The commission on November 28 gave out the following outline of the plan of procedure and the subjects to be considered at the hearings beginning on December 14:

The purpose of this hearing is to elicit facts. Therefore the submission of evidence is not to be preceded by an argument or debate on questions of law or of policy. Of course, at the close of the hearing opportunity will be afforded for argument, at which time questions of law as applied to the facts of record may be discussed.

During the period December 14 to 21, inclusive, it is expected that the respondents will put in their case. Hearing will be resumed on January 9 and past experience has shown that full development of the facts will be facilitated if cross-examination of respondents' witnesses is deferred until then. Before the close of the hearings on December

21 a schedule for the hearing on and after January 9, 1922, will be announced. This will be arranged according to commodities, etc., etc. Interested parties should advise the Secretary of the amount of time desired to present their case.

The hearing will be continued until adequate opportunity has been afforded for the presentation of such matters as in the opinion of the commission may aid it in determining the questions before it, but every effort will be made to expedite the proceeding and to confine the evidence within reasonable time limits. Relationships between particular points under existing rates are not in issue.

It is suggested that the matters to be presented should include the following:

1. Are the present rates\* reasonable in the aggregate under section 1 or other provisions of the act either in the country as a whole, or in the several territorial rate groups\*\* defined in Ex Parte 74. Are the rates on specified commodities or descriptions of traffic reasonable? If not, to what extent are they unreasonable? This of course includes passenger traffic.

2. To what extent are the respondents realizing return contemplated by section 15a and what are the prospects for the future? This should be shown by individual lines, by territorial rate groups, and by classification territories.

3. To what extent have operating expenses been reduced since August 31, 1920:

- (a) By furlough or discharge of employees?
- (b) By reduction in wages?
- (c) By changes in working conditions?

Same questions as to operating expenses since June 30, 1921. State as in 2.

What part, if any, of this decrease has not been included in the monthly reports of operating expenses made to the commission since June 30, 1921?

4. (a) How do fuel contracts and costs now current compare with those in effect on August 31, 1920 (give the figures)? When do such contracts expire? To what extent are contract prices conditioned on wage scales? What part of the cost of fuel is for transportation?

(b) The same questions as to locomotives, cars, rails, ties and other materials and supplies.

5. To what extent have rates been (a) further increased and (b) reduced since general increase of 1920? This should be shown by individual lines, by territorial rate groups and by classification territories.

6. (a) What increase in gross and net operating revenues,

absolutely and on a percentage basis, resulted from the increases authorized in Ex Parte 74?

(b) What decrease in gross and net operating revenues (1) has resulted and (2) may be expected to result from reduced rates which have become effective since August 25, 1920? State separately.

(c) What changes have there been in the volume of traffic since August 31, 1920, and what are the prospects for the future? What has been the effect of rate changes upon the volume of traffic since that date?

7. What readjustments, if any, following *Increased Rates*, 1920, have not been but should be effected? The commission there said:

"It is impracticable at this time to adjust all of the rates on individual commodities. The rates to be established on the basis hereinbefore approved must necessarily be subject to such readjustments as the facts may warrant. It is conceded by the carriers that readjustments will be necessary. It is expected that the shippers will take these matters up in the first instance with the carriers, and the latter will be expected to deal promptly and effectively therewith to the end that necessary readjustments may be made in as many instances as practicable without appeal to us."

These matters should be gone into thoroughly.

8. To what extent, if any, has maintenance of road and equipment been curtailed since August 31, 1920? What is the present condition of road and equipment?

9. What amounts have been expended since August 31, 1920, for additions and betterments, including equipment, which, under the prescribed accounting system, are chargeable to capital account? What amounts are needed or will be needed in the immediate future for such expenditures, in the public interest, based (a) on present volume of traffic, and (b) on volume of traffic under normal conditions?

10. What are the relative degrees of profitableness of the freight and passenger services, respectively?

11. To what extent can net income be increased by enhanced economy and efficiency in management?

12. If rates are found to be unreasonable in the aggregate in the country as a whole, or in one or more territorial rate groups, (a) should a general reduction in all rates be required or, (b) should readjustment be required in the rates on specified commodities or descriptions of traffic?

If rates are found to be reasonable in the aggregate, but unreasonable on specified commodities or descriptions of traffic, what readjustment should be required?

13. What should be the rate of return after March 1, 1922?

\*For brevity the term "rates" is used throughout, as including fares and other transportation charges.

\*\*References hereinafter to territorial rate groups are to those defined in Ex Parte 74.



The Illinois Central's First Locomotive and One of Its Latest



Through Delaware Water Gap

# Lackawanna Success the Result of Supervision

Details of the Handling of Coal and Manifest Freight—  
Train 51—Full Use Made of Signals

By Charles W. Foss and James G. Lyne

Part II

**T**ECHNICALLY SPEAKING, the Lackawanna serves the Northern or Wyoming anthracite field. The mines or breakers are in a small area in the neighborhood of Scranton, Pa., and extend in a narrow strip southwesterly from Scranton along the Bloomsburg branch, the mine farthest from Scranton being at West Nanticoke, about 25 miles from Scranton. Various of the older mines are within the city limits of Scranton itself; in fact, the mine cave-ins, and the resulting damages to buildings and streets overhead, represent a continuous source of trouble to the coal mining company. The Scranton mines, on the whole, are now being worked out, the Kingston district from Luzerne to West Nanticoke having superseded them in importance. Normally one-half the total coal mined by the Glen Alden Coal Company is secured in the Kingston district.

The Lackawanna normally handles about 900 to 1,000 cars of coal a day. In summer, the lake season, about 50 per cent of the coal tonnage moves west to Buffalo, about 30

per cent east and the remaining 20 per cent to Lackawanna local points or to connections other than at Buffalo, such as for Canada through Utica, etc. In winter about 35 per cent of the coal movement is to Buffalo, whence it moves by rail over the various connections from Buffalo and Black Rock.

## Hampton Yard

Probably the most important facilities for handling coal in the coal district are the assembling yard at Kingston and the hump yard at Hampton on what is known as the Keyser Valley branch. The empty cars for the Kingston district are distributed from Kingston and the loads assembled there. They are then moved in drags to Hampton yard, at which point also are assembled the cars loaded in the Scranton district. At Hampton the coal and other freight is classified over the hump by destination. The classifications number 22, including among others: Coal for Buffalo; coal for



Anthracite Mines Served by the Lackawanna

Michigan Central; coal for Grand Trunk; New York freight; Hoboken coal; Syracuse freight and empties, etc.

The west classification yard has 15 tracks ranging from 2,060 to 3,700 ft. in length, or holding from 50 to 97 cars and with a total capacity of 973 cars. The east classification yard also has 15 tracks, ranging from 21 to 76 cars, and with a total capacity of 765 cars. The three largest tracks in the westbound yard, in addition to being used for classification, are used largely for the handling of trains that do not require being put over the hump. There is also a receiving yard of 6 tracks with a capacity of 70 cars each. This yard, incidentally, is on a descending grade of 1.3 per cent. The classification yard, except for the hump itself and its approaches, is on a descending grade of 0.5 per cent.

For westbound movement trains are made up to 3,500 tons, or as it is termed in Lackawanna parlance, to 7,000 M's. Their movement to Clark's Summit requires a Mikado, usually assisted by a helper and two or three pusher locomotives, the helper and pushers being dropped at Clark's Summit, which is the end of the 1½ per cent grade. The west end of the Keyser Valley branch is at Cayuga, some four miles east of Clark's Summit. An interesting feature is the left-hand movement from Cayuga to Clark's Summit over a slow speed track which crosses under the other tracks to the right-hand side just east of the summit.

Coal moving eastward is made up to 2,500 or 3,500 tons, the trains requiring four or five locomotives eastbound up the 1½ per cent grade to Gouldsboro. If they are made up to the smaller figure only, they are filled out to 3,500 tons by the addition of cars assembled at Gouldsboro from mines on the Winton Branch which leaves the main line at Nay Aug.

In the foregoing we have spoken of the classification of the coal by destination. This term possibly needs some explanation. The loaded cars are assembled from the mines, but in the case of the Glen Alden cars they are not billed



Pushers for No. 51 at the Foot of the Pocono Grade

from the mines, but from the assembling yard—and then on the authority of a representative of the coal company whose office is at the yard. This, of course, means that in classification by destination the cars are in some measure also classified by sizes. Further classification by sizes must be carried out for the car dumpers at Buffalo and Hoboken. Included among the extensive facilities at Secaucus, N. J., for example, is a hump yard in which is classified the coal for Hoboken or for movement to the Lackawanna's territory adjacent to Newark, N. J.

**The Movement of Manifest Freight**

The Lackawanna's success in operating fast manifest freight schedules and its ability to make connections almost without fail has for many years been the road's chief stock in trade in the keen competition for fast freight business

with the other roads in trunk line territory. Prior to the war the road furnished a service rather better than that which the competing lines were able to maintain—it being able to offer this service because of its having the short line from New York to Buffalo, because of its facilities and because of the special care which the fast freight service was accorded. Up to the present its pre-war schedules have not been restored. The road now is offering the same manifest deliveries as the other lines. It seems, however, to be able to maintain its schedules somewhat better; its record for making connections is especially an enviable one.

The Lackawanna, like the other trunk lines, is now solicit-



Train 51 in the Poconos

ing merchandise or manifest freight out of New York on the basis of second morning delivery at Buffalo; third morning at Cleveland, Pittsburgh, Toronto, etc.; fourth morning at Chicago, St. Louis, Indianapolis, Cincinnati, etc.; fifth morning at Milwaukee and Nashville, and sixth morning at Kansas City, Memphis, etc. It is making the same deliveries on less-than-carload freight as it makes on carload freight, despite the fact that l.c.l. transfer freight must be delayed for some 12 or 15 hours for transfer into through cars at New York Transfer, Secaucus, N. J. Prior to the war the Lackawanna made a third-morning delivery at Chicago and a fourth-morning at Kansas City, and this summer put on a schedule offering these deliveries eastbound on perishables.

The Lackawanna's manifest trains are designated by sym-

**FAST FREIGHT SCHEDULES**

	Westward				
	No. 51 Secaucus	First 55 Hoboken	Second 55 Pt. Morris	Third 55 Hoboken	Fourth 55 Hoboken Mid.
Hoboken . . . . .Lv.	6.30	....	....	9.45	12.00
Secaucus . . . . .Lv.	10.30	....	A. M.	....	....
Port Morris . . . . .Lv.	....	....	12.30	....	....
Slateford . . . . .Lv.	1.00	10.30	1.30	2.00	A. M. 4.15
Seranton . . . . .Ar.	4.30	A. M.	6.00	7.00	9.15
Binghamton . . . . .Ar.	5.00	4.30	8.00	9.00	2.00 P. M.
Elmira . . . . .Ar.	7.30	....	....	P. M.	5.00
.....Lv.	8.15	8.30	12.00	1.00	5.45
.....Lv.	10.25	11.30	3.00	4.00	8.00
.....Lv.	11.00	1.30 P. M.	5.00	6.00	8.45
E. Buffalo . . . . .Ar.	A. M. 6.30	P. M. 8.30	A. M. 1.00	A. M. 2.00	3.45
Eastward					
	No. 52	No. 54	No. 56		
E. Buffalo . . . . .Lv	A. M.	A. M.	P. M.		
.....Lv	4.00	9.45	9.20		
Elmira . . . . .Ar.	11.10	3.29	4.05		
.....Lv	12.00	4.00	4.45		
.....Ar.	P. M.	....	....		
Binghamton . . . . .Ar.	2.55	....	7.45		
.....Lv.	3.15	6.15	8.00		
Seranton . . . . .Ar.	6.15	8.30	11.00		
.....Lv.	7.15	9.30	12.00		
Slateford . . . . .Lv.	11.40	A. M. 1.30	F. M. 4.15		
Hoboken . . . . .Ar.	A. M. 5.05	6.55	9.30		

bol numbers. A tentative schedule showing arriving and leaving times at division and terminal points is issued in mimeograph form to officers and employees concerned. That is to say, the schedules do not appear in the operating timetable, nor is a symbol book used. The schedules are given in the table. With reference to the eastbound schedules, mention should be made that frequently three sections are run of No. 54 and two of No. 56.

The spectacular feature of these schedules is Train 51—the train handling package freight from New York Transfer. This train is due to leave Secaucus at 10.30 a. m., about 15 hours later than First 55 or about 10 hours later than Fourth 55. Its movement to Buffalo in 20 hours, covering about 385 miles, is made at an average speed, including terminal time, of about 20 miles an hour. First 55 is allowed 26 hours and Fourth 55 about 28 and they are not required to make as close connections with the lines beyond Buffalo as No. 51.

Train 51 is limited to 70 cars, about 4,200 Ms (2,100 tons), from Secaucus. It was put on about January 1, 1921, and for a short period the road found difficulty in giving it 50 cars of freight from the transfer. Business has gradually become heavier and heavier as the schedule and the manner in which it is maintained have become better known to shippers. As a result the train is now run frequently in two sections. Since the train was put on it has not missed connections at Buffalo, although if the train is late connections are protected by the Buffalo lines. The operation of this train may be taken as the leading example of what Lackawanna service means. It is, therefore, worth examining into the manner of its operation.

A considerable portion of the Lackawanna's manifest freight is received at its piers in New York City. For

Indianapolis, Peoria, St. Louis, Denver, Detroit and even for Seattle and San Francisco.

An interesting feature of the operation of the transfer is the manner in which the record is kept of the freight and way-bills. As soon as one of the incoming or "feeder" cars, is unloaded, the way-bills are sent to the transfer office and



Pier 1, Hoboken

sorted. The way-bills for a particular westbound car are then abstracted, the way-bills being forwarded early in the afternoon by train mail. Copies are made of the abstract, one of which is filed and another sent to the commercial agent at the destination point to which the car is routed. The commercial agents find these reports of special value in permitting them to keep in touch with consignees and to advise them of the arrival of their freight when it reaches its destination.

Naturally, in view of the small amount of time available for loading the train, many short cuts must be utilized. For example,



freight which can during the day be made up into through cars at the New York pier freight stations the problem is relatively simple. These cars are floated across the Hudson river and dispatched in the various sections of No. 55 from Hoboken.

**New York Transfer**

New York Transfer is situated adjacent to the Secaucus classification yards, about 4 miles out from Hoboken. The facilities at the transfer include three platforms, two 1,050 ft. in length and one 1,200 ft. in length. The forces are utilized in the forenoon, from about 6.00 to 10.30, for transferring the freight for No. 51. In the afternoon, or rather from about 11.00 to 3.00 o'clock, the eastbound cars are made up. About 17 gangs are used in the morning and about 10 in the afternoon shift. On a typical day 72 westbound cars were loaded with 591 tons and 48 eastbound with 288 tons. Through cars are loaded westbound for such points as Pittsburgh, Memphis, Nashville, St. Paul, Chicago,



The Lower End of the Yards at Hoboken—Above, Float Bridges at Hoboken

while the freight is being transferred, car inspectors examine all the cars carefully. The cars are provided with long air hoses to connect the air lines of cars not coupled, so that it is possible for the inspectors to test the brakes before the train is actually made up. The cars into which the freight is loaded are on three tracks. When the transfer forces have done with their work, two switch engines are used to put the train together. The road engine is waiting

and the conductor has his bills. An hour's time is a liberal allowance from the time the last truck-load of freight is loaded until the train is on its way.

The schedule for No. 51 allows it about 30 minutes at Scranton and 35 at Elmira, which means that any necessary switching, inspection of the train and changing engines must be done as rapidly as possible. As soon as the train enters the yard at Scranton, for example, the incoming caboose is removed by a switch engine and the new caboose attached. By this time the incoming locomotive is off of the train with about 20 cars from the head-end which it has to leave on an adjacent track, the tracks in the yard not being long enough to hold a train of 70 cars. Eight car inspectors are assigned to this train. As soon as the engines are detached the inspectors connect up the train-lines with the yard air-line and go over the train under the protection of blue flags. A switch



A Model Freight House for Small Station—at Orange, N. J.

engine is stationed at both the head and rear ends of the train to set out any bad orders that may be found.

In the meantime, the conductor has his way-bills, the road engine is ready to back onto the train and two or three helpers are at the rear ready to couple on as soon as the carmen take down their blue flags. As soon as this is done the helper engines (used on all trains out of Scranton) couple on the rear and pump up the air (little of it has leaked out because the yard air-line has kept it up as long as the carmen were working). The road engine has in the meantime coupled onto the head cars, which have been doubled over, and has backed onto the train. All that remains to be done is to pull out of town. The handling of this train is always under the direct supervision of at least one yardmaster.

#### Advantage Taken of Complete Automatic Signaling

The Lackawanna has taken full advantage of a main line which is double-tracked and provided throughout with automatic block signals, in using modern methods of train dispatching. Trains move almost entirely by signal indication, with the result that unnecessary delays to trains have been thereby greatly decreased.

All through freight trains run as extras, but they do so without train orders ordering their movement and without displaying white signals. Clearance cards are issued and train registers kept at certain points. Beyond this no authority is necessary for the movement of extra trains. Third class trains when overtaken allow through extras to pass them. When drag extras moving ahead of manifest trains are likely to delay them, "19" orders or messages are issued by the dispatcher directing the slower trains to clear the

main line for the faster ones. Third class trains and extras, of course, clear the time of first class trains.

Train orders are used but infrequently in the ordinary course. If a first class train is late and the dispatcher desires to give inferior trains the benefit of the time, he may, if convenient, issue a "31" order to the first class train and "19's" to the inferior trains interested. If he does not wish to restrict the first class train, however, he can still give the inferior trains the benefit of the extra time by giving them a message to "use . . . minutes on No. . . . (the late first class train)" between certain points. When this message is used, no restriction is placed on the passenger train. It can make up all the time physically possible under the speed regulations. Automatic block signals and flagging rules are depended upon to prevent collisions. The dispatcher, of course, knows about how much time the passenger train will make up between certain stations, and this factor is reckoned with in authorizing inferior trains to "use" so much time on the first class train. A message to an extra freight train which was sent from the dispatcher's office at Scranton on August 11 giving time on first class trains, where no restricting order had been issued to the superior trains, reads as follows:

"C & E x 1152

Use 45 mins. on No. 44 and No. 46 to Lehigh."

Extra passenger trains may be run without train orders but, as distinguished from freight extras, they must display white signals. The following illustration shows a "19" order issued to inferior trains directing them to clear the time of a passenger extra.

Form 19	Form 19
<b>THE DELAWARE, LACKAWANNA &amp; WESTERN RAILROAD CO.</b>	
TRAIN ORDER NO. 100	
Superintendent's Office, Hoboken, Aug. 9, 1921	
To C. & E. all Extras East At Slatford Jct. Station	
X	M.
	Opr;
<i>Psgr. Extra will pass Slatford Jct.</i>	
<i>1.20 A. M..</i>	
<i>Blairstown, 1.32 A. M.</i>	
<i>Greendell, 1.42 A. M.</i>	
<i>Port Morris Jct., 1.58 A. M.</i>	
<i>Do not Delay them, and call on Telephone where you clear for this Extra.</i>	
<i>R. M. H.</i>	
CONDUCTOR AND ENGINEMAN MUST EACH HAVE A COPY OF THIS ORDER	
Made Complete	Time 1:13 a. M. Scolar Opr.

Time table rules require trainmen to be in a position to receive messages from the operator's hoop at every telegraph station, and conductors are required to report to the dispatcher by telegraph or telephone whenever their trains have come to a stop on a passing track, telephones being conveniently located for that purpose.

In addition to the two main tracks and sidings which are provided for the movement of trains there are, especially on the two eastern divisions of the road, numerous short stretches of third and fourth tracks. These additional tracks are in reality nothing more than elongated passing tracks

and are designated in the official parlance as "slow" tracks. The current of traffic moves over them in one direction only (i. e., that of the main track nearer to them, with the exception of the line from Cayuga to Clark's Summit, where the slow track is to the left) and they are in the ordinary course used only by inferior trains in clearing the through tracks for superior trains.

When a train enters the slow track it has fulfilled all requirements of clearing the main track. It will continue on



Train on Slow Speed Track Between Cayuga and Clark's Summit

the slow track until the superior train has passed and will then take the main track once more, except where the auxiliary track continues for some distance or when another superior train is expected soon. As a rule, slow freight and coal trains make a practice of using slow tracks east and west out of Scranton. Where these additional tracks are located at frequent intervals practically no time is lost by slow trains in allowing faster trains to pass them. Interlocking plants are located at the beginning and end of slow tracks, so that no stops are necessary on account of throwing switches.

Efficient operation of the whole railroad as a unit has been greatly facilitated by the installation, in addition to telephone dispatching, of a telephone system covering the entire railroad. Through it every office and every station of the company is in easy communication with all other offices. Delays and enforced brevity which characterize the handling

of office-to-office business by telegraph have thus been obviated. There can be no question but that the personal contact which is possible with the telephone system has been a great help in avoiding misunderstandings which often arise when messages and correspondence have to be relied upon for communication.

**Lackawanna Supervision—33 Report**

Operating department officers are able to keep in close touch with the performance from day to day by a complete situation report for the day previous, which is laid on the desk of every interested officer each morning. The report is known as the "33" report and embodies the following information:

- 1—Engine failures, time lost thereby and cause.
- 2—Delays to trains in arriving and leaving all registering points, engine number on each train, showing where more than one engine is used, tonnage of each train with the number of loaded and empty cars.
- 3—Bad order cars at each point on each division, storage cars at each point and loaded cars not moving at each point.
- 4—Accumulations of loaded and empty cars at Hampton Yard, Gouldsboro and Taylor Tank (the assembly yards for coal), number of loaded cars in transit and how many of these are foreign open, how many are foreign box and how many are Lackawanna cars and number of cars loaded which inspector has ordered back to mine because of unsatisfactory contents.
- 5—Movements of extra passenger trains and the state of the weather.
- 6—Cars at the various mines and mining districts.
- 7—Time of departure at initial point and arriving time at destination of all manifest trains and the number of loaded and empty cars and tonnage of each train.
- 8—Leaving and arriving time of all local freight trains and the number of loads and empties handled between various points.
- 9—Turn-around runs ("pick-ups" in Lackawanna parlance), between what points run, number of loaded and empty cars and leaving and arriving time.
- 10—Ice trains run and where cars handled to (Note: The company gets most of its ice in the Pocono mountains and it is stored at Gouldsboro, whence ice trains run to various points on the system.)
- 11—Work trains run, by whom ordered, what material moved and what work performed and number of workmen.

The following details from the situation report will show in what manner the movements of Train 51—the train described above—were carried out and reported for the trip leaving Secaucus on the morning of October 11:

Morris & Essex division  
 No. 51 Engines 1170 and 1169.  
 70 loads 4009 M's.  
 Secaucus 10:35 a. m.  
 Stamford Jet 1:31 p. m.



Freight House at Buffalo

Scranton Division—

No. 51—Engines 1170 and 1169.  
 Slatford Jct. 1:31 p. m.  
 70 loads 4009 M's.  
 Arrived Scranton 4:16 p. m.  
 Left Scranton 5:07 p. m.  
 Engine 1163—70 cars—4102 M's.  
 Arrived Binghamton 7:30 p. m.  
 Left Binghamton 8:05 p. m.  
 71 cars—4408 M's.  
 Arrived Elmira 10:05 p. m.

Buffalo Division—

No. 51—Arrived Elmira 10:05 p. m.  
 Left Elmira 10:50 p. m.  
 Engine 1165—72 loads 4627 M's.  
 East Buffalo 5:00 a. m.

The advantages of such a report as this are obvious. Officers are given an opportunity to check up accurately the work of their subordinates. Mechanical and engineering departments are able to see what the operating department is doing and what its problem amounts to while, conversely, operating officers can tell at a glance what kind of performance they are getting from the mechanical and engineering departments in moving trains over the road. The report, too, being kept in the same manner each day, is susceptible of comparison with that of other days so that the officers may know whether conditions are improving, whether they are stationary or retrogressing. With complete information available and with an extensive use of the phone system, officers are able to detect errors and to call their subordinates and secure proper explanations within a few minutes, when ordinarily these errors might not be run down for days and perhaps weeks.

Careful Checking of Operating Details

It is, of course, rather trite to observe that as important as the information received by the operating officers may be, the manner in which this information is used by them is considerably more important. It is far from trite to say, how-

dinates and so on down the line, with the result that every man in the operating department is fully cognizant of the fact that he is expected to give 100 per cent efficiency or be called to account by some one higher up for not doing so.

The foregoing sounds to some extent, perhaps, like an elementary lesson in the subject of supervision, for what has been said is that the Lackawanna succeeds in securing the results for which every operating officer strives. How, therefore, does the Lackawanna secure these desirable results?

The operating officers of the road, for one thing, make it a point to use the telephone extensively, not only when they are in the office, as previously brought out, but at home. A further assistance to adequate supervision is the idea of frequent conferences, attended by general officers, the division superintendents and representatives of the marine and traffic departments, etc. Conditions are carefully discussed, remedies suggested if needed, and decisions made to correct or improve any conditions necessitating such action. The value of a daily or frequent conferences of this kind is too evident to need emphasis.

The movement of manifest freight is watched primarily from the 33 report. Supervision by the officers of the road, however, extends further than this through the attention paid to eliminating unavoidable delays to cars that may be set out from manifest trains. When a car is set out, the office of the superintendent of car service at Scranton is informed by wire, as is usual on most roads. The superintendent of car service is then required to keep tabs on the car to see that it is repaired promptly and forwarded. The work of his office is checked by a report of such cars rendered daily to the general officers. A similar report is required from the mechanical department relative to cars set out at division points.

The co-operation between the traffic and operating departments on the Lackawanna is a notable feature. As a result, the operating department is advised promptly of complaints by shippers and prompt steps are taken by way of remedy. Suggestions for improved service are talked over and decision, favorable or adverse, is made promptly. Through frequent conferences, such action is expedited and such delays as might occur through the matter being lost in voluminous correspondence are eliminated. Another feature is the encouragement given operating department men to solicit freight. In a recent period of about four months' duration, one yardmaster was credited with having secured over 500 routing orders.

Considerable attention is naturally given to tonnage ratings and train loading. This is reported to the general officers by the car accountant on form C. A. 201, daily tonnage report. The sheets of this report cover each ruling grade.

Elsewhere in this article appears a copy of the report for September 29 for the seven-mile 1 1/2 per cent grade from Scranton west to Clark's Summit. It is interesting to observe that the report shows on that day that the trains as a whole were loaded to 104.8 per cent of the engine ratings.

The Lackawanna in 1920 had a credit per diem balance of \$804,157. This is primarily the result of the extra effort given to move foreign cars to connections as rapidly as possible, a factor which is noticed most carefully at all times.

THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

REPORT OF THE ACCOUNTANT

DAILY TONNAGE REPORT

Westward Scranton Division From Scranton to Clark's Summit on Sept 29 1921

TRAINS	Engines	Miles	Tons	CARS	M'S HAULED		Percentage of Cars Hauled								
					Per Cent	Total M's									
No.	No.	No.	No.	No.	No.	No.	No.								
								Per Cent	Total M's						
1163	5	347	501	509	59	2,315	21.15	4,627	126.7						
37		126	573	543	59	1,120	27.4	1,331	411.2	102.1					
1164		1210	350	321	24	488.5	35.9	174.7	481	235.7	46.2				
		1171	320	309	24	320.0	40.0	300.0	49.2	202.5	56.6	23.2	84.0		
		1145	539	329	37	430.5	30.5	400.0	53	217.2	150.7	34.7	92.0		
55		723	785	818	70	425.0	75.0	350.0	51.3	228.2	191.0	41.8	113.9		
X		796	1347	1235	360	547.0	75.0	400.0	39	127.8	367.5	51.5	103.1		
1165		1203	320	303	24	400.0	40.0	448.4	211.5	202.2	413.9	103.5			
4		1223	292	334	20	203.5	33.2	200	330.3	190	416.0	145.9			
		1244	274	350	359	299	45	700.0	55	207.5	503.4	71.5	102.3		
		1251	1207	435	356	362	40	704.5	45.5	700.0	53	214.7	483.1	70.3	100.0
		1235	1207	435	360	360	40	704.5	50.5	700.0	54	206.9	504.4	71.3	101.6
		1251	359	359	359	359	32	544.4	344.5	58	203.7	510.0	71.3	112.0	
1166		1231	248	539	303	32	400.0	300	400.0	43.2	155.5	301.2	45.6	121.7	
54		1224	274	233	261	261	40	704.5	40	700.0	57	211.7	490.4	70.6	100.4
X		538	520		16	194.5	50	141.5	20	73.3	123.3	20.16	105.3		
4		765	342	357	201	526.0	32	526.0	260	300.0	37.15	224.6	365.8	53.02	106.0
		737	397	317	210	526.0	32	526.0	260	500.0	40.1	154.4	351.4	51.28	102.6
					7134.5			53.2	6550	54213		3794.3	50303	58296	104.5

A Daily Report of This Kind Is Made for Every Ruling Grade

ever, that the care with which the details of operation are checked on the Lackawanna is the outstanding feature of the work of that road's operating department. The Lackawanna is a comparatively small and compact system. It is not so large but that the general officers are in a position to know fully what is happening along the line at all times. The knowledge by other officials that their work is being constantly watched by the general officers has a strong moral influence on them similarly to check the work of their subor-

# Hearings Before Senate Committee Continued

Testimony of Bird S. Robinson, Forney Johnston and F. A. Molitor—F. J. Warne Attacks Carriers' Statistics

WASHINGTON, D. C.

BIRD M. ROBINSON, president of the American Short Line Railroad Association, testified before the Senate committee on interstate commerce on the Capper bill and proposed repeal of the rate-making provisions of the Transportation Act on November 28. He defended particularly the group plan of making rates provided in Section 15-a of the act. This plan, he said, is sound and is the only one under which the Interstate Commerce Commission can meet the present situation confronting the railroads because it is the only one that takes care of the problem of the strong and weak roads. Mr. Robinson said there are four essentials to a proper solution of the transportation problem, the mandatory rule of rate-making, a rule of divisions which will give to the lines which are of service to the public a self-sustaining revenue basis, authority in the Interstate Commerce Commission to permit the abandonment of lines that cannot be made self-sustaining, and the consolidation of railroads so that the stronger lines may absorb lines which may be weak in themselves, but by serving as feeders would tend to increase the profits of the main lines.

Mr. Robinson said that a large part of the traffic of the country is originated by short lines and branch lines, but that railroads cannot prosper on that kind of traffic alone. To be prosperous they must share in the more profitable through traffic. He said he knew of comparatively few roads that properly can be called worthless and cited several examples of roads which at various times have been so called, but which later have become important or even prosperous. He said that the Detroit, Toledo & Ironton was an example of a so-called "worthless" road which suddenly, after it had been acquired by Mr. Ford, became not only self-sustaining, but was widely advertised as a model road, without any improvement in its physical condition, but because Mr. Ford was able to divert his traffic to that road and thereby give it a traffic which paid a higher average rate.

Very few of the short lines, Mr. Robinson said, fail to render a real public service, but they cannot continue to serve the public unless they are fairly paid and that can be done only under the group system of making rates, by which the Interstate Commerce Commission may increase their divisions to cover the cost of service on a road which has light traffic. If a railroad does not fill a public need, he said, it should be abandoned, but there is less duplication of service by railroads than there is of duplication of railroad service by unregulated motor truck lines allowed to be operated under most unfair conditions. In answer to the argument made on behalf of the state commissions that the valuation of so-called worthless roads has been used to swell the total value of the roads on which the commission attempted to calculate a 6 per cent return, Mr. Robinson said that the value of the roads included which do not perform a public service is very small.

If the rule of rate-making in Section 15-a is taken away, Mr. Robinson said, the Interstate Commerce Commission will have no standard by which to fix the divisions. In the past the divisions have been arbitrarily fixed by the trunk lines, who have not accorded the short lines a fair proportion. The Interstate Commerce Commission has not yet made divisions under the new law, but now has that matter under consideration and he was confident it would establish a rule of divisions that can be used by the short lines in negotiations with the trunk lines and that will give each part of the transportation system an adequate revenue based on its cost of service and a fair return on its investment suffi-

cient to maintain it. Mr. Robinson said that the process of consolidation would be facilitated if the earning power of the short lines can be brought up to a fair standard.

Mr. Robinson said that Congress ought to consider soon an amendment to the labor provisions of the Transportation Act. He said he had no criticism for the Labor Board, but that it is not possible for it successfully to do what Congress contemplated for it unless it and the Interstate Commerce Commission are enabled to work more closely together.

## Forney Johnston for Security Owners

Forney Johnston, of counsel for the National Association of Owners of Railroad Securities, on November 23, completed the testimony of the witnesses appearing for the association.

Mr. Johnston asserted that the association was compelled to oppose the proposed measures because they were fundamentally wrong and destructive, and not merely because of the psychological or moral effect on railway credit and securities. He insisted that those proposing the mutilation of the Transportation Act were unconsciously trying to force the railroads into a status of absolute federal ownership and control to escape what they erroneously considered a partial interference with the state commissions. The obligation on the part of the state commissions, asserted Mr. Johnston, to readjust their rate structures after a general advance in interstate rates in order that both rate structures may contribute a fair proportion to the revenue necessary to sustain transportation involved no tangible and substantial loss in control. The state commissions were free to proceed in the normal way to deal with particular rates after any general advances consistent with the action of the Interstate Commerce Commission were put into effect.

Mr. Johnston pointed out that before the Transportation Act the railroads had no affirmative status before the commission to protect their revenue and the commission had no original jurisdiction over unreasonably low rates, its function being only to prevent excessive rates and avoid discrimination by the railroads themselves. The theory of the old act, he said, was that carriers would protect their own revenue by initiating higher rates when necessary, but that rate advances had never proven practicable before the Transportation Act for a number of controlling reasons.

"The first of these," Mr. Johnston continued, "is, that as rates are largely competitive, no increases could be accomplished without concert of action, and concerted action in filing rates had been repeatedly held by the courts to be in violation of the Sherman act. In all of the advance rate cases full relief to the carriers was made difficult by the inability of the commission to adjust the rate structure to the circumstances of the different carriers, and to give adequate relief where needed without conferring excessive revenue upon carriers which did not require it, and also by the fact that the burden of proof on the carriers was held to be of the most exacting character. These facts, repeatedly recognized by the commission, established practical handicaps before the Transportation Act, although, in theory, revenue considerations were always before the commission.

Those proposing the repeal of the rate making provision of the Transportation Act, Mr. Johnston asserted were attempting to destroy the general public interest in transportation in order to secure a temporary advantage to individual litigants before the commissions. He said that if revenue considerations were practically excluded from rate hearings,

as proposed by those advocating the Capper bill, the government would be exercising the privileges of public ownership with none of its responsibilities.

Mr. Johnston pointed out that if effective revenue considerations were withdrawn from the commerce act, Congress was under obligations to yield the provisions in the act which confer jurisdiction upon the commission over approximately 90 per cent of the expenditures of the carriers and to abandon control over extensions, car service, wages and other important functions of the carriers, and also to repeal the Sherman act as applied to rate making.

Pointing out that in America it was impossible for Congress to force directly a consolidation of existing railway systems, Mr. Johnston asserted that the association of security owners had repeatedly urged upon Congress the necessity of a program of co-ordination and economies which could be made effective under our Constitution and without awaiting the slow process of consolidations.

#### Col. Molitor Testifies

Col. F. A. Molitor, chairman of the Board of Economics and Engineering of the National Association of Owners of Railroad Securities, testified before the committee on November 22. He showed that without the recent reductions in rates the net operating income of the railroads for the year ended August 31, 1921, had been only 2.85 per cent of the tentative value; and that this return would have been approximately 1.63 per cent if maintenance expenditures had been up to normal. Assuming an increase of 5 per cent in the volume of traffic, and allowing for the July reductions in wages, but not for the recent decrease in rates on farm products, he asserted that the net railway operating income for the year ending August 31, 1922, would be only 3.4 per cent.

Senator Poindexter inquired whether this estimate was based on a normal maintenance expenditure, to which Col. Molitor replied that it was not. "With normal maintenance," he said, "the net operating income would be \$408,000,000, or equal to but 2.2 per cent on the property valuation. If the recent decreases prescribed by the Interstate Commerce Commission on farm products were to be taken into account, the net operating income for the next year would be reduced to approximately \$350,000,000, or materially less than two per cent on the property valuation.

#### Testimony of F. J. Warne

The hearing before the committee in its general investigation of railroad conditions was resumed on November 25 to allow Frank J. Warne, representing the labor organizations of the train employees, to continue his testimony. Mr. Warne read from a prepared statement, which he said would take 48 hours. Chairman Cummins of the committee and Senator La Follette were the only members present most of the time. The latter appeared greatly interested in the statement, which was a general attack on the statistics presented by the railroad witnesses, while Senator Cummins frequently took issue with the witness. Although few of the members of the committee heard the testimony, from two to four stories a day based on it were sent to the newspapers. The statement included most of the charges against the railroads that have been made during the past 10 or 15 years.

Mr. Warne claimed to have proved that during the federal control period the railroads had received on the average the largest net operating income in their history, apparently by including with the net operating income the amount of the government guaranty, and he criticised the roads for not making this inclusion when they referred to the net operating income actually earned to show the relation that existed between revenues and expenses. He charged that the railroads had affected adversely or favorably their net operating income by increasing or decreasing their maintenance accounts

and that during the six months' period following the termination of federal control they had allowed their expenses to "simply run riot." To prove this he referred to the large expenditures for maintenance shown in the months of 1920 when the accounts were swollen by retroactive wage increases as compared with the first month after the guaranty expired. The roads, he said, "began extraordinary expenditures in order to put their way and structures and their equipment in the very highest state of efficiency at the expense, if possible, of the United States government."

Testimony on behalf of the railroads as to wage statistics were criticised because they in some cases included the amounts paid to general and other officers, although a separate exhibit had been filed to show how little their inclusion affected the general result. Mr. Warne gave the impression that average wage figures were very greatly increased by the inclusion of \$100,000 salaries, but he did not specify how many of such salaries were paid. In this connection he referred to the Interstate Commerce Commission's report in the Rock Island investigation which showed that officials of that road had been given bonuses in addition to their salaries. Among other things he said the railroad witnesses had used figures showing the increase in the payroll in recent years without referring in the same breath to the increase resulting from the increases in traffic and he then proceeded to correct some of the "statistical fallacies" by making various exclusions. One of these was the overtime payments and increases in overtime which, he said, "economically are not wage increases but represent the purchase at a higher rate of more man-hours." He also had some combination of figures to prove that the increases in wages made in 1920 were more than met by increases in revenues. This should be sufficient answer, he said, "to the unjustified contention of the railroads that increased wages are responsible for their discreditable showing in the year 1920." To account for the other increases in expenses Mr. Warne quoted some of the testimony regarding the expenditures by the Pennsylvania for locomotive repairs in outside shops and from a letter by John Skelton Williams regarding the profits of the steel corporation. He also read the names of railroad officials interested in companies that sold supplies to the railroads as shown in reports to the Interstate Commerce Commission in connection with an investigation of such relations for the year 1913, and he quoted from various other reports of the commission made several years ago. A Congressional investigation or one by the commission, he said, "will undoubtedly disclose the significant fact that in recent years all the railway supply companies have reported huge surplus earnings to be added to their already accumulated surplus secured through high prices to the railroads."

Mr. Warne also devoted some attention to the history of rebates and "that equally common and widespread practice of present-day railroad management of granting free transportation and the free use of private cars to passengers and representatives of favored shippers." This contribution to the information of the Senate committee as to the causes for the extraordinary increase in railroad expenses in 1920 which is the subject of the hearing was reinforced by quotations from the Interstate Commerce Commission's decision in the five per cent rate case, but he brought his story of unwarranted concessions to shippers down to date by referring to the \$122,000,000 paid in 1920 for loss and damage claims. Just how far this represented the payment of false claims amounting in effect to a rebate, he said, "is, of course, not known."

During part of the time Senator La Follette was the only member of the committee present. He gave every appearance of enjoying the proceedings largely.

The committee proposed to hear testimony from W. G. McAdoo and Walker D. Hines before concluding the hearings.



The Bridge Destroyed in 1918 and the New One Which Replaces It

## Baltimore & Ohio Completes Large Bridge Project

The Structure at Lawrenceburg, Ind., Replaces a Crossing Destroyed by a Large Ice Gorge in 1918

By Philip G. Lang, Jr.

Engineer of Bridges, Baltimore & Ohio, Baltimore, Md.

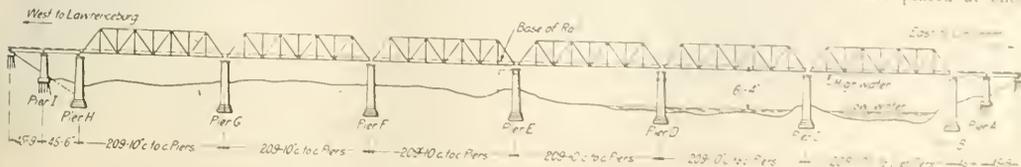
ON OCTOBER 1 the Baltimore & Ohio turned traffic over a new bridge crossing the Great Miami river, between North Bend, Ohio, and Lawrenceburg, Ind., on the main line to St. Louis. The project involved an expenditure of about \$2,200,000. This structure consists of six double-track, through truss spans, each 206 ft. 2 in. center to center of end pins, and two 45-ft. deck plate girder approach spans at each end. The new bridge is designed for E-60 loading, 14-ft. track centers, 8-ft. side clearance, and 25-ft. overhead clearance. The most formidable feature of the project was the substructure work which entailed the sinking of seven pier foundations by the pneumatic process.

The section of road on which this crossing occurs was originally known as the Ohio & Mississippi Railroad, created by an act of the General Assembly of Indiana, approved February 14, 1848, and confirmed by subsequent acts of the states of Ohio and Illinois, dated March 15, 1849, and February 12, 1851, respectively. The construction of the line between Cincinnati and Illinois Town, now East St. Louis, was commenced in 1852, and the road was opened to traffic in 1857. Its completion permitted through rail con-

nection between the Atlantic coast and the Mississippi river, and was the occasion of the "Great Railway Celebration of 1857."

The original crossing of the Great Miami river at Lawrenceburg consisted of a series of timber truss spans, which were replaced in a few years by an iron structure consisting of three spans of Fink trusses. This bridge was rebuilt in 1894, using three 210-ft. through truss spans, supported on two abutments and two piers with a 48-bent pile trestle at the west end. The metal in the superstructure weighed 1,013,000 lb. and the bridge had a total length, including the trestle approach at the west end, of 1,350 ft.

The great floods which occurred in portions of the states of Ohio, Indiana and Illinois during March and April, 1913, are matters of common recollection. On March 25, 1913, the water at the Lawrenceburg bridge rose to an elevation two feet above top of rail; the westerly pier was destroyed and carried with it the two westerly truss spans, as well as 350 ft. of the approach trestle. Work was immediately commenced on a temporary timber trestle and traffic was restored on April 27, 1913. Contracts were placed at once



General Elevation of the New Baltimore & Ohio Bridge

for the construction of a new pier at the site of the one which was destroyed and the fabrication and erection of a new superstructure. The new spans were designed for E-50 loading, riveted throughout, and were of the same length as the old spans. These steel spans were completed on January 31, 1914, and continued in service from that date until they were wrecked by an ice gorge in February, 1918.

The early part of 1918 was characterized by weather conditions of exceptional rigor. The ice broke up and was released by a thaw which occurred during February. A large ice gorge was formed in the Ohio river, adjacent to the mouth of Sugar creek, a small stream which joins the Ohio river at the Kentucky side, about 40 miles below the mouth of the Great Miami. A smaller gorge occurred about six miles below Lawrenceburg, extending across the Ohio, between Rising Sun, Ind., and Rabbit Hash, Ky. At the Baltimore & Ohio bridge crossing the Great Miami river immediately above the confluence of that stream with the Ohio river, the water reached an elevation of approximately five feet below base of rail; the top of the accumulated ice floes, however, rose to an elevation approximately ten feet higher, or about five feet above the existing base of rail. When the ice gorge in the Ohio river at Rising Sun went out, the natural effect was to lower the water in the Ohio very rapidly and this pulled the water and ice out of the Great Miami. At 2:30 p. m., February 12, 1918, the ice turned over the three 210-ft. truss spans of the Lawrenceburg bridge and destroyed the approach trestle at the west end of the structure. The masonry, however, remained in place.

Baltimore & Ohio traffic was detoured over the adjacent upstream bridge of the Cleveland, Cincinnati, Chicago & St. Louis, and in view of the existing war conditions, as well as high prices of material, scarcity of labor and other factors, the reconstruction of the bridge was deferred, pending the advent of more favorable conditions. Consequently, the detour movement over the Big Four was continued until October, 1921. An exhaustive study was made of all local conditions, with a view to the adoption of such measures as would prevent a recurrence of the preceding disasters. The type of crossing finally adopted consisted of six through truss spans, each 209 ft. 10 in. center to center of piers, in place of the three spans previously used.

Comparative estimates indicated that the most economical

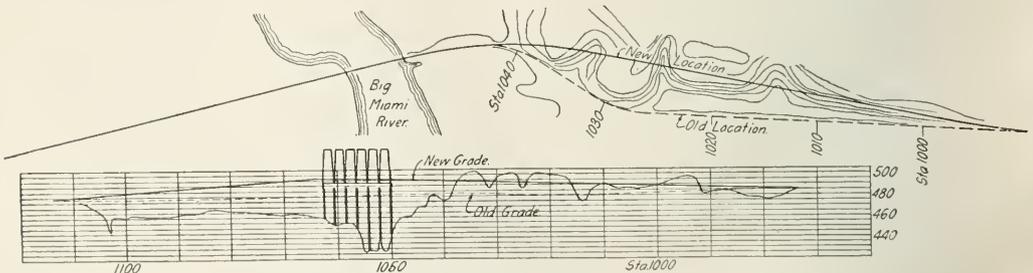
new base of rail to underclearance line is 6 ft.  $7\frac{5}{8}$  in. and that from base of rail to the high water line of March, 1913, is 7 ft. 6 in. and the new bridge provides more than double the clear waterway which had existed under the previous structures. It is believed, therefore, that it removes the danger from future ice and flood conditions. In this connection, flood conservancy work, completed, underway and contemplated, was considered.

The substructure work involved the construction of six



View Through the New Bridge

new piers for the support of the truss spans, the extension of an existing pier from single to double track and increasing its height approximately 10 ft., and the construction of two bank piers and two bank abutments on concrete piles. The bottom at the site of this crossing consists of sand and gravel and it was found necessary to carry the foundation to a depth varying from 93 ft. to 99 ft. below the new base of rail. This



Location, Map and Profile, New Baltimore & Ohio Bridge

type of crossing provided for the utilization of the single-track pier which was built in 1913, founded on piles, and the use of span lengths identical with those which existed previously. This had the further effect of making an unusually attractive proposition from a structural steel standpoint, as with six square spans identical in every respect much duplication occurred. In lieu of building high and expensive abutments, two 45-ft. deck plate girder spans were used at each end, the cost of these spans with their substructures being materially less than the cost of high abutments. The base of rail was also raised 10 ft., thus giving 8 ft. 2 in. additional clearance. The distance from the

was done under compressed air. For six of the new main piers, reinforced concrete caissons were built in place at the sites of the piers. For the extension of the pier built in 1913, a timber caisson was constructed. This was carried down 105 ft. below the new base of rail. The two bank piers and two bank abutments were placed on concrete piles and approximately 4,300 lin. ft. of concrete piling was used. A total of 18,300 cu. yds. of concrete was required.

The superstructure contains 7,900,000 lb. of steel. Shop rivets, one inch in diameter, were used throughout, except for lateral and sway bracing, where rivets  $\frac{7}{8}$  in. in diameter were used. The field rivets for stringer and floorbeam con-

nections and for all main truss connections are 1 1/4 in. in diameter. A continuous footwalk was provided on the bridge south of the tracks and between them, and a refuge bay was installed on the north side of the tracks at the center of each main channel span.

The erection of the steelwork was started at the west end. All spans were erected on falsework consisting of frame bents placed on mud sills. Following the completion of the falsework, the floor system was placed complete for one span after which the truss members were erected. In one case, all the members in two trusses, that is 44 pieces, were erected by one 50-ton locomotive crane in 12 hours. Immediately after the erection of the trusses, each span was swung clear of the falsework. In order that the erection equipment could operate readily, no top laterals were placed until after all spans had been erected and swung. The west deck plate girder span was erected on May 27 and the east through truss span was swung on August 22, 1921. The entire bridge was opened to traffic on October 1.

In addition to providing double track on the bridge, the approaches were double tracked for a distance of 5,841 ft. and 4,648 ft. to the east and west, respectively. On the west end provision for the raise of grade and second track was made entirely by raising and widening the existing embankment, but on the east end the change necessitated a relocation of the approach so as to afford support for the new grade against the hillside. This is indicated on the map. This change eliminates reverse curves of 5 deg., having a total angle of approximately 76 deg., whereas the new alignment contains only a relatively short 1 deg. curve. The line revision at the east and the grading of the approach on the west end involved about 210,000 cu. yd. of earthwork.

For the substructure and grading work, the contractor's camp, plant and equipment were assembled at the east end of the bridge. All concrete was mixed at a central mixing plant, located at the east abutment, where a steel tower 225 ft. in height, its top 275 ft. above low water, was erected, and the concrete chuted across the river. For the superstructure, the contractor's yard for the storage of steel, framing of the timber deck and falsework was located approximately one mile west of the west abutment. The yard in this case was an ideal one since it afforded a strip of land 100 ft. wide and 1,000 ft. long, that was practically level. This was served by two tracks, 18 ft. center to center.

The substructure, grading and incidental work was done by the Vang Construction Company of Cumberland, Md. The superstructure was fabricated at the Ambridge plant of the American Bridge Company, and erected by that company. The entire work was handled by the engineering department of the Baltimore & Ohio, under the direction of H. A. Lane, chief engineer, and the writer. A. H. Griffith, district engineer, was in charge of the work in the field.

## The Form Nineteen Train Order

By Edgar W. Weston

Inspector of Train Dispatching, Northern Pacific

**L**ET WELL ENOUGH ALONE" is a slogan for the lazy-minded. From Columbus down to Thomas A. Edison, history records our debt of gratitude to the men who adopted as their motto "Make well enough better, and better best."

But for many of us it is difficult to adopt new methods. One stumbling block I have found in getting the A. R. A. to approve, or railway managing officers to adopt anything new in train rules, is that the A. R. A. will ask if it has been tried out on any railroad, and the railway officer will ask whether the A. R. A. has approved. Each seems to "side-step," or "pass the buck."

In view of this, it is a strange fact that the A. R. A., in

the Standard Code, approves the use of Form 19 for restricting the rights of a train, and without having the operator clear with the dispatcher before delivery of the orders. Few railway managements have adopted the 19; and those who have, aside from the Northern Pacific and possibly one other, have surrounded it with so many restrictions and safeguards that its use is limited to a point where the 31 might just as well be used.

After reading in the *Railway Age* the letters from a Cleveland dispatcher and from Mr. Forman, and the editorial comment on the use of Form 19 train order, I feel there is no better time than the present to express my own ideas as to its exclusive use. Like that of Mr. Forman, my experience with train orders covers 40 years; and during the past 25 years I have given careful study to train rules and train orders. In my opinion, there should be but one form, and that Form 19. I will concede that signatures should be required when necessary to restrict a train at a non-telegraph office, or if it has already passed the train order signal; but let the signatures be on Form 19.

In 1912 the Northern Pacific began using Form 19 on one division to restrict the trains in automatic block territory. In a few weeks it was used also in non-block territory. In a few months it was extended over the entire system.

Your Cleveland correspondent says the safeguard of the middle order is not well enough appreciated. I cannot agree with him, for I believe it is appreciated; but in using the 19 order exclusively we cannot depend on the middle order for safety, as most roads west of Chicago have many sidings where there is no operator on duty, and many stations where there is telegraph service for only a portion of each 24 hours.

The middle order is used to protect the 31 as well as the 19 order.

The important thing is to insure the delivery of the restricting order. This assured, we want the form and procedure that will cause the least delay, with equal or greater safety. Nine years' experience with the exclusive use of Form 19 warrants me in saying that it is safer, and far ahead of Form 31 in every way. As your correspondent has well said, we must enforce rigidly the rules requiring clearance cards, and prevent the careless handling of the cards.

The profane language of train men and engine men when stopped to sign a 31 order is a moral argument against the use of that Form! The lurid language is, of course, directed against the dispatcher for his "——— thick-headedness" in stopping that particular train. I have asked a number of dispatchers and chief dispatchers what they would say if they were instructed to return to the use of the 31 order, and I get replies like this: "I will quit rather than use the 31," and "The person who suggests it ought to be hung, and I am willing to pull the rope."

My friend Bill Nichols of the Southern Pacific will say that Form 31 is preferred because it makes the work easier for the dispatcher. I do not think so; for no dispatcher worthy of the name will sacrifice safety in order to lessen his responsibility.

Mr. Forman, in his letter in your issue of September 24, outlines circumstances under which the 19 may, with safety, be used exclusively. Regarding the four points of his outline, I will say:

1. He is correct as to the clearance cards. This is the keynote of safety for the 19 order.
2. It may be a good thing to deliver additional copies so the fireman and flagman may have copies; but as such extra copies are no more essential with the 19 than they are with the 31, we cannot use that as an argument for the safety of the 19.
4. I have already commented on the middle order, and cannot see where it has any bearing on safety, as between 31 and 19.

Further, under "4" of Mr. Forman's letter, he says: "This

cannot be regarded as safe practice if (a) the superior train is directed to take siding, or (b) if it must pass the switch where the inferior train takes siding before it reaches the telegraph office where the middle order is to be delivered.

Is the Form 31 any more safe than Form 19 under these conditions? I cannot see that it is. However, I think Northern Pacific Rule 208-A is important, and tends to greater safety, no matter what form order is used. Let me quote this rule:

"208-A. Meeting orders, or orders conferring rights to the point where placed, must not be addressed to the trains of superior right, at the point of execution, if it can be avoided.

"When it cannot be avoided, special precaution must be taken by the train dispatchers and operators to insure safety, and the following notice will be incorporated in the order: '\_\_\_\_\_ gets this order at \_\_\_\_\_.'

"When a train is advanced by the use of a meeting order put out at meeting point as per Rule 208-A, it must be understood by conductors and engineers on the train advanced that they must approach the station named under control and take siding at the first passing siding switch unless otherwise directed, running through the siding expecting to find it occupied. The conductor and engineer of the train advanced must bear in mind that the opposing train has no notice of this meeting point until they reach the station, and must govern themselves accordingly; and must protect as per Rule 99 if necessary to reach the switch used by them in taking siding."

In my opinion there are no reasons of safety, economy, or efficiency to justify a return to the 31 on roads already using the 19, or to oppose the adoption of the 19 exclusively on all roads.

Since writing the above I have received the *Railway Age* for October 15 and have read with interest William Nichols' "Questions About Unsigned Train Orders." These questions are very much to the point and should be considered carefully. I should like the privilege a little later on of attempting to answer some of these questions; for very likely many will say that what I have written in favor of the exclusive use of Form 19 is "old stuff" and mostly theory. I will give as examples bearing out my conclusions some of the actual results that we have obtained by using Form 19 for restricting the rights of trains.

### Freight Car Loading

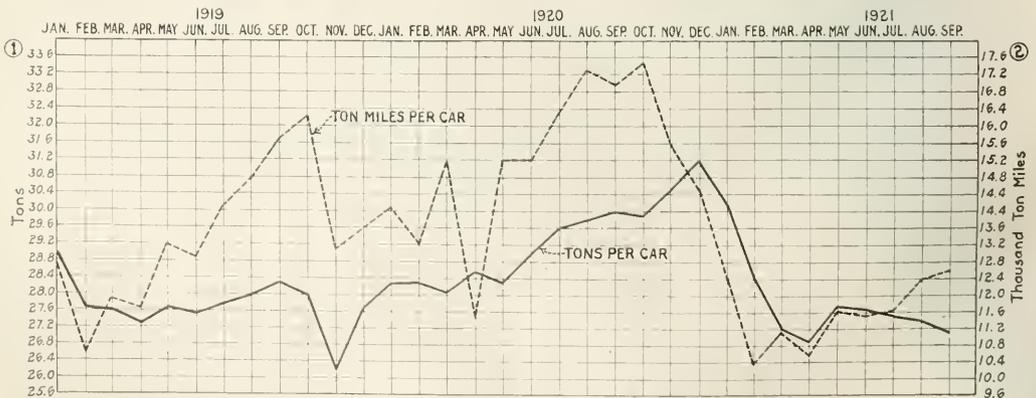
WASHINGTON, D. C.

THE REPORT compiled by the Car Service Division of the American Railway Association on freight car loading for the week ended November 12 is shown in the table which is given below.

The report for the week ending November 19 was delayed and is not available for publication in this week's issue. The car surplus report for the period November 15 to 23 shows another large increase in the number of surplus freight cars to 213,523. This is an increase of 73,334 as compared with the previous week.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, NOVEMBER 12, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	7,994	3,530	39,357	1,883	4,254	2,708	59,347	65,542	184,615	.....	.....
	1920	5,589	3,589	58,698	3,182	7,070	9,966	47,662	90,844	148,420	.....	226,000
	1919	2,906	3,607	39,974	2,791	2,443	2,616	40,677	53,406	101,013	.....	168,530
Allegheny	1921	2,562	4,091	66,124	7,274	3,327	11,613	39,586	66,436	.....	.....	32,310
	1920	194	287	21,732	169	1,246	1,161	5,396	3,285	.....	.....	.....
	1919	121	280	25,068	843	1,689	178	5,110	4,146	.....	.....	37,435
Southern	1921	2,842	2,025	22,759	547	16,919	513	37,444	36,708	119,957	.....	130,118
	1920	2,537	2,549	29,656	1,276	17,388	2,222	34,960	39,030	.....	.....	115,052
	1919	8,906	9,277	7,133	741	11,995	1,364	26,455	28,315	94,096	.....	.....
Northwestern	1921	11,106	10,650	11,231	1,925	13,405	21,564	27,410	34,604	114,129	.....	131,895
	1920	8,359	12,648	17,513	183	6,542	687	30,497	37,700	.....	.....	113,998
	1919	8,636	14,726	25,383	469	5,775	3,095	29,789	45,153	.....	.....	132,936
Central Western	1921	3,201	2,895	3,841	136	7,352	769	15,623	25,702	59,519	.....	68,189
	1920	3,956	3,026	3,314	141	7,602	635	16,744	28,771	.....	.....	55,669
	1919	34,402	34,269	152,309	6,450	50,661	8,658	215,439	256,858	753,046	.....	.....
Southwestern	1921	34,507	38,911	222,874	15,110	56,256	49,683	201,261	308,984	.....	.....	927,586
	1920	39,321	41,120	104,238	9,942	57,767	29,941	151,513	374,462	.....	.....	808,304
Total, all roads	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	256,858	753,046	.....	927,586
	1920	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	.....	915,615
	1919	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	.....	981,242
Week ended—		51,001	40,188	212,219	6,647	55,426	23,186	246,640	338,935	962,292	.....	1,008,818
November 12	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	.....	1,018,539
November 5	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October 29	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October 22	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October 15	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....



NOTE: For reading "TONS PER CAR" use scale No.1 For reading "TON MILES PER CAR" use scale No.2

Tons and Ton Miles Per Car



as best suited to the conditions. Hydro-electric power will be generated at the Maitines station of the Chilean Electric Tramway & Light Co., Ltd. This station is already under construction and will utilize the waters of the Rio Colorado. The station will contain three 8,125 kilovolt-ampere generators and will have an ultimate capacity of 30,000 kilowatts. This power will be transmitted 37 miles to Santiago by twin circuit 110,000-volt transmission lines and will be generated at 50 cycles, 3-phase. These transmission lines will be connected at Santiago with the system fed by the Florida hydro-electric station and the Mapocho steam station, both of which were constructed some years ago by the Germans and which were designed for 50-cycle 3-phase power. The total capacity of the three generating stations at present proposed will be, when completed, approximately 120,000 kw.

#### Substations Provide for Large Increase of Traffic

The power supply will be distributed by five substations designed to handle a train movement that is approximately 50 per cent greater than that existing in 1917, with a further provision for tripling the 1917 traffic demands, if necessary. Each station will initially contain two 2,000 kw. motor generator sets, each set consisting of a 2,800-hp. driving motor, and two 1,000-kw. 1,500 volt generators connected in series. These sets will be designed to withstand a 200 per cent overload for five minutes without injury, and as an additional safeguard a flash suppressor will be included.

Substations 1 and 5 will receive power at 12,000 volts while 2, 3 and 4 will receive power at 44,000 volts and power indicating and limiting equipment will be installed.

#### Motive Power

Thirty-nine electric locomotives are required for the initial electrification, including 6 express passenger, 11 local passenger, 15 road freight and 7 switching locomotives. The main points of interest about these locomotives are given in the following table:

Type locomotive	Weight, tons	Length, ft. in.	Wheel arrangement	Number of motors	Total h. p.	Max. speed, miles per hr.
Express passenger	127	58 ft. 6 in.	2-6-0-0-6-2	6	2,250	62½
Local passenger	80	40 ft. 6 in.	0-4-0-0-4-0	4	1,500	56
Road freight	113	49 ft. 10 in.	0-6-0-0-6-0	6	1,680	40
Switching	65	40 ft.	0-4-0-0-4-0	4	480	34

The express passenger and road freight locomotives will be equipped for regenerative braking. The service in which the local passenger locomotives will operate will not require or justify the regenerative braking feature.

According to a statement issued by the Westinghouse International Company this contract includes only the first railroad zone of the electrification project which Chile has undertaken.

## Electrification of English Railroads

THE PRELIMINARY REPORT of the Electrification of Railways Advisory Committee in England was published in the November 5, 1920, issue of the *Railway Age*. The final report has now been published in pamphlet form.

The committee was appointed by the Ministry of Transport in March, 1920, to consider and advise:

1. Whether any regulations should be made for the purpose of ensuring that the future electrification in this country is carried out to the best advantage in regard to interchange of electric locomotives and rolling stock, uniformity of equipment or other matters.

2. If any such regulations are desirable, what matters should be dealt with, and what regulations should be made.

3. How far it is desirable, if at all, that railways or sections of railways already electrified should be altered so that they may form parts of a unified system.

Subsequently in October, 1920, the terms of reference were extended as follows: To consider and advise—

1. Whether any regulations should be made to limit the drop of potential in an uninsulated return conductor on electrically operated railways.

2. If any such regulations are desirable, what limits these should impose, and under what conditions.

The committee in its final report now desires to confirm the recommendations contained in its preliminary report. The final report is remarkable for its brevity and the following excerpts from the report are worthy of especial attention:

The committee desires to add to the preliminary report that from the evidence which has been put before them, as well as their own experience, they have come to the conclusion that alternating current supplied to the substations at a frequency of 50 cycles can be used for railway purposes without any detriment to railway working.

In respect to contact rail collection, it is essential for the interchange of electrically operated trains, that the contact rails should be so placed as to enable current to be collected by the same trains both on railways employing 1,500 volts and on those employing 600-750 volts. The top-contact type of rail is that now generally in use for the present low voltages; the under-contact type of rail has also been largely used, and, in the opinion of the committee, possesses advantages in regard to interference by the accumulation of ice and snow, and also in regard to the arrangement of protection for men working on the track with higher voltages. Suitably designed shoes can be run interchangeably with either the top or under-contact type of rail. Under these circumstances, the committee is of the opinion that the contact rails employed may have either a top-contact or an under-contact surface, and it does not consider it desirable to recommend the exclusive use of either type, some varieties of which may be the subject of patents, but thinks that the choice in this respect should be left open, subject to the regulations below, so as not to interfere with such future improvements as are likely to be developed in either or both types.

With regard to the practicability of further standardization of equipment by regulations, the committee desires to confirm the views expressed in Clause 10 of the Interim Report to the effect "that such regulations should put no avoidable difficulties in the way of the adoption in future, with the approval of the Minister, of any improvements in methods or appliances which may from time to time become available with increasing knowledge and experience," and to add that the committee does not consider it desirable, in the interests of railway electrification, that further regulations (other than those recommended in this report) should be issued for the time being.

With regard to the extended references 1 and 2, the committee, after careful consideration, finds that—

(1) The evidence given by the railway companies operating electric railways indicates that the cases of harmful effects due to a drop in potential substantially in excess of that allowed by Tramway Acts in earthed railway conductors have been few and unimportant, and readily corrected by the railway companies themselves on their own initiative.

(2) The clauses for the protection of observatories inserted in the Acts of Railway Companies applying for powers to operate their railways electrically have had, and continue to have, a retarding effect on railway electrification. The committee having heard in evidence officers concerned with the observatory instruments likely to be affected by the operation of electric railways, is of the opinion that the interests of observatories would in any case be sufficiently protected if the scope of the clauses referred to were limited to the portions of electric railways within the vicinity of the observatories.

Having regard to these considerations and to the views expressed in Clause 10 of the Interim Report, as well as to the difficulties in imposing any definite limit to the voltage drop owing to the variety of conditions which present themselves along different portions of any railways, the committee therefore recommends that—

(1) It is not desirable that regulations should be issued to limit the drop of potential in an uninsulated return conductor on electrically-operated railways.

The recommendations are briefly summarized in the following:

Standard system of power generation—Three-phase alternating current.

Standard system of power distribution—Direct current.

Standard Pressure—1,500 volts at substation busbars; in special cases a multiple or sub-multiple of 1,500 volts, if approved by the Minister.

Standard collection—Contact rail or overhead contact wire.

Contact rail standards—Top-contact or under-contact rail, with the contact surface in a horizontal plane installed at a gage of 1 ft. 4 in. from the gage line of the nearest track rail.

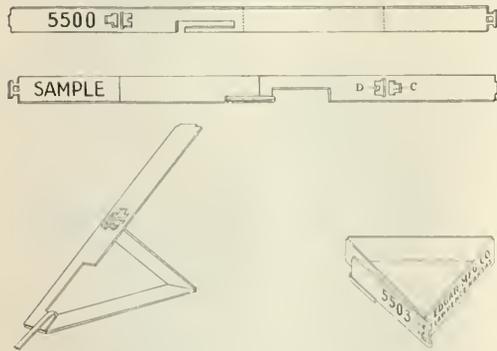
Overhead contact wire standards—Installed normally over the centre of the track at a height of 3 ft. above the maximum load gage likely to be used on the line, and at a maximum height of 20 ft. above track rail level.

Limitation of drop in earthed return conductors—No regulations to be issued.

### Edgar Steel Car Seals

SINCE THE DAYS of the lead and wire car seals requiring the use of sealing irons or special construction for their application, numerous types of self locking, self contained seals have been developed not all of which, however, have been proof against skillful tampering. The seal here described has recently been developed by the Edgar Steel Seal Manufacturing Company, Lawrence, Kan., to prevent the possibility of tampering with the fastening of the car door without destroying the seal beyond the semblance of repair.

The seal is cut from strips of No. 21 B. W. G. steel, 5/16 in. in width and each seal as furnished to the user, is self-



Details of the Seal and Method of Locking

contained. The seals are formed by punching suitable openings through the strips, nicking them at certain locations and trimming one end to form a perforated tee projection. Each seal is stamped with the name or initials of the user and a serial number.

The seal, which is triangular in form when locked, is applied and locked in one piece. In addition to the perforations required for locking, the seal is weakened at two points by nicking, thus locating the angles of the triangle when the seal is closed and locked. In applying the seal it is held with the number right side up toward the operator and is passed through the opening in the hasp lock until the nicks on the body of the seal are located one on either side of the opening through which the seal has been passed. The tee head end of the seal is then bent forward until it forms an angle of not more than 45 deg. with the body and the other end is bent forward until the two come together, allowing the tee head to be sprung firmly down over the post in the tee slot *D*. The seal is locked by bending the number end directly backward

until it is closed against the side of the triangle of which it originally was an extension. The weakness created at the tee slot causes the bend to take place at this point and the opening *C* closes directly over the protruding end of the tee head. This opening is not wide enough to permit the removal of the tee head from the post *D* which supplements the projection of the tee head against the sides of the narrower portion of the tee slot *D* in securely locking the seal.

To protect the numbered end of the seal from being accidentally raised away from the side of the triangle a slender projection formed in the type illustrated by the L-shaped slot in the body, is bent back before the seal is locked, and then bent forward over the numbered end to hold it in place. A later modification of the seal at this point, consisting of a change in the location and direction of the L-shaped slot, brings the projection directly into position for bending over the numbered end without bending it back. This form saves one operation required in locking the form illustrated. On seals of this form a projection, made by indenting the back side of the seal, has been provided to keep the numbered end from being bent down tight against the body of the seal. This lessens the probability of the lock being gummed in position after an attempt to tamper with the seal.

When locked the seal possesses considerable strength against the effect of a direct pull and to break it in this way involves considerable difficulty. To remove it by unlocking, however, involves the straightening out of the numbered end and of the angles formed at the nicks in the body of the seal, and this operation results in the complete failure of the metal at the sides of the tee slot in the case of the numbered end, and in the nicks at the angles in the body of the seal. Any attempt to remove and reapply the seal, therefore, results in its complete destruction into four short pieces of metal. The complete absence of a seal following any attempt to tamper with it facilitates prompt detection and this is said to have become a deterrent against attempts to enter cars bearing seals of this type.

The compactness with which these seals may be packed, because of their uniform section, makes it possible to store them in comparatively large quantities in an office safe or cash drawer, where they may be kept under lock and key with less opportunity for theft than is likely to exist with seals of more bulky form.

### Semi-Automatic Arc Welding Lead

A SEMI-AUTOMATIC arc welding lead has just been developed by the General Electric Company, Schenectady, N. Y., for use in conjunction with its automatic arc welding head, which retains the continuous features of the automatic apparatus, yet allows the operator to direct the arc as required by the conditions of the work.

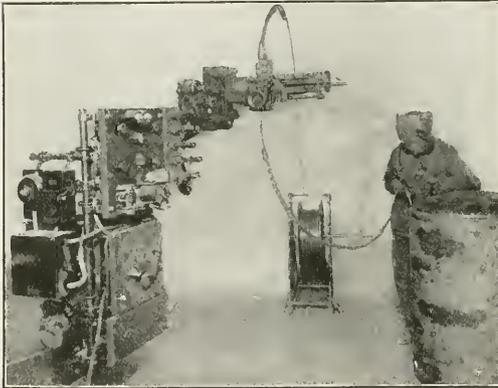
The apparatus consists of a welding tool to be held by the operator, which acts as a guide for the electrode wire. In the handle of the tool, which greatly resembles an automatic pistol, is a switch for operating the control on the panel of the automatic welder to start and stop the movement of the electrode wire. Attached to the tool is a 10-ft. length of flexible steel tubing, called the "flexible wire guide," with an adapter on the other end for attaching it to the automatic welding head. The wire passes from the feed rolls of the head into the flexible tubing, and thence to the arc through a "guide nozzle" in the welding tool. The automatic welder functions in its accustomed manner, tending to hold the arc length constant, and the operator merely directs the arc as required by the particular job in hand.

The field of application of the semi-automatic lead is the welding of products where the seams to be welded are of very irregular contour, or on very large work where the

travel mechanism and clamping necessary for the full automatic welder would be complicated and costly. In many cases the edges of the seams are not accurately prepared, making gaps in some places and tight fits in others. The automatic welder with mechanical travel cannot compensate for these conditions by varying the speed, or by manipulation of the electrode, but with the semi-automatic, they are taken care of.

The semi-automatic welder may also be used for building up metal rapidly, as in the case of the filling up of blow holes in castings, or the building up of worn spots, etc. The speed of deposition of the metal varies widely, being somewhere between the ordinary hand speed and that of the automatic, according to the conditions of the particular job. In general it is about twice as fast as hand welding.

The advantages claimed for the automatic welding equipment may be summed up as follows: (1) Saving in time which in ordinarily lost in changing electrodes; (2) Saving



General Electric Semi-Automatic Arc Welder

of from 10 to 20 per cent in electrode material ordinarily thrown away as waste ends; (3) Operators can become proficient in the use of the tool very quickly, as they do not require the muscular training necessary for hand work; (4) Continuous operation results in few interruptions in the welding, each of which is a potential source of defective welds.

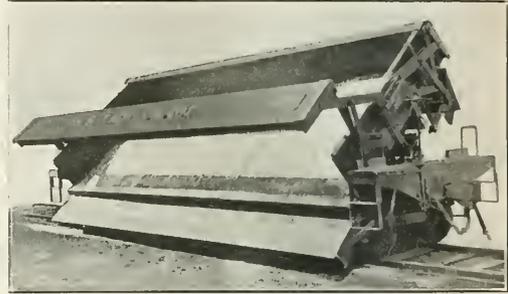
## Apron Attachment Facilitates Use of Air Dump Cars

**T**HE USE OF DUMP CARS in ditching or other service sometimes leads into difficulties because the material is dumped too close to the rail, resulting in the fouling of the ballast and in the expenditure of considerable hand labor to keep the track clear. Engineers who have encountered this difficulty will be interested in an apron attachment which the Kilbourn & Jacobs Company, Columbus, Ohio, has devised for its all-steel automatic air dump cars to overcome this difficulty. Particular interest is derived from the fact that this attachment is not alone an improvement in new equipment manufactured by that company, but may be added to any cars of that make now in service.

This apron attachment is in effect a 28-in. extension of the car floor on both sides, pivotally connected in such a manner as to take a position in a plane practically parallel to the floor when the car is in the dumping position. As the car is dumped the apron on the low side is moved outward auto-

matically and when the car is again righted the apron is restored to the vertical position. The aprons on the two sides of the car are absolutely independent of each other.

The operation of these aprons is coincident with and a part of the operation of the car itself which is actuated by compressed air drawn from a reservoir embodied in the car. In service it is operated by air drawn from the regular air



Side View of the Car in the Dumping Position

brake train line, this passing through a check valve into the reservoir situated in the girder of the car. Its entire operation is controlled by a hand lever for each side. A vertical cylinder 20 in. in diameter is situated on each side of the car and the dumping is effected by the travel of a piston on the side opposite that to which the load is to be dumped. The car is righted by the operation of the cylinder on the dumping side. By connecting the auxiliary valves on each car



The Apron Keeps the Ballast and Rail Clear

through the medium of an air line, any number of connected cars may be operated as a unit from a position at the operating levers of any car in the connected unit. Use of the K. & J. car fitted with the apron attachment demonstrates that the material in the car is cast well away from the track.

FRAUDULENT USE of monthly commutation tickets was detected on the Long Island Railroad, in five months ending with October, in 247 cases. The conductors took up the tickets and the railroad company's last Bulletin gives the names of these conductors. One of them, W. Muir, took up 40 tickets. A large number took up from two to seven each, and a still larger number are credited with getting one each.

# General News Department

Five thousand poles, telegraph, telephone and trolley wire, were reported destroyed or disabled in New England—mainly within 50 miles of Boston—after a severe rain and sleet storm on November 27, 28 and 29. The suspension of telephone and electric lighting service was the most extensive on record for many years.

## Annual Meeting of Federated Societies

The Federated American Engineering Societies will hold their annual meeting at Washington, D. C., on January 5 and 6 at which reports will be submitted showing the progress of the federation since its formation in 1920 when Herbert Hoover was elected president.

## Mr. Elliott's Holdings of Stocks

In applying to the Interstate Commerce Commission for authority to hold the office of chairman and director of the Northern Pacific while also serving as director of affiliated companies and assistant to president and director of the New York, New Haven & Hartford and director of affiliated companies, Howard Elliott has filed a statement with the commission giving the status of his holdings of stocks and bonds of the companies. This shows him as the owner of 100 shares of Northern Pacific but only of from one to ten shares of the other companies to qualify as a director, and no bonds.

## Informal Instruction of Reading Employees

"Safety first," saving fuel, solicitation of freight and prevention of fires are among the subjects that are to be presented at noon meetings of employees of the Philadelphia & Reading which are to be held at the Y. M. C. A., Spring-Garden street station, Philadelphia, on December 7, December 14, December 21 and weekly thereafter. These meetings are intended to promote more intimate relations and more thorough cooperation between employer and employee. Department heads will discuss their work and its relation to that of other departments. Among the scheduled speakers are: J. T. Pratt, supervisor of safety; E. D. Osterhout, assistant general passenger agent; Charles P. Dampman, supervisor of fuel conservation; Harry E. Paisley, treasurer (on thrift), and F. M. Falck, general manager.

## 5,000-Volt Direct Current Locomotives

A potential of 3,000 volts direct current is now used successfully for the electric operation of heavy trams and, if necessary, 5,000-volt equipment will be developed, according to a statement made by Charles P. Steinmetz, chief consulting engineer for the General Electric Company, in a talk to the New York Electrical Society in New York on November 25. At the same time Mr. Steinmetz stated flatly and emphatically that two-thirds of the coal burned by steam locomotives was wasted and that this two-thirds could be saved by electric operation of trains with power derived from coal burned in steam-electric stations. When asked to verify this last statement, however, Mr. Steinmetz spoke only in generalities and produced no figures or tangible argument to substantiate his claim.

## Senate Calls for Railroad Administration Accounts

On motion of Senator La Follette, the Senate, shortly before its adjournment, adopted a resolution directing the director general of the Railroad Administration to furnish to the Senate on or before December 10 detailed information with reference to the settlement of claims growing out of federal control of the railroads and the administration of the affairs committed to him by the transportation act. This called specifically for a statement of account between the government and the carriers from the be-

ginning of federal control down to December 1, 1921, a statement showing in detail the claims which have been settled, showing the amounts claimed by the railroads and the basis of settlement finally arrived at, the purpose being to show in concise form the character of the settlement which has been made with each individual road.

## Standard Contract Forms Planned

In an endeavor to promote uniformity of contract forms, the Associated General Contractors of America has called a meeting of interested engineering organizations at Washington on December 15 to organize a joint committee on standard contract forms. Among the organizations which have been invited to participate in this conference are the American Railway Engineering Association, the American Society of Civil Engineers, the American Institute of Architects, the American Engineering Council and others interested in private and public construction work.

## Baggage Agents Meet

The American Association of General Baggage Agents held its annual convention at San Antonio, Tex., on November 16, 17, and 18, with an attendance of more than 100 members and associate members. The association's membership is largely composed of baggage officers from 78 major lines in the United States, Canada and Mexico and associate members, representing express companies and other interests relating to baggage transportation.

The convention devoted its attention to the promotion of uniformity of baggage tariff rules, more efficient handling of railroad business mail in interline baggage service, uniformity of color, general makeup, etc., of baggage checks; uniform methods of tracing lost or unclaimed baggage, and the vigorous prosecution of claim prevention work. The association has inaugurated a campaign to protect the traveling public against damage to baggage. It was stated that a large amount of the baggage claims are the direct result of inferior and unsafe baggage receptacles commonly in use. Fragile and insecure containers are particularly susceptible to damage, and this campaign, which will be nationwide and accompanied by a large amount of publicity, is for the purpose of educating the public in the exercise of better care and judgment in purchasing and selecting baggage receptacles. Steps were also taken to improve the service and the handling of baggage by the employee.

The following officers were elected for the coming year: President, E. B. Carson, general baggage agent, Southern Pacific, Pacific System, San Francisco, Cal.; W. J. McPhail, general baggage agent, Pennsylvania System, Eastern region, Philadelphia, Pa.; secretary and treasurer, F. L. Duncan, general baggage agent, Chicago & Eastern Illinois, Chicago. The next meeting will be held at Minneapolis, Minn., on June 28 and 29, 1922.

## Historical Handbook of the A. R. A.

The Directors of the American Railway Association have issued, for members, a handsome book of 134 pages, 6 1/4 in. by 6 in., containing in concise form a history of the activities of the association from its first meeting in 1872; and especially the history of the last two years, during which the scope of the association has been greatly enlarged.

The history up to 1919 fills only about 10 pages; but the rest of the book is packed with useful information about the present activities of the parent organization and of the numerous divisions.

The number of railroads holding membership in the association is now 712, operating 315,340 miles of road, including companies in Canada, Cuba, Japan, Mexico, Philippine Islands, Porto Rico and Yucatan.

The book contains the substance of most of the conclusions reached at recent annual meetings, of the association and of divisions and sections, together with lists of officers and com-

mitted, with condensed statements of standards of practice which have been adopted or approved by the association.

For railroad officers who have participated in (or who have followed) these activities, the book serves as a valuable compendium of details of things which, in a general way, they already know, or ought to know; while for other readers it will prove a luminous and informing work concerning a great variety of useful scientific investigations and economic discussions relative to railroad operation, the value of which ought to be more widely known.

"A. R. A." has come to be almost as familiar a phrase on railroad men's lips as "I. C. C."; and, like the latter, it is by many people used, in connection with standards, sanctions or ways of working, with only a dim understanding of its full significance. This handbook should be a welcome aid to such people.

Railroad officers can, doubtless, get copies from General Secretary J. E. Fairbanks, 30 Vesey street, New York.

### Advocates of Public Ownership Hold Convention

With the avowed object of "bringing together the leading advocates and representatives of municipal and public ownership in the United States and Canada for the consideration and study of the problems of public ownership; to get the ideas of the most careful and competent utility experts in America, to hear the methods and plans of those who have made a success of public ownership, and to consider ways and means for advancing the public ownership, efficient management and democratic control of public utilities and natural resources," a convention was held on Saturday, Sunday and Monday, November 19, 20 and 21, in the Congress Hotel, Chicago, under the auspices of the "Public Ownership League of America, the Plumb Plan League, the National Non-Partisan League and 65 other labor, farm, civic and commercial bodies". About 100 out-of-town representatives attended the convention and the attendance at different sessions varied from a figure approaching 400 on Sunday evening to 50 Monday morning.

While preparations had been made for an elaborate discussion of the railroad question, J. H. Hopkins, "of a committee of 48 assigned to the study of the railroad problems"; J. F. Comings, lieutenant-governor of Wisconsin; W. H. Johnston, international president, Association of Machinists; Laurence B. Finn, former chairman of the Kentucky Railway Commission; Timothy Shea, vice-president, Brotherhood of Locomotive Firemen and Engineers; E. F. Grable, grand-president, United Brotherhood of Maintenance of Way Employees; Warren S. Stone, grand-chief of the Brotherhood of Locomotive Engineers and Glenn E. Plumb, special attorney for the railway brotherhoods, it developed that L. B. Finn, Timothy Shea, E. S. Grable and W. S. Stone were unable to attend.

The address of Glenn Plumb was in the nature of a reiteration of the ideas which he has advanced on previous occasions concerning the railroad situation under private ownership. That the roads are physically bankrupt was the conclusion which Mr. Plumb drew from his statement that "tracks and roadbeds are disintegrating for lack of care, and cars are piling up on sidetracks for lack of repairs. Under the employees plan," said Mr. Plumb, "the government would own the railroads. They would be operated by a corporation, guided by a board of directors—one-third to be chosen by the employees, one-third by the managing officials and the remainder by the President." He then stated that one-half the saving which would result from this plan would go to increase wages of the employees and the other half would be used to build new roads and to effect improvements in existing equipments and facilities.

### Meetings and Conventions

*The following list gives names of secretaries, dates of next or regular meetings and places of meetings*

AIR BRAKE ASSOCIATION. F. M. Nellis, 165 Broadway, New York City. Next meeting, May 25, 1922. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venon, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Penticus, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. C. of N. Y., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 23-25, 1922, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Borchardt, 202 North Halpin Avenue, Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Annual meeting, November, 1922.

Division I—Operating.  
Freight Station Section (including former activities of American Association of Freight Agents). K. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Next meeting, March 21-23, Richmond, Va. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.

Safety Section. J. C. Caviston, 75 Church St., New York.

Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Cover, 431 South Dearborn St., Chicago, Ill.

Division III—Traffic. J. Gottschalk, 143 Liberty St., New York.

Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next convention, March 14-16, Chicago. Exhibit of National Railway Appliances Association, March 13-16.

Construction and Maintenance Section. E. H. Fritch.

Electrical Section. E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association). J. S. Balliet, 75 Church St., New York, N. Y. Annual meeting, June 14-16, 1922, Monmouth Hotel, Spring Lake, N. J.

Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, March 14-21, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. P. Murphy, General Store Keeper, New York Central, C. & N. W. Ry., Chicago, Ill.

Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Filcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichtig, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 17-19, 1922, Cincinnati, Ohio. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Annual meeting, May 10-12, 1921, Denver, Colo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Market St., Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF HOTEL TREATING.—W. H. Eisman, 4600 Prospect Ave., Cleveland, Ohio. Annual convention, September 23-30, 1922, Detroit, Mich.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June, 1922, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3rd Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

Railroad Division, JAMES PARTINGTON, American Locomotive Co., 30 Church St., New York. Next meeting, December 9, 1921, 29 W. 39th St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PAPER ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis. Next meeting, January 24-26, Hotel Sherman, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. Ry., St. Paul, Minn. Next meeting, May 17-19, 1922, Montreal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—JOS. A. ANDREUCCI, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Cleke, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. J. Higgins, American Valve & Meter Company, 332 S. Michigan Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrooke St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Auron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, Mo.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortland St., New York. Regular meetings, 2d Thursday in January, March, May, September and November, Hotel Iroquois, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meetings.—Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2d Tuesday in February, May, September and November.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N.W., Washington, D. C. Annual meeting May 11, 1922, Railroad Club of New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO, C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 1414, Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1922, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY STEELY MEN'S ASSOCIATION.—C. W. Sullivan, Garlick Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R. Room No. 19, Union Pacific Bldg., Kansas City, Mo. Annual convention, 1922, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortland St., New York. Next convention, May 23-26, 1922, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division IV.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

NATIONAL ASSOCIATION OF RAILWAY TOOL PRODUCERS.—Warren C. Nixon, Western Tie & Timber Co., 505 Syndicate Trust Bldg., St. Louis, Mo. Annual meeting, 2d January 26 and 27, Hotel Sherman, Chicago.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. L. Kade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortland St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 29th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Nixon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Cochran, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY AND MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Moffish, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Curlew, 1841 Oliver Bldg., 17th St. and Market St., Philadelphia, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention, September 12-14, 1922, Cleveland, Ohio. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—W. W. Froehlich, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association.

SOUTHERN AND NORTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. B. 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kilde, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Marine Trust Building, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Regular meetings, 3d Monday each month except June, July and August.

## Traffic News

The Union Pacific and connecting lines have reduced freight train schedules from Chicago to Denver, and other Colorado points 24 hours.

On the recommendation of Governor Blaine of the state of Wisconsin the State Railroad Commission will make a detailed survey of utility and railroad rates with a view to possible reduction.

The Atlantic Coast Line has opened a freight office in Memphis, Tenn., with Walter M. Wharton in charge as commercial agent. Mr. Wharton was formerly commercial agent of the Mobile & Ohio at Memphis.

Vigorous opposition to the granting of the petition of the transcontinental roads for lower through rates was voiced by manufacturers and jobbers at Denver, Col., on November 28, at a hearing before Attorney-Examiner William A. Disque of the Interstate Commerce Commission.

A report from Saskatoon says that a party of 1,000 Mennonites is about to leave Saskatchewan for Northern Mexico. The holdings of the Mennonites, amounting to 85,000 acres, are being purchased by a land company, which proposes to settle a colony of Poles there, to be brought from the United States.

The Interstate Commerce Commission has authorized the railroads in Southern classification territory to reduce rates on iron ore, throughout the territory by the amount of the increase which was made on August 26, 1921. The southern roads asked for the permission so as to place them on equality with the carriers, in the north and east, that have recently made reductions in these rates.

The House committee on interstate and foreign commerce has voted to report favorably Senate bill 621 extending the time for the filing of straight overcharge claims against the Railroad Administration with the Interstate Commerce Commission. The bill was passed by the Senate on June 11. The House committee amended it to add six months time in order that claims may be filed up to September, 1922.

The Southern Traffic League, composed of the traffic bureaus of prominent Southern cities—Chattanooga, Atlanta, Birmingham, New Orleans, Charlotte, Jacksonville, Tampa, Savannah, Charleston and other places met at Atlanta this week to discuss plans to go before the Interstate Commerce Commission in Washington to show the commission that it is necessary to have a general percentage reduction in freight rates throughout the South.

The Chicago, Milwaukee & St. Paul will immediately reduce carload rates from all points on its lines in Wisconsin, Illinois and Indiana, to Seattle and Tacoma, Wash., on classified commodities when destined to the Hawaiian Islands, to meet so far as possible the rates in effect via the Panama Canal. It is understood that the same rates will also be applied to the territory east of Chicago as quickly as arrangements can be made with eastern lines.

A special freight rate committee has been appointed by the Prepared Roofing Association, Chicago, with the following membership—Chairman, R. S. Crawford, Certain-teed Products Corporation, New York, J. P. Brown, Barber Asphalt Paving Company, Philadelphia, Pa.; J. L. Roberts, Barrett Company, New York; Osborn Van Brunt, Certain-teed Products Corporation, St. Louis, Missouri; William A. Harris, Flintkote Company, Boston, Massachusetts; H. S. Loving, Ford Roofing Products Company, Chicago; and Arthur T. Cavey, Richardson Company, Cincinnati, Ohio.

The Interstate Commerce Commission has authorized the transcontinental railroads to put into effect on short notice a tariff of transcontinental joint rates on lumber and other forest products applicable from California, North Pacific and Inland

Empire" mills to destinations east of the Indiana-Illinois line, which will be 10 cents higher than the rates in effect on August 25, 1920, before the general advance made in Ex Parte 74. The filing of the new schedule represents an agreement on which the carriers in Central Freight, Eastern Trunk Line and New England rate territories have been having a controversy with the transcontinental lines for several months.

### Reduced Rate for Marshal Foch

The Pennsylvania on November 22 filed with the Interstate Commerce Commission a special tariff providing for a reduced rate of fare for the transportation of Marshal Foch and members of his party on a tour through the United States and Canada ending at New York on December 12. The total charge for the trip will be \$35, which in general provides \$1 for each road participating in the movement.

### A Satisfied Traveler

A man who has been a severe critic of the American railroads is just back from an 8,000-mile trip in which he visited about forty cities and journeyed from the Atlantic to the Pacific and from British Columbia to Southern Texas. Knowing the strain to which the railroads had been subjected in the war period, he expected to have his full complement of troubles. He had no troubles, practically no delays. He says: "In all the 8,000-mile trip the trains arrived on time in every instance but two. Once we were thirty minutes late. At another time nine minutes. Never did we know discomfort. The trainmen were helpful, kindly and courteous. And this was in the period when it seemed as if the whole Nation was to be tied up by a railroad strike. Nobody can make me believe that the railroad workers, from executives down to the tie tamper and the engine wiper, are not on the job as faithfully and conscientiously as ever."—Philadelphia Public Ledger.

### General Rate Reduction in Canada

A general reduction of ten per cent in freight rates on all steam railroads in Canada went into effect on December 1, according to an announcement made by Chief Commissioner, F. B. Carvell. The order of the Railway Board followed a conference between the president and representatives of the Canadian National Grand Trunk and the Canadian Pacific, and the commissioners.

Chief Commissioner Carvell explained that the reduction was not a straight ten per cent off the present freight rates but was to be deducted from the increases in rates made effective by the order of the Board in December, 1920, when the increases of forty per cent in the East and thirty-five per cent in the West, made effective September 13, 1920, were reduced to 35 per cent in the East and 30 per cent in the West. The present order will further decrease freight rates to a basis of 25 per cent in the East and 20 per cent in the West above the rates effective prior to the first increase in September, 1920. Also there is a decrease in sleeping car and parlor car rates of one half of the increase granted in 1920.

### New England Case Re-argued

Oral arguments on the application of the New England railroads to the Interstate Commerce Commission for an order requiring the lines west of the Hudson river to allow the New England lines increased divisions of through rates were heard before the commission on November 29, the case having been reopened for this purpose. The commission in deciding the case has declined to fix the divisions, but it directed the interested roads to appoint committees to try to work out the problem themselves. Representatives of the New England roads reported that very little progress was being made by these committees and are seeking to have the commission issue an order. Charles F. Choate, representing the New England lines, said that in enacting the transportation act Congress intended that without important exception, the railroads in existence and serving the public at that time should be allowed rates that would enable them to live and that the commission was authorized to adjust the increased revenues resulting from increases in the rates by groups. Until the commission issues a certificate au-

thorizing the abandonment of a road, he said, the intention is that it shall be allowed rates which will enable it to pay operating expenses and interest on the investment, at least. To increase the divisions of the New England lines in this case, he said, would not represent a taking away from the other lines of something that belonged to them before because when the commission was authorized to increase rates it was also given power to administer the use of the increased income and the rate divisions represent a vehicle for doing this. The traffic which produced the revenue, he said, is the joint product of the joint effort of the several lines and the sum of money to be realized by the increases in rates was calculated on the basis of the value and earning power of all the roads. Therefore, the amount of the increase constitutes a common fund to be equitably distributed among the roads.

### Joint Congressional Committee to Report on Marketing and Transportation

The labor of more than 1,500 people, for a period of three months, is represented by the data now being compiled by the transportation division of the Joint Commission on Agricultural Inquiry, which will shortly present a report of its investigation on the marketing and transportation facilities of the country. Representative Sydney Anderson, chairman of the joint congressional commission, says that splendid co-operation is being given by railroads and shippers. Approximately 800 representatives of the railroads and 600 representatives of the shippers, in all sections of the country, are gathering information through various sub-committees. Compilation of operating costs and labor costs is included in the work, and a thorough study has been made of each medium of distribution. The committee aims to determine the basic facts of the relation of the railroads on the one hand and shippers and receivers on the other. The general committees have organized sub-committees, located in the producing and consuming regions, with reference to the movement of the particular products which they are studying. For instance, the general committee organized on fruits and vegetables has in turn appointed sub-committees in nearly every state and these sub-committees are studying the particular products in their section of the country. The railroads are organized in two groups, namely, traffic and organization, and the personnel of the executive traffic committee follows: H. M. Adams, Union Pacific, chairman; J. G. Woodworth, Northern Pacific; Edward Chambers, Atchison, Topeka & Santa Fe; T. C. Powell, Erie; Gerrit Fort, Boston & Maine; Archibald Fries, Baltimore & Ohio; Robert C. Wright, Pennsylvania; Lincoln Green, Southern; F. B. Bowes, Illinois Central; and J. L. Edwards, Atlanta, Birmingham & Atlantic.

Forty-four committees of shippers have been appointed to work in conjunction with the executive traffic committee of the railroads in securing data on the marketing and transportation facilities of the country under the direction of the transportation division of the commission. Included in their membership are: C. B. Hutchins, traffic manager of the American Farm Bureau Federation; F. E. Todd, vice-president of Deere & Co.; S. J. Lowell, master of the National Grange; R. D. Phillips, of the International Apple Shippers' Association; R. Cumming, of Chicago, representing fruits and vegetables, who is working in conjunction with E. G. Dezell, assistant manager of the California Fruit Growers' Exchange; and J. A. Campbell, of Youngstown, Ohio, president of the Youngstown Sheet & Tube Co. These committees, together with the representatives of the railroads, have been asked to complete their work by January 1, whereupon all data will be carefully reviewed and analyzed by an advisory committee, whose personnel will be announced shortly. There will be 12 members of this advisory committee, representing transportation, industry and agriculture.

HENRY W. GAINES, of Huntington, L. I., has traveled between that place and New York City, as a "commuter," every month since April 1, 1877, or about 44 years, six months. Mr. Gaines estimates that he has averaged 275 days a year, 70 miles a day, making his total mileage equal to more than 34 times around the earth at the equator. From his home to his office he spends two hours and the same on the return, so that he calculates that he has been traveling 48,950 hours during this time, or the equal of about five years, seven months.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until March 31, 1922, the operation of certain schedules which propose reductions in the carload rates on sugar from eastern cities to destinations in Central Freight Association Territory.

The commission has further suspended until January 12, the operation of schedules which propose to eliminate the application of the rates on lumber from points in southeastern territory to certain stations on the Norfolk & Western.

The commission has further suspended until January 7, the operation of all schedules published in a supplement to an Alabama & North Western tariff which provides for the cancellation of the existing commodity rate of 11½ cents per 100 lb. on lumber from points on the Alabama & North Western to Selma, Ala.

The Secretary of War, on behalf of the Mississippi-Warrior river waterways, now operated by the Division of Inland Transportation of the War Department, has filed an application with the Interstate Commerce Commission for joint through rates in connection with the railroads in practically every part of the United States.

The commission has further suspended until January 12 the operation of schedules published in a supplement to Agent R. H. Countiss' tariff which propose to increase from 6½ to 7 cents the charge for storage-in-transit on apples and pears at points in Official Classification territory, applicable on east-bound Trans-Continental traffic.

The commission has suspended from November 30 until March 30, 1922, the operation of schedules published by the Chicago & North Western which propose to increase from 10½ to 14 cents per 100 lb. the rates on grain and grain products carloads, between St. Louis, Mo., and stations on the Chicago & North Western in Illinois south of Peoria, Ill.

The commission has further suspended until January 31, 1922, the operation of proposed reductions in the existing rates on coal, carloads, from mines on the Detroit, Toledo & Ironton in Jackson County and Ironton (Ohio) districts, to Detroit, Mich., and other destinations on the same line in Ohio and Michigan, the operation of which was suspended until January 1, 1922, by orders previously entered.

By a supplemental order in Investigation and Suspension Docket No. 1431, the commission has suspended until April 30, the operation of schedules published in a Missouri, Kansas & Texas tariff, which propose increased rates on cotton and cotton linters from Ft. Smith, Greenwood, Shreveport and other places; and from stations on the Midland Valley Railroad in Arkansas to St. Louis, Kansas City, New Orleans, Galveston and various other places.

The commission has further suspended until January 22 the operation of schedules published in Agent E. B. Boyd's tariff which propose increased and reduced rates on potatoes, carloads, from producing points in Minnesota, Wisconsin and the upper peninsula of Michigan to destinations in Central Freight Association and Trunk Line territories, the operation of which was suspended until December 23, 1921, by an order previously entered.

The commission has further suspended until January 7 the operation of certain schedules published in Agent W. J. Kelly's Exceptions to the Official Classification which provide that the estimated weight on crude petroleum from points in C. F. A. territory originating at points in Texas and destined to points in Official Classification territory (except to points in Canada) will be 7.4 pounds per gallon, in lieu of the existing estimated weight of 6.6 pounds per gallon, the operation of which was suspended until December 8, by an order previously entered.

### Rates on Wool and Mohair to Boston

The commission has issued its decision in the case of the Boston Wool Trade Association vs. Abilene & Southern, et al., in which the commission prescribes reasonable classification ratings on wool, mohair, camel's wool and hair, angora hair and alpaca. The proportional commodity rates to Boston on wool in the grease in carloads from Mississippi river crossings were not shown to be unreasonable, but proportional commodity rates to Boston from Duluth, Minn., lake and rail, on wool and mohair in the grease were found unreasonable and a reasonable basis of maximum rates was prescribed. The commodity rates to Boston from Texas points, all rail, on wool and mohair in the grease in carloads were found unreasonable and a reasonable basis of maximum rates was prescribed. Consideration of fourth section applications was postponed. The failure of the railroads to accord transit at Boston on wool and mohair originating west of the Hudson river and to publish consolidated wool tariffs was found to be not unreasonable or otherwise unlawful.

### Commission Reopens Rate Division Cases

The Interstate Commerce Commission has ordered the reopening of two cases involving the application of "short line" railroads for orders by the commission increasing the divisions of through rates accorded them by their connections. These are cases initiated by the Wichita Northwestern and the Federal Valley. They are reopened for further hearing, particularly for the submission of additional evidence to show: (a) the value of the complainant's railroad property used in the service of transportation; (b) revenues and expenses from January 1, 1921, to date of hearing, by months; (c) total tonnage transported from January 1, 1921, to date of hearing, by months; (d) tonnage of grain, lumber, coal and miscellaneous freight transported from January 1, 1921, to date of hearing, by months; (e) financial state as of date of hearing.

The cases will be heard before Examiner Carter at Washington on December 12. Hearing in the Federal Valley case vs. the Toledo & Ohio Central and others was held by the commission on September 30 and officers of the American Short Line Railroad Association presented arguments urging a decision by the commission which would establish a general rule to carry out what they conceive to be the purpose of the transportation act by forcing trunk line connections to accord to originating short lines divisions sufficient to represent the cost of handling traffic taking into consideration the low density of an originating line, and also a fair return on the value of the property. It was stated that as the trunk lines have not been receiving 6 per cent, it would not be contended that under all circumstances the short lines should receive that rate of return. The general idea was held forth that the commission should order established divisions sufficiently high to more nearly equalize conditions between railroads.

It was stated that the short lines had tried to persuade the trunk lines to agree on a general rule for calculating divisions, but that they had thus far been rather unsuccessful in the negotiations with the trunk lines and hoped the decision of the commission would establish a precedent that could be used in other cases.

### State Commissions

Hearings on a petition filed by the Michigan Manufacturers' Association asking for a general reduction in freight rates will be heard on December 6, by the Michigan Public Utilities Commission at Lansing, Mich.

### Court News

#### Loss of Freight Intended for

##### Nonadjacent Foreign Country

Eight carloads of grain were destroyed in accidents while in course of transportation to Baltimore from points in Nebraska, Michigan, Indiana and Ohio. The railroad on whose line the losses occurred paid the owners, the purchasers of the grain, its value at the time and place of shipment. This was the measure of damages under the bills of lading, but it did not fully

compensate the owners for the actual loss. The railroad's liability could not be restricted unless the grain was intended for export to a foreign country not adjacent to the United States. In an action by the owners against the railroad, it was conceded that the grain was to be unloaded at Baltimore into the railroad's elevators and loaded therefrom into vessels for export to Europe. The bills of lading themselves disclosed that the shipments were for export. The plaintiffs' purpose, as shown by their testimony, was to ship it to Europe. The Maryland Court of Appeals holds that the shipments were in course of transportation to a nonadjacent foreign country at the time of their destruction, and that the measure of damages stipulated in the bills of lading was not contrary to the provisions of the Federal Act to Regulate Commerce and its amendments, prohibiting stipulations against recovery of less than the full amount of the actual loss or damage to property in transit from one state to another, or for export to an adjacent foreign country. The purchase of the bills of lading while the grain was in transit merely affected the title to the shipments, and made no change whatever in its movement or destination or in any of its commercial characteristics.

The railroad company was not estopped from relying on the limitation of liability provision in the bills of lading because the consignees were not given notice of the loss until long after the shipment was due to arrive, although the replacement value of the goods was higher when notice of loss was finally received. If the shipments had been lost after a delay, however prolonged, in transportation, the limitation of liability would have applied; therefore delay in giving notice of the loss could not enlarge the measure of damages.—*Farley v. Baltimore & Ohio* (Md. App.) 114, Atl. 905.

### Decisions Under Federal Employers' Liability Act

Where an employee was injured while the railroad was engaged in interstate commerce, and while the employee was also so engaged, the Circuit Court of Appeals, Third Circuit, holds that it is immaterial to his right of recovery under the act whether or not another employee, who committed the act of negligence which was the cause of the injury, was then employed in interstate commerce. The act of negligence of the other employee was the careless placing of another car on the switch, with which that on which the plaintiff was employed came in collision. The court, treating this as "a novel proposition," holds that "the test of an employer's engagement in interstate commerce within the meaning of the statute is not the character of its engagement at the time of the commission of a negligent act, when not contemporaneous with the injury, but it is the character of its engagement at the time of the consequent injury to its employee." The employer's negligence here consisted not only in negligently placing the car, but in operating a train of cars in interstate traffic toward and against it.—*Hines v. Keyser*, 268 Fed. 772.

Where an employee, engaged in interstate commerce employment, on leaving his work, selects a dangerous way to leave the yard where the employer has provided a safe way out, he loses the status of an employee in interstate commerce, and when he is subsequently killed by a train while crossing the main track, there can be no recovery for his death under the Employers' Liability Act.—*Krysiak v. Pennsylvania*, C. C. A., 8th Cir., 270 Fed. 758.

The Supreme Court of the State of Washington holds that a trackman on the main line of a company engaged in interstate commerce, who left the section, under the direction of the foreman, to accompany the foreman on a motor car to another town to get supplies, could not recover, under the act, for injuries caused by the derailment of the motor car, it being contrary to the company's rules to leave the section during working hours.—*Adams v. Hines* (Wash.) 196 Pac. 19.

The Pennsylvania Supreme Court holds that an employee in charge of an oil tank from which oil, etc., for engines and cabooses of both interstate and intrastate trains were supplied with oil, but who did not distribute the oil, injured when opening a valve on a tank car to permit the oil to run into the tank, was not engaged in interstate commerce.—*Lindway v. Pennsylvania Co.* (Pa.) 112 Atl. 40.

The New Jersey Court of Errors and Appeals holds that a car repairer working on a car which was entirely out of commission and was not being used for any purpose whatever, was not engaged in interstate commerce within the act.—*Herzog v. Hines* (N. J.) 112 Atl. 315.

## Foreign Railway News

### Eight-Hour Day Abolished in South Africa

The Southern African Railways have abandoned the eight-hour day for certain classes of employees, effective September 5, according to the Railway Gazette (London). The railways have accumulated a deficit of some \$15,543,791 since the fiscal year 1917-1918. The eight-hour day is estimated to cost some \$4,860,000 annually. In lengthening the work-day the management endeavored to take into consideration the intensity and continuity of the work done. The employees affected and the length of the new work-day for them are enginemen and firemen, nine hours; ticket examiners and trainmen, ten hours. Overtime will be paid for at 1 $\frac{1}{4}$  rate. The duties of other employees will be considered and further adjustments made, but no hours will be increased beyond twelve, including times for meals, and where the work is exacting the present 48-hour week will be maintained.

### New General Manager of North Eastern (England)

R. L. Wedgwood, C. B., C. M. G., has been appointed general manager of the North Eastern Railway (England), effective January 1, 1922, according to the Railway Gazette (London). Mr. Wedgwood was born in 1874, and was educated at Cambridge University. He entered the service of the North Eastern in 1896. In 1902 he was appointed district superintendent, and in 1904 he served for a short time as secretary of the company. In 1905 he was appointed to an official position in the goods (freight) department, and by various promotions to chief goods manager in 1911. Mr. Wedgwood served in various important military transport positions in the British army during the war, attaining the rank of brigadier-general, and in 1919 returned to the North Eastern in his former capacity as well as passenger manager and deputy general manager, which position he held at the time of his recent promotion.

### Proposed Reorganization of French Railways

A plan has been elaborated which aims at raising the general efficiency of all the railroads in France as regards national service, by bringing about the closest co-operation possible among the different lines, a standardization of rates all over the country, and financial solidarity for the French railway system as a whole.

According to advices received by the Bankers Trust Company of New York from its French information service the main features of this proposed new regime are: 1—The creation of a common central organization destined to co-ordinate the methods of operation on the different roads in the best interests of the nation as a whole; 2—The creation of a board of management which will study questions interesting the general railroad system, and act as "liaison" between the central administrative organization and the individual lines.

This central organization, which is to be called the Superior Council of Railways, will be composed of 30 representatives chosen by the Minister of Public Works from the nation's most important interests (shipping, industry, etc.), 12 representatives elected by the railroad employees and 18 representatives of the railway administration (2 directors and the general manager from each of the 5 existing private companies, and the president, vice-president and manager of the state railway).

The "board of management" will consist simply of the 18 representatives of the railway administration who are members of the Supreme Council, and both the board of management and the Supreme Council of Railways will be under the authority of the Ministry of Public Works.

The basic principle of an "association of interests" between the state and the railway companies which has been characteristic of the French system since its very earliest days, will be maintained and still further developed in the new regime, whose most salient feature is that through a unification of administrative policy the railways are to be put at the service

of the nation in the shape of a single system of transportation.

Another clause in the financial provisions of the proposed new regime specifies that out of the gross receipts of each line will be deducted the necessary amount for payment of: 1—The operating expenses; 2—The charges accruing from interest on capital and loans of all kinds; 3—A sum representing the total amount of the fixed dividends which are now called "guaranteed"; 4—The premium, if any, which may be compared to the extra dividend now called "reserved."

It is also proposed by the terms of this new regime that all war liabilities be cancelled and that the state restore the railroads to pre-war conditions, it being understood that the companies abandon any outstanding claims they may have against the state.

### Improvement in French Cab Signals

Jean Aumont, a French engineer, in a brief article in the Bulletin of the International Railway Association for October, page 1684, says that the roadway member, for use with audible cab signals (known as the "crocodile") has been greatly improved by the adoption of a new design. It is made hollow, and, in cold weather, is kept covered, on its upper surface, with oil, thereby forestalling failures, which have been troublesome, due to the presence of frost on the metal. The new design is called the "J. Colas anti-frost system."

This "crocodile" is a flattened tube, about 6 ft. long, resting on insulated supports between the rails. It is pierced on its upper surface with numerous holes. In each hole is a tube and a piece of felt through which the oil rises by capillary attraction. A gallon of oil lasts more than a year. When the engine contact-piece touches the "crocodile," the film of ice, which is on the surface of the oil, is scraped off and it is said that perfect electrical contact is secured under all circumstances.

In this system the engine contact piece is a brush made of steel threads, said to last more than a year, where copper brushes have been worn out in three months. The system has been tried, it is said, on the Paris & Orleans Railway, not alone for distant signals but also arranged to warn postal clerks, on trains, when they are approaching a station; and also to warn the station attendant of the approach of the train.

Mr. Aumont says that, with modifications, the "crocodile" system has been adopted on the majority of the railways of France. On the Northern Railway it has been in use 45 years.

HARD COAL has been discovered at Latchwood, Ontario, about 25 miles northwest of Sudbury; and a Toronto syndicate has leased 20,000 acres surrounding the discovery. Miners are on the ground stripping and sinking test pits to determine the exact extent of the find.



Photo by Keystone

The American "Unknown Soldier" Lying in State at St. Lazare Station, Paris, en Route to Havre

## Equipment and Supplies

### Locomotives

THE CARNEGIE STEEL COMPANY is inquiring for 1 locomotive.

THE NEW YORK, ONTARIO & WESTERN is inquiring for from 3 to 6 Mountain type locomotives.

THE ATLANTIC COAST LINE has ordered 1, 4-6-0 type locomotive from the Baldwin Locomotive Works.

THE VICKSBURG ROUTE will have repairs made to 3 Santa Fe type locomotives at the shops of the Baldwin Locomotive Works.

THE DOLBEER & CARSON LUMBER COMPANY, Eureka, Cal. has ordered 1 Prairie type locomotive from the Baldwin Locomotive Works.

MITSUI & COMPANY, New York, is inquiring for 5 Mogul locomotives for export to China, also for 4, 6-wheel tank locomotives for export to Japan.

THE HAVANA CENTRAL has ordered from the Baldwin Locomotive Works 10 locomotive boilers and fire boxes for Mogul and Consolidation type locomotives.

THE SEABOARD AIR LINE, reported in the *Railway Age* of August 20, as inquiring for 28 locomotives has ordered from the American Locomotive Company 10 Mountain type locomotives to have 27 by 28 in. cylinders and a total weight in working order of 315,000 lbs. and 15 Mikado type locomotives to have 27 by 30 in. cylinders and a total weight in working order of 284,000 lbs. All these locomotives will be equipped with superheaters.

### Freight Cars

THE BUFFALO, ROCHESTER & PITTSBURGH is inquiring for from 20 to 30 coalose cars.

THE FRUIT GROWERS' EXPRESS is inquiring for 100 steel underframes for refrigerator cars.

THE NEW YORK CENTRAL contemplates asking for prices on 1,000 box cars, of 50-ton capacity.

THE NORTHERN PACIFIC is inquiring for 1,200 center frame constructions for gondola and box cars.

THE BUFFALO, ROCHESTER & PITTSBURGH has given a contract to the Buffalo Steel Car Company for the repair of 500, 50-ton hopper cars.

THE CHESAPEAKE & OHIO is asking for bids until 12 o'clock noon, December 15, at Richmond, Va., for repairing 500 more or less steel coal cars.

THE MISSOURI PACIFIC has awarded a contract for the repair of 500, 30-ton box cars to the Sheffield Car & Equipment Company, Kansas City, Mo.

THE UNION PACIFIC is inquiring for 500, 40-ft double sheathed box cars of 50-ton capacity and expects to be in the market soon for 46-ft. automobile cars and 50-ft. all steel automobile cars, also for refrigerator cars.

THE VIRGINIAN RAILWAY, reported in the *Railway Age* of October 29, as inquiring for prices on the repair of 4,000 freight cars, has given a contract to the Virginia Bridge & Iron Company, Roanoke, Va., for the repair of 1,500, 50 to 55 ton all steel coal cars.

THE BALTIMORE & OHIO, reported in the *Railway Age* of September 10, as inquiring for prices on car bodies, has ordered 500 hopper car bodies from the Pressed Steel Car Company, and 500 from the Standard Steel Car Company, all to be of 55-ton capacity.

## Passenger Cars

The NEW YORK CENTRAL is asking for prices on the repair of 1,000 passenger cars.

## Iron and Steel

The TEXAS & PACIFIC has ordered 15,000 tons of rail from the United States Steel Corporation.

The ATLANTIC COAST LINE has ordered 15,000 tons of rail from the United States Steel Corporation.

THE CHICAGO UNION STATION will accept bids until December 1, for 3,600 tons of steel to be used in the widening of Canal street, from Jackson boulevard to Washington street, and the Monroe street viaduct, Chicago.

## Machinery and Tools

THE UNION RAILROAD OF PITTSBURGH has ordered a radial drill, a lathe and a planer from the Niles-Bement-Pond Company, New York.

THE NEW YORK CENTRAL has bought from the government stock at Hog Island, two lathes for use at the enginehouse at Solvay, N. Y.; one Reed-Prentice 24 in. lathe, and one Le Blond lathe, 16 in.

## Miscellaneous

THE NORFOLK & WESTERN is asking for bids until 12 o'clock noon, December 15, at Roanoke, Va., for electrical material; 400 rods wire fencing; 300,000 tie dating nails, and 25,000 lb. steel shapes.

ALL THE 50 Santa Fe type locomotives being built by the Baldwin Locomotive Works for the Southern Pacific are to be equipped with the locomotive booster, made by the Franklin Railway Supply Company, New York.

THE SOUTHERN PACIFIC is having the 50 Santa Fe type locomotives now being built by the Baldwin Locomotive Works equipped with open type combined feed water heaters and pumps made by the Worthington Pump & Machinery Corp., New York.

## Signaling

THE ATCHISON, TOPEKA & SANTA FE contemplates the installation of automatic block signals between Olathe, Kan., and Le Loup, 25 miles; Neva, Kan., and Cedar Point, — miles; New Boston, Iowa, and Dumas, Mo., 9 miles; Nersko, Ill. and Willow Springs, 10 miles; Las Vegas, N. M., and Sands, 34 miles; Shirley, Cal., and Calwa, 20 miles; Corona, Cal., and Atwood, 15 miles, and Caldwell and Temple, Tex. 61 miles.

.. .. .

## Supply Trade News

The Rich Tool Company, Chicago, has appointed the Busch Corporation, St. Louis, Mo., its representative in the St. Louis territory.

Arthur P. Bowen, formerly director of purchases of the Pullman Company, has been elected vice-president of the Ryan Car Company, Chicago.

R. W. Levenhagen, vice-president of the Glidden Company, Cleveland, Ohio, has recently assumed direct charge of the sales policies and sales activities of the Glidden organization.

The Arcola hot water apparatus is to be used to heat the 23 passenger cars of the Piedmont & Northern, an electric road 127 miles long, in North Carolina and South Carolina. Anthracite coal will be used. Hitherto the cars of this line have been heated by electricity.

J. F. Kelly, Jr., has been appointed export sales manager of the Electric Storage Battery Company, Philadelphia, Pa. Mr. Kelly will have his headquarters at 23 West Forty-second street, New York City.



J. F. Kelly, Jr.

He joined the Electric Storage Battery Company in 1909 and has been in the service of this company continuously except during the period of time he spent in military service. He was commissioned a captain in the United States army in November, 1917, at the Plattsburg Training Camp and was assigned for duty as officer in charge at the army supply base, at Port Newark, N. J., serving until his release in January, 1919. Mr. Kelly has spent considerable time with officers of the railroads

in Australia, Argentina and Brazil, having recently returned from a two years' trip around the world in the interests of the Electric Storage Battery Company.

Fred Atwater, vice-president and treasurer of the Columbia Nut & Bolt Company, Inc., Bridgeport, Conn., was on November 8, elected mayor of the city of Bridgeport by the largest majority ever given any candidate. Mayor Atwater will still retain his connection with the Columbia Bolt & Nut Company, Inc., with which company he has been associated since 1902.

John L. Artmaier, eastern sales manager of the Buda Company, in charge of the New York office, has been appointed sales manager of the railroad department of the company, with headquarters in the Railway Exchange building, Chicago. J. E. Murray, formerly assistant to Mr. Artmaier, has been appointed eastern sales manager and J. H. Maher, formerly representing the company at Buenos Aires, Argentina, has been appointed eastern export manager.

F. N. Bard, vice-president and treasurer of the Barco Manufacturing Company, Chicago, has been elected president, succeeding George M. Bard, who has been elected chairman of the board of directors. C. L. Mellor, sales manager, succeeds F. N. Bard as vice-president and will also act as secretary, F. N. Bard retaining his duties as treasurer. Frank H. Stiles, formerly mechanical representative at Boston, Mass., has been appointed district sales manager with the same headquarters. Mr. Stiles, previous to entering the service of the



Union Station, St. Paul, in Course of Construction

Barco company, was with the New York, New Haven & Hartford. **Arthur S. Lewis**, mechanical representative at New York, has been appointed district sales manager with the same headquarters.

**Wm. Bosworth** has resigned as assistant engineer in charge of contracts and production of the Underfeed Stoker Company of America, Detroit, Mich., to become mechanical engineer of the **Wine Railway Appliance Company**, Toledo, Ohio. Mr. Bosworth's experience has been almost entirely railway mechanical engineering, he having served as mechanical engineer on several steam railroads until he went to the Underfeed Stoker Company about three and a half years ago.

### Superheater Company Forms French Connection

Geo. L. Bourne and Fred A. Schaff, president and vice-president, respectively, of the Superheater Company, New York, have just returned from Paris where they have formed as a French connection the *Compagnie des Surchauffeurs*, which has been given full rights for the sale and manufacture of the "Elesco" superheaters and forged return bends controlled by the Superheater Company.

This new French company brings together interests prominently associated with superheating in France, the board of directors being Ad. Seghers, A. Fiedler, S. Magis, Capt. F. R. Fitzpatrick and Geo. L. Bourne. Capt. Fitzpatrick will represent the American interests in the company, and will reside in Paris as a resident director. Ad. Seghers, has, for 20 years, been identified with superheating in France. A. Fiedler represents the *Basse Loire* group, comprising the *Usines Métallurgiques de la Basse-Loire*, *Société des Forges et Acieries du Nord et de l'Est*, *Ateliers et Chantiers de Bretagne*, etc., and is, himself, managing director of the *L'Auxiliaire des Chemins de Fer et de l'Industries*, manufacturers of the *Caille Potonie* feed-water heater, high temperature pumps, etc. A. Magis is a member of the firm of *Magis et Dumortier* of Brussels, dealers in railway supplies.

The *Compagnie des Surchauffeurs* is located at 11 Rue Scribe, Paris, France. A plant has been established in the outskirts of Paris for the manufacture of all types of superheaters where the forged return bends will be made, a battery of the special machines used for manufacturing these return bends having been already ordered from the Superheater Company's plant in Chicago.

## Obituary

**W. P. Hawkins**, formerly fuel agent of the Missouri Pacific and for four years president of the Western Coal & Mining Company, died on November 23, at St. Louis, Mo.

**B. C. D. Stafford**, of the Flannery Bolt Company, Pittsburgh, Pa., died on November 30 at Atlantic City, N. J., after a long illness.

## Trade Publications

**VALVES.**—The Pratt & Cady Co., Inc., Reading, Pa., has issued catalogue No. 6, 161 pages illustrated and bound in cloth describing of the brass and iron body valves and asbestos packed cocks manufactured by this company. The text includes full information relative to the different types and tables of sizes, prices and fittings.

**OIL ENGINES.**—An illustrated booklet of 22 pages has recently been issued by the Vacuum Oil Company, New York, which treats of the construction, operation and lubrication of oil engines of the surface ignition type. The text covers all of the important points in connection with this class of engines and covers in detail such problems as classification of types, the fields of service, principles of construction and operation, cooling, fuel, methods of lubrication, lubricating oils and deposits. The illustrations show various types and parts of engines, as well as the various steps in the cycles of operation.

**REFRIGERATOR CARS** are now being placed on the railroads in Latvia, out of Riga, the capital, running to various important points.

## Railway Construction

**ATCHISON, TOPERA & SANTA FE.**—This company which was noted in the *Railway Age* of November 19, as contemplating the construction of three oil storage tanks at Argentine, Kansas, will accept bids for this work until December 3.

**CENTRAL OF GEORGIA.**—This company closed bids on December 1, for the construction of a 500-ton concrete coaling station to be erected at Columbus, Ga.

**CHICAGO & NORTH WESTERN.**—This company contemplates the extension and improvement of its car and locomotive shops at Winona, Minn., at an estimated cost of approximately \$500,000. While preliminary plans have been drawn, no definite time has been set for the commencing of this work.

**CHICAGO, BURLINGTON & QUINCY.**—This company will construct a line of railroad extending from Hardin, Mont., on its main line, into the Soap Creek oil field area, a distance of about 30 miles. Surveys for this work have recently been started. This company contemplates ultimately extending this line further north into the Soap Creek Valley, a distance of 14 miles to open an area where the Holly Sugar Corporation has a large acreage of sugar beet land.

**CHICAGO, PEORIA & ST. LOUIS.**—This company will reconstruct its freight station at Havana, Illinois, which was destroyed by fire on November 18.

**CHICAGO UNION STATION.**—This company, which was noted in the *Railway Age* of November 19 (page 1016), as accepting bids for 2,600 sq. yds. of concrete track slabs, has awarded the contract for that work to W. J. Newman & Company, Chicago.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of October 8 (page 695) as applying to the war department for permission to double track its bridge across the Ohio river at Cairo, Ill., at an estimated cost of \$8,482,000, has received the government's approval for this work, and contemplates commencing construction on the project soon.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of November 26 (page 1069), as receiving bids for the construction of a new freight house and the enlarging of its passenger depot at West Frankfort, Ill., has awarded a contract for this work to the Zitterell Construction Company, Webster City, Iowa. The same company has awarded a contract to M. L. Windham, Centralia, Ill., for the construction of a track 1 3/4 miles long to extend from a point on the main line to the Shamrock coal mine, near Providence, Ky.

**MISSOURI PACIFIC.**—This company contemplates the improvement and enlargement of its station at Newport, Ark., at an estimated cost of \$10,000.

**OSAGE RAILWAY COMPANY.**—This company has applied to the Interstate Commerce Commission for permission to construct about 11 miles of railroad extending from Foraker, Okla., to the Osage County oil field in that state.

**RED LAKE NORTHERN RESTRICTION COMPANY.**—This company, which is located at Bemidji, Minn., contemplates the construction of a 130-mile logging railroad to run northwest from Redby, Minn., through the Red Lake Indian reservation, and through Grygla to Roseau, and South Junction, on the Canadian border. It has been estimated that the construction and grading of this line will cost about \$2,000,000. Plans are now under way to commence 13 miles of this work during December.

**SOUTHERN PACIFIC.**—This company contemplates the construction of a levee fronting its yard trackage at Algiers (New Orleans), La., estimated to cost \$185,000. It is expected that the Orleans Parish Levee Board will pay the Southern Pacific \$25,000 in consideration of the public interest in the levee. A proposal substantiating this viewpoint has been submitted to the attorneys of the two organizations for preparation of a formal agreement.

## Railway Financial News

**ALABAMA GREAT SOUTHERN.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$1,232,000 of first consolidated mortgage 5 per cent gold bonds, payable December 1, 1943, to be held in the treasury.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$955,000,000 of first and general mortgage 5 per cent gold bonds to reimburse the treasury for money expended from income. It is not proposed to sell the bonds at this time but authority is asked to pledge them from time to time as collateral for short term notes.

**COWLITZ, CHEHALIS & CASCADE.—Granted Loan from Revolving Fund.**—The Interstate Commerce Commission has granted in part an application of this company for a loan from the revolving fund to assist it in meeting maturing indebtedness and for some additions and betterments. The amount of the loan is \$45,000 for five years.

**DELTA SOUTHERN.—Sale Ordered.**—Judge Edwin Holmes, of the United States District Court at Jackson, Miss., has ordered the sale of this road at Greenville, Miss., on December 5. The Interstate Commerce Commission recently authorized the Delta Southern to abandon its line of 52 miles in Mississippi.

**DULUTH, MISSABE & NORTHERN.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$1,174,000 of general mortgage 5 per cent gold bonds for the purpose of refunding a like amount of its first division bonds due January 1, 1922. It is expected that most of the bonds will be exchanged.

**LEAVENWORTH & TOPEKA.—Authorized to Issue Stock.**—This company has been authorized by the Interstate Commerce Commission to issue \$52,175 of common stock to the Leavenworth & Topeka Railroad Aid Benefit Districts of Leavenworth and Jefferson counties, Kansas, in exchange for a like amount of aid bonds.

**LOUISIANA & PACIFIC.—Authorized to Abandon Line.**—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a branch line from Longville to Vandercook, La., 5.5 miles.

**NEW YORK, CHICAGO & ST. LOUIS.—Asks Authority to Issue Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$1,008,000 second and improvement mortgage 6 per cent gold bonds, series A, and \$3,027,000 of similar bonds, series B, and to pledge any part as collateral security for short term notes and as security for a note for \$1,000,000 to be given the director general of railroads on account of additions and betterments made to the company's property during federal control.

**PENNSYLVANIA.—Application to Control P. C. C. & St. L.**—The Interstate Commerce Commission has issued an order in connection with the application of this company for authority to acquire control of the Pittsburgh, Cincinnati, Chicago & St. Louis, giving leave to L. Kenn Duval to intervene, and a hearing on the petition filed by Mr. Duval has been ordered to be held at Washington on December 13 before an examiner.

**PORT READING.—New Directors.**—Robert L. Russell and Charles W. Ewing have been elected directors to succeed W. I. Brocklehurst and W. G. Brown, deceased.

**SARATOGA & ENCAMPMENT.—Control by Union Pacific.**—See Union Pacific.

**UNION PACIFIC.—Asks Authority to Acquire Road.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Saratoga & Encampment, which runs with a connection of the Union Pacific at Walcott, Wyo., to Encampment, a distance of 44.77 miles.

**WESTERN PACIFIC.—Authorized to Issue Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue \$3,000,000 of first mortgage bonds, to be sold at not less than 94, the proceeds to be applied mainly to the redemption of equipment notes.

### Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts: Los Angeles & Salt Lake, \$800,000; Akron Union Passenger Depot Company, \$14,000. Short Line railroads, Lorama Railroad, \$2,350.

### More Equipment Certificates Sold

The director general of railroads has, with the consent of the president, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government as follows:

Alabama Great Southern, 1922 to 1935, inclusive.....	\$154,969
Atlantic Coast Line, 1922 to 1921, inclusive.....	1,275,900
Chicago, Northwestern, 1922 to 1924, inclusive.....	1,994,700
Pittsburgh, McKeesport & Youghi gheny, 1922 to 1927, inclusive.....	1,139,806
Richmond, Fredericksburg & Potomac, 1922 to 1927, inclusive.....	393,600
Virginian Railway, 1928 to 1935, inclusive.....	869,600
Total amount of these sales is.....	\$5,817,600

The sales were arranged by Eugene Meyer, Jr., managing director of the War Finance Corporation. The total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$120,068,300.

### Dividends Declared

**Atlantic Coast Line.**—\$1.50 quarterly, payable December 10, to holders of record December 1.

**Chicago, Rock Island & Pacific.**—Six per cent preferred, 3 per cent, semi-annually, seven per cent preferred, 3½ per cent, semi-annually; both payable December 31 to holders of record December 9.

**Eric & Pittsburgh.**—\$0.87½, quarterly, payable December 10 to holders of record November 30.

**Fonda, Johnstown & Gloversville.**—Preferred, 1½ per cent, quarterly, payable December 15 to holders of record December 10.

**New York, Philadelphia & Norfolk.**—\$3, payable November 30 to holders of record November 15.

**Pittsburgh, Ft. Wayne & Chicago.**—Common, 1¼ per cent, quarterly, payable January 2 to holders of record December 10; preferred, 1¼ per cent, quarterly, payable January 23 to holders of record December 10.

FIVE MEN were arrested at Indianapolis, Ind., on November 25, charged with the hold-up of the Illinois Central train near Paxton, Ill., on the night of November 7. Three of the suspects are negroes.

THE CANADIAN ROBERT DOLLAR COMPANY plans next year to add two large freighters to its present fleet. One will be added to the round-the-world service and one to the Vancouver-Orient line. This will permit Oriental trips at 30-day intervals.



Photo by International

Illinois Central Mail Car After Bandits Had Set Fire to Its Contents

## Railway Officers

### Financial, Legal and Accounting

**J. C. Ellington** has been appointed to the newly created position of real estate agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago.

### Operating

**A. T. Mercier**, whose election as general manager of the San Diego & Arizona, with headquarters at San Diego, Cal., was announced in the *Railway Age*



A. T. Mercier

of November 26 (page 1071), was born at New Orleans, La., on December 11, 1881, and was educated at Rugby Academy and Tulane University where he completed a course in civil engineering in 1903. He entered railroad service in January, 1904, as transit man and clerk to a roadmaster of the Southern Pacific, with headquarters at Los Angeles, Cal. He was soon promoted to assistant gang foreman with the same headquarters, which position he held until February, 1906. From February, 1906, to

March, 1907, he was assistant engineer in charge of reconstruction work on the Colorado River territory, with headquarters at Los Angeles; from March, 1907, to June, 1907, he was general foreman and engineer of bridges and buildings in charge of steel bridge construction, with the same headquarters; from June, 1907, to November, 1908, he was engineer and general foreman in charge of terminal construction work, with headquarters first at San Pedro, Cal., and later at Los Angeles; from November, 1908, to November, 1911, he was assistant division engineer of the Los Angeles division, with headquarters at Los Angeles; from November, 1911, to November, 1912, he was assistant district engineer of the Southern district with the same headquarters; from November, 1912, to August, 1913, he was division engineer of the San Joaquin division, with headquarters at Bakersfield, Cal.; from August, 1913, to February, 1917, he was division engineer of the Los Angeles division, with headquarters at Los Angeles; from February, 1917, to September, 1918, he was assistant superintendent of the Shasta division, with headquarters at Dunsmuir, Cal.; and in September, 1918, he was promoted to superintendent of the Portland division with headquarters at Portland, Ore., which position he was holding at the time of his recent change.

**J. D. McCully**, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been promoted to division superintendent with headquarters at Winslow, Ariz., succeeding W. Mathie, who was killed in an accident as noted in the *Railway Age* of November 26 (page 1061).

**W. F. Farrier**, trainmaster of the Los Angeles & Salt Lake, with headquarters at Salt Lake City, Utah, has been promoted to safety agent, with headquarters at Los Angeles, Cal., succeeding G. H. Wright, who has been assigned to other duties. **J. T. Wardenburg**, trainmaster, with headquarters at Milford, Utah, will succeed Mr. Farrier, who will be succeeded by **W. R. Spettigue**, chief clerk to the superintendent of the Salt Lake division.

### Executive

**J. M. Rapelje**, general manager of the Northern Pacific with headquarters at St. Paul, Minn., has been promoted to vice-president in charge of operation and maintenance, succeeding W. T. Tyler, who has resigned to enter business. Mr. Rapelje was born at Chippewa, Ontario, on January 22, 1857. He began railway work in August, 1879, as a brakeman on the Grand Trunk and shortly thereafter became a fireman on the Atchison, Topeka & Santa Fe. From May, 1882, to November, 1887, he was a conductor on the Canadian Pacific and then, until 1898, was a conductor on the Yellowstone division of the Northern Pacific. He was then appointed trainmaster and subsequently served as a conductor until June, 1902, when he was reappointed trainmaster of that division. From April, 1905, to July, 1908, he was superintendent of the same division and, from the latter date to May, 1910, was superintendent of the Rocky Mountain division. He was then transferred to the Idaho division, where he remained until 1912, when he was appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont. In May, 1914, he was promoted to assistant general manager with headquarters at St. Paul and, in October of the same year, to general manager of the lines east of Paradise, which position he was holding at the time of his recent promotion. For a time in 1918 he served as acting vice-president.



J. M. Rapelje

### Traffic

**W. E. Coman** has been appointed western traffic manager of the Northern Pacific.

**H. S. Garvey** has been appointed general agent of the Boston & Maine with headquarters at Detroit, Mich.

**J. M. Strupper** has been appointed assistant general freight agent of the Fort Worth & Rio Grande and its subsidiary companies, with headquarters at Fort Worth, Tex.

**P. M. Fagan** has been appointed division freight and passenger agent of the Chicago, Milwaukee & St. Paul, with headquarters at Terre Haute, Ind. Mr. Fagan will have charge of the Terre Haute division, including Chicago Heights, Ill.

**J. V. Lanigan**, assistant general passenger agent of the Illinois Central with headquarters at Chicago, has been promoted to general passenger agent with the same headquarters, succeeding H. J. Phelps, deceased. **J. W. Stevenson**, chief clerk to the vice-president in charge of traffic with headquarters at Chicago, will succeed Mr. Lanigan. **William Haywood**, assistant to the traffic manager with headquarters at Chicago, has been promoted to general freight agent in charge of solicitation with the same headquarters.

**Fred L. Hanna**, whose appointment as assistant general freight and passenger agent of the Atchison, Topeka & Santa Fe, with headquarters at Phoenix, Ariz., was announced in the *Railway Age* of November 5 (page 914), was born at Steubenville, Ohio, on May 1, 1869. He attended Wooster University in that state from 1888 to 1889. Mr. Hanna entered railroad service on September 1, 1891, as a clerk for the Atchison, Topeka & Santa Fe, and was promoted successively to rate clerk and chief clerk to the general agent, with headquarters at Los Angeles, Cal. On January 1, 1901, he was

promoted to traveling freight agent, in charge of the southern California territory, which position he held until January 1, 1909, when he left to become traveling freight and passenger agent of the Arizona & New Mexico. He left railroad service on January 1, 1914, to take a position as general agent for a commercial company. On August 1, 1918, he entered the service of the Inland traffic division of the war department and was given charge of this work in the States of California and Nevada. He re-entered railroad service on March 1, 1920, as division freight and passenger agent of the Atchison, Topeka & Santa Fe, with headquarters at Fresno, Cal., which position he was holding at the time of his recent promotion.

**W. T. Wright**, freight agent of the Illinois Central, with headquarters at Benton, Ill., has been promoted to supervisor of coal traffic, with headquarters at Carbondale, Ill. Mr. Wright was born at Scheller, Ill., on February 9, 1874. He entered railroad service in 1893 as a station helper and student of telegraphy on the Illinois Central, with headquarters at Tamaroa, Ill., and his entire railroad career has been with that company. From 1894 to 1921, he has worked mainly in the capacity of an agent at various stations on the St. Louis division. The office to which he has been promoted is a newly created one. Mr. Wright will have general supervision over all coal traffic matters on the entire system, and will act as the field man under the direction of the manager of the coal traffic department, enabling that department to maintain closer supervision of that class of traffic at its source in the coal fields of Southern and Central Illinois, Indiana, West Kentucky and Alabama.



W. T. Wright

### Mechanical

**Ora S. Jackson**, whose appointment as assistant superintendent of motive power and machinery of the Union Pacific, with headquarters at Omaha, Neb., was announced in the *Railway Age* of November 12 (page 964), was born at Huntington, Ind., on August 11, 1875. He entered railroad service as an apprentice machinist on the Erie, at Huntington, Ind., after which he worked as a round-house foreman and general foreman on the Cleveland, Cincinnati, Chicago & St. Louis for eight years. He then left that road to become general foreman and master mechanic of the Chicago, Indianapolis & Louisville, which position he held for five years, when he became superintendent of motive power of the Chicago, Terre Haute & Southeastern. After three years he was promoted to general superintendent in charge of the mechanical and operating departments, which position he held for five years up to the time of his recent appointment.



O. S. Jackson

**S. G. Kennedy**, general foreman of the Atlantic Coast Line at Lakeland, Fla., has been appointed master mechanic of the Tampa district with the same headquarters.

**W. H. Dempsey** has been appointed assistant division master mechanic of the Chicago and Milwaukee division and the Milwaukee terminal of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., succeeding G. E. Passage, promoted.

### Engineering, Maintenance of Way and Signaling

**W. W. Kelly**, division engineer of the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been promoted to engineer of the Grand division, with headquarters at Los Angeles, Cal., succeeding W. H. Oliver, who was killed in an accident as noted in the *Railway Age* of November 26 (page 1061).

**T. Martin**, division engineer of the Revelstoke division of the Canadian Pacific, with headquarters at Revelstoke, B. C., has been transferred to the Nelson division, with headquarters at Nelson, B. C., succeeding **J. H. Sloans**, who has been building master there, and who will now replace Mr. Martin at Revelstoke, effective December 1.

### Obituary

**H. J. Phelps**, general passenger agent of the Illinois Central, Northern and Western lines, with headquarters at Chicago, whose death was mentioned in the *Railway Age* of November 26 (page 1072), was born at Elmira, New York, on September 3, 1861. He entered railroad service in 1882 as a telegraph operator on the Illinois Central and remained with that company until his death. He was promoted to station agent at Onawa, Iowa in 1887, and later was successively ticket agent at Sioux Falls, S. D., and freight and passenger agent at Baton Rouge, La. In November, 1894, he was promoted to city passenger agent with headquarters at Chicago and was soon after appointed city passenger and ticket agent, with the same headquarters. In August, 1905, he was promoted to division passenger agent with headquarters at Dubuque, Iowa, which position he held until March, 1911, when he was promoted to general passenger agent, with headquarters at Chicago. Mr. Phelps died from meningitis on November 20, after an illness of four weeks in the Illinois Central hospital in Chicago.



H. J. Phelps

**Lord Mount Stephen** (George Stephen), the first president of the Canadian Pacific, died at Hatfield, Herts, England, on November 29 at the age of 92. George Stephen was born in Scotland, was educated in the parish schools and was apprenticed to a draper. In 1850 he went to Canada, entered business and, after a time, became a manufacturer of woolen goods. In 1876 he became president of the Bank of Montreal. Shortly thereafter he became associated with Donald Smith, later Lord Strathcona, and others in the development of the Northwest. In 1880 they organized the Canadian Pacific and George Stephen became its first president. He retired from this position in 1888 and has since made his home in England. It was in recognition of his activities in connection with the Canadian Pacific that George Stephen was made a baron.

# Railway Age

Vol. 71 December 10, 1921 No. 24



D., L. & W. Yards at Binghamton, N. Y.

## Contents

### More About Ford's Railroad Operating Methods ..... Page 1137

It Is Found a Difficult Thing to Check Up the Flivver King's Claims Because His Little Railroad Does Not File Statistics, by H. F. Lane.

### Norfolk & Western Goes to Treated Cross Ties ..... 1141

New Wood Preserving Plant Built by This Road at East Radford, Va., Contains Many Advanced Features.

### Baltimore & Ohio Shows Marked Improvement in 1921..... 1165

An Analysis of What the Road Is Doing in Operation and What the Results Are—The 1920 Results.

#### EDITORIALS

The Equipment Designers' Responsibility .....	1125
The Railroads and World Prosperity .....	1125
The Taxes on Transportation .....	1125
Electrification in Japan .....	1125
Why Not Assume a Positive Attitude? .....	1125
The New "National Agreement" .....	1126
Railway Rates and Revival of Business .....	1126
Should the Slow Bidder Get the Work? .....	1127
Unfair Motor Vehicle Competition .....	1128
<b>NEW BOOKS .....</b>	<b>1128</b>

#### LETTERS TO THE EDITOR

Limitations of the "Middle Order" .....	1129
Twenty Years' Observation .....	1129
Concerning "Official Costs" .....	1129
The Railroads and Public Opinion .....	1129
Why Collogo Men Fail on the Railroads .....	1130
A Plea for Changes in Time-Worn Methods .....	1131
Boiler Compounds and Anti-Foam Compounds .....	1132

#### GENERAL ARTICLES

The Care and Protection of Lumber in Storage, by H. A. Sackett .....	1133
More About Ford's Railroad Operating Methods, by H. F. Lane .....	1137
Opposes Repeal of Rate Law .....	1138
Texas Attack on Transportation Act Argued .....	1139
Norfolk & Western Goes to Treated Cross Ties .....	1141
A Heavy Day's Work on the C. P. R. ....	1144
Accident Investigations—July, August and September .....	1145
Meeting of Railroad Division of A. S. M. E. ....	1147
Asked to Abrogate Foreign Ship Line Contracts .....	1153
Calm Again Marks Railroad Labor Situation .....	1156
Interstate Commerce Commission Annual Report .....	1157
Freight Car Loading .....	1160
President Touches on Freight Rates in Message .....	1161
Disastrous Collision on Philadelphia & Reading .....	1163
Senate Committee Hearings .....	1167

#### GENERAL NEWS DEPARTMENT ..... 1169

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y.*

CHICAGO: Transportation Building. CLEVELAND: 4300 Euclid Ave. LONDON, England: 34, Victoria St., Westminster. S. W. I. Cable address: Uragimco, London.  
PHILADELPHIA: 407 Bulletin Bldg. WASHINGTON: Home Life Bldg. NEW ORLEANS: Maison Blanche Annex  
CINCINNATI: First National Bank Bldg.

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*

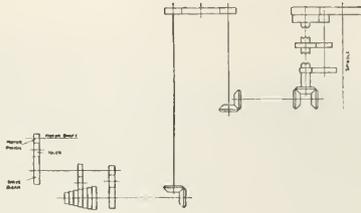
E. T. HOWSON	A. P. STUBING	MILBURN MOORE
B. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	K. E. KYLENBERGER	J. E. COLE
R. E. TRAYER	ALFRED G. OEHLER	J. G. LYNE
C. B. PECK	F. W. KRAEGER	J. H. DUNN
W. S. LACHER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. X. WINTER	K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

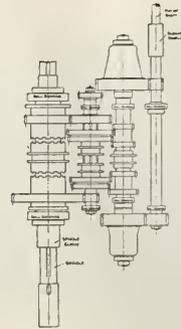
Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, in places other than New York, payable in advance and postage free, United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue 8,700 copies were mailed, that of these 8,700 copies, 7,883 were mailed to regular paid subscribers, 57 were provided for counter and news-stand sales, 5 were mailed to advertisers, 65 were mailed to employees and correspondents, and 354 were provided for new subscriptions, copies of which were lost in the mail and office use, that the total copies printed this year to date were 461,700, an average of 13,422 copies a week.



Usual Drive of Standard Radials.  
(Note great complexity. Eleven gear transformations.)

Fig. 1



Ryerson-Conradson Spindle Drive.  
(Note extreme simplicity. Three gear transformations.)

Fig. 2

## Speeding Locomotive Repairs

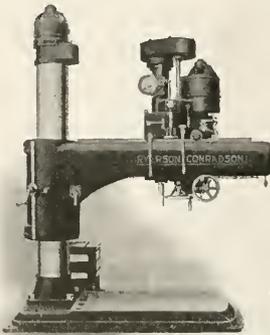
Do you realize how far machine tool design has advanced and how modern machine tools speed locomotive repairs?

Take the Radial drill—

Figure 1 shows the inefficiency of power consuming bevel gears and "round the corner drive" found in the usual radial drill.

Figure 2 shows the simplified spindle drive of the Ryerson-Conradson Railroad Radial that reduces the number of gears by more than one-half and cuts power consumption 40%.

Do you know how the Ryerson-Conradson Radial cuts the time of tapping? Write for bulletin 4,001.



Ryerson-Conradson Railroad Radial.

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Designers of cars and locomotives should more consistently follow the equipment when it goes into service. Unless there are bad failures they do not often hear from the equipment. It is important, however, from the standpoint of cost of maintenance and also of operation that they know of the minor failures and of cases where the wear of parts is excessive; and they should know that the equipment is giving complete satisfaction so far as convenience of handling and operation is concerned. This will require organized effort outside of the drafting room, but the cost of this will be repaid many times over in the improvements that will follow.

### The Equipment Designers' Responsibility

The railroads of this country are vitally concerned with the industrial prosperity

### The Railroads and World Prosperity

business conditions in this country are dependent in a large measure upon trade with foreign countries. Most of the European countries cannot do much business with us because of their unbalanced budgets and mounting deficits. Indeed our financiers and business men will not extend credit to them as long as they tend toward a condition of bankruptcy. The deficits for these countries in many cases just about equal the cost of maintaining their armaments. The conference at Washington seems to be in a fair way to succeed in its efforts to reduce the large navies and settle the Far Eastern question. The countries which are running up deficits and with whom we want to do business are more or less helpless because of the burden of supporting large land armaments. Is it not vital therefore that American business men get behind a program looking toward another conference in the near future to study land disarmament and other economic problems and that financiers and business men be well represented in the conference?

In view of the formidable amount of agitation that is going on in favor of reductions in freight rates and passenger

### The Taxes on Transportation

fares, it is somewhat surprising that more attention has not been given to the elimination of the taxes on transportation charges. Mr. Average Man has been paying high freight rates and passenger fares, but he has somehow failed to realize that 3 per cent of his freight charges and 8 or 10 per cent of his passenger fares and sleeping car rates have represented taxes. Possibly the fact that he has failed to realize it is the reason he has failed to realize that the elimination of the taxes will amount in effect to a reduction of the charges which he has paid. On the other hand, Mr. Average Man has found himself rather busy of late, keeping up with the news. Between the conference on the limitation of armaments, the pending solution of the Irish question and a multitude of lesser things, the reduction in taxes in transportation has taken second place. The average business man further has also at last found himself in a happy frame of mind where he can worry again about his business—that is, conditions are gradually improving sufficiently so that worrying about his business is really worth while again.

Up to within a comparatively recent period one of the leading questions in connection with the railways of Japan was that

### Electrification in Japan

of widening the lines to standard gage. Japan's government owned railways total over 6,000 miles. They are of 3 ft. 6 in. gage. It was proposed to widen this gage to 4 ft. 8½ in., although it was understood that this would have meant the expenditure of enormous sums of money both as relates to the widening of the right of way and to the necessary changes in equipment. The strength behind the proposal presented itself in a rather strong fashion. Bills were prepared for presentation by the government, although the program never went far enough to be brought to a vote. We are now advised that the proposal for widening the railway gage has been relegated to the background. Railway Japan is now thinking and talking electrification. The reason is partly the difficulty of getting sufficient quantities of coal at a reasonable cost and, on the other hand, the availability of large sources of water power. Japan at present has some electrified lines—the development of her electric tramways also is noteworthy. The country, as it happens, is in a position to build its own steam locomotives and has been building them for some time. It is not without significance to American trade, therefore, that orders should recently have been placed with two of our largest electrical concerns for some \$5,000,000 worth of electrical apparatus for hydro-electric developments.

As a general rule it is probably safe to say that the rewards of supervision vary with the size of a business. In other

### Why Not

words, the need and results of supervision are of greater importance in a business of many ramifications than in one that is more or less self-contained.

### Assume a Positive Attitude?

Because of the character of its organization a railroad presents numerous opportunities for the creeping in of wasteful practices and the efforts of supervisory officers to prevent and eliminate them are practically continuous. Nevertheless, in too many instances the corrective measures undertaken are, so to speak, retrospective in character rather than introspective. That is to say, there is often an inclination to approach the matter of effecting improvements in a negative manner by pointing out the ill results of existing practices rather than from the positive attitude of applying the remedy before the fact. For instance, the matter of prevention of freight loss and damage claims is often approached in a negative way by presenting to those concerned figures showing the total loss and supporting the figures by pictures, charts or other means. There is no question but that such action creates a desire on the part of the men to see the matter remedied. In such a plan, however, the personal equation is missing and it is not hard to believe that the desired end could more nearly be approximated if the plan of approach were made positive by giving each employee something to do in the matter in addition to bringing home to him the results of present practices. It is probably safe to say that in the great majority of supervisory problems the transition from a negative attitude to the positive is a very simple matter. However, the importance of effecting the change in front can hardly be overestimated.

## The New "National Agreement"

THE DECISION of the United States Railroad Labor Board finally disposing of the so-called "national agreement" between the shop crafts and the United States Railroad Administration is a much needed step toward the attainment of stable relations between the railroads and their shop employees. With whatever feeling the result may be regarded by the two parties to the controversy, the mere fact of a settlement of reasonable permanency is likely to have a marked influence in restoring some measure of co-operation between the members of the shop crafts and the railway supervisory forces.

Like any decision essentially a compromise, there are not lacking numerous features with which each party to the controversy will be disappointed. The employees, however, cannot legitimately claim they have been unjustly dealt with and the railroads have been relieved of by far the greater part of the vicious and restrictive regulations of the former national rules. It is true that the main contention of the railroads in the presentation of their case before the board was the establishment of the right of the railroads to negotiate local agreements with their own employees and the abrogation of national agreements which of necessity cannot fit the widely varying conditions existing on different roads. The re-establishment of a set of national rules was a defeat for the roads on this point. This defeat, however, is only partial, since the right of negotiations between the individual roads and their own employees has been established in principle, and where local agreements have been negotiated they are undisturbed by the new national rules.

The original decision in the national agreement case was handed down by the board on April 14, 1921. This decision called upon the officers and organizations of employees on each road to negotiate their own local agreements as far as possible, in accordance with the terms of the Transportation Act. Because of the power of the Railway Employees Department of the American Federation of Labor to control these negotiations, the entire controversy was forced back to the Labor Board for final settlement. As a practical matter it would have been impossible for the board to have established other than national rules. Therefore, under the terms of the Transportation Act, the perpetuation of the equivalent of a national agreement was inevitable in the circumstances. Had the employees entered the local negotiations in a spirit of co-operation, other results might have been obtained, but they were prevented by the power of the American Federation of Labor, attained through the closed shop conditions established by the Railroad Administration.

In this connection it is worthy of note that while this power enforced the continuation of national rules, the provisions of the former agreement practically establishing the closed shop are materially modified in new rule 35, which protects unorganized or minority employees in the right of representation of their own choosing in the handling of grievances.

Specifically, however, the new rules have been made much more flexible than those of the former national agreement and will be much easier to adapt to varying local conditions. They have restored the right to the establishment of piece work by local agreement; the arrangement of shifts is left to local agreement; the features of the overtime rules have been revised substantially in accordance with the railroads' objections; the craft classifications have been modified in several important respects to permit the use of helpers where mechanics were formerly required and they have been made more flexible of application on running repairs in small shops and terminals. The right to the establishment of special apprenticeship is restored; more flexible and satisfactory provisions have been made for reducing expenses and the worst features of the running repair and dead work rules have been eliminated.

It is true that not all objectionable features of the rules have been removed. The classification rules still prevent the use of handymen and specialists not rated as mechanics; the class qualification rules, particularly the carmen's rule, place undue limitations on the supply of labor, and the seniority rule perpetuates the lack of discrimination between the various classes of carmen established by the rule of the former national agreement. The spirit of the rules, however, is greatly improved and the fact that in promulgating them the Labor Board has abrogated all interpretations handed down by the adjustment boards of the United States Railroad Administration, a large part of which were punitive in spirit, justifies the expectation that future interpretations may be formulated on a far more hopeful basis. This fact alone will be of tremendous value in re-establishing a better morale throughout the departments affected.

However unsatisfactory some of the provisions of the new rules may be, the roads should take full and immediate advantage of the opportunity which they offer for the re-establishment of piece work and the building up of better discipline and a spirit of co-operation between the employees and supervisory forces. With such a spirit fully established the way is open for future modifications of objectionable features of the rules through local negotiations and agreements.

## Railway Rates and Revival of Business

WOULD A GENERAL REDUCTION of railway freight rates help business? Almost everybody, including railway officers, believes it would. The railroads are taking steps to bring a case before the Railroad Labor Board for a reduction of wages. They have said they will give to the public in reduced rates the full benefit of any reduction of wages they get. As an earnest of their good intentions, they have granted for six months a reduction of 10 per cent in all rates on farm products, which will be permanent if a reasonable reduction of wages is secured.

There are two points regarding railway rates which should, however, be forcibly emphasized at this time. One is that no more baseless statement could be made than the oft-repeated assertion that the present railway rates have "killed" the business of the country and the traffic of the railways, and are preventing a revival of business and traffic. The other is that many other changes besides any such reduction of railway wages as seems now to be in immediate prospect must be made before any really large reduction of railway rates can be expected.

The *Railway Age*, in its issue for December 3, page 1089, published an article showing that in spite of all that has been said about the present "excessive" rates, the average railway freight rate is today actually lower, compared with the present prices of most commodities, than has been the case most of the time during the past 32 years. If we take the average freight rate and the average wholesale prices of the years 1890 to 1899 as a basis, we find that in July, 1921, the average railway rate per ton per mile and the average wholesale prices of commodities were the following percentages higher than in the years 1890-1899:

	Per Cent
Railway rate per ton per mile.....	49
Farm Products .....	89
Foods .....	84
Cloths and Clothing.....	122
Fuel and Lighting.....	161
Metals and Implements.....	60
Lumber and Building Materials.....	294
Drugs and Chemicals.....	102
House Furnishings .....	177
Miscellaneous .....	104
All Commodities .....	100

If we take the average railway rate and average wholesale prices of the years 1900-1910 as a basis, we find that in July, 1921, the average railway rate and average commodity

prices were the following percentages higher than in 1900-1910:

	Per Cent
Railway rate per ton per mile.....	65.50
Farm Products .....	42
Foods .....	61.50
Cloths and Clothing.....	93
Fuel and Lighting.....	98
Metals and Implements.....	29
Lumber and Building Materials.....	30
Drugs and Chemicals.....	82
House Furnishings.....	147
Miscellaneous.....	71.50
All Commodities.....	66.66

(This last figure was erroneously given as 76 per cent in an article in last week's *Railway Age*.)

The average railway rate is not at present quite as high compared with where it stood in 1900-1910 as the average wholesale price of all commodities. It is higher relatively than the average prices of farm products, foods, and metals and implements, but lower relatively than the average price of any other group of commodities, and much lower relatively than the average prices of fuel and lighting, lumber and building materials, and house furnishings.

It has been and is still being widely charged that the present freight rates are preventing the movement of large amounts of traffic. It is well known, however, that the volume of farm products shipped in the year 1921 has thus far been larger than in any previous year. This proves that the rates have not seriously hindered the movement of farm products. The prices charged for any class of commodities must have a much greater influence upon the amount of them that can be marketed, and which therefore can be shipped, than is exerted by the railway rates on them, which in most cases are only relatively small percentages of the total prices. The figures regarding the present average railway rate and average prices show that the prices which are still being charged for many commodities are exerting a great deal more influence on the volume of them shipped than are the freight rates being charged on them. Are not some groups of producers who are still charging prices from 100 to 150 per cent more than in the ten years prior to 1910 getting on rather thin ice when, upon the ground that the traffic cannot bear them, they demand reductions in railway rates which are relatively much lower than the prices they are charging?

Another most important point to be considered is the influence exerted by the present level of prices upon the ability of the railways to reduce their rates. The prices being charged for some important classes of commodities, such as coal, directly affect the operating expenses of the railways. The prices of all commodities also affect the operating expenses of the railways by determining the cost of living of their employees and, therefore, indirectly, the wages the railways must pay. The wages of most classes of railway employees are too high, and some much too high, in proportion to present rates, the prices of most commodities, the cost of living and the wages paid in other industries. It is made evident, however, by careful study of the present relations between railway rates, commodity prices and wages in the railroad and other industries that if both railway wages and railway rates are to be largely reduced the reduction in them must be accompanied by further reductions in the wholesale and retail prices of many kinds of commodities.

There are some important classes of commodities the prices of which at the present time are relatively lower than the average railway rate. The average price of metals and implements, for example, is only 29 per cent higher than in 1900 to 1910, and the average price of farm products only 42 per cent higher. Certainly, however, shippers of the many commodities whose prices are still much higher relatively than the railway rates on their commodities, have no right to complain about the present rates as long as they maintain the present prices. One of the principal reasons for the long continuance of the industrial depression is that the prices of some commodities are still relatively much too high compared with railway rates and with prices of other commodities.

No conceivable reduction of railway rates would materially stimulate general business until these maladjustments between the prices of different commodities were corrected, and, furthermore, no really large reduction of rates can possibly be justified as long as the prices of most commodities are relatively as high, and some much higher, than the general level of railway rates.

## Should the Low Bidder Get the Work?

IN THE EARLY YEARS of the last decade, which marked the beginning of state supervision in road construction and the first real impetus to the use of concrete in highway bridges, the state authorities were confronted with an awkward situation. Concrete bridges, unlike steel structures, may be built without the aid of a manufacturing plant. Consequently, advertisements of bridge lettings brought bids from all the concerns in the vicinity that had ever turned a shovelful of concrete. Statutory restrictions and political expediency made it necessary to award the work to the lowest bidder so long as he complied with the stipulations as to form of bid, certified check and surety bond, notwithstanding the fact that the amount of his bid established beyond question that he was bound to do the work at a loss. This actually occurred in the majority of cases because the experienced contractor who knew what the work would cost would not make tenders as low as the bidder who did not know the requirements. After a sufficient number of the contractors had learned an expensive lesson in the school of experience and after surety companies for similar reasons became more exacting in the choice of their clients, this condition was gradually corrected. In the meantime, it worked hard-ship on the engineering staffs of the state highway commissions, caused unending delays in the completion of structures and resulted in the construction of many inferior bridges.

This chapter from the history of highway engineering would be of no interest to railway officers if it were not for the fact that they are now confronted with an almost parallel situation. The present stagnation in building operations, following, as it does, a period of most extended construction activity, has enormously increased the competition among bidders for the limited amount of work now being advertised. Railroads that normally solicited bids from a half-dozen contractors are now being asked to supply plans and specifications to as many as 40 or 50 concerns. The impression gained is that every builder who ever erected a small dwelling or business building anywhere near the proposed work is now striving to get the contract at any price. The roads are receiving a flood of exceedingly low bids from firms that have never done work under any but the most casual supervision and are, therefore, entirely unfamiliar with the strict requirements for material and workmanship that prevail under the supervision of the railway chief engineer. Under the circumstances, the established railroad building contractors, who have constructed most of the railway structures in the past and must be depended upon to take such work during coming periods of normal building activity, are now frequently not among the low bidders.

This situation places the chief engineer in a serious predicament. He knows that the management is under a burden to conduct the capital expenditures with scrupulous economy, and that these are times of falling wages and falling material prices and he desires to take advantage of every opportunity to save money. At the same time he is under a burden to get the work completed within the allotted time, and to have it done on a grade of workmanship that is well up to the standards established by the road he represents. He also knows how difficult it is to secure these results with a firm of limited credit and mediocre organization.

By following the line of least resistance, as in the case of the highway bridges, this situation would gradually correct

itself through the eventual elimination of the irresponsible bidders. But in the meantime serious damage would be done which could not readily be righted. Fortunately, the railroads are not bound by precedent, politics or statutes to accept the lowest bid and this freedom of action, together with a thorough investigation of firms submitting tenders, the imposing of strict requirements as to surety bonds and advertisements calling particular attention to the established rule for the strict interpretation of specifications, should serve in large measure to keep the roads out of the difficulties encountered in public work.

## Unfair Motor Vehicle Competition

THE RAPID EXTENSION of paved highways throughout all parts of the country and the introduction of the motor truck and the motor bus comprise the outstanding developments in transportation today. From the standpoint of the steam and electric railways it offers a new form of competition which must be recognized. It is also creating new and serious problems for the public, most important of which is the necessity for the formulation of a means of taxation of the trucks which use these highways for hire, that will return sufficient funds to make good the damage they do.

As a general average these highways are today costing \$30,000 per mile or more. Their construction is in general paid for largely by the owners of motor vehicles. Only a small percentage of the owners of motor vehicles use the highways for commercial purposes, but this small percentage is wearing out the highways more than all the other users of them. Not only are the commercial vehicles using these highways more continuously but, traveling as they are at high speeds and heavily loaded, they do more damage to the roadways in one trip than the average automobile will in many.

These motor trucks and motor buses are competing with the railways for the transportation of freight and passengers. The highways afford them right-of-way and roadway at only nominal cost. The railways have to build and maintain their own lines. They are also taxed heavily for the support of the public activities including highway construction.

The way in which this works out is illustrated in a striking manner in Minnesota, where the railroads are taxed at the rate of six per cent on their gross earnings. A new highway was recently completed between St. Paul-Minneapolis and St. Cloud, 65 miles at a cost of approximately \$30,000 per mile. Motor vehicles are taxed two per cent on their cost. On a motor bus costing \$5,000 the owner pays \$100 tax for a year's use of the highways. For every passenger hauled from St. Cloud to Minneapolis the railways pay the state approximately 14 cents. If the two railways which connect these cities hauled only 30 people a day from St. Cloud to Minneapolis and return, the tax collected by the state in two weeks would exceed the year's license paid by the average truck, or in 24 days they would pay the state over \$200, which is more than the highest priced truck pays for a year's use of the highways. There are many days in which the gross earnings tax on the St. Cloud-Twin City business of the railways amounts to more than a year's license for a passenger bus.

Such facts as these indicate the necessity for the enactment of legislation which will tax commercial motor vehicles on the same basis as other transportation agencies with which they compete. From the standpoint of the public these trucks should be classed as common carriers and be subjected to the same regulations as to rates, continuity of service, etc., as the railways. It is also only fair that commercial vehicles make good the destruction of the highways which they cause. With these provisions in effect and the public given the protection to which it is entitled, the activities of the commercial vehicle will be restricted to those fields in which it

can be operated with real economic benefit to the public. Within such limits the railways cannot object to competition, but until such regulations are enforced the railways and the public will suffer from the mushroom-like competition which resembles the jitney competition of a few years ago that did so much to injure the street railway systems.

## New Books

*Motor Truck Transportation.* By F. Van Z. Lane, C.E., lecturer on Motor Truck Transportation, New York University. 6 in. by 9 in., 153 pages, 44 illustrations. Bound in cloth. Published by Van Nostrand Company, New York.

This volume is exclusively a discussion of motor trucks from an operating point of view. In it are discussed, in an exhaustive manner, the principles necessary to the economical and efficient use of such trucks. The book is divided into 15 chapters and the information presented is arranged in logical order and in such a way that information relative to a particular phase of the problem is readily accessible. The chapters devoted to motor truck transportation laws, cost records, motor trucks and the railroads, bodies, and loading and unloading devices, are well thought out expositions of these subjects and, moreover, are of particular interest to the railway officer concerned with the possibilities of the motor truck as used to supplement rail transportation. In other chapters the future of motor trucks is discussed, motor trucks are contrasted with horse-drawn trucks and the value of highway transport surveys is brought out.

Purely technical information relative to truck design and construction, etc., purposely has been omitted from this work and the volume better serves its purpose—the presentation of practical information on motor truck operation in usable form—because of this manner of treatment.

*Freight Traffic Red Book for 1922.* By Henry G. Williams and Charles J. Fagg. 494 pages. 8 in. by 11 in. Cloth. Published by The Traffic Publishing Company, 150 Lafayette street, New York City.

This book is well described, in its subtitle, as a practical reference book for either railroad men or shippers who are actively engaged in traffic work; and, for shippers especially, "an everyday guide; a condensed but comprehensive text book for the student of freight transportation."

The first thing in the book, following the list of abbreviations, is a traffic glossary. A glossary should serve, mainly, for the instruction of the primary class; but this one assumes a good deal of information on the part of the reader.

The next chapter is one for the post-graduate student, "rate factors." Thenceforward the authors dip into the practical side of the subject as looked at by the freight agent and the shipping clerk: classifications, rates, territories, rate bases and routing. Each detail is treated with great care and evidently with scrupulous attention to accuracy; demurrage, lighterage, reconsignment and so on. The chapter on rate bases fills 30 pages, and is an elaborate geographical essay. Rules and rulings of the Interstate Commerce Commission fill 82 pages and governmental regulation, its necessity and philosophy fills 10 pages. Following this, the Interstate Commerce Act, the Transportation Act, 1920, and other statutes are given in full, followed by the rules of practice before the Interstate Commerce Commission, chapters on express service and on export and import traffic, with 50 pages of other interesting details. Forms of bills of lading and other documents fill 50 pages more and, finally, 36 pages are taken up with five complete indexes.

It is the intention of the publisher to issue supplements, when necessary, to be sent free to subscribers, so as to keep the book up to date until October, 1922.

## Letters to the Editor

*[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]*

### Limitations of the "Middle Order"

OGDEN, UTAH.

TO THE EDITOR:

Every dispatcher, every operating officer, must have read with interest Mr. Whitenton's article entitled "Eliminating the 31 Train Order," and Mr. Forman's advocating the use of the so-called "middle order" to catch 'em if they get away under the much discussed use of the 19 Form. I hope that the managements of all single-track railroads anticipating the elimination of Form 31 will, before adopting or depending upon the obsolete "middle order," take into consideration the percentage of communicating points as against those where there is no operator.

Consider, also, the staggering of points of communication by working an operator 12 hours—one-half of the 24-hour period—at one station and an operator at the next station working the other half. When the middle order is in effect at an open office and such office must be closed, under the federal law, before the trains meet, it must be annulled. Then the protection that is supposed to make the 19 order safe has been removed. It takes time to put out the middle order, even though the operator responds promptly; and that means much to the busy dispatcher. Many times it handicaps him in placing his orders and delays the trains; thus the use of the middle order to make friends for Form 19 defeats its own purpose.

If the 19 is not safe without the middle order, then it is not safe to make meets at non-communicating points.

We should not, in my opinion, advocate the use of the middle order. It is seldom used and will not be used unless dispatchers are continually watched; this for the reason that it is not practicable, and is a train delayer. It weakens our conductors and engineers, for the reason that they depend upon it. If we cannot make the use of the 19 order safe without bolstering it up with the middle order and a block signal system, we should not use it for restricting trains.

WM. NICHOLS.

### Twenty Years' Observation

MIAMI, FLA.

TO THE EDITOR:

I have read in the *Railway Age* of September 10 and October 15 and since, the various letters and articles on the abolishment of the "31" train order, particularly what Mr. Whitenton has to say in reference to this matter. I have also advocated for a number of years the abolishment of the 31 order. I have been a train dispatcher on single track railroads for 20 years and have watched this particular feature since I first started in the business; and I have never been convinced that the signature of the conductor, or of the conductor and engineer, added materially to the safety of the transaction. If the operator enters the numbers of the orders on the clearance card, with the safeguards that have been described, the dispatcher can check them just as easily as if the operator had given him the signature of the conductor.

When an engineer finds a red signal he must either see it turned to clear or procure an order or a clearance card. If

neither, he is then required to stop. Suppose the conductor and the engineer should both overlook the red signal; the fact that it is a 31 order has no bearing on the case. To require the signature of the conductor causes, with a long train, at least 20 minutes' delay.

The middle order is all right so far as it goes, but on the majority of single-track railroads open telegraph offices are few and far between, and it is impracticable to put orders out at the meeting points. Some rule could be easily worked out to take care of the order when sent to the superior train at the meeting point; say, restrict its delivery until the train has come to a stop.

I know there is quite a lot of opposition to the abolishment of the 31 train order, but I am satisfied in my own mind from practical experience that the 19 order, even without automatic block signals and the middle order, is just as safe.

E. P. McLAIN,  
Superintendent of Transportation, Florida East Coast Railway.

### Concerning "Official Goats"

CLEVELAND, OHIO.

TO THE EDITOR:

I have noted with some amusement, and considerable disgust, the letter entitled "The Official Goat," signed by "One of Them," in your issue of September 24. I wish to take exception to "the exception, and not the rule," as described therein. I put in about seven years as secretary to a chief operating officer. In all my travels in the business cars of various officers, from vice-presidents down the line, I never came in contact with one who treated his secretary in any but a businesslike and gentlemanly manner; and this not only applies to the man for whom I was working but to all of the officials I came in contact with; therefore I do not recognize the "typical day's bawling out" as outlined.

It is very evident that "One of Them" is either working for a man whose treatment of a secretary is not the rule, or he has a grudge against all bosses. It would seem that "One of Them" should look more to the mote in his own eye rather than to the beam in the eye of the boss. After nine years of such treatment, if "One of Them" had any backbone or pep he would get out and get another job. Evidently he is lacking in something.

While, no doubt, all secretaries sometime or other receive a "bawling out" from the boss, it has been my experience that after cooling off and giving the matter thought the secretary usually finds he had it "coming to him."

If the officer did not realize that his secretary had "sensibilities" and "intelligence," he would not be the secretary. Therefore, my suggestion to "One of Them" is that he try being "human" with the boss, stop criticising him, and get in the class with the well-treated secretaries of the country (fortunately in the majority).

EX-SECRETARY.

### The Railroads and Public Opinion

EAST ORANGE, N. J.

TO THE EDITOR:

For the present the railroad strike specter has vanished from the public eye, but no one knows when it will return. It is the duty, if not a necessity, for the railroad managers to keep the public posted as to the railroad situation. It was public opinion which broke the last strike threat, and it will be the public which will play the lead-role in the next railroad crisis.

The railroads must see that the public knows all the facts and fully understands the particular problems, for if the public does not know the truth the professional labor agi-

tator and government ownership propagandist will so mislead and befoggle the public that it will not be able to perceive clearly the justice of the controversy and wrong will triumph over right.

What the railroads must do this winter is to adopt a campaign of educating the public to the real railroad situation. Let the railroad executives explain in the newspapers the questions which the public want answered, let the railroads send speakers into the different communities, and finally let the railroads insert advertisements in the daily press which will state conditions just as they are in language and in figures which everyone can understand.

Such a campaign would without doubt bring about a clearer perception of the railroad problem by the public. Where ignorance is, there suspicion is sure to lurk. The cost would be nothing compared with the results. The railroads belong to all the public and it is only fair that the public should be kept informed of all the policies and problems of the business in which it has the most at stake. Now is the time to adopt some such plan—not tomorrow, or the next week, but now.

A RAILROAD STUDENT.

## Why College Men Fail on the Railroads

CRITICAL.

TO THE EDITOR:

The question of encouraging college men to enter railway service is attracting much interest with your readers. I entered railway service in 1882 with a granger road, owned in New England, and I was given a position because I was a college man. A relative who was interested in my future solicited the interest of a wealthy Bostonian of her acquaintance who was a director of a prosperous western railroad which operated in a developing country and whose board of directors had established a policy of recruiting its staff with young college men who could be trained in railroad work. Through him I was introduced to the president of the road who looked me over and asked me what I wanted to do. I replied, "Anything—I'll brake a freight train if you want me to." His answer, which will stay with me all my life was, "*Take hold* is all right, but *Hold on* is better." I was told to report to his office in a western city as soon as possible and after working there for about a month was transferred to an active department and put right in the thick of the fight, where I have remained ever since.

In casting up in my memory the names of other college men who started with this railroad, either before or after I did (the policy was continued well into the 90's), I can recollect 68 men. There were others, I know, but I cannot recall their names after the lapse of years. Of these 68, one has risen to the chairmanship of the board of a large railroad company, one recently retired as a general manager, one is a passenger traffic manager, one a secretary and treasurer. One rose to be a vice-president in charge of the operating department, quarreled with his president, resigned in a huff, took up other business and soon after died. Another rose to be the president of a railroad but suddenly resigned and has dropped out of railroad work.

Of the remaining 62 I am the only one, so far as I know, who has remained in railroad service. None of them to my knowledge has been very successful in any other business.

One had been appointed an assistant trainmaster and had resigned because the only place he could get board in the town where his headquarters were was a hotel patronized by coal miners and they were allowed to come to table in their shirt sleeves. This man has since risen to the position of mayor of a good-sized city, and I do not think any of the rest have gone even that far. Now these were selected college men, mostly from Harvard, Yale and Princeton (39 years ago the western colleges had not reached their present

standing), and it would appear that they "*took hold*" but did not "*hold on*."

The requirements of railroad service are probably more exacting than those of any other business or profession. Railroad companies expect to receive, and do get from their officers unwavering loyalty to the company's interest for 24 hours a day to the exclusion of social pleasures, family ties and everything else of a personal nature. Unless a man has the will to sacrifice every personal desire that will in any way interfere with the performance of the work he is employed on, he might as well give up the ambition to rise high in the railroad service. A year ago I spent a day on the car of a general manager. While we were at dinner he remarked that he had made his plans to have his Thanksgiving day dinner with his parents in a neighboring state. He had not been able to see them for four years and there was to be a general family reunion this year, which he was looking forward to, as it was quite an event. Soon after dinner we stopped for water and a handful of telegrams were brought in the car. As he read them a momentary flush of disappointment passed over his face and with the remark, "That's railroading," he handed me one of the messages which read:

"Sorry to spoil your plans for Thanksgiving, but must see you in Chicago Thursday morning. Important." It was signed by the vice-president. To this man discipline had become such a second nature that this, which was certainly a bitter disappointment, was simply passed over as all in a day's work. Would any lawyer, doctor, banker or manufacturer suppress his personal feelings in this way?

Again, the mathematical chances of securing a high position on a railroad are not bright. On a railroad with 40,000 employees the positions paying \$10,000 a year or more may be counted on one's fingers and toes. Until recently, too, the permanency of employment on a railroad, especially in the higher positions, was uncertain. Sudden changes of management brought with them sweeping changes in personnel. This occurs less frequently than formerly. In spite of all this, there is to certain types of character a fascination in railroad work, just as there is in seafaring, which keeps men who have once started at it in the service even in spite of the lack of personal freedom, the poor pay in the lower grades and the slim chance of reaching one of the higher positions.

There is no doubt that railroad managements appreciate the value of *educated* men and are constantly on the lookout for such, but here's where I pay my compliments to the modern college. The word "education" is derived from the Latin "*educare*," meaning to draw out, to expand, to enlarge. In the sense of our word this application is applied to the mental faculties. Now is it the practice of the modern American university or college to draw out, to expand, to enlarge the mental faculties of the student. I say, no. The system of elective courses by which an 18-yr. old boy, who knows about as much about his own capacity as he does about the planet Jupiter, picks out just what studies he proposes to pursue with a view to taking up some particular line of work in which he hopes to make money as soon as he graduates, is not getting an education, *it is learning a trade*. There is nothing mentally expanding or widening out in this. On the contrary it is narrowing. An Englishman once said to me, "You know, I don't understand your college men at all. They take up some specialty and are bully good men at that but when it comes to anything else, why they couldn't spell 'cat.'"

When a boy goes to college and simply studies civil engineering and on graduation accepts employment with a railroad he has in the first place narrowed his chances of promotion to one department only. The chances are that he will never rise higher than an instrument man, while if he has studied many subjects, thereby enlarging his range of vision and broadening his views generally, somebody is going to find it out and he will get opportunities of promotion in

other departments possibly better suited to him temperamentally. Our modern system of education is wrong as far as fitting men to rise in the world is concerned. It is all right to make specialists, hewers of wood and drawers of water all their lives because they have never learned to do but one thing; who will set grade stakes accurately, calculate strengths of material, make water softening tests, and do laboratory work generally.

After all is said and done the qualities which help men to succeed in life are born in them and not taught them. Self-control and self-discipline are two qualities most necessary to success in railroad work. The "Call Boy" has these driven into him from his start at 16 years of age, while the college man does not begin to learn them until he starts to make his living after graduation. Really educated men, whether self-educated or college-bred, barring the acquisition of bad habits, are pretty certain to succeed. They are indeed *rari avi*, but the possession of a college diploma is no guarantee of the possession of an education.

What with the adoration of the American girl for the college boy, newspaper head lines, the lack of real discipline (something that makes a man do things he does not want to do because it is his duty) in the colleges and in the police department of college towns where brutal rowdism is winked at on the plea of being merely college frankishness, the average college graduate is the most egotistic, conceited person imaginable. This is an awful handicap to start life with and more often than not counterbalances the advantage of the education which even a good student may have received. If many of our colleges were as successful in filling as they are in swelling the heads of their students more college men would succeed, not only on railroads but in other walks of life. I do not believe there is any prejudice on railroads against college men except the prejudice they make individually through their conceit and lack of discipline.

Only a few days ago I had a letter from a large insurance company. In it was the statement that 85 per cent of the men in this country were dependent at 65 years of age; that they were failures. I think this holds good with college men as with others. Only a small proportion of each generation succeeds, as success is measured in this world. The others fall by the wayside whether college men or call boys.

I will add that I have been passed in my climb up the ladder more than once by "call boys," and some of them have trod on my fingers as they stepped on the rung ahead of me; but in looking the facts and my conscience squarely in the face, in every instance I recall, measured by the standards required by railroad service, I can only say, "You're a better man than I am, Gunga Din." ONE WHO HAS SEEN.

## A Plea for Changes in Time-Worn Methods

BREWSTER, Ohio.

TO THE EDITOR:

No doubt every railroad manager has in mind plans for future development or improvement that would permit of resultant economies, but at the moment there appears the necessity for the reduction in expenses without further investment or increase of payroll, and it is thought the following suggestions may be helpful to that end. (1) The establishing and use of material standards for all departments. (2) The elimination of time-worn practice and form in the handling of correspondence, requisitions and vouchers. (3) Insistence upon the officers assigned to the various departments carrying full responsibility and liability for the duties assigned.

Possibly there are no departments at present that offer equal or greater opportunities for economies than the main-

tenance of way and of equipment. Furthermore, the universal establishing of standards of materials used in railway construction and maintenance to the same extent as are in force in the rules of train dispatching or car interchange, would permit the extensive reduction in store stock maintained and permit of economies, the magnitude of which is most overwhelming.

Standardization of practice and of materials is a lucrative field for those who are sincere in their efforts for economy. The standard practice of train operation is universal. We also see, to a degree, the advantages of standards of design exemplified in our car construction. No doubt the future will see still further application of universal standards for all departments of the railroads.

It is not beyond a possibility for the executives of the various regions to select men and give them the authority to establish standards of materials to be used in both maintenance of way and equipment. Such a plan, if followed, would eliminate many of the designs of track supplies that are various and wonderful, and result in a reduction of material stock as well as the cost of handling.

Many of the standards applied to car construction are the results of demands of business interchange; that is, the practice established the standards. However, in maintenance of way and other departments this incentive was not present and our railroads are now built and maintained largely with designs of materials that evidence the individuality of the officer in charge of the particular department, not to mention oftentimes material of various designs purchased to meet a rather limited authorized expenditure.

It is difficult to understand the necessity for the many different designs of rail section for rails of the same weight, used under like service and axle loading. Again, why should there be the many designs of angle bars, all for the same weight of rail? This also applies to the tie plates, frogs, crossings, signs and almost everything that enters into track and bridge construction. Equally so, do we find this variation in standards applying to our stationery, telephone and mechanical equipment. Conceive, if you can, the saving possible in materials, their use and supply, not to mention the advantage gained by the reduction in store stock, if it were possible to establish a limited number of standards for use in the various departments for the railroads as a whole.

We must necessarily maintain our present properties with like materials therein, until they have given us the expected life, or we are required to change them by the demands of service. But, for the future, is it not possible for the executives to agree to accept standards of maintenance of way and other departments, that should be established by the best thought possible to assign to this duty? Some of our larger railroads have created the position of engineer of standards, realizing its importance. Sooner or later, forced necessity for economy will drive us to uniform standards of materials as has been evidenced in the demands of business enforcing the car standards so necessary for interchange.

The more intensive personal application to detail by the respective officers in the various departments will be imperative, if the railroads are to show a balance on the right side of the ledger in the future. The establishment of practices as to form and method of handling much of our correspondence, has developed a condition that has been properly termed "red tape." This must be eliminated by more up-to-date methods in the handling of business, together with short cuts so as to avoid delay and complaint. Possibly next to the government the railroads are bound by form in the handling of their business from one office to another, to such an extent that promptness is an exception to the rule.

How many have given thought to the authority of the stamped signature of the superior officer, its far-reaching effect and the opportunity it gives for waste? It is not out of the ordinary to find in almost any storehouse, requisitions

for materials running into large sums of money that are covered with three or four stamped signatures of the officers superior to the one ordering and responsible for the use of the material. When one sees a requisition, voucher, pay check or the like literally covered with stamped signatures, it bespeaks an evidence of lack of confidence in the fellow handling the job for whom the material was ordered, and indicates a form of practice that does not check the expense incurred, but quite the contrary, results in delay in the passing of requisitions, together with relieving the man responsible for the request of the responsibility for its being supplied. Surely the more intensive application of personal attention to these details should result in economy and eliminate waste.

Let the respective officers carry in full the responsibility of the office assigned. If they are competent, give them the reins and eliminate the checking and rechecking of reports, requisitions and accounts, all of which, small in detail, are costly in the aggregate. Results are what should tell the story. Men like to be trusted, and generally speaking, when their interest and honor are appealed to, will respond. The attention to details, eliminating the unnecessary, is a field for endeavor that will result in a correction within ourselves of multitudinous small expenses, which, in the aggregate, will place the management among the successful.

JOHN C. SESSER,

Engineer Maintenance of Way, Wheeling & Lake Erie.

## Boiler Compounds and Anti-Foam Compounds

DANVILLE, III.

TO THE EDITOR:

I have read with much interest the article by C. R. Knowles on The Interior Treatment of Boiler Waters in your issue of Nov. 12, and also the editorial comment on the same subject. It appears to me that there is a possibility of confusion between those compounds which remove scale and those which prevent foaming, which confusion may work a great and unintentional hardship to the cause of treated water. This confusion is enhanced by the editorial interpretation of the article as a comparison between boiler compounds and treated water, a viewpoint which hardly seems to be justified.

In his article the author touched on four separate and distinct methods of improving water, viz., softening plants, hit-and-miss internal treatments for scale, technical internal treatments for scale, and technical internal treatments for foaming or anti-foaming compounds. The reader may be in doubt whether the author is considering primarily internal scale treatments or internal anti-foam treatments although in the use of the term "boiler compound" in the editorial, there can be no such doubt since common usage has designated the term boiler compound as one which is applied for the treatment of scale only.

Foaming is caused primarily by the character of the natural water supply. If properly handled, a water having a small percentage of sulphate salts will not foam unduly, whether treated or not. Likewise, even though properly handled, a water having a large amount of sulphate will foam, whether treated in a softener or with a scale-removing compound. In either case it will not foam so badly if an anti-foam compound is used. Indeed, it is probable that the anti-foam compound will need to be used just about as often, if not more often, with the internal scale treatment than with a properly conducted softener, since in the first case there is a great excess of mud, and in the second case a moderate excess of foaming salts. It is hardly fair to compare the cost of an anti-foam compound with the cost of softening on the basis of foaming alone, since the softener

removes scale and prevents flue leaks and the accumulation of excessive mud deposits, while if the anti-foam compound does any of these it is only by accident.

Internal treatments which are designed to prevent foaming are entirely different chemically from those which are designed to check the accumulation of scale. Anti-foaming materials are all based on the action of castor oil and its ability to increase the surface tension of the water. Theoretically it never gets below the surface of the water and therefore never comes in contact with the scale or scale-forming salts. Internal scale removers are composed of soda ash, sodium silicate, tannin, tri-sodium phosphate, barium salts, etc., none of which has any effect in increasing the surface tension and some of which act to lower it decidedly. Mixtures of the two into one compound have not proven very satisfactory and neither one can be substituted for the other.

Mr. Knowles quotes eight examples showing the benefits of internal treatment. The first four of these refer to the benefits of using anti-foaming compounds although it is not stated whether the basis of comparison was raw water, treated water, or water treated with anti-scale compounds. The use of anti-foam compounds is admitted to be good practice where water persists in foaming in spite of all that can be done and any experienced person will agree with the author in his contention that an anti-foam compound is more economical than foaming, but it is not clear just what bearing this agreement will have on the subject of boiler compounds and treating plants. It can hardly be claimed that a castor oil, anti-foam compound unsupported by any anti-scale method of treatment, is more economical than a softener when scale, leaks and foaming are all considered.

The fifth and sixth examples deal with the use of the "proper interior treatment" as against soda ash when used alone. If the soda ash under consideration was used as a boiler treatment, the argument comes under the author's heading of hit-and-miss treatment vs. technical applications, but if used in a softener it is more of an indictment of the operator since the mixing of a little lime with it would have probably improved the water. It is fairly safe to say that soda ash alone should never be used in a softener because of the unnecessary expense involved, considering the small amount of improvement to be obtained. The last two examples appear to be comparisons of the anti-scale compound with raw water since if a softener had been in service, and had been operated properly it would, of course, have removed all scale. It is doubtful if an anti-scale compound will be much, if any, superior to a softener in the prevention of foaming when neither one is backed up by an anti-foaming mixture.

The confusion of the article, it seems to me, lies in the fact that the first half deals with scale-removing treatments and most of the last half with anti-foaming treatments, without the change of subject being clearly marked. Looked at in this light, I am inclined to agree with many of Mr. Knowles' statements, but it seems to me that there is some danger of the reader obtaining the impression that the saving in the various examples was obtained by the abandonment of a softener and the substitution of an anti-foam mixture. This is so widely at variance with the general experience of those handling water softeners that it hardly appears to be tenable. It is admitted that a strict interpretation of the term boiler compound might be all-inclusive, but common usage has limited it to the action of scale removal only and the term should be used in the sense in which it will be interpreted. If there is any possibility of an impression, therefore, either in the article or its editorial interpretation, that the use of a softener entailed the expenses shown in the examples, it is well to correct such an idea in the minds of any who are hesitating between a choice of the two methods of water treatment.

W. H. HOBBS,

Water Chemist, Chicago & Eastern Illinois.

# The Care and Protection of Lumber in Storage

## Sanitary Precautions to Prevent Decay The Building of Piles and Protection Against Fire

By H. A. Sackett

Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul

MUCH OF THE DISSATISFACTION with timber, particularly car lumber, is wrongly charged to assumed inherent weaknesses of wood in general, or certain species, where in fact carelessness in handling is responsible. The cause quite frequently is poor storage facilities, which lead to checking, warping, decay, caschardening, etc. Finished metal products and even raw material is given adequate protection against the elements and natural deteriorating influences. If similar precautions were taken with lumber, which often is a very highly finished product, not only would its use give better results but considerable waste could be stopped.

Failures that are mostly traceable to incipient or advanced decay before use are generally attributed to inferior quality of lumber. It is true that the constantly widening use of wood has resulted in the cutting of smaller timber than was the practice a generation ago, and that many mills now utilize practically every stick of timber available which naturally results in a larger volume of inferior grades. If greater care had been exercised in wood utilization in the past, which includes handling from the mill to ultimate consumption, the actual loss would probably have been reduced 30 per cent. It behooves everyone responsible for lumber stocks to practice such diligence as will minimize the deterioration and loss occasioned by careless handling in storage.

### Storage Yard Improvements

Most roads have established concentration and storage yards for lumber and wood products. Some are admirably laid out and maintained; others resemble more a typical junk yard, selected not because of their suitability for the purpose but apparently because they happened to be in the way. The suggestions that follow are conservation measures designed to protect the very considerable investment represented by the average stock of timber and lumber carried day in and day out by the average road.

The first step is to rid the yard of all refuse, particularly odds and ends of old rotten wood, to remove all grass, weeds and vegetation of every sort. Then the site should be graded as nearly level as possible with at least six inches of cinders, gravel or slag to insure prompt seepage of such moisture as may collect from heavy rains, rapid thaws or overflow. In some localities drainage ditches, at required intervals, would greatly aid maintaining a reasonably dry yard.

### Fungi Infections

Several years ago the United States Department of Agriculture investigated timber storage conditions throughout the country for the purpose of making available data that would assist in controlling the enormous waste due to deterioration of lumber in storage, which it found chiefly to be caused by decay, communicated from infected material to originally sound stock. To quote from the report, \* "There are two general methods by which wood destroying fungi spread from infected to sound lumber: (1) by a direct outgrowth of mycelium from an infected stick to adjoining or nearby timber, and (2) by the blowing about of spores produced by the

fruiting bodies or by the mycelium.

"In wholly or partially enclosed moist spaces, such as are often found in poorly ventilated lumber piles, the mycelium finds sufficient moisture in the air to allow it to develop on the surface of timbers and in this way may progress along the timber for considerable distances. Such may be the case, also, where timber is closely piled; the writer has records where severe infections have thus passed during rainy weather from the bottom upward through piles 12 to 15 ft. high. In lumber storage sheds, or in the base of close piles the mycelium of several species of fungi has frequently been observed developing in great abundance, not alone on the moist foundations and lower layers of lumber, but also spreading profusely on the soil.

"The chief purpose of spore formation in fungi just as



A Horrible Example: Vines Permitted to Grow Over Lumber Piles—Courtesy U. S. Department of Agriculture



Courtesy of U. S. Department of Agriculture

Partially Rotted Hardwood Will Infect the Adjoining Stock by Contact

in seed formation in ordinary green plants, is a perpetuation of the species through reproduction. Spores serve the two-fold purpose of tiding the fungus over unfavorable periods and allowing their rapid spread under favorable growth conditions. Nature is lavish in her methods and the number of spores produced is often enormous. For instance, Buller computed from partial counts that each pore of the underside of *Polyporus squamosus* produced in the course of a few hours an average of 1,700,000 spores, or a total of over eleven billion for the entire under surface of a fruit body having an area of 250 square centimeters (38.75 sq. in.)"

A lumber yard should be systemized, and arranged as carefully as a store house, where castings of various types

\*See Bulletin 510 United States Department of Agriculture.

and sizes, nails, screws, bolts, nuts, etc., are placed each in its designated bin, drawer or shelf. Lumber should be piled according to size, first by cross-section and then by length. Each species should be separated, and each class of material be assigned a section of the yard. Maintenance of way material should be in one group, including bridge timbers, switch ties, bridge ties, piling, rough lumber, etc., car lumber in another group, and so on. Finished and kiln-dried stock should always be stored under cover in sheds with at least three sides as protection against driving rains and snow as well as intense heat. Proper ventilation is also important. Every pile of lumber should be plainly marked to indicate contents and purpose for which it is to be used. Such identification cards can be arranged to act as a stock record upon which withdrawals and additions can be noted, thus giving a clear record of stock on hand at all times. This suggests that a special lumber storekeeper may be required. And when the value represented by an average railroad lumber yard is considered, what objection can be offered to this suggestion? If the issuance of lumber and its maintenance in proper condition during storage were given as much attention as is devoted to practically all other materials used on a railroad, many thousands of dollars now dwindling away in small leaks of waste and deterioration could be saved.

The site for a lumber storage yard should be carefully chosen. Low ground or "made land" should be avoided. It is practically impossible to keep such a yard reasonably dry and free from collecting bogs and pools of water, and in localities where overflow is to be expected standing water may reach to the pile bottoms, or even beyond, for weeks at a time.

Another desirable feature is reduction of the communicable

and automatically unloaded onto the pile. In addition there should be narrow gage tracks for small lumber trucks on which the stock when issued is moved from the pile to the shop. When transhipped to some other point on the system it can again be loaded directly on the work cars which, without rehandling the lumber, are switched to the work train. In the alleys and at required intervals between piles, at right angles to the main tracks narrow gage tracks should be laid for the lumber trucks. Wherever possible the grade of the yard should be in one direction so that the loaded lumber trucks, which are usually moved by manual labor, will have the aid of gravity when being moved with loads toward the shop.

An arrangement as outlined would permit the use of locomotive cranes for handling timbers, and gasoline or electric motors for hauling the lumber trucks. In fact, careful plan-



*Courtesy of U. S. Department of Agriculture*

#### Badly Infected Pile of Three-Inch Hard Pine

ning of a new lumber yard will so reduce the amount of manual labor required that the cost of handling can be more than cut in two, which will not only pay for the extra mechanical equipment needed, but will solve the problem presented by a scarcity or poor quality of labor.

Spacing of stock piles and proper clearance for tracks are details that must be adapted to the conditions that are individual to the yard. In every case care should be taken that ample space is provided to allow for the use of either gravity, or automatic loading and unloading devices, as well as the handling of lumber and timber by manual labor.

#### Foundations for Lumber Piles

Whether the yard is old or new there can be but one suggestion for bearings; they must conform to modern sanitary requirements. The ideal foundation for lumber piles consists of concrete piers and creosoted timber sills. The tops of the piers should be at least 18 in. above the ground and the treated bearing sills about 6 in. by 8 in. in sections. Another less permanent type of bearing is shown in one of the illustrations. This may be built of salvaged timber providing it is absolutely sound, and after framing should be treated with at least two coats of heated creosote oil. Where better methods of treatment are available these should be used but in any event some such protection must be given all lumber used in pile foundations. This bearing consists of ground pieces *A* which may be plank 2 in. to 3 in. thick, from 6 in. to 12 in. wide and about 2 ft. in length; risers *B* which should be at least 6 in. in height, or more as required, and may be of one piece or several as is most convenient; bearing *C* which may be made of almost any available ma-



*Courtesy of U. S. Department of Agriculture*

#### Fruiting Body of Fungus Growing on Hardwood Lumber in Position to Spread Infection to Sound Stock Above

fire hazard by isolating the yard as much as practicable from other industries or localities where such a condition may be expected to develop within the immediate future.

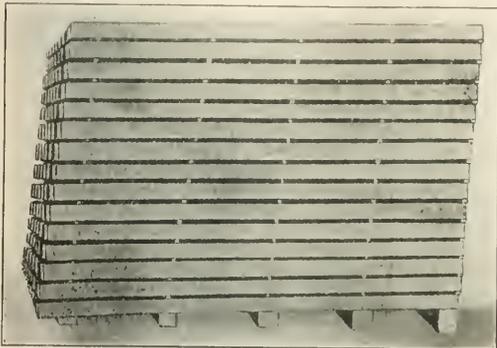
High ground is unquestionably an ideal location, not only because this provides the best drainage, but also because a better circulation of air is obtained which aids seasoning and will keep lumber in better condition.

#### Trackage

The service tracks should be so laid out that handling is reduced to a minimum. The yard should be platted in blocks, each block facing standard gage tracks on which lumber is delivered in the original cars direct from the mills

material but should not be less than 4 in. by 6 in. in section, and should rest on at least three foundations. Almost any sound lumber may be used, but it must be preserved with creosote.

Numerous types of bearings can be made suitable. The important point with each, however, is that it must itself be proof against infection by decay if it is to prevent the communication of such infection to the lumber piled upon it. It

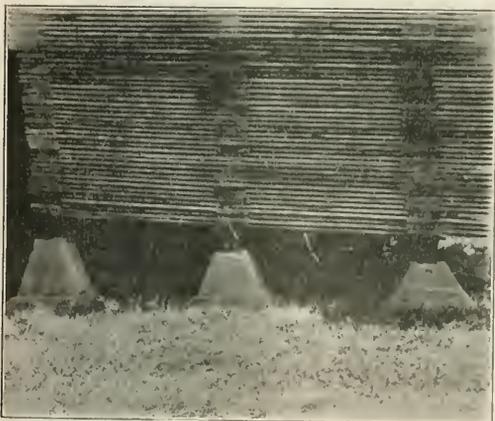


*Courtesy of U. S. Department of Agriculture*

**Method of Piling Timbers. Showing Stripping and Overlapping of Ends**

must, of course, also be of sufficient strength and rigidity to carry the required load without sagging, and to provide the proper pitch to the pile so that it will freely shed water, and resist wind pressures. The slope of all lumber piles should be in one direction, preferably towards the "face" side of the alley.

The piling strips should be sound lumber and such as



*Courtesy of U. S. Department of Agriculture*

**Concrete Foundation Piers and Timber Sills**

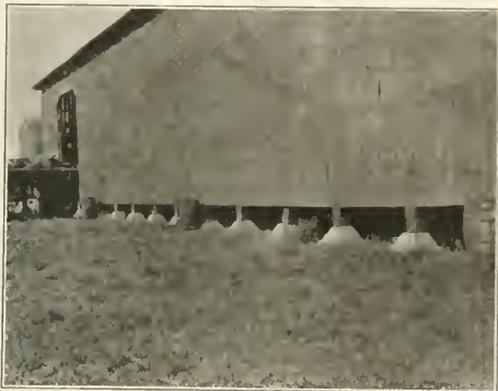
are used for timber and rough lumber should be creosoted. Piling strips should never be allowed to accumulate between lumber piles or in the alleys. Likewise, damaged sticks or waste lumber should be removed immediately and disposed of; otherwise the best planned yard will fail to meet the chief requirement, i. e., maximum sanitation.

Properly built sheds with ample room to allow for the necessary working space should always be provided for kiln-

dried stock such as car siding, car lining, car roofing, car flooring, building siding, ceiling and flooring, dry poplar, ash, mahogany and quartered oak. The shed foundation should be either of concrete or creosoted timber, substantial and so constructed as to keep the lumber well off the ground. The roof must be tight and the siding should not run down below the bottom of the foundation sills or bearing pieces so that a free circulation of air is permitted from all sides beneath the enclosure. If fungus outbreaks occur in the shed the soil and timber immediately adjoining the infected area should be sprayed or painted with an antiseptic solution of a water soluble salt like sodium fluoride, mercuric chloride, zinc chloride or copper sulphate.

#### Method of Piling

In the piling of all lumber, care must be used to have the piles substantially constructed to prevent them from falling apart or being blown over by wind storms. The sides or edges of the piles should be straight and parallel, both horizontally and vertically. Piles of boards and 2 in. plank should not be built wider than the length of the lumber in the pile, and in no case should the width of the pile exceed



*Courtesy of U. S. Department of Agriculture*

**Ideal Storage Shed. Built on Concrete Piers and Set High Off the Ground for Ventilation**

16 ft. Plank over 2 in. in thickness and all timbers should be piled in narrow piles from 6 ft. to 10 ft. wide, although piles of the same kind of material may be placed upon the same bearings closely adjoining each other. This arrangement permits the complete removal of a pile without waiting to exhaust the entire stock of one size and provides space for piling receipts of new stock without piling it on older or seasoned lumber.

In piling dressed boards and kiln-dried 2-in. plank in sheds it is permissible to strip only between each five layers. In piling out of doors similar material which has not been kiln-dried, as well as all heavier lumber, strips must be used under each layer in all cases.

In piling 1-in. and 2-in. lumber, pieces of the stock itself should be used for piling strips, but in larger sizes strips 1 in. thick and not over 1 in. wide should be used over each bearing, except the one strip on the face of the pile, which should be 1 in. thick and 2 in. wide.

The piling strips should be no longer than the width of the pile. No strips should be allowed to run through from one pile to another. One piling strip should be used over each bearing piece upon which the lumber rests and should be placed directly over the bearing piece or the strip previously applied. The edge of the strips used on the front

of the pile should be allowed to project over the ends of the lumber upon which it rests at least  $\frac{1}{8}$  in. This will act as a drip cap and assist in preventing the ends of the lumber from checking or splitting. The ends of each course of lumber applied to the pile should be brought flush with the edge of the piling strip at the front of the pile. By following this method the pile will have a forward pitch of about  $1\frac{1}{2}$  in. per ft., which together with the slope of the pile, will prevent the accumulation of moisture from rains or snows.

Except where piled in a shed all lumber should be separated in the layers so that a space of approximately  $\frac{3}{4}$  in. is left between pieces to allow of free circulation of air on all four sides of the pieces. This permits of rapid and thorough drying of the lumber and prevents sap staining and rot. Lumber so piled may be allowed to remain in stock for a long period without damage. This space may be easily regulated by instructing the workmen to allow the width of a finger between the edges of pieces.

All boards and planks dressed on one side which are stored out of doors, should be piled with the dressed side down. When similar lumber is rough on all sides the side of the piece nearest the heart of the log should be down. This will retard checking of the lumber and opening of shakes in the course of seasoning.

In piling lumber 2 in. and under and of miscellaneous lengths the entire pile should be of the length from front to rear of the longest piece of material in the pile. Thus, if 1-in. lumber 8 ft. to 16 ft. in length is being included in the same pile that pile should be 16 ft. long and should

All piles of 1-in. boards, poplar and hardwoods of all thicknesses, dressed car flooring and 2-in. plank not under roof should be protected from sun and rain by a covering of rough boards laid in two courses with the cracks in the lower courses lapped by the boards in the upper course. This cover should be laid on strips so that it will be about 6 in. above the top of the pile at the front and 2 in. at the rear. Care should be used to have this cover always in place when the pile is not being worked.

In removing lumber from piles in the yard, that which has been on hand for the greatest length of time should invariably be taken first. Lumber should always be taken



Lumber Bearing Built of Sound Salvaged Material

from the top of the pile and in no case should workmen be allowed to break into the side of the pile to avoid the effort of going to the top and removing and replacing the cover.

### Fire Protection

Adequate protection against fire is merely common sense. In addition to keeping the yard clean of accumulation of debris, which provides the greatest fire hazard, water should be always and everywhere available. New yards should always be equipped with high pressure water mains, hydrants and sufficient hose so that practically every foot of the yard can be immediately flooded. In addition to keeping this equipment in perfect working order the workmen in the yard should receive thorough training in its use by fire drills which are ordered by the regular fire alarm, previously unannounced.

Where such apparatus is not available water barrels should be distributed throughout the yard at convenient points and strategically disposed so as to be most effective in an emergency. A fire pail should be kept at each barrel and additional pails, ready for instant use, at suitable points. It is obvious that the barrels must be kept full of water, and that they must be inspected frequently. The water in the barrels can be kept from becoming stagnant or from freezing by dissolving in each barrel from 100 lb. to 150 lb. of calcium chloride (common salt). Barrels should be kept covered with well fitting but readily removable covers to prevent excessive evaporation of the water. The most suitable barrels for this purpose are those in which creosote oil is shipped. Tarring the tops will keep the salt from creeping. Barrels should be painted a bright red as identification.

All of these precautionary measures are summed up in the old and well worn but, alas, only too little applied adage, "a stitch in time saves nine." Not alone does the proper handling and protection of lumber before utilization provide real, tangible economy; it is likewise effective conservation which from the standpoint of the greatest good to the largest number is far more important than individual profit. The workmen who must carry out these details is as much profited as the employer who may derive the immediate benefit, because every stick wasted decreases the available supply just that much, which means greater scarcity and higher prices; and high priced lumber always touches every pocket.



Courtesy of U. S. Department of Agriculture

### Conditions Caused by Failure of Decayed Foundations, Creating Fire Hazard and Waste

be even at both ends. This is accomplished by bringing the ends of the shorter lengths alternately to the front and the rear of the pile.

By this method a ragged appearance of the rear of the pile is avoided and there is no waste due to warping and checking of the ends of the longer pieces projecting unprotected from the rear of the pile.

If the quantity of such stock will warrant having two or more piles it would be desirable to pile the 14-ft. and 16-ft. lengths together and the 8-ft., 10-ft. and 12-ft. lengths together.

All rectangular sizes 5 in. in thickness or over, whether rough or dressed, should be piled on edge. This includes car sills, car framing, guard rails, caps, stringers, bridge and switch ties, heavy joints, etc.

# More About Ford's Railroad Operating Methods

## Difficult to Check Flivver King's Claims Because of His Not Filing Statistics

By Harold F. Lane

WASHINGTON, D. C.

HENRY FORD is still revolutionizing the railroads, on paper, but as he is much more fond of reporting his achievements and his rosy predictions for the future to the reporters of the Hearst and other papers of that type than of filing his own reports with the Interstate Commerce Commission, it is becoming somewhat difficult to check up his statements by which he demonstrates the inefficiency of the other roads. In his latest exposition of the virtues of the Ford principles, in an interview distributed by the International News Service on December 3, Mr. Ford says that freight is now moving over the Detroit, Toledo & Ironton at the rate of 45 miles per day and that when he has finished doing things that are now under way freight will be moving over his road at the rate of at least 200 miles a day. His latest report to the Interstate Commerce Commission, that for the month of August, showed an average movement per freight car per day on the Detroit, Toledo & Ironton of only 20.7 miles, as compared with an average for the railroads of the country of 22.7, so we are left in some doubt as to whether he has effected this great improvement in such a short time or whether he is as careless in using his own figures as he is regarding those of the roads generally. To emphasize his point he gives the railroads generally credit for only 20 miles per car per day, whereas the average for the first nine months of this year, which, because of the light traffic was low, was 21.9 miles and for September it was 23.8 miles.

### The Matter of Car Miles Per Day

Mr. Ford says that when he bought the D., T. & I. its cars were making only 19 miles a day, but he omits to say that for the month of March, in which he took over the actual management of the road, the average was 27.8 and that there was a steady decrease up to and including August, the latest month for which the D., T. & I. has reported, to 20.7 miles. This was slightly less than its average for the corresponding month of 1920. Of course, as was pointed out by Walker D. Hines in his article in *The Nation's Business*, the average of miles per car per day is by no means conclusive of the speed obtained in the movement of cars actually handling traffic, because the average is based on all the cars which happen to be on the railroad at the time, whether they are moving in trains or waiting to be loaded, unloaded or switched, and include also the surplus cars. The average freight train speed for the railroads as a whole for the first nine months of 1921, according to the Interstate Commerce Commission reports, was 11.6 miles per hour. If the D., T. & I. has made such a large increase in its average car mileage as Mr. Ford says, it is very likely due to an increased demand for automobile parts which gave more cars something to move for, but here again we find that, in his efforts to reduce book-keeping, Mr. Ford is omitting to make the usual reports of car surpluses, shortages, loading, etc., to the American Railway Association, and thereby declining to place his figures in comparison with those of other roads.

To the extent to which increases in the car mileage per day do reflect increased efficiency, it would be very interesting if Mr. Ford would tell some of the reporters who trail him about some of the operating methods which result from what is vaguely described as the "Ford principles" or the application of "common-sense" methods. Unfortunately the only method we have heard of that he has actually applied

for the purpose of speeding up cars and avoiding delays has been his plan of requiring, as a shipper of freight in train-loads, that the connections of the D., T. & I. take the traffic off its tracks within 20 minutes or let some other road have it. What happens after that, as Mr. Hines says, is not his problem but theirs, and it is obvious that the same special service cannot be given for every car of freight.

Mr. Ford says that red tape is responsible for a good deal of "this slowness," by which term he describes the difference between an average car movement of 23 miles per day and a train speed of 11.6 miles per hour, but he refrains from telling us how he has avoided or untangled the red tape.

### Alloy Steel Cars

"The excessive weight of the train," he says, "is responsible for some more," and he much prefers to enlarge upon that factor, possibly because it offers greater opportunity for his expansive imagination. However, he is becoming more conservative on this point as he goes along. A while ago Mr. Ford told the world that a freight train is "several times the weight of the load it carries." He has now toned this down to what is more in accordance with the facts, that the weight of the average freight car is almost equal to the load it carries. That this is so is generally the fault of the load which the shipper puts in the car, but in predicting an average car movement of 200 miles a day, Mr. Ford says he is preparing to build cars in which two-thirds of the weight will be sacrificed without sacrificing any of the car capacity by using alloy steel. This car, he says, can be built as cheaply as present cars because although the steel costs more, only one-third as much will be used.

While awaiting with great interest the advent of the flivver freight car, which by the way has not made its appearance, except in print, in the nine months since Mr. Ford became a railroad president, we have also had time to wonder how, when it does arrive, it will revolutionize railroading unless Mr. Ford will also solve the problem of keeping the new cars fully loaded and in movement all day. The present freight car is quite capable of more than 200 miles a day at the present average rate of speed, but even "multiplying the carrying capacity of the railroads by 10 without increasing the equipment and without additional cost" will hardly solve the problem. The average freight car does not move 200 miles every day without hitting a terminal of some kind where more or less delay is encountered before it can again be started in the right direction and most of the time the roads have excessive car capacity which does not move at all. Railroad officers are constantly working to try to minimize the inevitable delays and if Mr. Ford would offer some constructive suggestions as to how this problem could be met, or even as to how he claims to have solved it for himself, beyond such broad statements as "keep the cars moving," they would listen to him with more respect when he attempts to make newspaper readers "realize how inefficiently our railroads are run" by inaccurately comparing what they do with what he could do if he tried or what he says he is going to do.

Mr. Ford also expects to reduce by 75 per cent the amount of coal burned by locomotives and says he has made such changes on one of the old D., T. & I. engines as to reduce the fuel used by 50 per cent. He also is making experiments

to see if he can't burn the coal in the mines and thereby obtain benzol with which to do away entirely with the coal-burning locomotive, claiming that he has already made an engine run 70 miles an hour on that fuel on his railroad. Various devices are advertised for which it is claimed that they will effect nearly as great an improvement in the performance of a brand-new Ford engine but we do not understand that they have yet revolutionized Mr. Ford's business.

### We Must Not Take Mr. Ford Too Seriously

It is well not to take Mr. Ford too seriously, although his habit of spilling his loose thoughts for the benefit of the reporters on every possible occasion undoubtedly spreads much misinformation on important subjects among people who do take it seriously. Even when his lighter freight car is brought out and a trial run is given with great publicity to demonstrate that it can travel faster than 20 miles a day or carry a given load with complete success, it will still take several years to ascertain its possibilities under the strain of actual service, such as its cost of maintenance and its life. It may take as long as it took Mr. Ford to equip his car with such newfangled contraptions as self-starters and electric lighting. It may be noted that almost as many people have what they consider practical suggestions for the improvement of the Ford car as have ideas as to how the railroads ought to be run, yet Mr. Ford does not allow himself to be seriously disturbed by them even when others put them into practice.

Ford says he does not believe the railroads of America "can be properly run except under government ownership," and the reporter says he expressed pain when requested to boast to the extent of saying whether he could run all the railroads, but he finally overcame his modesty sufficiently to say that if all the railroads of the United States were under his control, "I could run them all as easily as my own." He would "send word to the D., T. & I. gang to extend their principles to all other lines," but he also expressed the belief that even under private ownership American railroads will soon follow his example and cut down the weight of their cars two-thirds.

### Railroad Millennium Possibly Not So Far Off

Perhaps the railroad millennium which Mr. Ford pictures is not so far off as it appears. One of his reasons for desiring government ownership is that "nobody should get a cent of railroad income except those who work on the roads and earn it." Our experiment in government operation during the war was restricted in some ways but it came very near to realizing this ideal. If our present hopes of an improvement are not realized (and government regulation is not meanwhile extended to the prices and profits of the flivver industry) it may yet become possible for Mr. Ford to buy the roads at a bargain, as he did the D., T. & I. and thereby have an opportunity to work out the Ford principles on a broader scale without the necessity for government ownership.

## Opposes Repeal of Rate Law

WASHINGTON, D. C.

THE CHAMBER OF COMMERCE of the United States is preparing to oppose vigorously any movement that may be made in the present session of Congress to repeal provisions of the Transportation Act which authorize the Interstate Commerce Commission to make rates to provide adequate revenue for the railroads and to regulate intrastate rates where necessary to prevent discrimination. The position of the national chamber is that these provisions of the act should not be repealed until they have had a fair test. In a communication sent to the constituents of the chamber, Joseph H. Defrees, president, said that the pass-

age of such legislation as the Capper or Nicholson bills would be "a long step backward." According to Mr. Defrees, "enactment of the proposed legislation would repeal those sections of the Transportation Act by which the Interstate Commerce Commission is directed to establish rates that are reasonably adequate to the railways and just to the public. The railroad committee and the officers of the national chamber are firm and fixed in the opinion that these proposed laws would be extremely injurious to the railways and detrimental to the public good."

President Defrees points out that the rate-making provisions of the act give no guaranty whatever to the railroads. "Statements to the contrary are misrepresentation," he says. "If rates even under the most honest, efficient and economical management do not yield the return specified in the act, the amount of the shortage is lost to the railroads. Not a cent is payable to the carriers from the federal treasury, and the deficit cannot be made up from rates subsequently established.

"If the Interstate Commerce Commission is deprived of all authority to regulate intrastate rates as proposed in the Capper bill, rate regulation will return to the chaotic condition which existed for many years because of the conflict of authority between the Interstate Commerce Commission and the 48 state commissions.

"To repeal the two vital provisions of the Transportation Act which are now attacked is to overthrow the system of rate-making which the Interstate Commerce Commission has developed after long study and out of wide experience. It is the opinion of some able lawyers who testified at the hearings that the proposed bills would take from the Interstate Commerce Commission any power to prevent discrimination by the states against interstate traffic. Experience and wisdom have shown the necessity of the interstate rate being paramount and of a yielding of the state rate when it discriminates against the interstate rate. The letter of the proposed statute and the spirit of it seem to make the state right paramount and to force the adjustment of interstate rates to the rates which may be made by the state commissions of all the states, and it is at least highly probable that this result will be accomplished if the pending bills are enacted into law.

"The Constitution of the United States has always recognized the paramount importance of national control of commerce between the states. The repeal of those provisions of the Transportation Act which assert federal authority over state rates would in effect limit national control over interstate commerce in every instance where state regulations conflict with interstate regulations."

President Defrees' communication calls attention to the fact that "the railways are now in a depleted condition and that there is need for the expenditure of millions of dollars for proper maintenance and equipment. The country is growing in population; and there is need and there will be constantly growing need for an expansion of the railways. This need for expansion can be met only if they can market their securities. If the railways can receive no adequate return it is at once obvious that they cannot market their securities. The corollary follows that they will fall into a dilapidated condition and their facilities will be insufficient to supply the public needs. Not only would this be a disaster to the railroads as business enterprises, it would be a calamity affecting in a most serious way every shipper and every consumer. This condition would beyond doubt tend inevitably in the direction of government ownership."

THE PROVINCE OF QUEBEC grants for agricultural purposes about \$1,000,000 yearly, and has spent \$5,000,000 in colonization to open up the northern districts of the province.

# Texas Attack on Transportation Act Argued

Constitutionality an Issue—Asks That I. C. C. and Labor Board Be Enjoined

WASHINGTON, D. C.

ARGUMENTS were heard by the United States Supreme Court this week on the original bill filed by the State of Texas attacking the constitutionality of the Transportation Act and asking that the Interstate Commerce Commission and the Railroad Labor Board be enjoined from enforcing it in a way to interfere with the jurisdiction of the state authorities.

## A. P. Thom Files Brief

Declaring that the only power denied the states by the Transportation Act is the power to fix intrastate rates that discriminate against interstate commerce, Alfred P. Thom, general counsel of the Association of Railway Executives, in a brief filed as *amicus curiae* asks the court to sustain the constitutionality of the statute.

The Texas authorities attack the constitutionality of the sections of the act relating to the regulation of state rates, the so-called rate-making section, the sections relating to the establishment of the Railroad Labor Board; to the extension and abandonment of lines of railroad and the sections relating to pooling of freights or earnings and consolidations.

In his brief, Mr. Thom asserts that the case is not justiciable because the order issued by the Interstate Commerce Commission under the act and attacked in the proceedings "inflicts no injury," adding that it is "not fair to jurisprudence to attempt to settle great constitutional questions, like those presented here, on abstract considerations not involving definite complaints of wrongs to persons or property."

"Aside from the objections on the grounds mentioned, the bill is without equity and is based on what, we respectfully submit, is a misconception of the constitutional justification of the Transportation Act and of the lawful rights and authority of the parties," the brief says.

## A Supervisory Power Over Intrastate Rates

"The Interstate Commerce Commission was given by the act," the brief continues, "direct and primary jurisdiction to fix interstate rates, but only a supervisory power over intrastate rates to be exercised only if the states failed to establish intrastate rates which would not give preference to their own traffic over interstate traffic and would not unjustly discriminate against interstate commerce.

"The only power over state rates denied to the states by Congress was the power to establish an unjust discrimination in favor of their own traffic over interstate traffic and to require the use of the instrumentalities of interstate commerce 'in their intrastate transactions in such manner as to affect injuriously traffic which is interstate.'

"Manifestly, interstate commerce would be injuriously affected and unjustly discriminated against if it could not use the instrumentalities used by both on terms as favorable as intrastate commerce could—if interstate commerce had to pay the bill for maintaining, up to the national standard of adequacy and efficiency, the agency which was used interchangeably by both, while the state refused to make an equitable contribution. If the standard of adequacy expressly fixed by Congress in the act must be supported out of the rates derived from both classes of traffic and the states could decline to bear their equitable proportion, either the Congressional standard must be abandoned, or the deficit caused by the refusal of the state must be made up

out of increased interstate rates—and thus, in either case, the states would effectually regulate interstate commerce. No interpretation of the act which would accomplish this result can be accepted.

"The interstate commerce act confers upon the Interstate Commerce Commission the power to judge as to this discrimination, and to remove it, if the action of the states results in such unjust discrimination.

## Removal of Unjust Discrimination

"It is equally obvious, from another standpoint, that the act must be interpreted as authorizing the removal by the Interstate Commerce Commission of any unjust discrimination, created by a state, against interstate commerce, or any portion of it, in favor of intrastate commerce, or any portion of it.

"Unjust discrimination may exist, and does exist, whenever interstate commerce is injuriously affected by the more favorable terms on which intrastate commerce is permitted to move. The more favorable terms on which intrastate commerce may move, as compared with interstate commerce, may exclude the latter from markets which each is seeking, or from producing fields on which each is depending.

"It is accordingly submitted that, from whatever standpoint the subject be viewed, the act must be interpreted, in its provisions as to state rates, as conferring upon the Interstate Commerce Commission a power, and a power only, to see that all unjust and unreasonable advantages of state over interstate commerce, and all unjust discrimination of state against interstate commerce, are removed, and that there be no substantial inequality of commercial opportunity to the prejudice of interstate commerce in the use of the instrumentalities of interstate commerce.

"It cannot be successfully asserted that the powers conferred by the act, as to interstate rates and as to unjust discrimination against interstate commerce, are not within the constitutional grant of power made to the national government by the states to regulate interstate and foreign commerce.

## The Method of Rate Making

"Nor can valid criticism be made of the method of rate-making, by groups, prescribed in the act. It is the method which was adopted and followed by the commission before the act was passed. It is the only method possible.

"It is difficult to understand why the contention should now be insistently and gravely made that if Congress undertakes to regulate or fix the intrastate rates of an interstate carrier, it is invading the reserved rights of the states and violating the tenth amendment of the Constitution.

"It cannot be denied that the power to provide for, foster and protect—all of which are involved in the power to regulate—includes the power to fix the standard of efficiency and adequacy of the means or instrumentalities for carrying on interstate commerce. That standard—the national standard—must be supported out of all the traffic, state and interstate, of the carriers. If a state disapproves of the national standard and may, by fixing state rates so low as to make an inequitable and inadequate contribution to the support of the interstate agency, it has the power to impose its standard on Congress, or to throw on interstate commerce and the commerce of other states, or on both, the burden of sustaining the national standard of efficiency and

adequacy. In either event, Congress would be denied the exercise of its constitutional authority, and the state, not the nation, would be supreme in the national field.

### Brief Filed By Texas Authorities

The bill filed by the Texas authorities says in part:

Complainant avers that the Railroad Labor Board and the Interstate Commerce Commission, without power or authority, constitutional or otherwise, are each exercising functions, powers and authority attempted to be given to each of them respectively by act of Congress in the "Transportation Act of 1920" and are making findings, entering orders, and attempting to enforce its provisions in accordance with said act and several sections herein referred to, and are claiming and intend to exercise power and authority under said act and said several sections thereof.

### Labor Board

That the acts of the Railroad Labor Board in fixing wages, salaries, establishing working conditions, practices and regulations of the various employees of the railroads of the United States and of the state of Texas have caused an enormous increase in the amount of railroad operating expense; and that its orders in force and effect at the present time have resulted in unnecessary, unreasonable and unjust wage to many of the employees of the said railroads within the state of Texas; that such salaries and wages are out of proportion to wages paid for like services in other and similar positions and employment, paid and received by the people of the state of Texas, and is an unjust and unreasonable demand upon the railroads of the state of Texas resulting in the necessity for and an increased operating income; and complainant further avers that by reason of such unjust, unreasonable wages, salaries, working conditions, practices and regulations, the Interstate Commerce Commission acting under the pretended authority of the Transportation Act in order to create and obtain for the railroads of the state of Texas an operating income pursuant to the Act of Congress of 1920 above alleged, and sufficient to pay the wage scale and carry out the practices and regulations so fixed and maintained by said Labor Board, has fixed fares and charges for the transportation of passengers and freight which are unjust and unreasonable. All of which causes and has caused a great loss to the producers and shippers of the state of Texas, a great diminution of freight and passenger traffic to the railroads of the state of Texas and has caused and is causing a great financial loss to the people of the state of Texas, producers, shippers and carriers alike in violation of the constitutional right particularly guaranteed to them by the fifth and fourteenth amendments of the Constitution of the United States.

### Certificates of Convenience and Necessity

That the Interstate Commerce Commission has granted certificates of convenience and necessity to railroads within the state of Texas authorizing and directing them to cease operation of trains and to dismantle their railroads and dispose of their physical property contrary to the Constitution and laws of the state of Texas, and in disregard of their contract obligations with the people of the state of Texas, and particularly of the vicinities through which such railroads pass. That the Interstate Commerce Commission has refused to grant certificates of convenience and necessity and to permit railroads within the state of Texas to advertise and charge fares and freight rates and to receive passengers and freight from connecting carriers and transport same in accordance with the laws of the state of Texas, and has refused to permit the construction of railways within the state of Texas by persons and corporations who have complied with the Constitution and laws of the state regulating the chartering, organization, construction and maintenance of railways wholly within the state of Texas. That the Interstate Commerce Commission is exercising the powers attempted to be granted in the Transportation Act to supervise and regulate the issuance of bonds, certificates and other securities by the railroads of the state of Texas when so issued in accordance with the Constitution and laws of the state of Texas regulating the issuance of bonds, certificates and securities; that thereby the railroads of Texas and the people of Texas are compelled to submit to the demands and conform to the rules and regulations of the Interstate Commerce Commission at an unnecessary expense and great inconvenience resulting in the loss of property and in the taking of their property without due process of law contrary to their right guaranteed under the Constitution of the United States.

And that the Interstate Commerce Commission is making rates, charges, fares, issuing orders, regulations and schedules

and establishing practices requiring and compelling the railroads of the state of Texas to comply and conform thereto; and that the said Interstate Commerce Commission has issued an order placing the state of Texas in what is designated as the "Western Freight Group" and has and will continue to require the railroad companies of the state of Texas to charge and control fares, rates and charges contrary to the statutes of the state of Texas and its Constitution and valid contracts of said railroad companies, all of which acts, orders, rules and regulations are contrary to the statutes and Constitution of the state of Texas and the United States, and as heretofore alleged, the railroads of Texas are now and will be called upon to pay more than their just share upon property within the state to supply the operating income demanded by the railroads of the United States; that said Interstate Commerce Commission intends and will whenever it deems it necessary and desirable, authorize the creation and operation of trusts, combinations and monopolies among railroads in Texas without regard for the Constitution and statutes of Texas relative thereto, and thereby the people of the state will be deprived of their right to have competing carriers and freight competition; that the state of Texas in its sovereign capacity is being sued and has been and will be sued and made a party to suits involving the rights, powers, privileges, sovereignty and property of said state before the Interstate Commerce Commission of the United States contrary to the Constitution as herein alleged.

### State Sovereignty

Complainant further alleges that great and grievous injury and damage is resulting to it and its citizens by reason of the enactment of the act of Congress known as "The Transportation Act of 1920"; that it is shorn of large powers of sovereignty, viz.: legislative, executive and judicial powers reserved to it by the Constitution of the United States, and it is deprived of privileges and immunities guaranteed to it as a sovereign under the Constitution of the United States, and that citizens situated in the boundaries of Texas and that its citizens and railroads are unauthorized to do and prohibited from doing acts and things otherwise legal and lawful except for the provisions of said act and the acts of the defendant herein.

Forasmuch, therefore, as complainant is without adequate remedy at law and its only protection in the premises must arise from the powers of this Honorable Court, in the exercise of its original jurisdiction, the state of Texas respectfully prays that there be granted a writ of subpoena issuing out of this Honorable Court to be directed to the Interstate Commerce Commission by service upon its chairman, Edgar E. Clark, to the Railroad Labor Board by service upon its chairman, R. M. Barton, the defendants herein named, demanding them and requiring them and each of them to appear and answer thereto, but not under oath, answer under oath being expressly waived; and that the so-called Transportation Act of 1920, and particularly Sections 300 to 316, inclusive, 402 to 407, 416 and 418, 402, sub-divisions 18 to 22, 407, subdivisions 1 to 8, 422, subdivisions 1 to 18, 439, subdivisions 1 to 11, be declared invalid, unconstitutional and void; and that the defendants named herein and constituted bodies corporate be declared and adjudged illegal and without statutory or constitutional authority; and that any and all laws or parts of laws, directing, empowering, regulating the creation, appointment, qualification and terms of service and granting authority to defendants named and the several members thereof be declared invalid, unconstitutional and void and the acts, orders and all things authorized to be done or performed by defendants be declared void, invalid and of no force and effect and without force of law, or if any part of said Transportation Act of 1920 be held to be constitutional, the remaining sections and portions thereof and all other laws in aid thereof be declared invalid, unconstitutional and void; and that the defendants and each of them be enjoined and restrained from enforcing all or such invalid and unconstitutional portions of the laws herein complained of in the state of Texas in such a manner as to interfere with the regulation of internal affairs of the complainant and the enforcement of its Constitution and its constitutional and valid laws, regulations and contracts, and the constitutional rights of its citizens, and that complainant may have such other and further relief as to this court may seem just and equitable in the premises.

### The Wisconsin Case

The Wisconsin case was also reargued in the Supreme Court this week. The case was originally heard last spring but the court called for a reargument after the inauguration of Chief Justice Taft.



General View of the Plant and Yards During Construction

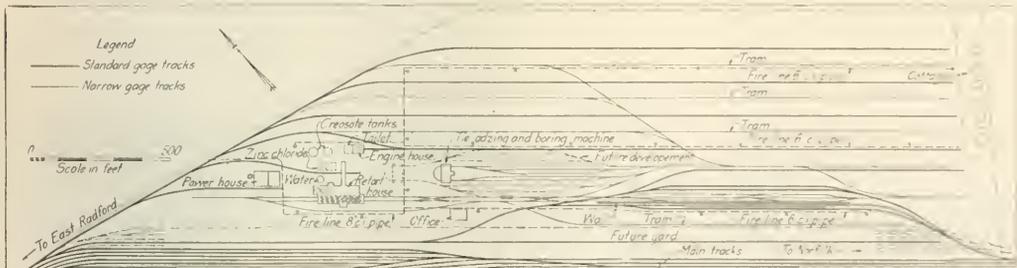
## Norfolk & Western Goes to Treated Cross Ties

New Wood Preserving Plant Built by This Road at East Radford, Va., Contains Many Advanced Features

EACH YEAR sees an increase in the use of treated timber and, in particular, of treated ties. The Norfolk & Western is one of the large railroads that has recently made a study of wood preservation and the result of its investigation is evidenced most clearly by the construction of a thoroughly modern treating plant and facilities at East Radford, Va. Heretofore this road had used no treated ties and for the present it will continue to use untreated white oak ties in its heavy traffic tracks, although about 70 per cent of its tie requirements will be met with treated ties. Outstanding among the many interesting features of the plant are its capacity of 1,500,000 ties annually; its

line. It is about centrally located on the system. The area selected lies between the present railroad tracks and the bank of the New river and comprises about 50 acres of sloping land that required considerable grading after which it was covered with a six-inch layer of cinders. The plant facilities consist of a power plant, retort house with treating and storage tanks, etc., a laboratory and office building, an adzing and boring house, a pumping station, a large storage yard and a full layout of standard and narrow gage tracks, living quarters for employees and other miscellaneous buildings and equipment.

It is the intention of the Norfolk & Western to season all



General Layout of the Treating Plant and Yard

adaptability for utilizing four different methods of treatment, if necessary; the method of handling all preservatives by air; and the duplication of all units to give flexibility and independence.

The chief tie wood which the Norfolk & Western will use is red oak, easily procurable in quantities in the territory served by that road but principally on its Bristol line. This formed one of the main reasons for locating the plant at East Radford, the others being the advantages of a central location and the acquisition of a tract of land suitable for the purpose. East Radford is on the Bristol line about two miles south of Walton, the junction of that branch with the main

ties for a period of approximately one year, after which they will be treated and shipped out immediately, no storage for treated timber having been provided except in a very small degree. The plant as a unit has been laid out to correspond with this method of handling, the area upon which it is located being divided roughly into two longitudinal sections as is shown in the plan. The buildings, the 36-in. narrow gage tracks, the loading tracks and the loading docks have been located in the section nearest to the railway tracks. Another factor which influenced the design of the layout was the desire to separate the standard and narrow gage tracks so as to avoid any conflicting movements and to provide a meas-

ure of independence in operating over the two trackage systems.

In following out this plan, the tracks were laid alternately standard and narrow gage at intervals of 60 ft., with four lines of each serving the storage yard-proper. In other words there is a standard gage track every 120 ft. across the yard. A ladder at one end connects all standard gage yard tracks while a narrow gage track running diagonally across at about the center of the yard provides for the moving of the trams to the adzing and boring house. In addition to this trackage, there is a complete system of narrow gage tracks leading to the various buildings mentioned as well as to the loading tracks and the loading docks, the latter being served also by standard gage tracks.

The tie piles have been arranged not only to give accessibility, both in stacking and in the loading of the trams, but likewise to provide adequate ventilation for seasoning and fire protection. Each pile is five ties long, perpendicular to the center line of the tracks with an alleyway  $3\frac{1}{2}$  ft. to 4 ft. wide separating it from the one adjoining. Every sixth pile has been omitted, thus forming a roadway across the yard approximately 17 ft. wide. As one of the measures for protection against fire a 100-ft. opening was left at about the center of the yard across its full width. The ties are generally delivered in box cars from which they are unloaded by hand, although the piling is handled by locomotive cranes equipped with 40-ft. booms.

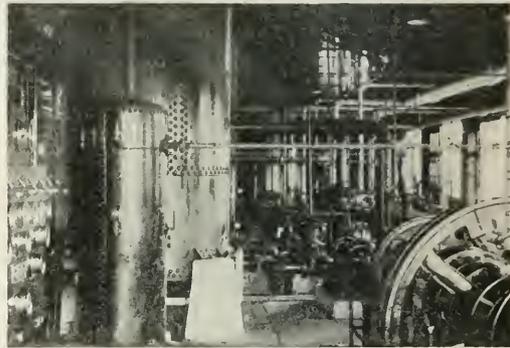
The tie yard equipment at present consists of 128 extra heavy tram cars, a 20-ton steam dinkey, one locomotive crane and two Angier tie loaders for use with the treated ties. All main track ties are adzed and bored before treatment. In connection with and in view of the increase in the amount of heavy rail on the Norfolk & Western, that road has adopted a larger tie plate with a 1 to 20 cant and measuring 7 in. by 11 in. in area by  $\frac{3}{4}$  in. thick in place of the old flat 6 in. by  $9\frac{1}{2}$  in. plate. The equipment for adzing and boring is housed in a well-lighted structure, is electrically driven and has a capacity of about 300 ties per hour.

Ties are brought in on trams operating on a high level track and are unloaded onto a conveyor leading to the machine, which, after the work is completed, discharges them onto trams on the opposite side. The outbound track is at a lower level than the inbound and is connected to it by a loop line running around the rear of the building. The movement of the empty trams is by gravity. The trams containing the adzed and bored ties are then made up in strings of 16, each containing from 40 to 45 ties, and moved to the retorts.

One of the most important features of the plant is that it

is possible to use any one of four preservative treatments and to switch over to any one of them with practically no disturbance to the regular routine, these treatments being the straight creosote, the Rueping or empty cell process, the Card or the zinc chloride and creosote process and the straight zinc chloride treatment.

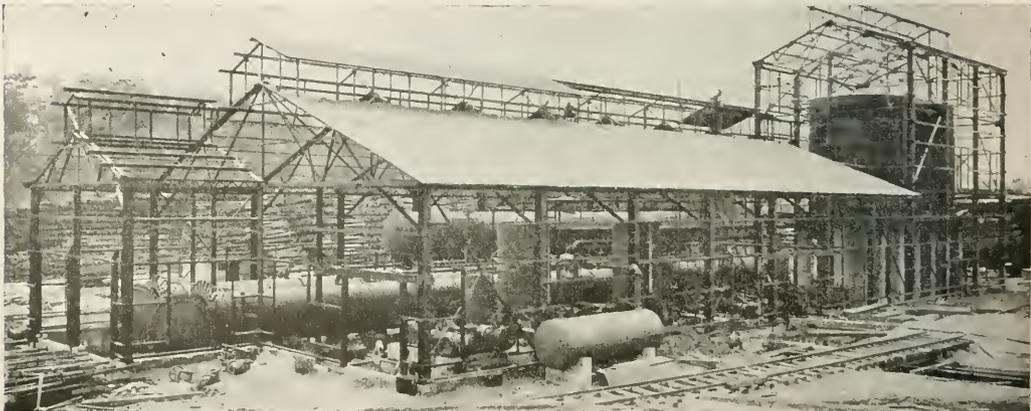
The plant and facilities for treating are housed practically in one building having concrete foundations and floor with a steel superstructure covered with corrugated sheet iron. The treating retorts, of which there are two, measuring 7 ft. in diameter and 140 ft. long, are situated along one side of the building and have superimposed on them a third tank of lesser dimensions and 35,000 gal. capacity for use with the



The Interior of the Retort House Is Clean and Well Lighted

Rueping process. Centrally located in the retort house and closely adjacent to the treating cylinders are two vertical pressure tanks equipped with various measuring gages to determine the rate of absorption and other factors. At one end two working tanks, each of 55,000 gal. capacity, are located in an elevated position and feed the retorts by gravity. These tanks are equipped with heating coils and measuring and temperature gages. They are also piped for use with the Card process and are equipped with a perforated air line to agitate the solution.

At right angles to the line of the retorts and on the opposite side of the building is an underground tank of 30,000 gal. capacity in a covered concrete pit partly within and partly without the building. This tank is utilized for un-



Showing the Full Complement of Equipment in the Retort House

loading oil direct from cars, after which it is blown up into two storage tanks outside; and also for receiving the oil dropped from the retorts when the treatment is completed. In the latter case the oil is blown back up into the two working tanks mentioned. Additional facilities for the storage of oil or zinc chloride solution consist of two 200,000 gal. covered tanks fitted with steam coils and water seal protection and a 20,000-gal. concrete tank for zinc chloride.

The space provided for the installation of the three air



Constructing the Concrete Cribbing Along the Loading Dock

compressors and two vacuum pumps is large and affords plenty of room in and around all parts of the machinery. The piping arrangement is equally openly laid out and is further simplified by giving each line a distinctive color. The air, water and oil pipes are respectively white, brown and black in color while the steam lines are asbestos covered. The air equipment consists of one compressor delivering 1,000 cu. ft. per min. at 100 lb. pressure and two delivering 300 cu. ft. per min. each at 200 lb. pressure, corresponding to the requirements of the various processes. The vacuum pumps maintain a vacuum of from 24 in. to 25 in. which, at the elevation of 1,800 ft. at East Radford, corresponds to about 26 in. at other and more nearly sea level installations. These units work independently of each other and may be used in connection with either treating cylinder, thus rendering the handling of the processes in each of the retorts a separate and independent proceeding. The same pressure that is

tunnel. The building is of brick and concrete fire-proof construction and is divided into two sections. At the present time the boiler room contains three 300 h.p. horizontal return tubular boilers equipped with automatic underfeed stokers, while provision has been made for a fourth or reserve unit which will be installed when needed. Coal is delivered over a hopper track from which it is elevated and conveyed by a conveyor system to a large, overhead, parabolic, steel hopper with chutes leading to the stokers. Ashes are dropped into concrete pits beneath the boilers and from there they are picked up and elevated by the same conveyor mentioned, to an ash storage bin over the hopper track.

The engine room is equipped with two 750-kw. steam turbines direct-connected to 3-phase 60-cycle generators delivering 2,300 volts at 3,600 r.p.m. Directly under the engine room is a basement containing the condensers, and the pumping equipment for delivering water to various parts of the plant. The water system is complete and flexible in ar-



Drawing a Charge. Laboratory and Office at the Right, Storage Tanks in the Background

angement. The source of supply is the New river from which the water is drawn and pumped to the power house.

The pumping plant at East Radford contains two electrically-driven centrifugal pumps, each with a capacity of 1,200 gal. per min. The requirements of the condensers are about 1,200 gal. per min., leaving an ample margin to take care of other needs. Much of the water used in the con-



Some of the Cottages Furnished the Employees of the Treating Plant

built up during treatment is used for blowing the oil through the various parts of the system.

Power is furnished by a plant built as a part of this tie-treating layout although intended to serve other and outside purposes. Steam, and electric power as well, will be delivered to the engine terminal and shops at East Radford and current alone to the block signal system and to a nearby



condensers is pumped out for other purposes, the entire water system including lines to a 200,000-gal. concrete tank at the engine terminal and a 50,000-gal. tank at the treating plant. When these storage facilities are filled the excess water from the condensers is returned to the river.

The fire pumps, which are located in the basement of the power house, draw water direct from the main water line

from the river and deliver it to the yard through two 6-in. mains. Two-way hydrants are located every 300 ft. along each of these mains in covered structures or hose houses, each containing three 50-ft. reels. Additional fire protection is secured by water barrels placed at each intersection of the standard gage track and the 17 ft. roadways. A layout of fire alarms, telephones, gongs and watchmen is contemplated to round out the system of yard protection.

A modern fire-proof office building has been constructed near the retort house which contains offices for the superintendent and his staff as well as a chemical laboratory and office for the resident or plant chemist. The equipment in the laboratory includes various pieces of apparatus of the latest design and is unique in that all ovens, hot plates and other similar devices are operated electrically. In addition to this layout, a small experimental cylinder with full accompanying equipment is installed in the retort house.

A lavatory provided with separate rooms for white and colored employees adjoins the treating plant and a bunk house located at one edge of the yard provides living accommodations for the laborers. At the extreme end of the yard



The Installation of the Coal and Ash Conveyor Is Clearly Evident Here

the railroad has constructed a two-story house for the plant superintendent and a series of one-story or bungalow-type houses for his staff. All houses are electric lighted, have running water and are connected with the yard sewer system.

The plant was designed by and constructed under the direction of J. E. Crawford, chief engineer, and his assistant, W. P. Wiltse, who made the necessary studies and was in general charge of the work. The power plant and other buildings were designed by F. P. Turner, bridge engineer, O. V. Parsons, assistant engineer, being in direct charge in the field. All questions of a chemical nature were under the direction of J. H. Gibboney, chief chemist. The retort house and its equipment, together with other accessories, were designed and constructed by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. White & Wood, contractors, Roanoke, Va., did all the concrete work, track-laying and other miscellaneous work in connection with the construction of the plant, while John P. Pettyjohn & Co., contractors, Lynchburg, Va., built the power house and office building. H. C. Bell, who has also been connected with the construction of the plant, will be the superintendent in charge of operation.

SIX PASSENGER TRAINS were snow-bound in the Columbia river gorge on the night of November 21, on the lines of the Oregon-Washington Railroad & Navigation and the Spokane, Portland & Seattle roads. The storm was characterized as the worst in the history of railroad operation through the gorge.

## A Heavy Day's Work on the C. P. R.

THE HEAVY movement of grain eastbound from Winnipeg over the Canadian Pacific on one day in October (the 25th), which was noted in issue of November 12 (41 trains—1,579 cars), was about 70 per cent greater than the average daily movement in October. An officer of the road has sent us the following particulars of the movement:

"Owing to the different classes of power used, it was necessary to break and make up trains to suit the different classes of engines supplied to handle this traffic east from Kenora and Ignace, which are the two intermediate divisional points between Winnipeg and Fort William. This section is called the Kenora division; it is 419 miles, divided into three subdivisions: the Keewatin subdivision from Winnipeg to Kenora, 126 miles; Ignace subdivision from Kenora to Ignace, 146 miles, and the Kaministiquia subdivision from Ignace to Fort William, 147 miles. Trains are operated by train orders over train dispatchers' telephone circuit, and without block signals. The Kenora division is practically all double track. On a 40-mile section, viz.: between Winnipeg and Molson, although operated as double track, the lines diverge to such an extent that in order to give a return service, it is necessary to run a daily passenger train against the current of traffic. The figures given represent the number of loaded freight cars moved out of the initial terminal on the date in question.

"No mishap of any kind occurred, notwithstanding that there was a train on each 5.6 miles of line between Winnipeg and Kenora. The record is remarkable in that it was a natural one; there was no holding back to accumulate cars with which to make a record; and when the 1,579th car had left Winnipeg at 11:50 p.m. there still remained 1,419 east-bound loads to be moved.

It was not necessary to borrow any power from any other division, as when traffic conditions fluctuate, it is the practice to assign the necessary power. In this instance, the peak of the heavy grain movement eastward reached Winnipeg on October 24 and 25, and to take care of this wave, which had been increasing in volume daily, it was necessary to assign additional power to keep traffic moving currently east from Winnipeg. On this particular day there were in operation on the Kenora division, in freight service, 112 engines. In addition to the trains mentioned, the regular passenger and mixed trains were operated on time. These latter consist of four transcontinental passenger trains, two local passenger trains against the current of traffic between Winnipeg and Molson, and one mixed train on each of the three subdivisions. The westbound traffic on this day west from Fort William amounted to 174 loads and 1,125 empties, or 1,299 cars in all. A total of 169 trains were dispatched and on the road during the 24 hours under review, exclusive of passenger trains. To man our trains there were in the service at that time 327 engineers and firemen and 386 conductors and trainmen, exclusive of the passenger crews.

"The success of this movement was entirely due to the hearty and loyal co-operation of the employees."

RAILROAD ACCIDENT RECORDS (and similar data for city streets) might perhaps be relieved of some of their odium if occasionally they were compared with country-life conditions. In the State of Maine 13 deer hunters lost their lives in the woods during the season that closed on November 30. Four hunters were killed when mistaken for deer, three accidentally shot themselves, and one was accidentally killed by a companion. Two were drowned and three died from exhaustion and exposure. These accidents and incidents were accompaniments of the killing of 2,200 deer.

## Accident Investigations— July, August and September

THE Interstate Commerce Commission has issued its ninth quarterly summary of accident investigations made by the Bureau of Safety, covering the reports completed in the three months ending with September, 1921. This pamphlet, 32 pages, covers 17 accidents—seven collisions and 10 derailments—as follows:

Derailment	..... Pennsylvania	.....	Huston Run, Pa.	.....	July 13
Collision	..... Denver & Rio Grande	.....	Grizzly, Colo.	.....	July 19
Derailment	..... Delaware, Lackawanna & W.	.....	Glenburn, Pa.	.....	July 22
Derailment	..... New York, New Haven & H.	.....	Chatham, Mass.	.....	July 27
Collision	..... Central of New Jersey	.....	Chatsworth, N. J.	.....	July 27
Collision	..... Chic., Rock Island & Pacific	.....	Clear Lake Jct., Ia.	.....	July 29
Collision	.....	.....	Minneapolis & St. Louis	.....	July 30
	.....	.....	Chicago, Ill. & St. Paul	.....	.....
Derailment	..... New Orleans, Tex. & Mex.	.....	Gordon, La.	.....	Aug. 5
Derailment	..... New Orleans, Tex. & Mex.	.....	Clear Creek, La.	.....	Aug. 8
Collision	.....	.....	Toledo, St. L. & W.	.....	Aug. 13
	.....	.....	Illinois Central	.....	.....
Derailment	..... Baltimore & Ohio C. T.	.....	Blue Island, Ill.	.....	Aug. 20
Collision	..... Wash'n., Balt. & Annapolis	.....	Revelt, Md.	.....	Aug. 23
Derailment	..... Denver & Rio Grande W.	.....	Gale, Colo.	.....	Aug. 24
Derailment	..... Delaware, Lackawanna & W.	.....	Apalachin, N. Y.	.....	Sept. 3
Derailment	..... Atlanta, Birmingham & Atlantic	.....	Decatur Cross'g., Ga.	.....	Sept. 3
Derailment	..... Chicago and North Western	.....	Belle Plaine, Ia.	.....	Sept. 16
Collision	..... Pennsylvania	.....	Gould, Ohio	.....	Sept. 25

Following are abstracts of these reports:

On the Pennsylvania Railroad, near Huston Run, Pa. (Monongahela division) on July 13, a southbound freight was derailed by the emergency application of the air brakes when the train broke in two between the tender and the first car; and one car fouled the northbound track. It was run into by northbound passenger train No. 7731, and the passenger locomotive was derailed and overturned. The engineman of this train was killed and one other employee was injured. The inspector gave the cause as the pulling out of the coupler of the leading car because of the coupler key having worked out. The cotter key was missing. The conclusion says that if the cars had been inspected at Shire Oaks it is probable that if the cotter key had been missing at that time its absence would have been discovered and the accident probably prevented.

The trains in collision on the Denver & Rio Grande at Grizzly, Colo., on July 19, about 9:07 a. m., were westbound freight No. 65 and eastbound passenger No. 2. The trains met on a curve of eight degrees. They were moving at low speed, but the fireman of the freight was killed. Six other employees and two passengers were injured. The collision occurred between the switches of the passing track. The freight locomotive had been cut off from its train to be run forward and backed into the siding. It had right of track to do this as, by train-order No. 10, the passenger train would be two hours 40 minutes late; but train-order No. 15, which had not been delivered to the freight, allowed the passenger to run 20 minutes earlier; and the passenger had right of track to the east switch until 9:17 a. m. The inspector finds that the dispatcher who omitted to send a copy of order No. 15 to the freight had ample time to do so; and if this had been done the freight would have had no right to the main track west of the east switch without flag protection. The dispatcher was employed as agent and operator in 1905, promoted to dispatcher in 1907 and to chief dispatcher in 1917.

The train derailed on the Delaware, Lackawanna & Western at Glenburn, Pa., on July 22, was westbound passenger No. 3, consisting of locomotive No. 1120 and nine cars, all of steel. The train was moving at about 50 miles an hour on a descending grade when it was thrown off the track by a nut,  $\frac{3}{4}$  in. square, which had been placed on the track by some unknown person. The engineman and fireman were killed, and 79 passengers, three mail clerks and two employees were injured. The leading wheels of the engine truck were first derailed and they ran on the ties more than 2,600 ft. to a trailing switch, where the rest of the train ran off; and the locomotive was overturned. It appears that neither the engineman nor the fireman, nor any person on the train, knew

that the leading wheels were off the rails until the train had traversed the half-mile from the obstruction to the switch. Throughout the half-mile it was noted that the marks on the ties were not sufficiently severe to necessitate any repairs to the track. The wheels on the right hand side, in some cases, skipped over a tie without touching it.

On the New York, New Haven & Hartford, near Chatham, Mass., on the seven-mile branch from Harwich to Chatham, on July 27, southbound passenger train No. 5553, consisting of three cars and a locomotive, the locomotive moving backwards, was derailed on a curve of five degrees while moving at about 25 miles an hour; and the engine was overturned. The engineman and fireman were killed. The engine was being run backwards because of some difficulty in using the turn table; but it had been run backwards many times and there was no evidence that the derailment was due to any fault in the tender or the track. The report gave the cause of the accident as not definitely ascertained.

The trains in collision on the Central of New Jersey near Chatsworth, N. J., on July 27, were eastbound passenger No. 324 and westbound freight extra No. 182, the latter consisting of 10 cars and a caboose drawn by engine 182. The freight, running at high speed, passed the train order signal at Chatsworth, set against it, and collided with the passenger train 200 ft. west of the station. The passenger train had stopped, the engineman having seen the freight; but there had not been time to move it backward. The passenger train was driven backward about 65 ft. by the impact. The engine remained upright, although all its wheels were off the rails. The freight engine was overturned. Eleven passengers and seven employees were injured.

The trains had had orders to meet at a station west of Chatsworth, but this order was superseded by another, to meet at Chatsworth. This second order had not been delivered to the freight, but was placed at Chatsworth for it. The signal was properly displayed, and the train approached on a straight line of about three miles, in clear weather; but the signal was disregarded. The station agent saw that the freight was coming too fast and he gave a stop signal by hand (on the fireman's side) but no attention was paid to this signal. Engineman Wilson of the freight said that approaching Chatsworth Brakeman Lundell said the train order signal was clear, and Wilson said it was difficult to see, but this excuse appears to have had no foundation. The fireman of the freight was making his first trip over this division, and had not seen the signal at all.

The report attributes the collision to the failure of Engineman Wilson to observe the signal. Wilson admitted approaching the station at 40 miles an hour, or faster, although knowing that he was approaching a train order signal. The brakeman is censured for misinforming the engineman, but it is observed that his action was not responsible for the engineman's failure to keep his speed under control.

The trains in collision on the Chicago, Rock Island & Pacific near Clear Lake Junction, Iowa, on July 29, were eastbound second-class freight No. 912 and westbound third-class freight No. 83. The trains met within yard limits at about 12 to 20 miles an hour and the engineman, fireman and one brakeman of train No. 83 were killed. The inspector finds that the conductor and the engineman of train No. 83 had departed from Clear Lake Junction without examining the train register; and they were encroaching on the right of an opposing superior train. It appears that an engine without train, No. 1523, had been run ahead of No. 912 as an extra, as far as Clear Lake Junction; and then from Clear Lake Junction eastward it was run as No. 912. Thus, the men of train 83 had met No. 912, but after passing Clear Lake Junction had to meet another train of the same number.

The inspector also finds that if any one of the men on the engine of No. 83 had been maintaining a proper lookout, on

the inside of the curve; the approach of No. 912 would have been observed in time to admit of stopping the westbound train. The eastbound engineman was deceived, for a short time, by assuming that the westbound train was on the track of the Chicago Great Western, which lies alongside the Rock Island track. Other irregularities contributed to the collision; and one flagman had made only two trips over this part of the road.

The trains in collision at Perry, Iowa, on July 30, about 6:10 a. m., were eastbound passenger No. 4 of the Minneapolis & St. Louis, and westbound freight extra 8653 of the Chicago, Milwaukee & St. Paul, the passenger running into the side of the freight at the crossing of the two roads. The 22nd, 23rd and 24th cars of the freight were knocked off the track and damaged, and the passenger locomotive fell down a bank. An employee, off duty, was killed by being struck by one of the freight cars. There is no interlocking at the crossing and trains are required to stop at a stop board. The passenger train approached on a straight line, but the engineman, although he had reduced his speed at a point one mile back of the crossing, did not keep a good lookout, and reached the crossing sooner than he expected to. He said that he struck the freight at about 10 miles an hour, but the inspector thinks he was running faster. The engineman was acquainted with the road and there were landmarks, including a bridge about one-fourth mile from the crossing, which should have enabled him to determine his location with sufficient accuracy.

The inspector finds that about 30 trains a day pass over this crossing on the St. Paul road and 14 trains a day on the M. & St. L.; and therefore recommends the installation of interlocking signals.

The train derailed on the New Orleans, Texas & Mexico near Gordon, La., on August 5, was a westbound freight, extra 113—locomotive and 46 cars. Moving at about 40 miles an hour, or faster, where the regulations required a much lower speed, the four rear cars and the caboose were derailed, and the conductor and one brakeman were killed. The inspector believes the derailment was due to excessive speed on uneven track, combined with excessive side-bearing clearance on the forward end of a tank car. Inspection of this car, the first to run off, showed that this clearance on one end of this car was  $\frac{7}{8}$  in., while it should not have been over  $\frac{3}{8}$  in. This was a car of 100,000 lb. capacity.

The train derailed on the New Orleans, Texas & Mexico, near Clear Creek, La., on August 8, was eastbound freight extra No. 88, consisting of a locomotive and 42 cars. Two trespassers were killed and one employee and four trespassers were injured. The inspector finds the cause of the collision to have been excessive speed on irregular track, together with excessive side bearing clearance on the front truck of a tank car. The wreckage of 17 cars was piled up in a distance of 300 ft. and the leading portion of the train ran about 1,000 ft. after derailment, indicating that the speed had been high. The rule limits the speed at this point to 25 miles an hour.

Trains in collision at Lerna, Ill., on August 13, were eastbound freight No. 46, second section, of the Toledo, St. Louis & Western, and northbound passenger No. 222 of the Illinois Central, the freight running into the side of the passenger at the crossing of the two roads; the crossing is at right angles. Both trains were moving very slowly. This collision occurred at about 9:50 p. m., and the passenger train had made a stop for the crossing, there being no interlocking signals. A conductor, off duty, was killed, and four passengers and two mail clerks were injured. The engineman of the freight had not attempted to stop, although he had been a runner since 1913. The inspector found that of the air brakes on the freight train only 77 per cent were operative.

The train derailed on the Baltimore & Ohio Chicago Terminal near Blue Island, Ill., on August 20, was a southbound extra freight. The locomotive was overturned and the

engineman was killed. Moving at 20 miles an hour, or faster, the tender rocked, on uneven track, so as to jump the track and cause the derailment. The engine was running tender first.

The trains in collision on the Baltimore & Annapolis Electric Railroad at Revell, Md., on August 23, were northbound passenger No. 332 and a southbound work train, the latter consisting of a motor car with one platform car, the motor pushing the flat. The conductor and the motorman of the work train were killed. These men had encroached on the time of the passenger train several minutes. How they came to do so is not known, but the brakeman, who was riding on the rear of the motor, thought that they were depending on the rights of a following superior train, No. 329. They thought that 332 would have to wait at Revell for 329; but an order had been issued fixing the meeting point at a station north of Revell.

The train derailed on the Denver & Rio Grande Western at Gale, Colo., on August 24, about 3:20 a. m., was westbound passenger No. 1, first section, consisting of a locomotive and 11 cars, all of steel construction. Moving at about 20 miles an hour, the train broke through a trestle bridge, the foundations of which were weakened by a sudden flood. One passenger and Engineman Armstrong were killed and 63 passengers and six employees were injured. The foundations of the bridge, 16 ft. apart, were 20 ft. long and 3 ft. wide with a depth of 5 ft. These were surmounted by bents of yellow pine, 12 in. x 12 in., properly braced and tied. The water course usually is dry, but on the night of the derailment there had been a heavy storm several miles upstream, and water had been flowing under the bridge to a depth of from 6 feet to 9 feet. This train had orders calling attention to 13 places where speed was to be reduced; but none of them applied at this particular point, no danger having been apprehended.

The train derailed on the Delaware, Lackawanna & Western near Apalachin, N. Y., on September 3, was westbound passenger No. 3, second section, consisting of a locomotive and nine cars, seven of the cars being all-steel. Moving at about 45 miles an hour, or faster, the train was derailed at or near the end of a curve of less than four degrees; and the locomotive and first car were overturned. One passenger was killed and 69 passengers and eight employees were injured. The inspector finds that the track, which was being raised and ballasted, was not strong enough to carry a train of this weight at this speed. "The indications are that the ballast did not hold, and that the track slid underneath the train." The trackmen had stopped work at this particular point and there was a heavy shower shortly before the derailment which may have tended to loosen some of the ties.

The derailment on the Atlanta, Birmingham & Atlantic at Cascade Crossing, Ga., on September 7, was caused by an explosion, the explosive having been placed under the track maliciously. The report on this case was noticed in the *Railway Age* of October 3, page 665.

The train derailed on the Chicago & North Western near Belle Plaine, Iowa, on September 16, about 3 a. m., was westbound passenger No. 7, consisting of a locomotive and eight cars. Moving at about 35 miles an hour, the train was derailed at a washout and the locomotive was overturned. The engineman and fireman were killed and one passenger, three employees and three trespassers were injured, one of the trespassers fatally. The report of the inspector says that the washout was due to an unusually heavy rainfall and that it was at a point where no previous difficulty had been experienced.

The collision on the Pennsylvania Railroad at Gould, Ohio, September 25, was caused by a false clear semi-automatic block signal, which was out of order by reason of grounds on controlling electric wires. This case was reported in the *Railway Age* of November 26, page 1052.

# Meeting of Railroad Division of A. S. M. E.

## Papers on Elimination of Waste in Design of Motive Power and in Operation of Locomotives and Cars

**T**HE ELIMINATION of waste in industry was the general topic discussed at the annual meeting of the American Society of Mechanical Engineers held in New York this week. In conformity with the central theme, the Railroad Division of the society, at its meeting on December 6, presented three papers on avoidable waste in locomotives and cars. The first of these papers, by James Partington, on

Avoidable Waste in Locomotives as Affected by Design, was published in the *Railway Age* of November 5, page 899. The first part of the paper by William Elmer on Avoidable Waste in the Operation of Locomotives and Cars was abstracted in the issue of December 3, page 1081. The concluding section of Mr. Elmer's paper and the paper by W. C. Sanders appear below.

### Avoidable Waste in Car Operation—The Container Car

By Walter C. Sanders

The container car was an outcome of the railroad congestion during the war and was first put in operation last year by A. H. Smith, president of the New York Central Lines, to reduce the transportation losses due to congestion which tied up industry. It is hoped that mail, express and freight robberies, breakage, checking and rehandling, delays to ship-

pers and station overseers, as well as switchmen to shunt cars to fixed locations where loading and unloading are possible.

The container system provides that the portable container shall be loaded and locked at the shipper's own store door, conveyed by motor truck to the railroad yard, and lifted by crane aboard the container car, where steel bulkheads and sides form absolute protection against opening the container in transit. At the destination the locked container is unloaded by a crane and carried by motor truck directly to the warehouse or consignee's door, to be unloaded at his convenience. This simple system of handling goods will make it possible to greatly reduce the force of employees now necessary.

Another advantage of the container-car system expected



A Carload of Mail Containers Ready for Delivery to the Post Office

pers, and many other railroad evils may also be materially reduced by the container-car system.

Loss of and damage to freight has grown in recent years into one of the heaviest leaks in the transportation industry and strenuous campaigns which included maintenance of extensive police and supervisory forces, together with educational campaigns among shippers and railroad employees to secure stronger packing, careful handling and suppression of theft, have failed to stop this economic waste.

The proportions of this transportation problem may be judged from the fact that in the year 1914 American railroads paid out \$33,000,000 in claims for loss of and damage to freight, and for the year 1920 this mounted to a total of \$125,000,000, the incidental injury to business affected being considerably greater. Under the ordinary system of handling less-than-carload lots or shipments the goods are checked and handled item by item from shipper to truck or dray, from truck to depot platform or warehouse, and from the platform to the car. They are subject to handling and checking at each stage of the journey, and when finally they reach their destination this handling and checking is all done over again. It is therefore necessary to maintain armies of employees to act as freight handlers, clerks, check-



Freight Type Container Loaded on a Motor Truck. The Larger Containers Which Originally Formed Part of the Equipment Are No Longer Used, the Size Shown Being Standard

to prove most valuable is the greatly increased use of container rolling stock in moving service, which is particularly important when traffic expands to its peak and when the prime need is to shorten layovers of cars in yards and stations for loading and unloading, and to limit their idleness and obstruction through misuse for storage purposes. In busy times the need is to keep every wheel turning as continuously as possible to secure maximum transportation. With ample supplies of the removable containers, which in

their several classes are of uniform size and interchangeable, one carload of containers may be removed and sent with their loads to consignees, and another set immediately hoisted into place and the car be ready to proceed within a matter of minutes in most instances. The locked containers may remain on station platforms or at the stores of shippers for loading or unloading at convenience without tying up costly rolling stock at points where track capacity is limited and congestion quickly obstructs the flow of traffic unless the cars are kept moving. With this rapid handling of the containers on and off the car the mileage per year made by the ordinary piece of rolling stock may be doubled, and it is predicted that the tremendous expense of maintaining box cars and other rolling stock equal to all emergencies will be materially cut down.

The container car may make costly packing and crating unnecessary because goods packed in flimsy pastboard boxes or even bound with heavy paper are protected against breakage, theft, and water or weather damage.

There are at present in service on the New York Central Lines three container cars, one of the mail or express type, and two that are being used for valuable freight, such as silks and woolsens. Three new mail cars of improved design which are now being constructed will be equipped with an improved type of all-steel container. A new freight-type container car is being designed, and refrigerator and tank container cars are contemplated.

#### General Description of the Container Car

The container car is nothing more than a long car with a steel side or fence, similar to a low-side gondola, loaded with large steel safes or containers, made as light as possible, in which commodities of all kinds travel from consignee to consignee, inviolate against thieves, fire, weather and breakage. The safes or containers are lifted on and off the car by cranes or hoisting devices, permitting the "parent" rolling stock to continue in immediate transportation circulation.

[Mr. Sanders' paper included a detailed description of the express container cars as illustrated and described in the *Railway Age* for February 4, 1921, page 315, and the freight container cars described and illustrated in the issue of April 8, page 905.—Editor.]

#### Containers and Container Cars

##### Now Under Construction

The three new mail-type container cars now being built will carry eight containers of a new, improved design, the outside measurements being, length 7 ft. 2½ in., width 9 ft. 3½ in., clear height 8 ft. 2 in., with 5 ft. 9 in. by 3 ft. 6 in. door on the length side of the container. The cubic capacity will be 438 cu. ft., light weight 3,000 lb. and capacity 7,000 lb.

Tests conducted in the last few months on the New York Central Lines have demonstrated that the express type of container car can be emptied of the nine containers by an ordinary crane in 21 min. and reloaded with other containers and the car put back in circulation in about the same time. This test was made with an ordinary moving track crane, since no special cranes or handling devices have as yet been constructed for use in handling the containers. With the special handling devices contemplated it will be possible to unload the containers with greater speed directly to waiting motor trucks, platforms, or on the ground.

During May, 1921, at the request of the Postmaster General, a mail test was run from New York City to Chicago, Ill., and return with the express type of container car. Upon arrival at Chicago the nine containers, containing 37,000 lb. of mail, were unloaded onto waiting Post Office motor trucks in 21 min., which is one-fifth of the time used in unloading an ordinary mail storage car. At Chicago connections were

made with western mail trains that have never been made before. Upon the arrival of the car at New York on the return trip the containers were removed from the car in 18 min.

It is believed that the use of containers in mail service (1) will prevent the loss in transit of valuable registered mail, parcels post and other mail; (2) will mean a saving to the government in handling mail, both in trucking and checking as well as a material saving to the railroads in the use of equipment; (3) will make possible a quick transfer at important gateway points and the maintaining of close railway connections otherwise impossible; and (4) will afford an increased weight and capacity as compared with the average load now handled in mail storage or baggage cars, the average weight of mail now carried in mail storage cars being approximately 30,000 lb.; 37,000 lb. of mail were carried on the run to Chicago.

#### Summary

A summary of prime advantages of the container car system is as follows:

- (a) It will furnish a means of expediting delivery of less-than-carload lots of commodities by eliminating the time and expense of rehandling, checking and trucking.
- (b) It will eliminate costly crating and packing.
- (c) The immediate unloading and loading of containers at terminal points eliminates the item of demurrage, at the same time promptly releasing rolling stock, clearing the yards of cars and reducing congestion.
- (d) It will eliminate the piecemeal loading of cars at railway sidings in exposure to all kinds of weather.
- (e) It will tend to keep the car moving at all times, making possible double the mileage as made now by an ordinary piece of rolling stock.
- (f) Containers are fire- and weather-proof, and also burglar-proof in that they cannot be opened while on the car or while being transferred by handling device to and from the car.

The increased service capacity of each unit by the development of the container-car system is thought to hold far-reaching economic possibilities in railroad operations of the future, as well as in the co-ordinated use of the motor truck and the electric railway.

#### Discussion

R. H. Newcomb (Boston & Maine), told of experiments with container cars manufactured by the River and Rail Transportation Company on the Boston and Maine. This design differs from the container car described by Mr. Sanders in that the containers can be transferred from the car to motor trucks without the use of cranes or other lifting devices. The container method of transportation seems particularly well adapted for use on the railroads in New England and it was thought that by this system less than carload freight could be handled with one-third the number of cars now used. Replying to questions, Mr. Newcomb stated that no trouble was encountered due to containers freezing to the car underframe in winter and no difficulty was experienced in meeting the requirements of the Safety Appliance Act.

A. E. Ostrander (American Car & Foundry Company), brought out the fact that high-grade commodities, such as furniture, were frequently shipped in the bodies of vans which were removed from the running gear and loaded onto freight cars. The container car affords a much better method of handling such traffic which should be advantageous to the railroads and also to the shippers. The container method of transportation should open up to the railroads a profitable traffic field in the handling of raw and finished silks which are now shipped principally by auto truck.

Representatives of the railway mail service emphasized the

value of the container car in expediting the delivery of mail and in handling parcel post matter.

F. S. Gallagher (New York Central) stated that the appli-

cation of the container system to the transportation of milk was now being considered. By using suitable insulation around the tanks, no icing in transit would be required.

## Avoidable Waste in the Operation of Cars\*

By William Elmer

The avoidable waste in the operation of cars may be considered under three heads: *a*, The utilization of cars in the hands of agents, shippers and consignees; *b*, The handling and dispatching of cars in yards and on the road; *c*, The inspection and repair of cars by the maintenance of equipment department.

### Utilization of Cars in the Hands of

#### Agents, Shippers and Consignees

So far as the railroads are concerned, one great means of improving utilization that suggests itself is the increased use of cars in the hands of agents and shippers, which necessarily involves the promptness with which they are loaded and unloaded and the extent to which they are loaded, i. e., that the maximum loading be secured for the car in the minimum time, etc.

Maximum car loading is a matter of dire necessity during periods of car shortage. It is also very essential to the economic conduct of transportation. During recent months the necessity for conserving cars has been decreased by the small volume of tonnage handled by the railroads. With the slump in traffic there is a tendency on the part of the shippers and railroad men alike to let down in their effort to secure maximum loading. This "line of least resistance" method is resulting in considerable less than capacity loading.

It is a fact, not generally recognized, that car loading affects the cost of railroad operation very seriously, not only because the paying load may be a small percentage of the gross train load, but also because lightly loaded cars require more tractive effort per ton than heavily loaded cars, e. g., the average weight of a car is from 15 to 20 tons while the average weight of all commodities is averaging approximately 27 tons. The load of the car itself must be hauled with every movement of the contents and requires as much tractive effort on the part of the locomotive per ton to move this weight as it does for the contents, therefore the importance of keeping the percentage of lading to total weight as high as possible is self-evident. This question has assumed a very different aspect to the shipper since the passage of the Transportation Act, which stipulates that the rates must be sufficient to earn a fixed return on the value of the properties. Any waste due to the light loading of cars adds to the operating cost and thereby to the rates necessary to earn the specified return. The shipper therefore has a new interest in effecting economics of transportation and can contribute to that end most effectively by co-operating in the heavier loading of cars.

General practice permits the loading of cars 10 per cent in excess of the marked capacity. There are great possibilities in the utilization of this margin for with many classes of loading great advantage may be taken of it to gain one car in every ten and to increase the average carload correspondingly.

There are many commodities moving which will permit of making trade units to correspond to the capacity of the car; this has been done with cement, and other like commodities. If this were done with flour and all similar commodities great assistance might be rendered to the railroads.

The agent through close association with shippers is in the best position to encourage maximum loading. It is often decidedly hard to convince shippers that they are not loading their cars to cubical capacity. This is particularly true of the coal operators. The best means of producing convincing evidence of the empty space in the car is to show the shipper a photograph of the car which will speak for itself, and we have found a kodak to be a most helpful instrument in increasing the tons per car. The cars may be intercepted and photographed at scales or in classification yards.

The prompt release of cars under load is a large factor in the efficiency of the car. Most shippers and consignees are reasonable in this respect and will give us their best efforts if the matter is handled with them in a diplomatic way. After urging the shippers and consignees, the railroad then has a very important part to play by the prompt movement of cars, whether loaded or empty; it being purely psychological that, after urging the shipper or consignee, failing on our own part would necessarily breed antagonism.

### The Handling and Dispatchment of

#### Cars in Yards and on the Road

After cars have been loaded and waybills furnished by the agent to transport freight from point of origin to destination, it becomes the duty of the trainmaster to arrange for movement and delivery with the least possible delay consistent with economical operation. This necessarily involves good organization and effective supervision to accomplish proper movement through yards and over the road. Trains arriving in the receiving yard are subjected to inspection and minor repairs to insure safe movement over the road between terminals, sending to the repair yard any bad-order cars that must be "shopped" for this purpose. After inspection and repairs have been completed, the train is prepared for switching from receiving yard to classification yard, which process requires car markers to chalk-mark cars for their respective classification tracks, according to destination and routing, also furnishing corresponding switching lists for the conductor in charge of switching crew, and switchmen who operate switches leading into the classification yard. Yard locomotives and a force of trainmen are required to switch trains into the classification yard at proper speed for accurate weighing at points where cars pass over a track scale; also requiring brakemen to ride cars into the classification yard and control them by use of hand brakes to bring them to a stop at the proper point and to avoid damage by impact with preceding cars standing on the track.

The train from the receiving yard has now been distributed on various tracks in the classification yard, usually from ten to thirty tracks, depending on the size and importance of the yard operation. The original train having thus lost its identity, following trains, classified in like manner to the same tracks, are required to assemble cars that will comprise new trains to be dispatched when the required tonnage is accumulated. A variety of conditions arise at this stage of the operation that seriously influence the time consumed by cars en route to their destination, which may necessarily be repeated from one to many times between the originating point and destination of cars, depending on the distance and the territory over which they are moving. The time required to assemble sufficient tonnage for a train in

\*An abstract of the section of Mr. Elmer's paper dealing with locomotives was published in the issue of December 3, page 1081.

the classification yard is very largely dependent on the steady or intermittent arrival of trains in the receiving yard; also on the hauling capacity of road locomotives used on trains dispatched in the same direction, which may be 35 or 50 cars from one yard and 100 to 115 cars from another yard for the same class of locomotive, depending on the ruling grade of the division over which trains are being hauled.

In this connection another primary cause of delay in assembling trains in the classification yard is to be found in the usual number of classifications imposed upon certain yards for the convenience of connecting divisions to meet their requirements for various reasons, but primarily due to inadequate track and switching facilities. So-called "prior classifications" are also a source of yard delay at the point where they are assembled, but the time thus consumed is presumably offset by saving in time at the next yard or terminal point where such trains are kept intact and delivered to the division in advance thereof without reclassifying, which means an actual saving in the aggregate time consumed from shipping point to destination, also in operating expenses. Therefore a considerable portion of yard delay is beyond control, owing to prevailing conditions that cannot be eliminated. However, there is ample opportunity for minimizing yard and road delays to train movement by employing the best operating methods, maintaining sound organization and efficient supervision.

Time consumed assembling tonnage for heavy trains to be hauled by large types of locomotives over comparatively level grades may be viewed by some as a contributory cause of "avoidable waste in cars," but it should be recognized that doing so reduces the number of engine and train crews and locomotives required to haul a large volume of freight, which means economical operation.

#### The Inspection and Repair of Cars by the Maintenance of Equipment Department

When trains are hauled over the road, certain defects develop and by the time they reach the terminal of a run, a certain portion of the cars, say 3 to 5 per cent, must go to the shop for repairs.

In order to keep a check on cars undergoing repairs, a report is prepared and sent to the different operating officials. The report indicates the time the car is shopped, the time it is moved to the shop, the time repairs are completed and the time car is moved out of shop. By checking over this report each morning the master mechanic, superintendent or general officers can determine in a few seconds if there are any cars that are being held an unreasonable length of time.

It is the aim of the operating officials to not only see that all cars are repaired, but to have the cars repaired promptly and returned to service in the most expeditious manner.

#### Conclusions

The great secret of the entire operation, therefore, is co-operation and teamwork, and these can be checked by suitable reports.

The statistics which reach the superintendent's desk giving hourly, daily, weekly and monthly information are many and varied, and originate from numerous sources, but the reports scanned by the author with most interest each day are those which tell where each of the heavy road freight and passenger engines were the day before and what they were doing. There is a maxim, "Take care of the shillings and the pounds will take care of themselves." It seems to apply particularly to the railroads. Take care of the engines and the dividends will take care of themselves. Of course this could not be literally true, but there is so much involved in this "taking care of the engines," embracing as it does the time and inferentially the money spent in locomotive repairs, the quality of back-shop and enginehouse work performed,

the proper tonnage rating, and suitable loading of engines in order to obtain the most economical road speed, the reduction of delays getting into and out of yards, the inspection and repair of car equipment, the efficiency of water stations, coal, sand and ash-handling plants, the organization and operation of wreck forces, the handling of local freight and work trains, in fact, almost each and every one of the thousand and one matters that go to make up a successful operation of a division.

If any one of the features named above is not functioning properly, as well as others too numerous to mention, the effect will be seen in the slowing down of the road speed or a lowering of the average mileage per serviceable locomotive or a falling off in the loading efficiency. All these must be at their highest possible levels of practical performance, and when they are, a glance of the eye at the daily barometer ought to tell it, and when they are not, a few minutes' inspection of the data ought to tell why and point the remedy. The supervisors must have tracks fit for speed and service; the signal engineer must have communicating systems and signal apparatus in good working order; the road foremen must have engines properly rated and sufficient crews and supervision; the train master must have his yard and road forces properly instructed and disciplined; the division operator must have his train dispatchers and signalmen alert and intelligent; and the master mechanic must produce the power in ample quantity and fit for service.

If the division superintendent can be assured that everything is being done that can be done to have every available engine in service that can be put in service, and every engine dispatched is being loaded to the maximum number of cars it can economically haul, then he is assured of an economical performance and an avoidance of waste in the operation of locomotives and cars.

#### Discussion

In presenting his paper, Mr. Elmer amplified some of the more important sections and presented a series of charts which he used to keep a record of the performance of individual locomotives and of the motive power on the division taken as a whole. He referred to the omission of figures regarding the cost of fuel from the tabulation of expenses from which the most economical train loading was determined and explained that this was done because of the difficulty of determining accurately the variation in the unit costs of fuel with the relatively small change in the tonnage which was included in the table.

W. L. Bean (New York, New Haven & Hartford) commended Mr. Elmer's paper as a splendid exposition of the methods to be used for overcoming poor utilization of equipment. Referring to the subject of fuel consumption he stated that the condition of engines has a great effect on the amount of coal burned. Locomotives may perform satisfactorily to the operating officers to the extent of keeping off the delay sheet and yet burn 25 per cent more coal than necessary. It has been demonstrated that a great improvement could often be made by properly adjusting the valve motion.

Mr. Bean called attention to the variations in operating results brought about by changes in the amount of traffic. During periods of light traffic the time over the road decreases and fuel consumption also goes down. He expressed the opinion that more harm is done by overloading locomotives than by underloading them.

In discussing equated tonnage rating Mr. Bean stated that on some roads a constant adjustment factor is used on all divisions irrespective of local conditions. The adjustment factor applies only to the frictional resistance and therefore should vary with the grade, being high on level divisions and low on divisions with steep grades. The same applies also to the temperature adjustment factor used for regulating tonnage rating in cold weather.

## Discussion of Paper by James Partington

The discussion of the paper on Avoidable Waste in Locomotives as Affected by Their Design, by James Partington, which was published in the *Railway Age* of November 5, 1921, page 899, brought out some striking suggestions for modifications in the design and types of motive power as the following extracts from the discussion will show:

Among the newly developed locomotive attachments that make for increased efficiency and economy the thermic syphon may be mentioned, by reason of its already ascertained influence over the avoidable waste in locomotive design and operation. On all tests made thus far the thermic syphon has never failed to reduce the amount of fuel consumed per drawbar horsepower. In some cases the installation of these syphons has resulted in a 25 per cent fuel saving. An average saving of 15 to 19 per cent, according to class, is now well established.

The second efficiency requirement proposed by Mr. Partington is that a drawbar horsepower be produced for the minimum amount of weight of locomotive and tender.

Locomotive 50000 was built back in 1910; and Mr. Partington therefore refers to a number of newly developed attachments which make for increased efficiency and economy. Along with these the thermic syphon, also of fairly recent development, should be considered. Indeed, consideration of thermic syphons, as if applied to locomotive 50000, will at once demonstrate the fundamental character of the improvement which the thermic syphon has accomplished in locomotive design. I will assume that the boiler horsepower of this locomotive is 2250 as stated in the paper. I have also assumed that all of Mr. Partington's figures relating to boiler horsepower are based upon the formulas devised by F. J. Cole of the American Locomotive Company and have used this method in estimating the capacity increasing ability of the thermic syphon; although, over and beyond the increase brought about by the addition of radiant heat absorbing surface in the firebox, consideration must be given the very rapid circulation which the syphons impart to all the water in the boiler, and the effect which this circulation has in further increasing the capacity of the boiler.

The thermic syphon is an inverted triangular water leg that is positioned vertically above the fire in the firebox, and which by thermal action draws water from the throat and barrel of the boiler, and discharges it through and above the crown sheet of the firebox. Thereby the firebox heating surface is much increased and a vigorous fore-and-aft circulation of boiler water is set up. Both factors contribute to a marked increase of capacity, as well as economy. Incidentally the syphons support the brick arch.

If two syphons were applied to locomotive 50000 they would add approximately 62 sq. ft. to the radiant heat absorbing surface of the firebox. The effect of this installation would be to add 164 boiler horsepower to the capacity of the locomotive, although I again desire to emphasize the point that this is, at best, a theoretical approximation which in actual practice is far exceeded due to the improved circulation effected throughout the entire boiler.

Allowing for the net additional weight of the syphons, the result of such installation in locomotive 50000 would be to reduce the weight of this locomotive to 113 lb. per boiler horsepower as compared with 119.6 pounds without syphons.

Further in the case of locomotive 50000, the application of thermic syphons as described would increase the boiler horsepower to 100 per cent of the cylinder horsepower. This increase in boiler capacity is alone sufficient to insure a substantial improvement in fuel economy, but assuming that a 92 per cent boiler, as originally provided is ample, what further contribution can the syphons make toward eliminating the avoidable weight in the design of this locomotive?

The original weight of this locomotive was 269,000 lb. If 2,350 boiler horsepower is sufficient and the application of syphons enables us to reduce the locomotive weight to 113 lb. per boiler horsepower, then it should be possible to build a syphon equipped locomotive of this capacity weighing approximately 254,000 lb., which is 15,000 lb. less, or to increase the cylinder horsepower of locomotive 50000 from 2,427 to approximately 2,600 horsepower by means of thermic syphons, without increasing the weight per axle.

Let us see what thermic syphons have actually contributed toward the elimination of avoidable waste in recent locomotive construction. For an example, consider the Mountain type locomotives which were constructed by the American Locomotive Company for the Chicago, Rock Island and Pacific last year. These locomotives are each equipped with three syphons and have a calculated boiler horsepower of 2,855. Without syphons the capacity of these boilers would be reduced to 2,550 horsepower. As these locomotives weigh 369,000 lb., their weight with syphons is 129.3 lb. per boiler horsepower, while without syphons, their weight would be increased to 144.7 lb. per boiler horsepower. The cylinder horsepower of these locomotives is 2,824 and to have provided a 100 per cent boiler without syphons on the basis of 144.7 lb. per boiler horsepower, would have increased the total weight of the locomotive to approximately 408,000 lb.

From a statement issued by the Interstate Commerce Commission, it is noted that the cost of these locomotives was approximately \$70,000, or at the rate of 19 cents per pound. At this rate it is apparent that if the railroad had purchased a Mountain type locomotive having a 100 per cent boiler without syphons, the first cost due to increased weight would not only have been \$7,410 greater, but the design of this locomotive would have included 39,000 lb. of added weight. Clearly, this is an instance of a most practical avoidance of waste in locomotive design. Moreover, it is obvious that by employing syphons in these locomotives, the railroads also eliminated avoidable waste in first cost, besides securing a more efficient locomotive that will continue to eliminate waste of fuel and upkeep every day that it is operated. The only conclusion that can be drawn from the foregoing is that locomotives built or operated without syphons must now be taken as representing avoidable wastes, from the standpoints of both fuel economy and unnecessary weight. An examination of the actual facts will convince anyone that syphon maintenance is a negligible factor; and further, that the syphon affords a potential safeguard against disastrous boiler explosions. Already 26 railroads have ordered and purchased thermic syphons. There are now more than 300 thermic syphons in actual use and it is a notable fact that to date, syphons have never caused an engine failure.

C. C. Trump (Stumpf Una-Flow Engine Co.): Perhaps many have wondered why the una-flow engine has not been as much used in locomotive as in stationary work where there are now nearly a million horsepower in service here and abroad. The difficulty has been to find room on the present locomotive for cylinders of a proper size on account of tunnel and bridge clearances. From the latest information from Prof. Stumpf, it appears that he has overcome this and other difficulties.

By using the energy in the exhaust steam with an ejector action, he is able to lower the back pressure in the una-flow cylinder by as much as 4 or 5 lb. per sq. inch, especially at heavier loads. He is thereby able to reduce both the length and diameter of his una-flow cylinder for a given draw-bar pull. This also applies to booster engines. He also obtains a better and steadier draft on his fire with less losses. He requires a smaller boiler, but a larger super-

heater because of the reduced temperature of the flue gases.

With a three or four cylinder locomotive he expects still better vacuum and better drawbar horsepower for weight of locomotive and amount of fuel. Tests are now being conducted on locomotives of this type abroad.

With respect to higher pressure steam, it seems to me that the una-flow engine offers promise of remarkable economies. It is probably no use to go above 400 lb. gage with a simple engine. But data we have from Europe recently indicates that 700 to 800 lb. pressure with a compound una-flow engine and well designed condenser, economizer, etc., might well compete in fuel economy and even in simplicity with a Diesel locomotive engine. It would have great advantages over the Diesel in starting torque and traction and in being able to burn any kind of fuel in solid, liquid or powdered form.

W. F. Kiesel, Jr. (Pennsylvania System): The paper is of particular interest, due to its presentation of locomotives designed on basic values adopted by different designers, but compared on American Locomotive Company's formulae. Such formulae, being empirical, must be changed from time to time to keep pace with new theories introduced in locomotive design. Even then, they are useful only as a preliminary approximation of desired values.

Mr. Partington refers to 100 per cent maximum steam requirements of the cylinders. On referring to American Locomotive Company's Bulletin 1017, this, for superheater locomotives, is found to be based on a horsepower  $H. P. = .0229PA$ , in which  $P$  = boiler pressure and  $A$  = cylinder area. That formula is reasonably satisfactory, for locomotives having equal cut-off in full gear, but falls short of forming a basis on which to compare a locomotive with 90 per cent cut-off with one having 50 per cent maximum cut-off.

The test of the Decapod locomotive, Class 11S, showed that in full gear, at low speed, the steam per indicated horsepower was 38 per cent less than the steam rate for a locomotive with 90 per cent cut-off. Under average service conditions the saving in steam is at least 15 per cent.

If the empirical formulae are changed to meet cut-off effect, such as obtains in the Pennsylvania System 11S locomotive, some of the values in the second table would be affected. With a saving of steam of 15 per cent, the steam rate, calculated, pound-per-horsepower-hours, which is given as 20.8 would be 17.68 which compares favorably with test results. The best actual test for steam rate per indicated horsepower was 14.9 pounds.

The empirical formulae also fall short for comparison due to relative freedom of draft, especially in the smoke-box which seriously affects size of nozzle and cylinder back pressure. Furthermore, the beneficial effect of large combustion chamber volume has not been clearly demonstrated. The freedom of the draft and large combustion chamber volume greatly affect the maximum boiler horsepower.

The locomotives listed in the first and second columns of table 1 are, respectively, the American Locomotive Company No. 50000, and the Pennsylvania System Class K4S. The test results for these locomotives are as follows:

	No. 50000	K4S
Low rate, one test, coal lb. per I. H. P. ....	2.12	1.52
Low rate, one test, steam lb. per I. H. P. ....	16.5	14.96
Maximum I. H. P. ....	2,216	3,184
Weight of locomotive per maximum I. H. P. ....	121.4	97

This shows that the K4S is actually far ahead of No. 50000 on every count, instead of being inferior as the comparison based on the antiquated empirical formulae would indicate.

Although these figures show the fallacy of empirical formulae in serving as a basis for comparative tabulation, they do not detract from the substance of the matter presented by Mr. Partington, which shows the method of procedure and the strides made in design and construction

during the past few years to make the locomotive a truly economical power plant.

C. J. Mellin (American Locomotive Company) commenting on the discussion by W. F. Kiesel, Jr., pointed out that the formulae used by Mr. Partington are intended for purposes of design and therefore all values have been taken on a very conservative basis. Furthermore, a careful study of locomotive proportions has resulted in an improved design since the formulae were originated and therefore in practice better results are always obtained than are indicated by the formula.

F. H. C. Coppus (Coppus Engineering and Equipment Company): In my opinion the steam locomotive can be developed to such a high degree of efficiency that its drawbar horsepower would be so cheap and its capacity increased to such an extent that the electrification of railroads for the sake of economy would be out of the question, at least on a large scale, for some time to come.

The logical order of locomotive development as far as combustion is concerned should be the following: 1. Mechanically induced draft in the front end. 2. Condensing the exhaust steam and carrying the condensate to the tender. 3. Pumping the hot water from the tender through a waste steam and waste gas heater into the boiler. 4. Under-grate forced draft in the ash pan.

Mechanically induced draft in the front end would eliminate the exhaust nozzle and reduce the back pressure to a maximum of four pounds. Exhaustive tests made on the Santa Fe showed that an average *added* indicator horsepower of 24 per cent could be obtained by reducing back pressure to four pounds. This means among other things a saving in fuel of 20 per cent.

The hot water from the tender pumped through a waste steam heater would enter the waste gas heater at 220 deg. F. This temperature can easily be raised to 300 deg. in the waste gas heater. Raising the temperature from an average of 60 deg. the year round as it now is to 300 deg. is an undisputed saving of 20 per cent.

Under-grate forced draft in the ash pan in conjunction with induced draft in the front end would create a balanced draft condition which would largely eliminate the loss of unburned coal in sparks and cinders through the stack—estimated to be between 5 and 20 per cent.—would stop the inrush of cold air every time the fire door is opened, enable the burning of cheaper grades of coal and, giving unlimited control, automatic action, and absolute flexibility, would increase the furnace efficiency. All of which will easily result in an average saving of 20 per cent.

From these savings should be deducted the steam used for the operation of the pump and blowers which will reduce them to a net overall saving in fuel of a little over 45 per cent.

It is difficult even to estimate the indirect savings which would result from drafting locomotives mechanically. The increase in the power of compound engines would be enormous. I have figures to show that the *added* indicated horsepower to the low pressure cylinder would be 53 per cent. Taking it altogether I look forward with confidence to the reduction of the operating expense of the locomotive to an equivalent of 50 per cent of the present coal consumption. The suggested improvements can be added to all locomotives now in use and at a cost that they will pay for themselves inside of a year.

Elmer A. Sperry discussed the application of the Diesel engine to locomotive service, stating that this is one of the principal problems confronting designers and builders of Diesel engines. The fuel efficiency obtained with the Diesel type of engine is so striking that, in Mr. Sperry's opinion, it is bound to come to the fore. He felt that there was an encouraging outlook for the application of the compound Diesel engine which has recently been developed.

# Asked to Abrogate Foreign Ship Line Contracts

Eastern Roads Willing; Transcontinental Lines Reluctant as to Agreements with Japanese Lines

WASHINGTON, D. C.

REPRESENTATIVES of the railroads having traffic contracts with foreign steamship companies were called to a hearing before a committee of the United States Shipping Board on December 1, scolded for their alleged assistance to competitors of the ships operated by the government and asked to promise at once that they would abrogate the contracts on the ground that the board considers them a "menace" to the success of ships operating under the flag of the United States. The officers of the roads serving Atlantic and Gulf ports said they attached little importance to the contracts, that they did not discriminate against lines with which they had no contracts and expressed a willingness to abrogate them, although in some cases they desired time to take the matter up with the steamship companies. The Great Northern and the Chicago, Milwaukee & St. Paul, however, having traffic contracts or agreements with Japanese lines, expressed a willingness to co-operate with the Shipping Board for the upbuilding of an American merchant marine but declined to agree offhand to give up the agreements by which they receive many millions of revenue from import traffic which, they said, would otherwise probably go to Canadian lines, without being offered some satisfactory substitute. Commissioner Thompson, who with Commissioners Lissner and Plummer conducted the hearing, referred to this as a "discordant note" in the proceedings and several times tried to get the railroad officers to promise unqualifiedly to abrogate the contracts. He admitted that the Shipping Board could not make an exclusive contract with a railroad as a substitute for a foreign contract. R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul, and W. P. Kenney, vice-president of the Great Northern, both urged that the present arrangements ought not to be disturbed unless it is required by law, on the ground that they have created a great deal of foreign trade for the Pacific coast ports of the United States and markets for the products of American industry, that they bring a large tonnage of import traffic to the American railroads who are able to control the routing of but little of the export traffic in return and that the breaking off of the contracts would have little effect on the routing of the traffic on the Pacific until the American lines build up a service superior to that of the Japanese and Canadian lines. Commissioner Thompson said the board was just as much concerned with retaining traffic for American railroads as with obtaining freight for American shipping and that some agency of the government ought to be able to protect the roads, but he did not suggest how it could be done. Both Mr. Calkins and Mr. Kenney agreed to take the matter up and give the board an answer as soon as possible but both said they would not recommend giving up the agreements voluntarily without something to replace them.

## Position of the Shipping Board

In opening the hearing Frederick I. Thompson, chairman of the committee on interstate commerce conferences, made the following statement:

Any exclusive or preferential contract or agreement between any American railroad and any foreign flag shipping company is a menace to the success of ships operating under the flag of the United States. The resulting effect is the diversion of American commerce to the ships of other nations operating in competition with our own. Section 28 of the merchant marine act, 1920, clearly defines the intent of Congress that American railroads

be preferential feeders of tonnage for American ships. Yet it is of record before the United States Shipping Board that a number of railroads in the United States have such exclusive or preferential contracts with foreign flag shipping companies in direct conflict with the spirit of the American Congress.

It is also of record that more than 2,500,000 tons of cargo were interchanged last year between these railroads and ships operating under the flag of nations other than the United States. This is a condition admittedly requiring correction, recognizing the full force and effect of the enactment clause of the merchant marine act which clearly provides that "a greater portion" of the commerce of the United States be carried in American vessels.

This committee first approaches the question of these contracts in a spirit of desire for those corrective and co-operative measures as will insure that the influence and organizations of the rail carriers, at present agencies of promotion for the extension of American commerce in vessels of other nations, be utilized for the extension of American commerce in vessels operating under the registry of the United States. The United States Shipping Board is assured that the rail transportation interests represented here, parties to these adverse agreements, recognize that any losses arising through the initial upbuilding of an American merchant marine necessarily falls upon the American public. The board believes that any American enterprise, particularly those the beneficiaries of government support, should make every effort to co-operate in full and unmeasured degree with any division of the government, whose duty it is to build, foster and promote American enterprise.

To bring about such corrective condition this meeting between representatives of the railroads possessed of these agreements and this committee of the United States Shipping Board is held. The railroads and the contracts of record with foreign shipping interests are as follows:

Baltimore & Ohio.....	Donaldson Lines; Scandnavian Lines, North German Lloyd; Furness, Withy & Co. and International Mercantile Marine Company.
Great Northern.....	Nippon Yusen Kabushiki Kaisha.
Pennsylvania Railroad.....	International Mercantile Marine Company.
Northern Central.....	International Mercantile Marine Company and Furness, Withy & Co.
Southern Railway.....	Mobile Lines, Inc.
Mobile & Ohio.....	Mobile Lines, Inc.
Boston & Albany.....	Lehigh Steamship Lines and Cunard Steamship Company.
Chicago, Milwaukee & St. Paul.....	Osaka Shosen Kabushiki Kaisha.
Atlanta, Birmingham & Atlantic.....	Syracuse Shipping Company.
Grand Trunk System.....	White Star-Dominion Line.

## Eastern and Southern Roads Acquiesce

Archibald Fries, vice-president of the Baltimore & Ohio, said its contracts with three foreign companies were entered into long before the American merchant marine was brought into existence but that there is no discrimination in their favor and the service given them is the same as that given to any of the 27 steamship lines that dock at its piers, so far as the facilities of the Baltimore & Ohio will permit. Mr. Thompson pointed out that the contract with the Donaldson lines provides for the free use of terminals and that the Baltimore & Ohio shall use its best endeavors to promote the business of that company. That is the objectionable feature as viewed by the board, he said, because there is no record of any pledge to promote the best interests of any American line. Mr. Fries replied that his road gave its best efforts to promote the interests of all lines docking at its piers and has tried to secure for the port of Baltimore as many lines as possible, assuring them in every case equal treatment. When Mr. Thompson asked if he had any objection to the cancellation of the contracts, he replied, "None whatever," and said he had consulted with the local agents of two of the companies, who expressed themselves as willing to recommend the cancellation on the ground that they assured no service that would not be accorded without the contracts. Mr. Thompson tried to get Mr. Fries to say at once that the contracts would be cancelled but he said it

would be necessary for him to consult his legal department, which had advised that the contracts are not in violation of any law. He assumed there would be no question.

Commissioner Thompson said that since 1918 the American lines have had adequate tonnage and asked if the Baltimore & Ohio had ever made an effort to make a contract with a Shipping Board line. Mr. Fries said it had considered the contract entirely inoperative and that it would not consider an exclusive contract with any line, believing it to be the best policy to take care of all to the best of its ability. Mr. Thompson said he had seen cases where the contract had operated to give preference to a foreign line and where proper facilities had been denied a line not under contract. When he repeated his request for assurance to the committee that the contracts would be cancelled, Mr. Fries said he would use his best efforts to have them cancelled, but that if the foreign lines decline he thought they should be allowed to lapse. The dates of expiration are 1922, 1926 and 1927.

### Pennsylvania Has No Agreement

R. C. Wright, general traffic manager of the Pennsylvania, said that the Northern Central contracts were no longer in force and that the Pennsylvania had no traffic agreement with the International Merchant Marine, merely an arrangement for the allocation of certain piers made for the purpose of inducing lines to the port of Philadelphia and for the improvement of the service. Recently half of one of the piers used by the International Mercantile Marine had been turned over to an American line. Mr. Wright said that during the past three years 648 American vessels had used his company's piers as against 279 foreign ships. In reply to a question, he said his company would be willing to cancel the contract at once if the board desires it.

H. M. Biscoe, vice-president of the Boston & Albany, said the contracts with the Leland Line and the Cunard Line were practically a dead letter and both would be canceled in his opinion.

Lincoln Green, vice-president of the Southern, said his company intended to cancel the contracts with the Mobile Liners anyway and would do so at once.

D. O. Wood, foreign freight agent of the Grand Trunk, said that his contract was a reciprocal traffic agreement and that 80 per cent of the cargo was Canadian grain delivered at Portland, Me., during the winter. He said it would be necessary to confer with the principals on the abrogation of the contract.

J. L. Edwards, assistant to the receiver of the Atlanta, Birmingham & Atlantic, said the contract with the Strachen Line was not now in existence because of the physical condition of the docks and also because it was not assumed by the receiver. He promised to confer with the board before executing any new contract.

### Great Northern and St. Paul Reluctant

#### to Give Up Agreements

W. P. Kenney, vice-president of the Great Northern, said that his company's contract with the Nippon Yusen Kaisha was dated November 1, 1911, and had expired but had been renewed with slight changes on October 18. The original contract was negotiated 25 or 30 years ago by James J. Hill and was exclusive, the purpose being to promote the movement of cotton to Japan and to get cargo from Japan for the Great Northern rails. This was the first Japanese line to give a regular service across the Pacific. Later the law was passed giving the shipper the right to control the routing and the Nippon Yusen Klen built up a large soliciting organization of its own in the United States which has far more to do with influencing the routing than the railroad has. It also has an extensive organization and connections in the Orient which give it the control of the

inbound tonnage to the United States and it acts as the agent of the road in the Orient, thereby giving the road practically all its inbound tonnage, while the road gives a very little in return because it has so little control over the routing.

In reply to questions by Mr. Thompson he admitted that the Shipping Board equipment in the Pacific Orient service is of the highest type and that he appreciated that the United States Government is operating its ships at a loss. Mr. Thompson asked then why he had neglected to confer with the board before making a new contract with a direct competitor.

"I didn't think there was any possibility of any Shipping Board line across the Pacific making an exclusive contract with any American railroad," said Mr. Kenney, "while we had a preferential contract which was very advantageous to us. The shippers have their preferences and we couldn't get 1,000 tons a year for any other line, if we had no contract, because the business is so closely tied up."

Mr. Thompson said: "The Great Northern on October 18 went into direct competition with the United States government in its efforts to build up an American merchant marine" and asked Mr. Kenney what his feeling was about abrogating the contract. "I don't want to let your statement go unchallenged," retorted Mr. Kenney. "This is only an extension of a contract that has been in existence for 25 or 30 years. Up to the present time there has been no other service available to the Great Northern. In proportion to our resources we have lost more money carrying the American flag on the Pacific than the United States government has. We are not opposing any measures of the Shipping Board to promote American commerce but we should not be condemned for carrying out our contract. When you talk about patriotism you might also talk to the shipper in this country who is shipping by the Canadian Pacific because he prefers its service on the Pacific. That agreement with the Nippon Yusen Kaisha is very valuable to the Great Northern and we want to hold it as long as we can until some substitute is given us that is as good. Why should we work with a line that cannot make a contract and is as likely to turn its inbound freight over to the Canadian Pacific as to us?"

Mr. Thompson said he had not said anything about patriotism nor attempted to "wave the flag," but that he was talking business and that the Great Northern had given the board no opportunity to offer its service.

"I know enough about the law to know the board couldn't make any exclusive contract," said Mr. Kenney.

"It could take care of all of your business," said Mr. Thompson.

"But the N. Y. K. gives us business in return," said Mr. Kenney.

### Business Might Go to Canadian Roads

With the preferential clause in it, Mr. Kenney said, he supposed the Shipping Board could object to the contract. Asked if he would abrogate the contract, he said he had no authority to do that and he would have to put the question up to his president. Mr. Thompson asked if he would not do so by wire. Mr. Kenney said he would want an opportunity to confer on the subject and asked if he could not submit a contract that might be approved by the Shipping Board that would not make it necessary for the road to throw the business to the Canadian Pacific. Mr. Thompson persisted in asking whether, assuming the Shipping Board would not approve any contract, Mr. Kenney would give assurance that any contract considered by the board to be adverse to American interests would be cancelled. Mr. Kenney said that his disposition was to be helpful but he would want time to consult on this. Commissioner Lissner asked if the railroad officers were not aware of the agitation against these foreign contracts when the contract with the

Japanese line was renewed. Mr. Kenney replied affirmatively, but said that if his company had refused to renew it, the contract would probably go to a Canadian road, which would give the Japanese line dock facilities at Victoria or Vancouver and this would be of no benefit to the American merchant marine. Mr. Lissner said that the law provides that such a contract is lawful only so long as approved by the Shipping Board and that the company had failed to file it with the board or consult with the board about it. Mr. Kenney said he had not understood it was necessary to get the approval of the board, although the board had been advised that the company intended to make a new contract. Much American freight, he said, is now going to the Canadian Pacific because of its superior service on the Pacific. When the Shipping Board has a superior service it will get the business. He promised to take up the matter with the president of the road and to advise the board promptly.

### Insists C. M. & St. P. Contract

#### Beneficial to U. S. Trade

R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul, insisted that his company's relations with the Osaka Shosen Kaisha have been beneficial to the trade of the United States. The contract is no longer in existence, he said, but there is a tacit understanding for the interchange of tonnage on about the same basis as provided in the contract during the latter years of its life. The St. Paul has done, and will continue, he said, to do all it can to foster American shipping and it has taken a deep interest in the efforts of the Shipping Board to build up a service on the Pacific coast. It is grateful for the beautiful ships that were recently put into the North Pacific coast service and it has spent a good deal of money to advertise that service, but as to the freight business the routing is largely controlled by the shippers and the railroad has very little to say about it.

The Japanese have their own ships and the shippers in the Orient naturally prefer to patronize their own lines. If a bar is put up against this traffic, it would be easy for it to be handled through the canal and by water to Atlantic ports where there is a comparatively slight rail haul to be considered, because a large part of the Oriental business originates or is destined to ports east of Chicago. A bar against this traffic through the North Pacific coast would simply deprive the American lines of the opportunity to participate except for the short haul inland from the Atlantic seaboard. The Osaka Shosen Kaisha is firmly entrenched in the Orient, he said, and if American lines want to control the business, they must fortify themselves in the same way, because to operate ships successfully they must be loaded in both directions. The railroad has never been advised that there was a dependable American service on the Pacific coast and in order to solicit business it is necessary that regular sailing schedules be maintained so that space can be reserved in advance. He also pointed out that whereas Canada prevents most of her exports from being handled through other than Canadian ports, enough American goods are sent out via Canadian ports to fill up a good many American ships. Mr. Thompson said the board is just as much concerned with fostering business for American railroads against Canadian railroads as it is with getting business for American ships and he had discussed with the Interstate Commerce Commission the question of protecting the American lines. Mr. Calkins said that the Interstate Commerce Commission is vested with authority to deal with the situation if it will do so.

Mr. Calkins said that the agreement provides that each party shall give preference to the other as against competing lines. When Mr. Thompson said that means that the

St. Paul will give preference to the Osaka Shosen Kaisha as against the government service from Puget Sound to the Orient, Mr. Calkins said that language was put in the contract in 1908 and conditions have been altered since then. The road would be willing to cancel the preferential clause, but as to the abrogation of the contract entirely, it would depend on what substitute could be made for it. The present traffic is balanced and gives many millions of revenue to the railroads. "I am sure," he said, "this committee would not ask me to recommend that we give up that business unless I have something tangible with which to replace it."

### Rate Question Also Involved

The rate question is also involved, Mr. Calkins said, citing a case where a Shipping Board vessel had recently quoted a rate of 65 cents to New York on crockery from China as against a rail rate of \$1.50. Commissioner Thompson said that the railroad is apparently unwilling to take a chance in order to do business with American ships. He recognized the problem involved in the inbound traffic and said that it may be true that some of it might be lost to the St. Paul, but he thought some assurance could be given that it would be confined to American lines. Mr. Calkins said that he was sure the board did not expect to secure tonnage at the expense of the Great Northern or St. Paul treasuries, to which Mr. Thompson replied that there would be no loss on the outward cargo. Mr. Calkins said he could not admit that, because 80 per cent of it originates east of Chicago and he doubted whether the railroads and the Shipping Board together could control it if the foreign steamship companies prefer to handle it by way of Canada or through the Panama Canal to the Atlantic seaboard. Mr. Thompson said the board would like to have the same kind of co-operation from the St. Paul that it now gives to the Japanese line and while there may be some loss of inbound traffic there is some agency of the government that can give some protection. Mr. Thompson again asked if the railroad would abrogate the contract, saying that he had preferred to discuss the question on a friendly basis rather than on a legal basis. Mr. Calkins said he would want to discuss further the question of what can be done to replace the contract. His company has made no money for its stockholders for five years and he would not be justified in sacrificing the revenue without any assurance.

### Board Issues Statement

Commissioner Thompson issued a statement, saying that the attitude of the railroads with respect to those contracts had been reported to a full meeting of the board, and that the members were gratified at the willingness of the railroad companies to follow the views of the government. The statement also indicated his belief that the Great Northern had committed itself to abrogate the contract.

"The conclusion of the Shipping Board that the agreements were harmful to the development of American vessels," said Commissioner Thompson, "was clearly defined to the railroad executives present, and it was considered a good augury to have evidenced the disposition of the rail carriers to form a closer working contact with the organization of the Shipping Board, looking toward an extension of American commerce in American vessels. "It was particularly gratifying to the board to hear the expression of the two trans-continental carriers, handling the major portion of the Pacific-Orient commerce, that the establishment of an American flag service from the Pacific Coast to the Orient had resulted in a record-breaking service as to time and accommodations. The Shipping Board felt confident that upon reflection the Chicago, Milwaukee & St. Paul, the only company whose representative would not guarantee to recommend to his associates the cancellation of its agreements

with the Osaka Shōsen Kaisha, would recognize the necessity of meeting not only the views of the board, with respect to its contract with this foreign company, but would fall in line with the spirit evidenced by all of the rail lines who were represented at the meeting and who possess similar agreements."

Commissioner Thompson has asked the roads to give him written confirmation of their statements regarding the abrogation of the contracts.

### Possibility of Ship Subsidy

President Harding has let it be known that he intends to go before Congress early in January with a special message advocating some form of a ship subsidy to assist in the development of the American merchant marine. The form of subsidy to be proposed has not yet been decided upon but will be based on recommendations to be made in a report from the Shipping Board which is making a study of the whole situation, under the direction of Commissioner Meyer Lissner, assisted by a committee of economic experts. It is hoped to substitute this plan for that contemplated in the Jones merchant marine act of assisting American shipping by preferential rail rates and other discriminations against freight shipped in foreign bottoms. It is also hoped by this plan to hasten the day when the Shipping Board will be able to sell its ships to private companies and get the government out of the business of ship operation.

## Calm Again Marks Railroad Labor Situation

ONCE MORE comparative calm prevails in the railroad labor situation. The recent rules regarding the working conditions of shop employees promulgated by the Railroad Labor Board, and announced in last week's *Railway Age*, have been received with widely varying attitudes, ranging from severe condemnation to tacit approval. From B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, who is largely responsible for the attitude which the employees will take toward these new rules, came only the brief statement that no definite action would be taken by the Federated Shop Crafts until after the first of the year. Other labor leaders connected with the Federated Shop Crafts, however, have expressed approval of various sections of the new rules and it is considered unlikely that any radical action will be taken on this issue alone. At the same time, it is recognized, because of the past policy of these organizations, that it is not improbable that the changes which have been made in the working conditions of the shomen will be used as a strong argument against any further reductions in the wages of these employees.

Samuel M. Felton, president of the Chicago Great Western, in commenting upon the new rules, said:

The ruling of the Railroad Labor Board, promulgating new rules to govern the working conditions of railway shop employees, contains provisions which should tend to remedy, to some extent, the waste and inefficiency caused by application of various rules of the National Agreements adopted during federal control. However, the decision does not give relief from the bad effects produced by the application of most of the working rules throughout the country regardless of widely varying local conditions. To this extent the decision represents a denial of the railroads' plea. The effects produced by these new rules can be properly appraised only after they have been in effect for some time. It is not improbable, however, that a large part of the objections made by the railroads to the rules in the National Agreement will apply with equal force to these new rules, unless, as in some cases authorized by the Board, they are modified by agreements between the individual lines and their employees. It is quite evident from an examination of the rules as promulgated by the Board that

the savings to the railways in money which will be effected by the changes it has made will not relieve the railways of a really substantial part of the burden imposed by the National Agreements.

### Labor Board Takes Up Maintenance Of Way National Agreement

On December 8 the Railroad Labor Board began consideration of the disputes in regard to the rules and working conditions of maintenance of way employees. The Board's action on these disputes will probably result in the modification of the National Agreement between the Railroad Administration and the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers which became effective December 16, 1919. This National Agreement has been superseded on some 35 or 40 railroads by subsequent agreements between the carriers and the men involved and these agreements will not be affected by the Board's action. Where rules have been agreed to in part by the carriers and the men the agreed rules will stand.

Approximately 95 railroads are directly involved in the present disputes, but the decisions as to them will affect others which may afterward come before the Board. Of the 83 rules in this National Agreement all are in dispute before the Board. However, an agreement has been reached on most of these rules on a majority of the lines. The six rules over which a majority of the roads and their maintenance of way employees have disagreed relate to overtime and similar subjects and to pay for time of men traveling to and from work.

### Clerks Request Wage Increase

Following the lead of the Federated Shop Crafts, in requesting increases in wages as a strategic move to offset the requests of the carriers for further wage reductions, the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Station and Express Employees, through E. H. Fitzgerald, its president, has issued instructions to its general chairmen on the various carriers to demand the restoration of the rates of pay in effect prior to the 12 per cent wage cut of last July.

### New England Roads Win Case

A minor decision, significant, however, to five New England carriers—the Boston & Maine, the Maine Central, the New York, New Haven & Hartford, the Central New England and the Portland Terminal—was recently handed down by the board. This decision rules that the differential now existing between the daily rate of pay of employees working on a six and seven-day per week basis (caused by the application of Rule 66 of the clerks' National Agreement to daily and hourly rated employees) should be abolished by reducing the daily rate of the seven-day per week employees to the same daily rate paid the six-days per week employees. The change is effective on December 16.

### B. W. Hooper Tells of Labor Board's Work

Reports to the United States Railroad Labor Board show steadily improving conditions among the railroads of the country, Ben W. Hooper, vice-chairman of the Board, said in a statement on December 5. Mr. Hooper pointed out that the Board's decision not to consider wage reductions for any class of employees until working rules for the class had been disposed of had not delayed consideration of wage disputes on any railroad or for any class of employees. His statement follows:

The railroad situation is more conducive to optimism than it has been for many months. The absence of any serious general labor disturbance, combined with the disposition of the carriers to make voluntary reductions in freight rates, will both contribute to the restoration of sound business conditions.

The Labor Board receives evidence every day of the more cordial co-operation of the carriers and the employees in carrying out the provisions of the Transportation Act. Another gratifying feature of the situation is that the public is manifesting an awakened interest in the work of the Board.

If it be a fact that the Labor Board is solely dependent on public opinion for the enforcement of its decisions, then it is highly important to the public that it be furnished correct and impartial information relative to the work of the Board.

The misleading statements that have been fed to the public in regard to the alleged methods employed to avert the recently threatened strike have been completely refuted by the subsequent work of the Board.

It has been amazingly reiterated that the Board or some of its members promised that there should be no consideration of the question of wages for a year, or until next July as it was frequently put. As a matter of fact, the Board merely said that it would not take up any readjustment of wages, upward or downward, for any class of employees, until the rules and working conditions for that particular class of employees had been decided.

This was a sensible and just exercise of the Board's discretion in arranging its own docket. It did not involve the promise of a delay of one year, one month, or one minute in the consideration of the wage question.

As a vindication of the Board's course in this matter, it now transpires that the shop craft rules have been finished and handed down, effective December 1, and neither the

carriers nor the crafts can get before the Board with a wage dispute for weeks.

In an address before the Chicago Association of Commerce several days previous Mr. Hooper, in commenting on the railroad labor problem, said:

There are grounds for optimism in the railroad situation. Under ordinary conditions there is an esprit de corps among the railroad workers that is highly conducive to the welfare both of the carrier and the public. This spirit should be encouraged and enlarged until railway employees feel as deep a sense of responsibility to the people and the government as though they were in the postal or other public service.

From this will come efficient and uninterrupted transportation, and the employees need have no fear that a grateful people will fail to reward this service with just and reasonable wages and working conditions. Gradually railway labor will come to entertain the belief that they must fight for what is justly due them or to be subject to the temptation to contend for more than their due.

In this connection it is it but just to state a fact based upon the records of our Board, and that is that up to the present time the carriers have been guilty of far more violations of the decision of the Labor Board than have the employees. There are evidences, however, of a growing purpose both on the part of the roads and their employees to co-operate hereafter more closely and cordially with the Labor Board.

# Interstate Commerce Commission Annual Report

## Rate Readjustments and Relations with Merchant Marine Leading Topics Discussed

WASHINGTON, D. C.

THE ANNUAL REPORT of the Interstate Commerce Commission, covering the year ended October 31, 1921, submitted to Congress this week, says that perhaps the most difficult task now confronting the commission, and certainly the one of greatest importance to the public, is the readjustment of freight rates which is necessitated by the changing conditions attendant upon the recovery of this country and others from the effects of the World War. The commission is "hopeful that with an improvement in the volume of traffic and with a further adjustment of operating costs in harmony with prevailing tendencies, a substantially lower level of rates and fares will be compatible with the rule of rate-making which has been prescribed by the Congress and at the same time permit an adequate maintenance of the properties." The report was compiled prior to the issuance of the order for a general rate inquiry on which hearings are to begin on December 14, but the discussion of rate readjustments and of the action of the commission with relation to intrastate rates is given first place in the report.

### Summary of Recommendations

For the reasons stated in this report and in former reports, the commission recommends:

1. That section 1 of the interstate commerce act be amended to provide for the punishment of any person offering or giving to an employee of a carrier subject to the act any money or thing of value with intent to influence his action or decision with respect to car service, and to provide also for the punishment of the guilty employee.

2. That the boiler-inspection act, as amended, be further amended to provide for increases in the number and salaries of inspectors.

3. That the use of steel cars in passenger-train service be required, and that the use in passenger trains of wooden cars between or in front of steel cars be prohibited.

4. That the hours of service act of March 4, 1907 (34 Stat., 1415; 8 Comp. Stat. 1916, p. 9448), be so amended that it will require all service of employees subject to the act

to be construed as continuous service, except that if an employee is given a release from duty for a definite period of not less than three hours, and under such circumstances that the employee has proper facilities and opportunities for securing rest during such relief period, such relief period can be used to break the continuity of the service and the service ceases to be continuous service and becomes aggregate service.

5. That the power to award reparation be placed wholly in the courts; that a condition precedent to an award of reparation by a court for unreasonable rates or charges be that we have found such rates or charges unreasonable as of a particular time; that the law affirmatively recognize that private damages do not necessarily follow a violation of the act; that provision be made that sections 8, 9, and 10 of the interstate commerce act shall be construed to mean that no person is entitled to reparation except to the extent that he shows he has suffered damage; and that the law should provide that if a rate is found to be unreasonable the rule of damages laid down in the *International Coal Case*, 230 U. S., 184, should control.

6. That section 20a of the Interstate Commerce Act be so amended as to indicate definitely the classes of electric railway companies subject to that section.

7. That paragraphs (4) to (8), inclusive, of section 5 of the Interstate Commerce Act be so amended or supplemented as clearly to provide whether and, if so, how voluntary consolidations of carriers may be effected pending ultimate adoption by us of a complete plan of consolidation.

8. That section 19 of the merchant marine act, 1920, be amended so that its provisions will clearly not be applicable to the Interstate Commerce Commission.

9. That section 28 of the merchant marine act, 1920, be reconsidered by the Congress in the light of the circumstances set forth in the chapter on the effect of this statute appearing at pages 13 and 14 of this report.

An abstract of the more general parts of the report is as follows:

## Abstract of Report

During the war, and for some time after the signing of the Armistice, the constantly rising operating expenses of the railroads made necessary very material increases in rates. It is usually called minor readjustments, affecting only one or a few commodities in a restricted territory, although many of these resulted in substantial increases.

The Congress is familiar with the situation of the railroads at the termination of federal control, and with the various provisions in the transportation act, 1920, designed to remedy that situation. Among other things, the Interstate Commerce Act was amended by adding a new section, designated section 15a.

Following this enactment we instituted a proceeding to determine what rates would be necessary to give effect to the intent of Congress. Since that decision was promulgated on July 29, 1920, conditions throughout the country have changed to a marked degree. The general trend of commodity prices and of labor costs has been downward.

We have been confronted with the demands of shippers, on the one hand, for reductions in rates which they allege are excessive and out of all proportion to the fallen values of commodities, and which interfere with, or prevent, commodity movement; and, on the other hand, with the fact that the carriers have not been receiving the fair return contemplated by Congress.

Many rate readjustments have been made since the increases authorized in *Increased Rates, 1920*, supra, became effective on August 26, 1920. Some were made by the carriers voluntarily, others at our suggestion, and still others under our requirement after formal hearing. In some adjustments there were both increases and decreases, and in many others only decreases. It is safe to say that at least a million changes in individual rates have been filed with us. The increases were made to remove discrepancies in rate adjustments and classifications. The reductions have been material, entailing reductions in carrier revenue of millions of dollars. The reductions embrace rates on lumber, grain, hay, raw sugar, canned goods, coal, smelter products, iron ore, iron and steel, on range cattle and other live stock; on potatoes and other vegetables; on sand, gravel and other road-building material; and on other articles of commerce that move in large volume.

The value of the service and the cost of transportation are among the important elements to be considered in determining the reasonableness of freight rates. These elements are, and for some time have been, in a state of flux. As a result, freight rates have not yet reached a condition of equilibrium.

### Interstate and Intrastate Rates

As previously stated herein, we instituted a proceeding designated *Ex Parte 74*, in which hearings were held in Washington in May, June and July, 1920. In accordance with the provisions of paragraph (3) of section 13 of the act we invited the state commissions to cooperate with us in this proceeding, whereupon three state commissioners were selected by the National Association of Railway and Utilities Commissioners and sat with us throughout the hearings and oral argument and deliberated with us in conferences antecedent to our determination of the matters in issue.

As a result of the information obtained, we concluded that for the purposes set forth in section 15a, the country should be divided into four groups, to be designated as eastern, southern, western and mountain-Pacific; that, with certain exceptions, passenger fares should be increased 20 per cent, with a 50 per cent surcharge on sleeping and parlor car fares to accrue to the rail carriers; and that, generally, freight rates should be increased 40 per cent in the eastern group, 25 per cent in the southern group, 35 per cent in the western group, 25 per cent in the mountain-Pacific group, and 33 1/3 per cent between groups, subject to the readjustments there recommended.

Corresponding increases were authorized by state commissions in about one-half of the states. In the other states the state commissions denied, either wholly or in part, the carriers' applications for similar increases, whereupon the latter filed petitions with us, in accordance with the provisions

of paragraph (3) of section 13, alleging that such refusals caused advantages, preferences, prejudices and discriminations prohibited and declared to be unlawful by paragraph (4) of section 13.

In these cases it appeared that the commissions in 3 states declined to authorize any increases in intrastate rates, fares, or charges; in 17 they denied increases in passenger fares, but granted full or partial increases in freight rates; in 4 they granted increases in passenger fares, but not the full increases in freight rates; in one the state commission granted all increases except the Pullman surcharge. Thirteen out of the 17 commissions which denied increases in passenger fares did so on the ground of lack of jurisdiction, because the intrastate fare was fixed by state statute.

Pursuant to said petitions we instituted additional proceedings, and after hearings, we found that certain of the intrastate rates or fares and charges complained of caused undue and unreasonable advantages, preferences and prejudices as between persons and localities in intrastate commerce on the one hand, and interstate commerce on the other hand, and undue, unreasonable and unjust discrimination against interstate commerce; whereupon, for the purpose of removing such advantages, preferences, prejudices and discriminations, we issued orders requiring the carriers involved to make certain increases in intrastate rates or fares and charges. To meet complications which early arose, we stipulated that the authority to increase rates, fares and charges should not be construed as authorizing any common carrier to establish, put in force or maintain any rate, fare or charge intrastate which is greater than its corresponding rate, fare or charge in interstate commerce from, or at the same points, or greater than its corresponding rate, fare or charge contemporaneously in effect and applicable to the transportation of passengers or property in interstate commerce.

Court proceedings have been instituted by the authorities of certain states to set aside the orders affecting their respective states on the grounds, generally, that the orders were invalid, first, because not based upon substantial evidence of unlawful discrimination; second, because we had misinterpreted the authority conferred upon us by the interstate commerce act; and third, because the provisions of law under which we acted constitute an unauthorized interference with state authority and are unconstitutional. Certain carriers have also sought injunctions in the United States district courts to restrain state authorities from interfering with their carrying out of our orders. Hearings have been had in a number of these cases, and so far as we are advised, the federal courts have held our orders to be valid.

Two cases involving such orders have been argued before the Supreme Court. One of them, known as the *Wichita Passenger Fares Case*, has been set for further argument. In addition to the two cases mentioned, two original proceedings have been instituted in the Supreme Court, one by the state of North Dakota, and the other by the state of Texas. The Texas case, apparently, raises every conceivable issue.

The provisions of section 15a of the act do not apply to express companies, but we need not before us proceedings as to 13 states wherein it is contended that certain rates and charges, which the American Railway Express Company is required by these states to apply to transportation of express matter in intrastate commerce, cause the advantages, preferences, prejudices and discriminations prohibited and declared to be unlawful by paragraph (4) of section 13 of the act.

### Consolidation of Railroads

On May 11, 1920, we instituted an investigation for the purpose of preparing and adopting a plan for the consolidation of the railway properties of the continental United States into a single number of systems, as contemplated in paragraphs (4) and (5) of section 5 of the interstate commerce act. Prof. W. Z. Ripley, of Harvard University, was employed to make a preliminary study of the problem. Under our direction he spent several months assembling and analyzing data and conferring with interested parties. The results, together with our recommendations, we embodied in a report to us. On August 3, 1921, we agreed upon a tentative plan confined, in the main, to class I roads, and published Prof. Ripley's report as an appendix thereto. In some respects our tentative plan presents alternatives for systems recommended by Prof. Ripley.

Due publicity has been given to this tentative plan. After a reasonable time for preparation by parties interested, hearings will be held at convenient times and places upon notice, given to all carriers by railroad, so that a full record can be developed upon which can rest the plan to be ultimately adopted.

### Railroad Earnings

Railroad earnings and expenses during the past year reflect the unsettled industrial conditions resulting from the economic adjustments following the war. In 1920, the rising cost of labor and materials led us to sanction a sharp increase in the charges for transportation. These increases became effective near the close of August, 1920, which was the last month of the guaranty period. The increased rates, combined with a valuable increase in the capacity of the railroads, resulted, in spite of the high costs of operation, in substantial increase of net earnings in September and October, 1920, but these did not attain a level equivalent to a rate of 6 per cent per annum upon the aggregate value of the railway property of the carriers held for and used in the service of transportation as determined by us in July, 1920 under section 15a. Net earnings fell rapidly after October, 1920, reaching almost a vanishing point in January, 1921. The inability of railroads at once to adjust expenses, proportionately to a marked reduction in traffic, accounts for the change. With a reduction of nearly half a million employees in service, and also as a result of some recession in the cost of materials, the net railway operating income showed an improvement in succeeding months. The reduction in expenses involved some retrenchments with respect to maintenance. With the reduction in the level of wages effective as of July 1, 1921, the net earnings in July, August and September, 1921, again showed substantial increase, although not reaching a rate of 6 per cent on the value so determined for the United States as a whole. This more favorable showing came in spite of the continued depression in traffic.

### Relations with the Railroad Labor Board

Under the provisions of the transportation act, 1920, the Railroad Labor Board is given certain jurisdiction over the wages which shall be paid by carriers to their employees, and over working conditions. While the law makes no provision for co-ordination between the labor board and the commission, the desirability of contact between the two bodies is appreciated. Since the creation of the labor board, informal conferences have been held from time to time, and will, without doubt, be continued in the future. We have been particularly solicitous to procure and have at hand such statistical information as may aid the labor board in its work.

### Relations with the United States Shipping Board

Section 19 of the merchant marine act, 1920, provides in part as follows: "Sec. 19 (1) The (United States Shipping) Board is authorized and directed in aid of the accomplishment of the purposes of this act \* \* \* (c) To request the head of any department, board, bureau or agency of the government to suspend, modify or annul rules or regulations which have been established by such department, board, bureau or agency, or to make new rules or regulations affecting shipping in the foreign trade other than such rules or regulations relating to the Public Health Service, the Consular Service and the Steamboat Inspection Service."

The United States Shipping Board has taken the position that the provisions of section 19 are applicable to the Interstate Commerce Commission. With this view we are not in accord. However, recognizing the desirability of co-operation between different branches of the government, and the benefits to be derived from joint consultation, we have appointed a committee

to confer with a like committee from the Shipping Board upon matters of common interest and concern. But we feel that decision in such matters as have been placed within our jurisdiction by the interstate commerce and related acts must lie with us just as determination of matters placed primarily within the jurisdiction of the Shipping Board by the acts under which it functions must lie with that tribunal. It is desirable that section 19 of the merchant marine act be amended specifically to exclude this commission from its operation.

Section 8 of the merchant marine act, 1920, requires the United States Shipping Board, in cooperation with the Secretary of War, to investigate territorial regions and zones tributary to ports; the causes of congestion of commerce at ports; the subject of water terminals, and other matters which would tend to promote and encourage the use by vessels of ports adequate to care for the freight that would naturally pass through such ports, and in case changes are deemed necessary in the rates, charges, rules or regulations of rail carriers subject to our jurisdiction to submit its findings to us for such action as we may consider proper under existing law. Pursuant to section 8, the Board of Engineers for Rivers and Harbors made a survey of port facilities at south Atlantic and gulf ports, and on March 25, 1921, the Secretary of War and the United States Shipping Board placed the results of this survey before us. In substance it was represented to us that the charges, regulations and practices of rail carriers at these ports were preventing the erection of needed terminal facilities; the natural development of the ports; the proper building up of our merchant marine, and the economical carrying on of foreign commerce. On April 9, 1921, we entered an order instituting a general investigation into the situation. Hearings in this investigation have been held. Necessity may be developed for extending the scope of the investigation to include north Atlantic and Pacific coast ports.

#### Section 28 of the Merchant Marine Act, 1920

Section 28 of the merchant marine act, 1920, provides that no lower rate, fare or charge shall be charged, collected or received for the transportation within the United States of persons or property in foreign commerce than is charged for like transportation in domestic commerce, unless the water transportation from or to the port of export or import shall have been or is to be in a vessel documented under the laws of the United States. It also authorizes us, upon the certification of the Shipping Board that adequate shipping facilities are not afforded by vessels documented under the laws of the United States, to suspend the operation of the provisions of this section, and to terminate the suspension upon further certification of the Shipping Board that adequate facilities are so afforded. Upon appropriate certifications received from the board, we have suspended the operation of the provisions of this section indefinitely.

The effect which the operation of section 28 may have upon the flow of commerce through different ports, and the possible resultant injury to some ports, merit the serious consideration of the Congress. Rail carriers, in making export or import rates, frequently group the ports in a given region, such for instance, as the gulf region, and the lowest domestic rate to or from any port in the group upon the particular description of traffic under consideration is published as the export or import rate on

that traffic to or from all ports within the group. The grouping is of benefit to shippers as well as to the ports affected, each one of which is nearer to some points of origin, and more distant from others, than any of the other ports. It follows that between certain origins and certain ports export or import and domestic rates are on a substantial parity. Even in the absence of such grouping, the difference between the export or import and domestic rates to or from various ports is materially greater in some instances than in others. When section 28 becomes operative, it is probable that export and import shipments moving in foreign vessels will seek the ports having the lowest domestic rates, and at these ports the foreign vessels will be able to compete upon practically equal terms with the United States vessels. The ultimate effect of section 28 may be merely to divert traffic from certain ports to others with little or no gain in tonnage for United States vessels.

The adequacy or inadequacy of shipping facilities afforded by vessels documented under the laws of the United States may vary from time to time dependent upon market conditions and the hazards of operation. It may become desirable, when adequate shipping facilities at particular ports are afforded by vessels so documented, to terminate the suspension of the operation of section 28 with respect to those ports, but not as to others. Subsequent developments may make renewed suspension necessary. The construction and maintenance of port facilities are costly, and if the use of ports is to be made variable and shifting under the operation of this section, that cost will be reflected in varying proportions in the charges to be borne by the shipping public.

Another aspect also merits careful consideration. A large part of our exports of grain, for example, move by rail under transit arrangements which permit of elevation, storing, grading or other treatment within a limited period, as for instance 12 months, at the transit point, and forwarding on the balance of the through rate in effect at the time and from the place of original movement. If section 28, now suspended, should become operative, shipments of grain could thereafter be carried in the same train from the same elevator to the same port for the same foreign vessel, on some of which the balance of the through export rate, which was in effect perhaps a year before, will be collected, and on other of which the higher domestic rate must be collected. If for some cause the suspension should be renewed, grain which had left the country elevator while section 28 was operative, would still take the domestic rate from the transit point, and grain originally shipped during the new suspension would take the export rate, although moving together from the same market to the same port for the same foreign vessel. The difficulty of policing such situations will be great. Moreover, grain dealers at primary markets name prices to foreign purchasers on grain delivered at the port. The purchasers arrange for the vessel, and the dealer can not tell, in naming his price, whether or not a foreign vessel will be selected by the purchaser. Obviously the dealers' risk of loss will be great, and the effect upon commerce most prejudicial.

In our judgment, the Congress should take such action with respect to this section as may be necessary to obviate unnecessary conflict with the needs and usages of inland transportation.

#### Export Bill of Lading

The transportation act, 1920, added to the interstate commerce act, a new section, designat-

ed section 25, which requires water carriers engaged in foreign commerce whose vessels are registered under the laws of the United States, to file with us schedules of sailing dates, routes and destinations, which schedules shall be published by us and distributed to railway agents, at export bill and distributed to the information of shippers; provides a method of procedure for reserving space at specified rates in the vessels of such water carriers; and, where such space for an export shipment has been reserved, directs the rail carrier to which the shipment is delivered for transportation to issue a through export bill of lading to destination.

Paragraph (4) of section 25 provides, in part: "The Commission shall, in such manner as will preserve for the carrier by water the protection of limited liability provided by law, make such rules and regulations not inconsistent herewith as will prescribe the form of such through bill of lading."

On April 14, 1919, we made a report and order in *Bills of Lading*, 52, 1. C. C., 671, wherein we prescribed a uniform domestic bill of lading and a uniform export bill of lading. Our order was enjoined by a divided court in *Hays v. S. S. Co. v. United States*, 259 Fed., 713.

The Supreme Court held, on appeal, that the case was made moot by the passage of the transportation act, 1920, and reversed the order of the district court, remanding the case to that court with directions to dismiss the petition with out prejudice to the right of the complainants to assail in the future any order we might make prescribing bills of lading pursuant to the new legislation.

On August 7, 1920, we entered an order reopening *Bills of Lading*, *supra*, for further hearing with respect to the form and substance of through export bills of lading. Pursuant to the directions of Congress quoted above, we made a report and order, *Export Bill of Lading*, 64, 1. C. C., 347, making rules and regulations prescribing the form of through export bill of lading to be issued by carriers subject to the interstate commerce act for application to the transportation of property from points in the United States designated under the provisions of section 25 to points in nonadjacent foreign countries in connection with ocean carriers whose vessels are registered under the laws of the United States.

The inland carriers, and more particularly the eastern carriers, challenged our jurisdiction to do more than prescribe the "form" as distinguished from the substance of the bill of lading, their illustrations of form being size of type and color of paper. For the reasons stated in our report, we found that:

"... our power to prescribe rules and regulations, not inconsistent with the act, which shall constitute and determine the form of the bill of lading, covers the terms or tenor of that instrument, and is, as to the transportation and delivery to the ocean carrier, adequate and complete."

The ocean carriers beyond the port of export, however, are not subject to the act except to the extent stated in section 25. A different legislation may become necessary to carry out the purpose of the Congress.

All parties to the proceeding emphasized the importance of securing a bill of lading that would be placed in general use at once. We have taken such action, consistent with the record before us, as in our view seems calculated to effect this object. Before adopting the report and order, we conferred with a committee of the Shipping Board representing that body

The commission's expenditures for the fiscal year ended June 30, 1921, were \$6,193,714, including \$2,728,656 on account of the valuation work.

THE GOVERNMENT RAILWAY in Alaska was opened through to Fairbanks on November 26. A total of 545 miles of railroad is now in operation with train service twice a week in each direction. At two river crossings temporary arrangements are still used. At Mile 347 a steel viaduct is to be constructed, contract for which is held by the Phoenix Bridge Company, Phoenixville, Pa. The steel for this viaduct has been shipped and it is expected to have the bridge erected by the first of February. This will complete the

reports of the various bureaus of the commission, which are included in its report, are given separately.

line with the exception of a permanent crossing of the Tanana river at Nenana, about 35 miles from Fairbanks, the northern terminus. The appropriation recently granted by Congress for work of the Alaskan Engineering Commission for the next fiscal year is principally to take care of this bridge. The crossing is now made by means of a ferry in the summer time, and by extending a narrow-gauge track over the ice in the winter time. When the bridge is built, the gage of the track from North Nenana to Fairbanks will be standardized.

## Freight Car Loading

WASHINGTON, D. C.

**L**OADING OF REVENUE FREIGHT totaled 673,827 cars during the week which ended on November 26, according to reports compiled by the Car Service Division of the American Railway Association. This was 112,844 cars less than were loaded during the previous week, the decrease being due principally to the observance of Thanksgiving Day. The total, however, was 129,874 cars less than were loaded during the corresponding week in 1920 which also included the same holiday and 65,370 cars below the total for the corresponding week in 1919.

Because of the observance of the holiday, reductions were reported in the loading of all commodities, compared with the week before. Loading of coal amounted to 137,432 cars, the lowest for any week since that of July 9, which included the Fourth of July. This also was a reduction of 29,354 cars compared with the week before. Merchandise and miscellaneous freight, which includes manufactured products, totaled 419,757 cars, 63,424 less than the previous full week.

Loading of live stock totaled 25,866 cars, the lowest number since the week of September 10 and a drop of 8,672 compared with the week before. Grain and grain products amounted to 35,981 cars, 2,374 less than the week before, but 1,773 more than the corresponding week last year. Tabulations showed 43,843 cars loaded with forest products during the week, 6,457 less than the previous week, while coke totaled 6,307 cars, or 180 cars less than the week before.

Ore loadings also were 2,383 below the week before, the total being 5,541 cars.

Except for grain and grain products, the loading of each commodity during the week of November 26 was less than during the corresponding week last year. Total loadings of all commodities by districts were also less compared with the previous week as well as compared with the corresponding week last year.

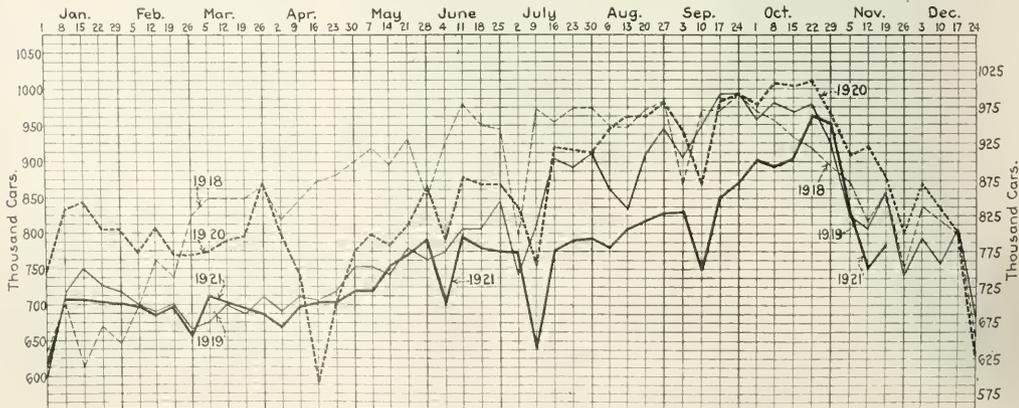
The loading during the week which ended on November 19 totaled 786,671 cars. This was an increase of 33,625 cars over the week before when loadings were reduced by the observance of armistice and election days. The reports show, however, that while the total for the week of November 19 was greater than that for the week before, the average per day was less. Compared with the corresponding week last year, the total for the week of November 19 was a reduction of 102,467 cars, while it was 67,930 cars less than for the corresponding week in 1919.

Loading of merchandise and miscellaneous freight totaled 483,181 cars, which was an increase over the short week before of 16,884 cars. This was, however, 8,070 cars less than were loaded during the corresponding week in 1920. Coal shipments amounted to 166,786 cars, an increase of 14,477 over the previous week, but 49,536 cars less than were loaded during the corresponding week last year.

Loading of grain and grain products totaled 37,455 cars, 3,053 more than during the week before, and 1,702 cars more than during the same week last year. Livestock also showed an increase over the previous week of 269 cars, the

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, NOVEMBER 19, 1921

District:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	9,031	3,852	45,439	1,782	4,325	2,060	63,409	68,929	198,927	.....	202,480
	1920	5,386	4,070	56,799	2,522	6,536	5,389	48,061	80,026	.....	209,029	38,505
	1921	2,332	3,844	47,965	2,888	2,930	3,018	47,538	53,593	164,108	.....	188,006
	1920	2,036	4,133	60,952	6,744	3,234	8,383	39,876	62,648	.....	188,006	178,850
Pocahontas	1921	212	181	20,812	168	1,294	3	5,660	3,166	31,496	.....	32,135
	1920	125	176	21,012	969	1,527	211	5,062	3,053	.....	32,135	38,505
Southern	1921	2,959	1,881	21,270	516	16,774	473	37,961	36,280	118,114	.....	128,412
	1920	2,578	2,460	31,227	1,226	15,922	2,752	34,542	37,705	.....	128,412	118,133
Northwestern	1921	10,047	9,372	8,836	849	11,460	877	27,213	28,321	96,965	.....	135,304
	1920	11,893	11,034	12,490	1,459	13,695	17,235	27,434	33,519	.....	128,759	135,304
Central Western	1921	9,463	12,348	18,656	149	6,331	715	31,036	37,869	116,567	.....	134,086
	1920	9,396	15,756	35,909	555	5,455	3,167	30,735	43,113	.....	134,086	121,857
Southwestern	1921	3,411	2,960	3,818	135	7,186	778	16,049	26,157	60,494	.....	68,711
	1920	4,139	2,950	7,933	150	7,545	537	16,824	28,633	.....	68,711	59,472
Total, all roads	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	.....	889,138
	1920	35,753	40,579	216,322	13,625	53,934	37,674	202,554	288,697	.....	889,138	935,071
	1919	44,370	46,046	126,794	10,483	59,516	31,663	156,612	379,017	.....	889,138	854,601
Week ended:												
November 19	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	889,138	854,601
November 12	1921	34,402	34,269	152,209	6,450	50,661	8,658	215,439	250,858	753,046	927,586	808,304
November 5	1921	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	951,615	826,724
October 29	1921	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	981,242	937,479
October 22	1921	51,001	40,188	212,219	6,647	53,426	23,186	236,640	338,985	962,292	1,008,818	975,051



Revenue Freight Car Loadings for the Past Four Years

total being 34,538 cars, while coke totaled 6,487 cars, a gain of 37 over the week before.

Shipments of forest products amounted to 50,300 cars or 361 less than the week before, and ore totaled 7,924 cars, a decrease of 734 cars within a week. Except for grain and grain products, shipments of all commodities were less during the week of November 19 than during the corresponding week last year.

Compared by districts, increases over the week before were reported from all regions in the loading of all commodities, except the Pocahontas and Southern districts, but all showed decreases, compared with the corresponding week last year.

The summary for the week of November 19 is given in the table on the opposite page.

An item of interest in the comparison of the week of November 19, with the same week a year ago, is the fact that the decrease in the loading of coal, coke and ore, which commodities are particularly vital to the iron and steel trade, accounts for more than 80 per cent of the total decline.

Complete reports for quarter-monthly period ended November 23 indicate a continued increase in the surplus of all classes of cars, the total being 213,523. This is an increase of 73,000 cars as compared with period ended November 15. The bulk of this increase is evenly divided between box and coal cars, there being approximately 35,000 increase in each type with scattering increases in flat, stock and refrigerators.

Shortages reported the past few periods no longer exist, the total for the period ended November 23 being 393 cars.

The Car Service Division has published a chart showing graphically the record of surplus equipment maintained by the railroads during the past 15 years to meet the demands of commerce. While during the periods of maximum demand there was a low average car shortage, the car surplus which the roads have been obliged to maintain during periods of inactivity averages much greater. This represents a sustained unproductive investment of considerable proportions. Certain periods show a surplus, as represented by the solid portion above the base line, and at the same time a shortage, as represented by the shaded portion below the base line. This always occurs at a time of transition between a car surplus and a car shortage period; it is also prevalent to some extent at all times of moderate demand, but disappears when conditions become acute on either side of the line. The cause is the varying requirements for different types of equipment, such as a shortage of coal cars when box cars are not in demand; and varying conditions in different parts of the country, such as a box car shortage in New England and a surplus of box cars in California which, in the nature of things, cannot at once be remedied by the movement of cars from one section to another.

The reports showed 333,616 freight cars in need of repairs on November 15, or 14.4 per cent of the cars on line, as compared with 345,801, or 15 per cent on November 1. This represents a reduction of 11,585 cars.

## President Touches on Freight Rates in Message

Suggests Also the Setting Up of Tribunals for Peaceable Settlement of Labor Disputes

WASHINGTON, D. C.

THE President, in his address before a joint session of Congress on December 6, upon the occasion of the opening of the regular session, made no definite recommendations for railroad legislation but he suggested two ideas, which, if followed up, might lead to far-reaching consequences. Following a discussion of the need for an improvement in the condition of the agricultural industry, in which he said the farmer "is justified in rebelling against the transportation cost." President Harding urged attention to the question of a readjustment of freight rates in connection with the general policy of restoring the balance between city and country, saying that the present adjustment has been favoring the basing points. He also urged a further effort toward a solution of the problem of capital and labor, suggesting some plan for the setting up of judicial or quasi-judicial tribunals for the settlement of disputes in order to do away with strikes, lockouts and boycotts. While he outlined no definite plan, the principle which ran through his entire discussion of the subject was the necessity for the regulation and supervision of labor organizations and he said that it may be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group. On these two points the President said in part:

"The base of the pyramid of civilization which rests upon the soil is shrinking through the drift of population from farm to city. For a generation we have been expressing more or less concern about this tendency. Economists have warned and statesmen have deplored. We thought for a time that modern conveniences and the more intimate contact would halt the movement, but it has gone steadily on. Perhaps only grim necessity will correct it, but we ought to find a less drastic remedy.

"The existing scheme of adjusting freight rates has been

favoring the basing points, until industries are attracted to some centers and repelled from others. A great volume of uneconomic and wasteful transportation has attended, and the cost increased accordingly. The grain-milling and meat-packing industries afford ample illustration, and the attending concentration is readily apparent. The menaces in concentration are not limited to the retarding influences on agriculture. Manifestly the conditions and terms of railway transportation ought not to be permitted to increase this undesirable tendency. We have a just pride in our great cities, but we shall find a greater pride in the Nation, which has a larger distribution of its population into the country, where comparatively self-sufficient smaller communities may blend agricultural and manufacturing interests in harmonious helpfulness and enhanced good fortune. Such a movement contemplates no destruction of things wrought, of investments made, or wealth involved. It only looks to a general policy of transportation, of distributed industry, and of highway construction, to encourage the spread of our population and restore the proper balance between city and country. The problem may well have your earnest attention.

"It has been perhaps the proudest claim of our American civilization that in dealing with human relationships it has constantly moved toward such justice in distributing the product of human energy that it has improved continuously the economic status of the mass of people. Ours has been a highly productive social organization. On the way up from the elemental stages of society we have eliminated slavery and serfdom and are now far on the way to the elimination of poverty.

"Through the eradication of illiteracy and the diffusion of education mankind has reached a stage where we may fairly say that in the United States equality of opportunity has been attained, though all are not prepared to embrace it.

There is, indeed, a too great divergence between the economic conditions of the most and the least favored classes in the community. But even that divergence has now come to the point where we bracket the very poor and the very rich together as the least fortunate classes. Our efforts may well be directed to improving the status of both.

"While this set of problems is commonly comprehended under the general phrase "Capital and labor," it is really vastly broader. It is a question of social and economic organization. Labor has become a large contributor, through its savings, to the stock of capital; while the people who own the largest individual aggregates of capital are themselves often hard and earnest laborers. Very often it is extremely difficult to draw the line of demarcation between the two groups; to determine whether a particular individual is entitled to be set down as laborer or as capitalist. In a very large proportion of cases he is both, and when he is both he is the most useful citizen.

"The right of labor to organize is just as fundamental and necessary as is the right of capital to organize. The right of labor to negotiate, to deal with and solve its particular problems in an organized way, through its chosen agents, is just as essential as is the right of capital to organize, to maintain corporations, to limit the liabilities of stockholders. Indeed, we have come to recognize that the limited liability of the citizen as a member of a labor organization closely parallels the limitation of liability of the citizen as a stockholder in a corporation for profit. Along this line of reasoning we shall make the greatest progress toward solution of our problem of capital and labor.

"In the case of the corporation which enjoys the privilege of limited liability of stockholders, particularly when engaged in the public service, it is recognized that the outside public has a large concern which must be protected; and so we provide regulations, restrictions, and in some cases detailed supervision. Likewise in the case of labor organizations, we might well apply similar and equally well-defined principles of regulation and supervision in order to conserve the public's interests as affected by their operations.

"Just as it is not desirable that a corporation shall be allowed to impose undue exactions upon the public, so it is not desirable that a labor organization shall be permitted to exact unfair terms of employment or subject the public to actual distresses in order to enforce its terms. Finally, just as we are earnestly seeking for procedures whereby to adjust and settle political differences between nations without resort to war, so we may well look about for means to settle the differences between organized capital and organized labor without resort to those forms of warfare which we recognize under the name of strikes, lockouts, boycotts, and the like.

"As we have great bodies of law carefully regulating the organization and operations of industrial and financial corporations, as we have treaties and compacts among nations which look to the settlement of differences without the necessity of conflict in arms, so we might well have plans of conference, of common counsel, of mediation, arbitration, and judicial determination in controversies between labor and capital. To accomplish this would involve the necessity to develop a thoroughgoing code of practice in dealing with such affairs. It might be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group. With rights, privileges, immunities, and modes of organization thus carefully defined, it should be possible to set up judicial or quasi judicial tribunals for the consideration and determination of all disputes which menace the public welfare.

"In an industrial society such as ours the strike, the lockout, and the boycott are as much out of place and as disastrous in their results as is war or armed revolution in the domain of politics. The same disposition to reasonableness, to conciliation, to recognition of the other side's point of

view, the same provision of fair and recognized tribunals and processes, ought to make it possible to solve the one set of questions as easily as the other. I believe the solution is possible.

"The consideration of such a policy would necessitate the exercise of care and deliberation in the construction of a code and a charter of elemental rights, dealing with the relations of employer and employee. This foundation in the law, dealing with the modern conditions of social and economic life would hasten the building of the temple of peace in industry which a rejoicing nation would acclaim.

No mention whatever was made of the railroad securities bill which he had asked Congress to pass in a message sent to it in July and which was passed by the House in August but was delayed in the Senate and only taken up for discussion on the floor during the latter part of the extra session.

The failure to mention the railroad bill was not particularly surprising since the President had let it be known before the close of the last session that he had rather lost interest in it because market conditions had improved sufficiently to make it possible to sell more of the equipment trust certificates held by the Railroad Administration in order to provide funds with which to make settlements with the railroads for some time to come. It has also been apparent that the railroads themselves were not sufficiently interested in the passage of the bill with the various conditions that have been put into it, to make any great efforts toward its passage, particularly in view of the danger of having it used as a vehicle for ill-considered amendments to the transportation act. As market conditions improve it may soon become possible for the railroads to finance themselves their indebtedness to the government for additions and betterments made during Federal control and their efforts now are being directed toward effecting settlements with the Railroad Administration.

Senator Cummins had allowed the bill to be displaced as the unfinished business of the Senate before the close of the extra session and the bill for the funding of the foreign loans was made the unfinished business on December 5.

On December 5 the President sent to Congress a special message on the budget, which included a report from the director of the budget estimating the expenditures of the various branches of the government for 1922 and 1923. This estimated the expenditures on account of the Railroad Administration and the transportation act for the fiscal year 1922 at \$337,679,235 as compared with actual expenditures for 1921 of \$730,711,669. No estimate was made for 1923.

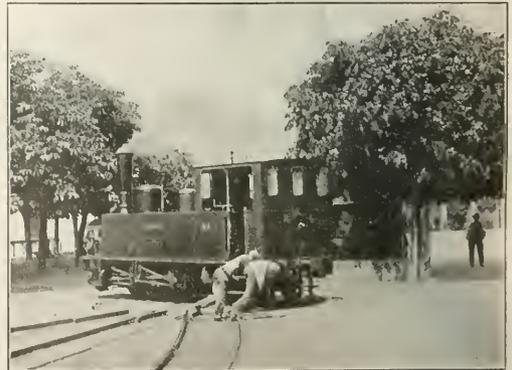


Photo from Ewing Galloway, N. Y.

Turning a Narrow-Gauge Locomotive at Lake Maggiore, Italy

# Disastrous Collision on Philadelphia & Reading

Caused by Failure of Train Crew to Obey "31" Order and to Heed Signal Indication

**A** BUTTING COLLISION of passenger trains on single track on the Newton branch of the Philadelphia & Reading, 16 miles north of Philadelphia, on the morning of December 5, resulted in the death of 25 persons and the injury of 20 or more. The only explanation of the accident which investigation thus far has brought out is, in the language of C. H. Ewing, vice-president of the company, the "failure of the human agency." Specifically—it appears that the train crew of one of the trains disregarded a meet

conjunction with the crew of No. 154, which was waiting on the main line just far enough north of the north end of the siding to allow No. 151 to back into the clear.

The operator had placed the manual block semaphore at stop for No. 151 and in addition had displayed a red flag, which is the practice when there are orders for a train. The conductor of No. 151 accordingly reported to the telegraph office and received an order, a fac-simile of which is shown in an accompanying illustration, directing his train to meet No. 156 at Bryn Athyn and to take the siding. This order was made "complete" at 7:46 a. m. The conductor delivered a copy of the order to the engineer.

As soon as No. 151 had cleared the main line, No. 154

Form 308 Philadelphia & Reading Railway Company

TRAIN ORDER No. 11

Superintendent's Office Dec 5 1934

To C. E. No 151 At Bryn Athyn

Operator: M.

No 151 will meet No 156  
At Bryn Athyn No 151  
take siding

W. F. E.

CONDUCTOR AND ENGINEER MUST EACH HAVE A COPY OF THIS ORDER.

Repeated at 7:45 am

CONDUCTOR TRAIN MADE OPERATOR  
Evans No 151 Complete 7:46 Clayton



Photo by International

Removing Victims from the Wreckage in the Cut

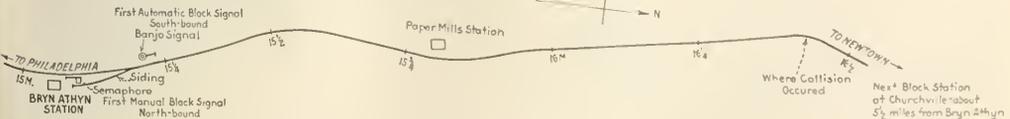
## The Order Which Was Disobeyed

order which they had received and, furthermore, the train entered a manual block section the signal for which was set against them.

The two trains involved were No. 151 and No. 156—the former northbound and the latter southbound. No. 151 arrived at Bryn Athyn at 7:42 a. m., 11 minutes behind schedule, and found waiting No. 154, a southbound train

proceeded southward. The operator at Bryn Athyn at this time was called by Churchville, about 5½ miles north and the first station at which an operator was on duty, asking for the block between the two stations for No. 156, which had received the order to meet No. 151 at Bryn Athyn and was ready to proceed southward. With No. 154 out of the block and No. 151 in the siding, the block was clear and accordingly the operator at Bryn Athyn allowed No. 156 to depart from Churchville, which it did at 7:45.

A minute or so later the operator at Bryn Athyn saw that



Section of the Newtown Branch in Vicinity of Accident

which it ordinarily meets at Huntingdon Valley, the first station south of Bryn Athyn. The siding at Bryn Athyn, as is shown in the accompanying sketch, can be entered from the north end only. Consequently No. 151 had to proceed past the manual block signal (also shown on the map) under protection of a flag. This protection was provided in

No. 151 was leaving and he ran up the track shouting to attract the attention of some of the train crew—but to no avail. No. 151 had left Bryn Athyn disregarding its meet order and also the manual block signal, without the clearing of which no train is, under the rules, permitted to proceed northward. The operator informed the dispatcher of what

had happened and calls for doctors and nurses were immediately sent out.

The trains met head-on about four minutes after No. 151 had left Bryn Athyn. The collision took place on a curve in a rather narrow rock cut which caused the wreckage to pile up instead of scattering over the right-of-way. To this fact the heavy loss of life may be laid. Many victims were imprisoned beneath the mass of wreckage and so perished, who might have been saved if the debris had been scattered.

The cars of both trains were of wood and they soon caught fire. Volunteer rescuers from houses in the neighborhood were not able to do effective work because of the fire and it was with difficulty that fire apparatus was brought from surrounding towns to the scene of the disaster because there are no highways in the immediate vicinity. Before any effective work could be done toward quenching the flames both trains had been practically consumed and with them the unfortunates imprisoned by the wreckage.

A relief train was sent from Philadelphia soon after the accident occurred and the injured were removed to neighboring hospitals as rapidly as possible.

It is understood that the conductor of No. 151 is inclined to admit some degree of responsibility for the accident. The engineman of this train is in the hospital and cannot be questioned. His fireman is among the dead. It appears, however, that the conductor, and possibly also the engineman, failed to give their orders to their subordinates to read as is required by the rules. The engineman and conductor, it is supposed, had in mind train No. 154 which they had met and by some peculiar psychological phenomenon assumed that the meet order referred to No. 154 and

for any unprotected movement into the block. No. 151 had never been admitted to the block and the fact that the signal was, when the train was in the siding, at the rear of the train, offers no excuse whatever to any of the train crew for proceeding without the assurance that it had been cleared by the operator.

Bryn Athyn is at the northern end of automatic block signal territory. On the accompanying sketch an automatic banjo signal, located just north of the north end of the siding to govern southbound movements, marks the northern extremity of automatic signals on this line. North from Bryn Athyn train movements are protected by manual block signals.

The Newtown branch is 19 miles long and is primarily



Photo by International

No. 156 Afire



Photo by International

Wreckage Piled in the Narrow Cut Which Made Rescuers' Work Difficult

not to No. 156—in spite of the fact that No. 156 was quite plainly written on the orders delivered to them.

But even with the general misunderstanding or neglect of the order, if any one of the five men composing the crew of No. 151 had paid any attention to the semaphore signal which was kept constantly in the stop position, the collision could have been averted.

This signal, as the map shows, is at the station and No. 151 had to pass the station to back into the siding. This movement was, however, protected by a flag, as was before noted, and no authority was given at any time by the operator for the train to enter the block. Such authority, indicated by clearing the signal, is necessary under the rules

a suburban passenger line. About ten passenger trains in either direction are operated daily over its rails between Newtown and Philadelphia. Most of the suburban communities it serves are relatively small and travel on the line is not remarkably heavy. As a result the equipment used is rather light and the trains are not as a rule long. For example, No. 156, an express train due to reach Philadelphia at a convenient hour, 8:30, in the morning and which may be presumed, therefore, to be a popular train—had on the day of the accident but five cars, a combination and four coaches. No. 151 had but three cars. All of these eight cars were of wood and the locomotives, No. 161 on Train 151 and No. 278 on Train 156, were relatively light "Mother Hubbards" of the American type and with Wooten fireboxes.

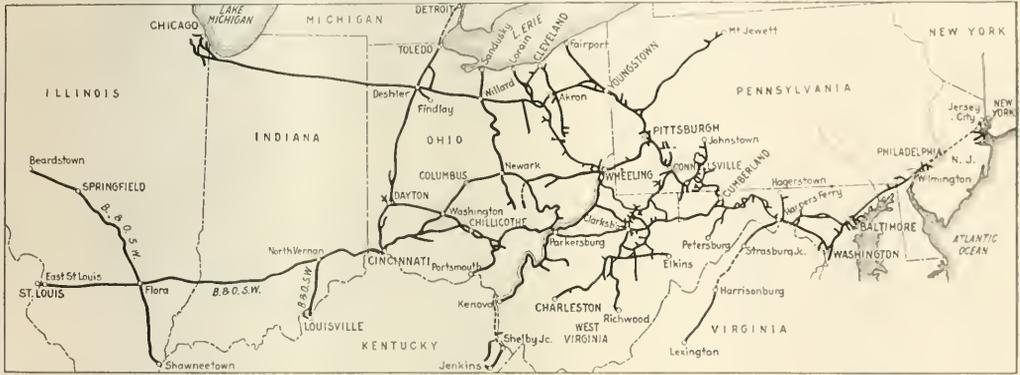
On December 6—the day following the accident—an investigation into the causes of the disaster was begun by the following: C. H. Ewing, vice-president of the company; F. M. Falk, general manager; V. B. Fisher, general superintendent; W. L. Kinter, general solicitor; W. F. Eckert, superintendent, New York division; A. H. Yocum, signal engineer; L. D. Shearer, superintendent of telegraph; B. H. Baker, chief dispatcher; J. T. Pratt, supervisor of safety; J. J. Scllers, train rules examiner; R. J. Steele, supervisor of signals; J. C. Wrenshall, division engineer; N. W. Jones, assistant superintendent; H. A. Rose, of the Pennsylvania Public Service Commission; and Messrs. Temple, Patterson and Hawley, representing the Interstate Commerce Commission. No official report of the results of the investigation have been made public and the details herewith set forth must be taken as preliminary to the official report of the investigators which is not yet complete.

# Baltimore & Ohio Shows Much Improvement in 1921

An Analysis of What the Road Is Doing in Operation and Earnings—The 1920 Results

THE MONTHLY REPORT of revenues and expenses of the Baltimore & Ohio for October and the first 10 months of 1921 furnishes a striking contrast with the figures for the preceding year, and particularly with the data given in the recently issued annual report. The net railway operating income for October, \$3,422,497, is considerably in excess of that of any previous month of 1921 and more than \$500,000 greater than the figure for October, 1920. For the first 10 months of 1921 the road had a net railway operating income of \$18,693,694. In the first 10 months of 1920 the property experienced a deficit of \$5,661,523. The figure, therefore, represents an improvement of \$24,355,217. This improvement is in part due to the adjustment

that we did not already know about the operations of the property during that eventful year. There are some things in the report, however, that are shown in such a striking way as to demand special attention. For one thing, the report brings out the fact that in the 12 months of 1920, the road handled 101,924,520 tons of revenue freight. This compared with 88,862,248 tons in 1919 and represented an increase of 14.7 per cent over that year. The ton-miles of revenue freight totaled 20,932,667,112, which broke all previous records for the Baltimore & Ohio. It was 15.3 per cent greater than the best previous year in the company's history. This seems to justify amply the statements made by the officers that the road regained more rapidly than



The Baltimore & Ohio

that was made in rates and charges in August, 1920, in part to economizing in maintenance, and in part to improved operating conditions generally. The Baltimore & Ohio in 1920 handled the largest business in its history. At the present time its net ton-miles are averaging but two-thirds those of last year. The latest figures available at this writing are those for September. Up to the end of that month,

was anticipated much of the traffic which, under federal control and as a necessary war measure, was diverted to keep the strategically located eastern lines open for the movement of fuel, steel and munitions to the seaboard. This last accounted in large part for the relatively poor showing in net income during federal control.

Although 1920 was a record year from the standpoint of

BALTIMORE & OHIO OPERATING RESULTS, 1914 TO 1920										
Year ended June 30	Mileage	Freight revenue	Gross revenue	Operating expenses	Operating ratio	Net operating revenue	Revenue tons	Revenue tons per mile	Average haul	Average train load
1914	4,515	\$76,398,717	\$99,164,010	\$74,403,389	75.03	\$24,760,621	72,267,060	14,054,421,501	194	645
1915	4,535	70,780,809	91,815,797	63,925,508	69.62	27,890,290	64,375,595	12,970,894,074	201	692
1916	4,539	88,476,032	111,668,680	79,319,804	71.03	32,348,876	80,785,993	15,793,944,856	195	761
Year ended Dec. 31										
1916	4,712	95,596,677	121,793,842	87,780,154	72.07	34,013,688	87,785,876	17,004,703,831	194	760
1917	4,989	107,174,612	139,851,910	108,093,666	77.29	31,758,244	93,516,882	18,144,817,428	194	785
1918	5,152	129,877,038	175,259,575	161,933,591	92.40	13,325,984	95,346,220	17,032,281,066	179	815
1919	5,154	136,802,852	182,620,016	170,348,032	93.28	12,271,984	88,862,248	17,203,592,303	194	847
1920	5,155	182,710,629	231,944,443	226,399,308	97.61	5,545,135	101,924,520	20,932,667,112	205	873

the road had handled since January 1, 11,062,904,000 net ton-miles. In the first nine months of 1920, the net ton-miles aggregated 16,095,181,000. The increase in net, therefore, is the more remarkable because it has taken place in spite of this falling off in traffic and in spite of the resulting sharp decrease in gross income.

*Record-Breaking Business in 1920.* The annual report of the Baltimore & Ohio which was given to the annual meeting at Baltimore on November 21, does not tell us much

the traffic carried, increased costs of operation without corresponding increase in rates and charges prevented the Baltimore & Ohio from realizing on its record breaking business. Its operating ratio was 97.61. For the year the road had a net railway operating deficit of \$4,427,019. The corporate income account, however, which takes into consideration the standard return for the first two months and the guarantee for the following six months and the earned income for the remaining four months, showed a

gross corporate income of \$31,834,154. The interest on funded debt and other deductions amounted to \$24,588,480. Dividends of 4 per cent on the preferred stock amounted to \$2,354,531 and the surplus after allowance for dividends was \$4,890,950. No dividends on the common stock were paid in 1920.

*Interesting Comparative Figures of Equipment Maintenance Costs.* A noteworthy feature of the Baltimore & Ohio's annual report is the comparative figures which are given for the years 1911 to 1920. A perusal of the several tables showing these figures brings out details which explain strikingly the reason for the net railway operating deficit which the road experienced in 1920. The tables develop the interesting fact that the wages of engine crews in 1913 averaged \$10.88 per 100 locomotive-miles. In 1919 they averaged \$18.70 and in 1920, \$24.43. Fuel per 100 locomotive-miles in 1913 was \$9.58; in 1919 it was \$22.96 and in 1920, \$36.81. The total cost per 100 locomotive-miles in 1913 was \$36.66; in 1919 it was \$100.78 and in 1920, \$122.98.

Another table shows the costs of repairs to cars, the statement including the repairs, retirements and depreciation charged to operating expenses. The average cost per freight car in 1913 was \$87.97; in 1919 it was \$212.97 and in 1920, \$287.55. The same figures for passenger cars

in a safe condition and is in adequate shape to handle properly all the business it has been called upon to carry; nevertheless, all has not been done that the officers of the road would like to have seen done.

### Some Maintenance of Way Statistics

It may be of interest to put some of these details in the form of statistics. The road will probably lay this year new rail amounting to about 28,000 tons. In 1920 it put in track 53,638 tons; in 1919, 28,262 tons; in 1916 and 1917, about 75,000 tons. New ties put in track in 1921 will total about 2,350,000. In 1920 the total was slightly in excess of this, the actual figure for 1920 being 2,576,398. The amount of rock ballast put in track this year is counted on reaching 275,000 yards. In 1920 the figure was 216,000. The average for the years 1908 to 1917 was 490,000. Gravel ballast used this year will total approximately 340,000 yards; in 1920 it was 425,000. Slag and cinder ballast this year is figured at 190,000; in 1920 it was 438,000.

*Orders for 3,000 New Car Bodies.* The best index of maintenance, insofar as cars are concerned, is the percentage of bad order freight cars. The Baltimore & Ohio on November 15 had 13.3 per cent of its freight cars in bad order. The percentage for all roads on that date was 14.4

		LOCOMOTIVES			CARS Repairs, retirements and depreciation charged to operating expenses				
		Cost per 100 miles run			Freight		Passenger		
Year ended	Miles run	Repairs, retirements, and depreciation	Wages of engine men, motormen and firemen	Cost of fuel for locomotives	Total*	Average number of freight cars owned	Amount	Average per car	Average per car
June 30									
1911	64,708,403	10.08	\$9.58	\$8.73	\$31.75	89,522	\$7,061,035	\$78.87	\$763.48
1912	61,119,637	11.15	10.09	8.48	33.20	88,131	7,566,655	85.86	785.01
1913	64,242,709	12.56	10.88	9.58	36.66	89,701	7,890,822	87.97	797.32
1914	61,445,747	12.11	11.67	10.27	38.37	88,364	7,116,659	80.70	653.80
1915	55,823,874	12.98	10.61	9.63	37.48	86,097	6,269,173	72.82	619.10
1916	62,581,009	17.07	10.44	9.31	40.85	84,943	9,646,292	113.56	809.74
Dec. 31									
1916	67,399,322	16.69	10.67	10.32	42.07	89,795	9,332,072	103.93	890.39
1917	69,839,296	20.38	13.24	20.15	59.74	94,217	8,849,531	93.93	912.11
1918	65,243,727	41.55	17.63	25.54	95.09	97,334	15,984,382	163.19	1,456.24
1919	59,960,670	47.45	18.70	22.86	100.78	95,432	20,321,911	212.97	1,994.67
1920	67,371,623	47.41	24.43	36.81	122.98	95,867	27,566,870	287.55	2,504.56

\*Includes also enginehouse expenses, cost of operating fuel stations, water for locomotives and lubricants and other supplies for locomotives.

show an increase from \$797.32 per car in 1913 to \$2,504.56 in 1920. A selection from these figures has been made up in the form of a table. The striking increases in costs reflect the changes which have come about through the inflation of labor and material during and incident to the war.

*Maintenance Savings in 1921.* As between 1920 and that part of 1921 for which the returns are available, the Baltimore & Ohio has seen a striking change. While influenced somewhat by the lesser amount of traffic handled and also by the reductions in wages, improvement in morale and changes in working conditions, there can be no question but that a large portion of the savings in expenses in 1921, as compared with 1920, has been due to reduced maintenance. The situation has been aptly described by a Baltimore & Ohio officer who explained that the condition was a great deal like that of the owner of a house whose bank balance had been seriously reduced but who desired nevertheless to repaper his living room and was confronted at the same time with the necessity of repairing a leak in the roof. Naturally, under the conditions, he would repair the roof and presumably postpone the repapering of the living room. This, the officer said, is what has happened with the Baltimore & Ohio. The road had been maintained to a high standard, but customary painting, etc., has been omitted. A trip over its main line evidences that it looks good and rides well. It is certainly

per cent. Bad order box cars on the B. & O. on the date mentioned totaled 12 per cent and coal cars 13.9 per cent. There are at present stored along the lines of the road large numbers of cars requiring heavy repairs, although this perhaps is not on the whole exceptional as compared with other roads. However, the road is taking heroic measures to remedy the situation. Early in October, as reported in the Equipment and Supplies column of the *Railway Age* of October 8, it placed orders for 1,000 box and 1,000 hopper car bodies; it was reported in the issue of December 2 as having placed orders for 1,000 additional hopper car bodies. The intention is to use rebuilt trucks and the running gear and replace the bodies; at any rate, the steps taken will permit the elimination of 3,000 heavy bad orders from the bad order total.

### B. & O. Primarily a Coal Road

*Coal Traffic Falls Off.* In the editorial review of the Baltimore & Ohio's annual report for 1919 which appeared in the *Railway Age* of January 21, 1921, page 224, considerable attention was paid to the manner in which the road handled its coal traffic, to the fields from which the coal is obtained, and the way in which it is moved. Similarly, comments were made concerning the growing traffic in other commodities. It was noted, however, that, "Nevertheless, despite the increase in general business, the Baltimore &

Ohio is still primarily a coal road." This statement applies with equal force to the 1920 annual report. In 1918 the Baltimore & Ohio carried 45,259,560 tons of bituminous coal, this constituting 47 per cent of the total tonnage; in 1919 the tonnage of bituminous coal was 40,752,924 or 45.86 per cent; in 1920 the bituminous coal moved reached 48,933,438 tons or 48 per cent. The increase in total tons of all commodities handled in 1920 over 1919 was 13,062,272; of bituminous coal 8,180,514.

The Baltimore & Ohio, as was noted in the editorial review above mentioned, moves its coal to tidewater at Baltimore. With one exception—the Pennsylvania System—it moves more coal to the lakes than any other carrier. There is also a heavy movement to central Pennsylvania, New York and New England over the Philadelphia & Reading through Shippensburg, Pa., which coal is delivered to that carrier by the Western Maryland and the Cumberland Valley. The movement to the coal piers at Baltimore this year has fallen off in a rather unusual degree, due largely to the difficulties which have beset the country's export trade in coal. In 1920 the B. & O. broke all records for dumpings at its Baltimore piers—Curtis Bay and Locust Point. Whereas in 1918 it dumped at these piers 2,400,000 tons, and in 1919 about 2,000,000 tons, in 1920 it reached a figure of 5,500,000 tons. For purposes of comparison it may be noted that in 1920 the Chesapeake & Ohio dumped at Newport News, Va., about 7,000,000 tons; the Virginian at Sewalls Point (Norfolk), about 5,500,000 tons and the Norfolk & Western at Lamberts Point (Norfolk), about 8,800,000 tons. This year, however, the B. & O. will dump at Baltimore but 2,200,000 tons. As has been the case at many other piers the pooling arrangements at Curtis Bay have been abandoned.

The Baltimore & Ohio dumps coal at the lakes at Toledo and Lorain, and will resume the handling of coal at Fairport, where it formerly handled considerable quantities also at Fairport. In the first 10 months of 1921 it has loaded bituminous coal into vessels at Toledo amounting to about 2,400,000 tons as compared with 1,400,000 tons in the same period of 1920 or 2,100,000 in 1919. For Lorain the figures for the first 10 months of 1921 show 2,500,000 tons as against 2,900,000 in the first 10 months of 1920, or 2,800,000 in the same period of 1919. The lake movement seems to have held up considerably better than the movement to tidewater at Baltimore.

**Back Haul on Iron Ore.** The Baltimore & Ohio has the advantage of a sizeable back haul on iron ore from its lake ports. It ranks fourth in this traffic, its business being exceeded by that of the Bessemer & Lake Erie, the Pennsylvania and the New York Central. Naturally, in view of the state of the steel industry, this business has been considerably less than it was in 1920. In the first nine months of 1921 the road handled from the lake ports about 1,500,000 tons as compared with 2,800,000 tons in the same period of 1920. Ore is received at Lorain, Toledo, Fairport and Cleveland. Last year the tonnage shipped from the first three was practically equal—about 900,000 tons. This year about two-thirds of the business has been handled from Fairport.

#### Attitude of Officers and Men Seems Excellent

**Conclusions.** It is fairly well understood that the Baltimore & Ohio has experienced rather rough going during the past three or four years. It has been handicapped by the manner in which its lines were divided during federal control under the jurisdiction of six federal managers reporting to four regional directors and by the diversion of much of its traffic, particularly its high grade freight traffic and passenger business, to other roads. While the officers of the road, themselves, do not believe that the system has

regained all the ground lost during federal control, the 1920 annual report states: "In the ten months of the year (1920) during which the road was operated under the jurisdiction of the company, the pre-war basis for maintenance of way and structures was re-established, and some improvement made in track and equipment conditions"; that the through passenger train service was re-established, and the general ability of the road reflected in the fact that the Baltimore & Ohio "during the year 1920 moved a larger volume of traffic \* \* \* than ever before in its history."

The general attitude of officers and men seems excellent. The substantial increase in net railway operating income, notwithstanding the falling off in business which has characterized the present year, seems to indicate that the Baltimore & Ohio has turned the corner and should continue the improvement which has already been developed.

## Senate Committee Hearings

WASHINGTON, D. C.

**T**ESTIMONY on behalf of the railroad train service brotherhoods by Frank J. Warne was concluded on December 3, after Mr. Warne had been on the stand for 10 days. This testimony was given in connection with the committee's general investigation of railroad conditions in accordance with a Senate resolution. In the same proceeding the committee expected to hear testimony of Walker D. Hines, former director general of railroads, on Friday of this week. Mr. McAdoo is to be called later. Commissioner Campbell of the Interstate Commerce Commission is also to be heard by the committee at the request of Senator Poindexter, and Chairman Cummins asked the Interstate Commerce Commission whether it cared to introduce testimony. It is understood that Commissioner Hall will appear for the commission some day next week.

Hearings on the Capper bill and other proposed amendments to the transportation act have not yet been concluded and it is expected that additional witnesses will be heard on behalf of the railroads. After hearing the testimony of the state railroad commissions and of Clifford Thorne and S. H. Cowan, the committee appeared anxious to conclude the hearings and act on a bill, but the testimony presented on behalf of the railroads and Security Owners' Association has apparently counteracted to some extent the effect of the previous testimony and indicated to the committee that it had heard a one-sided story. Representatives for the railroads insisted on having an adequate time to present their case in spite of the efforts of Senator Cummins to conclude the hearings and this made it necessary to postpone action until the new session.

Warne claimed that the case of the public interest in the country's transportation highways has not been properly presented before most tribunals in valuation and other cases. "One can even go further, with due regard to the facts in the case," he said, "and state without fear of successful contradiction that much of the public interest in the railroads has been automatically and arbitrarily capitalized by the financial interests in control of the roads for the benefit of private groups and individuals. These now exercise 'squatter' sovereignty over vast amounts of value belonging to the people and which were never surrendered by them. In brief, the greater part of the interest of the public in the railroads, which was retained by it even in the charter grants to the roads, has been taken from it by various methods and devices of economic exploitation and is today 'legalized' as private property. And a considerable part of this public interest is represented in the present-day land values in road and equipment of the railway property investment account."

The witness discussed the important part investments in

the roads made out of earnings and surplus play in the property investment account at the present time. He argued that the public had an interest in such sums and that it should not be required to pay an additional return on these invested surplus earnings. In this connection he claimed that the total cost of the Pennsylvania terminal and tunnel in New York City of \$114,000,000 contained \$57,000,000 of such surplus earnings. Illustrations were also given from the practices of the Chicago & Alton, the Burlington, the Delaware, Lackawanna & Western, and numerous other carriers.

Replying to testimony presented before the committee by witnesses for the railroads as to the proportion of operating revenues that goes to labor in the form of wages to employees. Warne said that the total amount of the government rental under the guarantee, amounting to as much as \$906,500,000, was omitted from the calculation for the years 1918, 1919, and 1920. He also said that as much as \$92,000,000, representing salaries to general and division officers, was included as wages to employees, so that the ratio to labor was made very much larger by each one of these two "statistical fallacies." He said:

"The amount received by the American railroads as representing return on investment was \$788,633,049 in 1920 and not \$61,928,626 as reported by Mr. Elliott and other representatives of the railroads. It was \$906,524,492 in each of the years 1919 and 1918 and not \$454,984,953 and \$638,568,603, respectively, as stated by Mr. Elliott.

"Mr. Elliott's figures give the proportion going to investment in 1920 as 1.0 cent out of each dollar. The inclusion of the amount of the standard return increases this more than eleven-fold—to 11.4 cents. For 1919 investment received 16.2 cents out of every dollar instead of Mr. Elliott's 8.8 cents, and in 1918 the amount going to investment out of each dollar was 17.6 and not 13.1 cents.

"The 11.4 cents out of every dollar that in 1920 went to investment, a relatively low return compared with 1919 and 1918 because of much greater maintenance expenditures in 1920 out of revenue, is equal to 105,528,216 more dollars than the 23.8 cents out of every dollar in 1915; it is \$127,614,902 more than the 21.8 cents going to investment in 1914; it is even greater in total amount by \$80,148,666 than the 25.2 cents received by investment in 1912.

"The 16.2 cents in 1919 and 17.6 in 1918 received by investment out of every dollar are \$223,419,659 more than the 23.8 cents in 1915. They are \$245,506,345 more than the 21.8 cents in 1914; \$198,040,109 more than the 25.2 cents in 1912. They are only \$78,348,467 less than the 29.1 cents in 1916, this latter standing for the largest proportion out of each dollar received by investment in any one of these years from 1912 to 1920.

"With labor receiving 53.6 cents out of every dollar in 1920, the largest proportion in any one of these nine years, there went to investment a much larger sum, not taking into consideration the large income to capital through excessive maintenance, than in either 1915, when labor received only 41.5 cents, or in 1914, when it was paid 44.1 cents, or in 1912, when the proportion of each dollar was 43.1 cents.

"It should be plain from all this that an increase in the proportion that goes to labor out of each dollar earned is not inconsistent with even large revenue to investment. It is also clear that the proportion that goes to capital out of each dollar earned may decrease in any one year in relation to another year and at the same time investment receive a much larger return. This usually comes about through the smaller proportion being received on a great many more dollars."

Mr. Warne said that railroad corporations today own as much as \$2,760,000,000, face value, of the stocks of other railroad and affiliated companies and \$2,453,000,000, face value, of their bonds, the total investment of railway corporations in the securities of other rail transportation and affil-

ated companies exceeding \$5,213,000,000, or approximately one-fourth—25 per cent—of total railway securities.

"This ownership of stock should not be regarded from the purely investment standpoint," he said, "that is, as the investment of capital upon which a stated or specified rate of return should be secured. This is true because of the fact that such ownership has no relation to and is not based upon the principle of investment that prevails in ordinary circumstances. The conclusion is indisputable that railway corporations do not purchase railway stock widely for purpose of investment, but that the holdings in the stock of other railroads are rather for the purpose of controlling or influencing the management of corporations whose operations are of real concern to the holding company. Such holdings are either majority holdings, which ensure control, or minority holdings of sufficient amount to guarantee an effective influence in management."

Among the conclusions which the witness drew from his presentation of a large number of specific illustrations of different railroads as to this intercorporate ownership are the following:

Inflation of the property investment account.  
Over-capitalization, involving the excessive issue of securities.

Over-expansion of credit.  
Corporate speculation and speculation with corporate funds.

Centralization or concentration of financial power.  
"Reckless and profligate" financing.  
Complex, complicated, intricate, secret, and confusing intercorporate relations and bookkeeping.

Manipulation of accounts and falsification of records.  
"Circuitous and subterranean" transactions between corporations within the same system.

Control of a company or of companies by a single corporation stockholder over against the interest possibly of thousands of individual stockholders.

Minority stock control of transportation companies.  
Removal of control from close relations to the subsidiary's public.

Creation of holding companies that deny the authority of the Interstate Commerce Commission.

Diversion from investment in equipment and other property of holding corporations of vast sums tied up in stock purchases.

Diversion of funds for needed improvements in the subsidiary to channels serving more the interest of the holding company.

Neglect of necessary improvements to the subsidiary road in order to pay dividends to the holding corporation.

Impairment of credit of the subsidiary.  
Destruction or deterioration of stock value to minority stockholders.

Reduction or passing of dividends to the subsidiary stockholders.

Replacement of a conservative by a speculative management; of one practicing rigid economy by one engaging in extravagance.

Cash dividends, bonuses, gifts of securities in subsidiary companies, syndicate profits and commissions, stock dividends, and the like.

Unfair and unjust division of through rates.  
Unfair and unjust distribution of traffic.  
Limitation of necessary new construction.

Encouragement to dummy directors and dummy officials and even dummy stockholders and dummy corporations.

Contracts presumably between two or more subsidiary companies made in fact by one and the same holding company.

The relation of holding and subsidiary companies and their officials to construction and supply companies.

# General News Department

The Illinois Central is experimenting with peat as a substitute for coal as fuel on its Chicago suburban trains.

Demurrage on freight cars, in Canada, according to a ruling recently handed down by the Railway Commission, is hereafter to be one dollar a day on each car, after the first 48 hours, and five dollars a day thereafter.

The division terminal of the Nashville, Chattanooga & St. Louis, now located at Lexington, Tenn., will be moved to Hollow Rock Junction, Tenn., on January 1, where new yards have been constructed at a cost of approximately \$500,000.

George J. Ray, chief engineer of the Delaware, Lackawanna & Western, will address the Western Society of Engineers, Chicago, on the evening of December 15, on "Economic Considerations of Line Revisions on the D. L. & W."

The Interstate Commerce Commission has announced a series of hearings in valuation cases to be held at Washington during January, including the Elgin, Joliet & Eastern and the Atlanta, Birmingham & Atlantic on January 9; Evansville & Indianapolis on January 16, Central of Georgia and Florida East Coast on January 23.

A million dollars a month, approximately, is the amount of the war taxes which the New York Central during the past four years has been collecting on passenger tickets and freight bills, and a circular has been issued telling the company's patrons how they are now going to save twelve millions a year. When the tax is taken off, January 1, the fare from New York to San Francisco will drop from \$120.59 to \$111.70.

## New England Railroad Club

C. B. Smith, mechanical engineer of the Boston & Maine, will speak on the subject of Rebuilding Old Locomotives at the next meeting of the New England Railroad Club, to be held on Tuesday, December 13. A dinner will precede the regular business meeting, which will be held at the American House, Boston, Mass., at 8 p. m.

## North Dakota Campaign Against Crossing Accidents

The Board of Railroad Commissioners of the state of North Dakota proposes to launch immediately a state-wide campaign for the reduction of grade crossing accidents. This is believed to be the first instance of a state department undertaking on its own account an extensive campaign against such accidents.

## Recommends Another Claim Prevention Congress

The Freight Claim Division of the American Railway Association has issued a circular to all roads recommending that another "Freight Claim Prevention Congress," be held in Chicago during the month of January, 1922, and to be somewhat similar to the one held in Chicago in November, 1920.

## "Labor" Contributes Some Additional Strike News

Labor, the newspaper published by the Plumb Plan League, reproduces in its latest issue a copy of an order said to have been sent by the Navy Department to all heads of departments and barracks petty officers under date of October 21, directing them to interview all men who come under their jurisdiction, with a view of finding out if any had previous experience in railroading; and to prepare lists showing the previous experience, such as fireman, engineer, trackman, switchman, round house and repair man, or in any duties in connection with railroad operation of all men assigned to each barracks or head of department.

The order also asked for a list of those who had had experience in machine gun crews and were good pistol or rifle shots. The lists were to be submitted to the executive officers on October 24.

The paper draws from this the inference that the government had made extensive plans for resisting the strike of railroad employees which was called for October 30.

## Chicago Engineers to Study Railroad Economics

The Chicago chapter of the American Association of Engineers has established courses of instruction in railroad management and in railroad economics. These courses are open to the members of this association without charge. They are not designed to make operating officers or accountants of the students, but are intended to give them an insight into the methods employed in these departments. It is the intention to direct the work of these courses by reference as far as possible to the methods in vogue on the roads on which the students are employed.

## Board Summons Carriers in Contract Controversy

Representatives of nine railroads—the Erie, the Pittsburg & Lake Erie, the Indiana Harbor Belt, the St. Louis-San Francisco, the Gulf Coast Lines, the Chicago Great Western, the Colorado & Southern, the Chicago, Milwaukee & St. Paul and the Great Northern have been summoned to appear before the Labor Board on December 19 in controversies arising over the action of these carriers in leasing their shops or maintenance of way work to outside companies. The disputes in each case have been brought by the employees involved as constituting a violation of the labor provisions of the Transportation Act. It has long been an open question as to the attitude of the Labor Board on this subject and its action will therefore be given careful attention not only by those roads which have already engaged in this practice but by representatives of other carriers which have been contemplating such action but have hesitated because of the unknown attitude of the Board.

All of the cases now before the Board, 70 in number, involving the American Express Company, are to be disposed of by hearings which will begin on December 12 and continue until testimony in all of the cases has been completed. This is part of the Board's attempt to clear its docket of a large number of minor cases which were submitted to it because of the lack of adjustment boards.

## Coal in Store November 1

The Bureau of the Census and the Geological Survey have made a joint investigation of the stocks of anthracite and bituminous coal in the country as of November 1, which shows total consumers' stocks on that date amounting to approximately 47,000,000 tons. This quantity was about 25 per cent below the maximum reached during the war. Because of the business depression, the report says, the stocks on hand appear larger than they are and at the present low rate of consumption if evenly divided among all users they would last about 43 days. With business active they would last 35 days. The present stocks are about the same as those on January 1, 1921. During the spring and summer stocks declined to 39,000,000 tons, but they increased rapidly in October because consumers feared a possible railroad strike. Now that the strike has been averted, production has fallen sharply to a point below consumption and coal is being withdrawn from storage.

The report estimates that the railroads had on hand as of November 1 29 days' supply of bituminous coal, which is a larger amount than they have had since January 1, 1919, when there was a 32 days' supply. This estimate is based on preliminary returns from 255 roads furnished by the American Railway Association.

I. C. C. Questions Interlocking Directors

The Interstate Commerce Commission has sent out a questionnaire to directors and officers of railroads that occupy such positions on more than one road, calling for information which the commission desires to have in passing upon their applications for authority to retain such positions after December 31. A large number of such applications under Paragraph 12 of Section 20-a of the law are being filed with the commission daily. So far the commission has passed on a number of simple cases in which the dual positions are held with purely subsidiary or affiliate companies. The questionnaire asks for information as to the following:

- 1.—Personal ability of person;
- 2.—Extent of financial interest in road;
- 3.—Affiliation if any with banks or banking institutions, railroad equipment concerns; supply houses, coal companies, real estate concerns or others doing business with railroads generally;
- 4.—Interest in commodities transported by railroad carriers;
- 5.—Number and importance of boards of which a member;
- 6.—Extent of actual or potential competition between carriers involved.

Net Operating Income for October 5.4 Per Cent

Reports of the earnings of the Class I railroads for the month of October just filed with the Interstate Commerce Commission show a net operating income of \$105,186,283, which is at the rate of 5.4 per cent for a year on their tentative valuation. This is the largest net operating income the roads have had for a month since the rates were increased and is 21.8 per cent greater than that for October, 1920, which was the best month they have had heretofore since the rate decision. The compilation is based on reports from 199 roads. The Detroit, Toledo & Ironton and the Kansas City Terminal have not yet filed their reports. October is normally the heaviest traffic month of the year and, due to the

per cent and the Western roads 5.8 per cent, in each case showing an improvement as compared with last year.

For the 10 months of 1921 ended October 31, the net operating income of the Class I roads has been \$494,606,000, which is at an annual rate of return of 3.2 per cent. Operating revenues for the 10 months show a decrease of 8.1 per cent and operated expenses show a decrease of 17.1 per cent. That this was accomplished to a considerable extent at the expense of maintenance is shown by the fact that the maintenance expenses decreased 21.7 per cent. Thirty railroads had operating deficits in October as compared with 36 in September, 13 being in the Eastern, 7 in the Southern and 10 in the Western district. The table below giving a preliminary report for October and the 10 months has been compiled by the Bureau of Railway Economics.

A. R. E. A. Nominees

The Nominating Committee of the American Railway Engineering Association has submitted its report to the Board of Direction as follows: For president, J. L. Campbell, chief engineer, El Paso & Southwestern, El Paso, Texas; for second vice-president, G. J. Ray, chief engineer, Delaware, Lackawanna & Western, Hoboken, N. J.; for directors (three to be elected), D. J. Brumley, chief engineer, Chicago Terminal Improvements, Illinois Central Railroad, Chicago; Maurice Coburn, engineer maintenance of way, Pennsylvania System, Indianapolis, Ind.; H. T. Douglas, Jr., chief engineer, Chicago & Alton, Chicago; F. W. Green, vice-president, St. Louis Southwestern, St. Louis, Mo.; C. E. Lindsay, special engineer, New York Central Lines, Albany, N. Y.; J. C. Mock, signal-electrical engineer, Michigan Central, Detroit, Mich.; H. L. Ripley, valuation engineer, New York, New Haven & Hartford, Boston, Mass.; O. E. Selby, principal assistant engineer, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Ohio, and W. P. Wiltsee, principal assistant engineer, Nor-

PRELIMINARY REPORT OF REVENUES AND EXPENSES, CLASS I ROADS AND LARGE SWITCHING AND TERMINAL COMPANIES

Item	Month of October			Ten months' period ended October 31		
	1921	1920	Per cent of increase	1921	1920	Per cent of increase
<b>Total Operating Revenues:</b>						
Eastern District (incl. Poca. Reg.)	\$246,362,769	\$314,585,441	d 21.7	\$2,246,399,989	\$2,416,509,430	d 7.0
Southern District (excl. Poca. Reg.)	64,279,732	71,068,251	d 9.5	573,108,304	631,795,903	d 9.3
Western District	224,492,625	256,012,830	d 12.3	1,851,803,938	2,033,060,895	d 8.9
Total—United States	535,135,126	641,666,522	d 16.6	4,671,312,231	5,081,366,228	d 8.1
<b>Total Maintenance Expenses:</b>						
Eastern District (incl. Poca. Reg.)	89,850,859	113,313,235	d 22.1	840,678,372	1,074,490,062	d 21.8
Southern District (excl. Poca. Reg.)	23,435,063	27,382,123	d 14.4	221,175,127	265,208,743	d 16.6
Western District	71,194,138	85,295,372	d 19.3	646,716,959	841,863,603	d 23.2
Total—United States	184,480,060	230,920,650	d 20.1	1,708,570,458	2,181,562,408	d 17.1
<b>Total Operating Expenses:</b>						
Eastern District (incl. Poca. Reg.)	191,786,345	266,357,947	d 28.0	1,966,541,969	2,404,428,403	d 20.7
Southern District (excl. Poca. Reg.)	50,305,615	62,295,550	d 19.4	501,897,543	589,097,644	d 14.8
Western District	153,127,817	197,740,434	d 21.6	1,470,881,318	1,808,324,071	d 23.2
Total—United States	397,114,777	526,393,731	d 24.6	3,979,320,830	4,801,850,118	d 17.1
<b>Net Railway Operating Income:</b>						
Eastern District (incl. Poca. Reg.)	40,734,848	33,860,110	20.3	207,885,159	Def. 107,671,519	.....
Southern District (excl. Poca. Reg.)	10,467,353	6,528,412	60.3	39,586,707	17,279,151	129.1
Western District	53,984,082	46,003,851	17.3	247,134,399	94,681,447	161.0
Total—United States	105,186,283	86,392,373	21.8	494,606,265	4,289,079	.....
<b>Rate Earned—Annual Basis:</b>						
Eastern District (incl. Poca. Reg.)	5.0	4.2	.....	3.0	Def.	.....
Southern District (excl. Poca. Reg.)	5.3	3.4	.....	2.2	1.0	.....
Western District	5.8	5.1	.....	3.7	1.5	.....
Total—United States	5.4	4.6	.....	3.2	.....	.....

\*Less than one-tenth of one per cent. d Denotes decrease.

Note—Excludes returns for Detroit, Toledo & Ironton and Kansas City Terminal not yet filed.

threat of a railroad strike, the volume of freight for the latter part of the month was beyond normal. Immediately after the strike threat was removed, carloadings fell off more than 122,000 in a single week and have since been declining at a rate which would indicate that the traffic for November will probably approximate only about 80 per cent of that for October. The ton miles of freight handled in October were approximately 36,000,000,000, a decrease of 14 per cent as compared with October, 1920. This was lower than the ton mileage for any October since 1916. The total operating revenues for the month were \$535,135,126, a decrease of 16.6 per cent as compared with October, 1920, while the operating expenses were \$397,114,777, a decrease of 24.6 per cent. The maintenance expenses were \$184,480,060, a decrease of only 20.1 per cent as compared with last year. The operating ratio this year was 74.2 per cent as compared with 82 per cent last year. Railroads of the Eastern district showed a net return at the rate of 5 per cent, the Southern roads 5.3

per cent and the Western roads 5.8 per cent, in each case showing an improvement as compared with last year. For the 10 months of 1921 ended October 31, the net operating income of the Class I roads has been \$494,606,000, which is at an annual rate of return of 3.2 per cent. Operating revenues for the 10 months show a decrease of 8.1 per cent and operated expenses show a decrease of 17.1 per cent. That this was accomplished to a considerable extent at the expense of maintenance is shown by the fact that the maintenance expenses decreased 21.7 per cent. Thirty railroads had operating deficits in October as compared with 36 in September, 13 being in the Eastern, 7 in the Southern and 10 in the Western district. The table below giving a preliminary report for October and the 10 months has been compiled by the Bureau of Railway Economics.

The Nominating Committee of the American Railway Engineering Association has submitted its report to the Board of Direction as follows: For president, J. L. Campbell, chief engineer, El Paso & Southwestern, El Paso, Texas; for second vice-president, G. J. Ray, chief engineer, Delaware, Lackawanna & Western, Hoboken, N. J.; for directors (three to be elected), D. J. Brumley, chief engineer, Chicago Terminal Improvements, Illinois Central Railroad, Chicago; Maurice Coburn, engineer maintenance of way, Pennsylvania System, Indianapolis, Ind.; H. T. Douglas, Jr., chief engineer, Chicago & Alton, Chicago; F. W. Green, vice-president, St. Louis Southwestern, St. Louis, Mo.; C. E. Lindsay, special engineer, New York Central Lines, Albany, N. Y.; J. C. Mock, signal-electrical engineer, Michigan Central, Detroit, Mich.; H. L. Ripley, valuation engineer, New York, New Haven & Hartford, Boston, Mass.; O. E. Selby, principal assistant engineer, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Ohio, and W. P. Wiltsee, principal assistant engineer, Nor-

folk & Western, Roanoke, Va. For members of nominating committee (five to be elected), W. J. Backes, engineer maintenance of way, New York, New Haven & Hartford, New Haven, Conn.; A. M. Burt, assistant to vice-president in charge of operation, Northern Pacific, St. Paul, Minn.; J. V. Hanna, chief engineer, Kansas City Terminal, Kansas City, Mo.; Maro Johnson, assistant engineer, Illinois Central, Chicago, Ill.; H. K. Lowry, signal engineer, Chicago, Rock Island & Pacific, Chicago; J. de N. Macomb, office engineer, Atchison, Topeka & Santa Fe, Chicago; A. Montzheimer, chief engineer, Elgin, Joliet & Eastern, Joliet, Ill.; W. L. Morse, special assistant engineer, New York Central, New York; P. B. Motley, engineer of bridges, Canadian Pacific, Montreal, Can., and A. O. Ridgway, assistant chief engineer, Denver & Rio Grande Western, Denver, Colo. Ballots will be distributed to the members shortly after January 1, and the result of the election will be announced in March.

## Traffic News

### Mississippi River Barge Line

The operations of the government freight barges on the Mississippi river during the 22 months ending with August last, are the subject of a brief review, prepared by the Transportation Division of the United States Department of Commerce, and published in Commerce Reports for November 28.

For the whole period of 22 months the quantity of freight carried southbound was 256,875 tons, and northbound 159,476 tons. The total movement for August was 266,578 tons, by far the heaviest month's traffic in the record.

Sailings are now made weekly from each terminal, New Orleans and St. Louis; and landings are made at Cairo, Memphis and Vicksburg. The boats have the benefit of municipal docks at St. Louis, at Memphis and at New Orleans, and at Cairo the barge line owns a floating terminal. With funds lent by the Secretary of War, additional terminals are being prepared at Memphis, Vicksburg and New Orleans.

The line now has in service 50 cargo barges and 10 tow boats; and other craft. Forty of the steel cargo barges are 230 ft. long with a capacity of 2,000 tons each; and 10 of the barges are adapted to carry oil in bulk, 118,400 gal. each. The freight rates by the barge line are about 20 per cent lower than those by parallel railroad lines.

### Commission Authorizes Temporary

#### Reduction in Rates on Farm Products

The Interstate Commerce Commission on December 2 issued a special order granting the request of the railroads for permission to make a reduction for six months of 10 per cent in the freight rates on agricultural products on short notice and in as inexpensive a manner as possible, by the publication of master tariffs and special supplements to freight tariffs in abbreviated form. The commission has issued the necessary modifications of its rules to permit the abbreviated tariffs to be filed on short notice on or before December 31.

The railroads proposed this temporary reduction as a substitute for the order of the commission which has been made effective on December 27, reducing the rates on grain and hay in the western districts by half of the amount of the increases made in Ex Parte 74; and the request was made in the same petition in which the commission was asked to reopen the Western grain case for further hearing. The present order is effective in all parts of the country except in New England; and it was granted without any statement of the commission's intentions as to the enforcement of its order in the grain case.

The commission also issued separate orders authorizing the establishment of the reduced rates on agricultural products without observing the long-and-short-haul rule, and providing that outstanding orders may be modified to the extent necessary to permit the proposed reduction to be applied to the rates covered by them. An "inexpensive form" of notice is shown with the order. This form has been worked out after conferences with the tariff publishing agents.

Representatives of the western states that would benefit particularly by the reduction on grain, hay and grain products provided for in the commission's order are making a fight to prevent the commission from withdrawing this order and substituting the 10 per cent reduction on agricultural products generally. Clyde M. Reed, chairman of the Kansas Public Utilities Commission and of the management committee of the state commissions which filed the original complaint in this case, which led to the investigation on the commission's own motion in which the order was entered, filed a protest with the commission on Monday against the granting of the railroads' petition. This, the protest said, "is in substance a request, that the Interstate Commerce Commission stultify itself by receding from its original position." It says that the railroads have failed to show any change in conditions or changed facts which were not put before the commission during the original investigation and the commission is asked to maintain its order and put the reductions into effect.

## Commission and Court News

### Court News

#### Live Stock Shipper Falling From Top of Car

The Circuit Court of Appeals, Eighth Circuit, holds that a shipper of live stock, who himself undertook to move a car to the chute and went on the top of the car in the dark without a lantern, and walked off the end, was guilty of gross negligence as a matter of law, barring recovery from the railroad for his injuries.—*Birkestrand v. Chicago, M. & St. P.*, 275 Fed. 194.

#### Abandonment of Telegraph Company's Easement

Where an easement for telegraph lines along a railroad right of way was not used for 40 years, during which time the telegraph company had accepted an exclusive lease of rights for its lines, and had subsequently started condemnation proceedings to take part of the right of way, the Alabama Supreme Court holds that the non-user, together with the acceptance of the lease and the condemnation proceedings, sufficiently showed an abandonment of the easement.—*Western Union v. L. & N. (Ala.)*, 89 So. 518.

#### Neither Railroad Nor Director General

#### Responsible for Defective Track in Military Camp

The Circuit Court of Appeals, Fourth Circuit, holds that neither the Atlantic Coast Line, which built a branch into Camp Jackson, nor the Director General, who took over the operation of the road, was liable for the death of soldiers caused by derailment of a car in the camp from a defective track, the military authorities having taken over control of the track and substituted lighter rails, insecurely fastened, at the place of the accident.—*Heise v. Davis*, 275 Fed. 326.

#### Sufficient Clearance Between Tracks in Yards

The Rock Island constructed its switching yards at Council Bluffs 20 years ago with the clearance between tracks usual at that time, 6 ft. 6 in., in yards constructed recently the usual clearance being 7 ft. 6 in. In an action for death of an employe, alleged to be due to insufficient clearance, the Minnesota Supreme Court holds that if the yard was reasonably safe, continuing to use it without rearranging the tracks so as to provide a greater clearance is not negligence, unless it appears that such yards are no longer in common use or that changed conditions require a greater clearance. Judgment for the defendant notwithstanding verdict for the plaintiff was affirmed.—*McNamee v. Hines (Minn.)*, 1184 N. W. 675.

#### Industrial Track Must Be Justified

#### By Amount of Business

The Oklahoma Supreme Court holds that under section 33 of article 9 of the state Constitution, the Corporation Commission is not justified in issuing an order to require a railroad to maintain a "switch" for the benefit of any \* \* \* coal mine, saw-mill \* \* \* or other industry, unless it appears that the amount of business is sufficient to justify the same.

It is also held that when a person seeking to have a switch put in by a railroad for his benefit accepts the terms of a letter that he is to pay a certain amount of the expense of installation, the letter clearly stating that the switch is temporary and shall be removed in six months, no equity arises in his favor to compel the railroad to continue to maintain the switch after the expiration of the time for which it was installed, because of the expenditure of money made by him.—*Rock Island v. State (Okla.)*, 201 Pac. 260.

# Foreign Railway News

## Raven's Automatic Train Stop

Raven's automatic train stop, the invention of Sir Vincent Raven, chief mechanical engineer of the Northeastern Railway of England, is now fitted to 1,500 locomotives of that road, according to a recent statement in the *Railway Gazette* (London).

The stop is a simple mechanical trip, similar to that in use on the Interborough subways, New York City, and is a development of the well-known cab signal of the same inventor, which has been used on the Northeastern for many years. It is stated that on lines where his apparatus is in use no provision is made for stationing fogmen at distant signals. As the use of power-brakes is, in England, confined mainly to passenger trains, this statement would seem to indicate that the audible signal, sounded in the cab, is a main feature of the system.

The passenger trains of the Northeastern use the Westinghouse brake, but the apparatus works also on trains using the vacuum brake, many of which traverse parts of the Northeastern lines.

## Spanish Northern Railway Electrification Project

A contract for the electrification of 40 miles of the Spanish Northern Railway is announced by the Sociedad Iberica de Construcciones Electricas, of Madrid, Spain, one of the associated companies of the International General Electric Company, Inc., of New York. This initial order constitutes the most recent and one of the largest European railway electrification projects now under development. The high voltage direct current system will be used.

The equipment to be supplied by the Sociedad Iberica de

be used similar to those on the St. Paul locomotives, having a double contact shoe.

## A New Bill for Reorganizing Spain's Railways

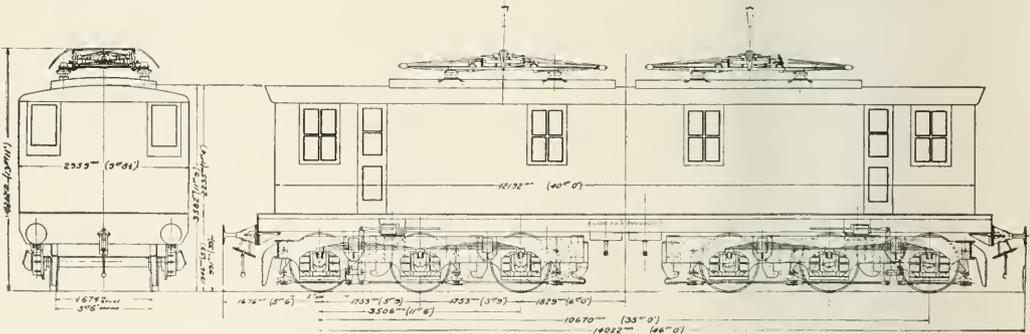
At the last session of the Spanish congress a bill was brought forth for the reorganization of the railways of the kingdom, according to the *Railway Gazette* (London). This bill, the principal provisions of which were noted in the *Railway Age* of July 16 (page 133), evoked so much protest that it was shelved. Now a new bill has been prepared. This legislation would make the state a partner in railway enterprise by having it advance to all the properties enough financial aid to put them on a sound basis. The railways, under the bill, would be managed by a council of 15 members—6 representing the government, 6 the companies, and 3 the Spanish business interests. The council would fix rates sufficiently high to provide adequate returns and net profits would be divided by the stockholders and the government.

## German Railways Have a Bad Year

At the close of the war railway rolling stock showed increases in locomotives of 22 per cent and in freight and passenger cars of 10 per cent over numbers on hand at the beginning of 1914, due primarily to confiscation from invaded territory, according to Commerce Reports. As the terms of the armistice forced the return of 5,000 locomotives and 150,000 cars to France and Belgium, the rolling stock now available is considerably less than that of 1914. A difference of 31 per cent is given for locomotives in 1920, and 36 per cent and 25 per cent, respectively, for passenger and freight cars.

A great number of the locomotives and cars now in use are in need of repairs, as well as the roadbeds of most of the German railways.

The railway deficit for the present year (operation and replacement) will amount to about 7,000,000,000 marks (about



End View and Side Elevation of One of the Locomotives to Be Used in Spain

Construcciones Electricas will consist of six 78-metric ton, six motor locomotives, two complete sub-stations, each comprising two 1,500 kilowatt, three unit motor generator sets, transformers and switchgear and the material necessary for line construction.

The first electrification project of the Spanish Northern comprises about 40 miles of the Leon-Gijon line running through the mountains between Ujo and Busdongo. Although this is a single-track line, traffic is extremely heavy, as it is a link between the mining district and the northern seaboard through a mountainous region with many tunnels, considerable grades and severe climatic conditions.

The electric locomotives on order will be of the freight type, with the following dimensions:

Length over bucklers.....	46 feet
Height.....	13 feet, 11 inches
Width of cab.....	9 feet, 8 inches
Rigid wheel base.....	11 feet, 6 inches
Maximum wheel base.....	35 feet

The locomotives will be arranged for regenerative braking, and will operate at 3,000 volts. The locomotive speed at continuous rating is 13.5 miles an hour. Pantograph collectors will

\$35,000,000 at the present rate of exchange) as compared with 15,000,000,000 marks (about \$75,000,000) in 1920. The extraordinary large figure last year was due to an unusual expansion in the number of employees.

An increase of 30 per cent in freight rates is scheduled to take place some time this month. This condition is based on existing rates, which are the result of an 80 per cent raise during 1920, and which in turn had been based on rates greatly advanced the year before. Freight-rate increases were not effected between 1913 and 1917, but during the latter year an advance of 7 per cent was made, followed by further advances, each time over existing rates, of 15 per cent in 1918 and 60 per cent in April and 100 per cent in October, 1919.

Passenger rates are also to be raised very shortly, according to the latest plans, by 25 to 30 per cent. Previous increases in these rates, extending over the period 1913-1920 have amounted to 671 per cent for first-class fares, 433 per cent for second, 380 per cent for third, and 405 per cent for fourth class fares.

## Equipment and Supplies

### Locomotives

THE LEHIGH & HUDSON RIVER is inquiring for 1 Consolidation locomotive.

THE AKRON, CANTON & YOUNGSTOWN contemplates inquiring for prices soon on 5 locomotives.

THE CUMBERLAND & MANCHESTER has ordered from the Baldwin Locomotive Works, 1 locomotive for passenger service.

THE DELAWARE, LACKAWANNA & WESTERN in the near future expects to ask for prices on about 5 Pacific type locomotives.

### Freight Cars

THE ERIE is building 70 caboose cars in its own shops at Buffalo, N. Y.

THE NORFOLK & WESTERN contemplates making repairs to about 2,000 coal cars.

THE SEABOARD AIR LINE is inquiring for prices on the repair of 1,000 or more 40-ton gondola cars.

THE BENGAL & NORTH WESTERN (India) is inquiring through the car builders for 300 four-wheel wagons.

THE CENTRAL OF GEORGIA may be in the market soon for about 800 cars to include box, stock and gondola cars.

THE NORFOLK & WESTERN is asking for prices on 2,000 hopper car bodies also on 2,000 all-steel gondola car bodies of 57½ tons capacity.

THE PAULISTA RAILWAY (Brazil) is inquiring through the car builders for 120 gondola cars of 50-tons capacity and 60 box cars of 40-tons capacity.

THE UNION PACIFIC, reported in the *Railway Age* of December 3, as expecting to be in the market soon for automobile cars is now inquiring for 500, 40-ft. automobile cars, also for 500, 50-ft. all steel automobile cars.

THE PERE MARQUETTE, reported in the *Railway Age* of November 19, as inquiring for from 500 to 2,000 box cars has ordered from the Western Steel Car & Foundry Co., 500 box cars, with an option for 500 additional cars.

THE MATHIESON ALKALI WORKS, Niagara Falls, N. Y., reported in the *Railway Age* of September 3, as inquiring for 20, 30-ton cars for handling tanks, has ordered this equipment from the Standard Steel Car Company.

THE CHESAPEAKE & OHIO has given contracts for the repair of 200 composite cars to the Ralston Steel Car Company, 500 steel cars to the Illinois Car & Manufacturing Company, Chicago Heights, Ill., and 300 composite cars to the American Car & Foundry Company's shops at Huntington, W. Va.

### Passenger Cars

THE WABASH is inquiring for a number of passenger train cars.

THE UNION PACIFIC is inquiring for 70 cars for passenger train service.

THE CANADIAN NATIONAL, contemplates buying 6 or more passenger cars for branch line service.

THE NORTHERN PACIFIC is having repairs made to a number of passenger cars at the shops of the Pullman Company.

THE PHILADELPHIA & READING is inquiring for from 45 to 90 passenger cars and from 6 to 10 passenger and baggage cars.

THE NEW YORK, ONTARIO & WESTERN, reported in the *Railway Age* of November 5, as inquiring for cars for passenger train service, has given an order to the Standard Steel Car Company for 20, 70-ft. coaches; 4 70-ft. combination smoking and baggage cars; 3, 60-ft. baggage cars and 3, 60-ft. combination baggage and mail cars. These will be all steel cars, equipped with Commonwealth trucks.

### Iron and Steel

THE NEW YORK CENTRAL LINES have placed contracts for 125,000 tons of rail with an option of 25,000 tons additional.

THE CANADIAN NATIONAL recently placed an order for about 40,000 tons of rail, equally divided between the Algoma Steel Corporation and the Dominion Steel Corporation, Sydney.

### Machinery and Tools

THE SEABOARD AIR LINE is preparing a list of machine tool requirements, comprising about 25 tools.

THE MISSOURI, KANSAS & TEXAS has ordered a 60-in. duplex control, horizontal boring machine, also a lathe and a shaper from the Niles-Bement-Pond Company.

THE VIRGINIAN RAILWAY has placed orders for machine tools as follows: 1, 5-ft. motor driven radial drill; 1, 28 by 48-in. motor driven gap lathe and 1, crank planer.

THE ERIE inquiry for various machine shop tools to cost about \$300,000 includes car wheel presses; boring mills; lathes; air compressors; electric welders; shapers and air tools.

### Miscellaneous

THE SALT LAKE, GARFIELD & WESTERN is inquiring for 10 trailer trucks.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, December 20, 1921, for its present requirements on galvanized tie dating nails.

THE NEW YORK, NEW HAVEN & HARTFORD is asking for bids until 12 o'clock noon December 20, at New Haven, Conn., for its requirements during 1922 of couplers, malleable castings and steel castings.

THE NEW SABINAS COMPANY, LTD., a coal interest of the Vickers Company, London, England, has awarded the contract for the design and construction of a fireproof, reinforced concrete and steel, coal washing plant and power plant at the Cloete mines, near Sabinas, Coah., Mex., to the Roberts & Schaefer Company, Chicago. Work has started on the project which is to cost approximately \$300,000.

THE INTERSTATE COMMERCE COMMISSION has issued an annual report for the year ending June 30, 1921, showing, by totals for each railroad company, instances in which employees were on duty for periods other than those provided by the Federal Hours of Service Act; to which is added a comparison of these data with totals for the preceding four years.

Causes of delays to trains are tabulated in accordance with the statements presented by the railroad companies, these having, however, no relation to the question of whether or not any given case was excusable.

For 1921 the number of cases where employees in train service were on duty for longer periods than 10 consecutive hours was 39,934 as compared with 67,468 in the year preceding, and larger totals for the years before that. The total number of cases where telegraph operators (at offices continually operated, day and night), were on duty more than nine hours was 25,164, as compared with 33,566 in the year preceding, and about twice the latter number in the second year preceding. The total number of instances of excess work, counting both trainmen and telegraphers, in 1921, including the foregoing and the other and smaller classes, was 67,686. This is only a little more than one-fourth the total number reported in 1918.

Roads reporting fewer than 25 cases in a year are not shown in the five-year comparison.

## Supply Trade News

The **Osgood Company**, Marion, Ohio, has opened a branch sales office at 1211 Conway building, Chicago, in charge of **Arthur B. Sonneborn**, as manager.

The **Blaw-Knox Company**, Pittsburgh, Pa., has moved its New York office from the City Investing building to the Carbide & Carbon building, 30 East 42nd street, effective December 15.

The **Enterprise Railway Equipment Company**, Chicago, has purchased all patents and trade mark "Ingoldsby" of the Ingoldsby Automatic Car Company, a corporation organized under the laws of the State of West Virginia.

The stockholders of the **Haskell & Barker Car Company** will meet in New York on January 4, for the purpose of voting upon a proposition to dissolve the corporation and authorize the directors to sell their plant to the Pullman Company.

The **Okonite Company**, Passaic, N. J., has opened a branch office at Atlanta, Ga., in the Candler building. **E. A. Thornwell** is southeastern sales representative and **John L. Phillips**, manager for the territory including North and South Carolina, Georgia, Alabama, Florida, Tennessee, and the city of New Orleans, La.

The **Whiting Corporation**, Harvey, Ill., has bought a controlling interest in the Grindle Fuel Equipment Company, manufacturers of complete powdered coal plants, for use in connection with malleable furnaces, annealing ovens, steam boilers, billet heating and various other types of furnaces. The Grindle Fuel Equipment Company has moved its offices to Harvey, and will continue its business under the same name. Whiting Corporation will manufacture all Grindle equipment. The officers are as follows: **B. H. Whiting**, president; **T. S. Hammond**, secretary and treasurer and **A. J. Grindle**, vice-president and general manager; and the board of directors includes the above officers and **J. H. Whiting**, **R. H. Bourne**, **N. S. Lawrence** and **A. H. McDougall**.

### U. S. Light & Heat Not Involved In

#### Willys Corporation Receivership

The recent receivership of the Willys Corporation has caused some inquiries to be made of the U. S. Light & Heat Corporation, Niagara Falls, N. Y., as to what effect, if any, the proceedings will have respecting the latter company; and certain publicity in connection with the receivership has erroneously carried the idea that the U. S. Light & Heat Corporation is one of the component parts of the Willys Corporation and would, therefore, be affected in its operation by the receivership. These inquiries have led **C. O. Miniger**, president of the U. S. Light & Heat Corporation and who is one of the receivers appointed by the U. S. District Court at Toledo, to make the statement that the receivership in no way affects the business of the U. S. company. His appointment as receiver was made by virtue of his connection with the Electric Auto Lite Company of Toledo, which company is one of the divisions of the Willys Corporation.

The only connection between the Niagara Falls company and the Willys Corporation is that of preferred stock ownership by the Willys Corporation. The corporations and the managements are entirely distinct and the operation of the U. S. L. Company will continue exactly as heretofore.

### Obituary

**Henry C. Barlow**, Traffic director of the Chicago Association of Commerce and chairman of the executive committee of the National Industrial Traffic League, died at his home in Chicago on November 6, at the age of 71. He had been prominent in transportation circles in Chicago for 17 years, having been a leader in the Chicago Shippers Association in 1904. Before that

he was in railroad service, having begun in 1866 on the Illinois Central as office boy and clerk. He was clerk and telegrapher on the Chicago & North Western, held various freight traffic offices on the Santa Fe, the Mexican Central and the Wisconsin Central, and for seven years, ending with 1901, he was president of the Evansville & Terre Haute.

**B. E. D. Stafford**, general manager of the Flannery Bolt Company, Pittsburgh, Pa., whose death on November 30, at Atlantic City, N. J., was noted in the *Railway Age* of December 3, was born in 1866 in Brooklyn, N. Y., and was educated in the public and night schools. At the age of 15 he took up patent office drawing and soon became an expert penman. In order to better himself for mechanical drawing he acquired a practical knowledge of the machine, tool and screw making trades and within a few years ranked as one of the few expert operators in America of the universal type of milling machine and the automatic screw machine. At the age of 21 he was made foreman of the



B. E. D. Stafford

tool shop of a large manufacturer of cotton machinery at Hopedale, Mass., and built most of the automatic machinery for the plant. Later he became a specialist in reducing shop costs and in 1895 was engaged by **B. M. Jones & Company** to demonstrate the uses of self-hardening steels. Five years later he was employed as a staybolt salesman by the **Ewald Iron Company**. In the fall of 1904, Mr. Stafford was engaged by the **Flannery Bolt Company** to develop and market the **Tate flexible staybolt** for locomotive firebox service. During the time he has been identified with that concern, Mr. Stafford has done much to advance the methods of locomotive firebox construction. Mr. Stafford lived in Millville, N. J., and funeral services and burial were in Vineland on the morning of December 3.

### Trade Publications

**FUEL OIL ENGINE.**—The **Hadfield-Penfield Steel Company**, Bucyrus, Ohio, has issued a 29-page booklet illustrating and describing its vertical and horizontal type fuel oil engines. These engines are amply illustrated in the booklet, both by photographs and sectional drawings. The booklet gives the dimensions for engines from two-cylinder to six-cylinder sizes and includes a chart giving the fuel consumption at different loads and speeds.

**STATIONARY STEAM ENGINES.**—The **Vacuum Oil Company**, New York, has issued a large 32-page, illustrated booklet dealing with the subject of steam valve and cylinder lubrication of stationary steam engines. This booklet is along educational lines showing, as it does, by text and illustrations, the various types of stationary steam engines, their method or methods of operation, proper methods of lubrication and the selection of oils. In addition to this, considerable information is given regarding boiler plant and steam production, covering such details as steam quality, exhaust steam, oil in exhaust steam, extraction of oil and feed water treatment.

**START THE JOB RIGHT.**—An 8-page illustrated folder has been issued by the **National Hoisting Engine Company**, Harrison, N. J., descriptive of the line of steam hammers, hoists, cableways and derricks manufactured by this company. The folder is well illustrated showing photographs of equipment in actual work driving piles and sheeting and in doing other miscellaneous work under varying conditions and surroundings.

## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company, which was noted in the *Railway Age* of November 5 (page 911), as receiving bids for the construction of an addition to its Alvarado Hotel at Albuquerque, N. M., to cost approximately \$300,000, has awarded the contract for this work to Charles Fellows, Los Angeles, Cal. The same company will also construct a new laundry building, and repair the old one, at Albuquerque.

**CANADIAN NATIONAL.**—This company contemplates extending its Vancouver Island line approximately ten miles into the Cowichan Lake territory.

**CHICAGO & ALTON.**—This company contemplates the construction of a subway at Division street, Bloomington, Ill.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company has awarded a contract to T. S. Leake & Company, Chicago, for the construction of a car repair shed, 87 ft. by 200 ft., at Pratt, Kan., estimated to cost \$20,000.

**CHICAGO UNION STATION.**—This company which was noted in *Railway Age* of December 3 as accepting bids for 3,600 tons of steel to be used in the widening of Canal street from Jackson boulevard to Washington street and the Monroe street viaduct has awarded the contract to the American Bridge Company, Chicago.

**CUMBERLAND & MANCHESTER.**—This road has recently purchased and is equipping a new ballast plant at a quarry along its line. It is also enlarging its shop facilities and installing new hump scales and additional side tracks at Heidrick, Ky. These improvements will cost approximately \$250,000 and are expected to be completed during the first part of 1922. The road has also closed contracts for equipment covering three locomotives, recently noted in the *Railway Age*, three steel underframe box cars, 25 steel coal cars, 10 wooden coal cars and some other miscellaneous equipment.

**ILLINOIS CENTRAL.**—This company, which was noted in the *Railway Age* of November 26 (page 1069), as receiving bids for the construction of a frame storehouse at Clinton, Ill., has awarded the contract for this work to Joseph E. Nelson & Sons, Chicago. This work is estimated to cost approximately \$20,000.

**MIDLAND VALLEY.**—This company, which was noted in the *Railway Age* of December 3 (page 1121), as the Osage Railway Company which had recently applied to the Interstate Commerce Commission for permission to construct about 11 miles of railroad extending from Foraker, Okla., into the Osage County oil field, has awarded the contract for this work to R. L. Plunkett, Pawhuska, Okla.

**OREGON-WASHINGTON R. R. & NAVIGATION Co.**—This company has been ordered by the city council of Seattle, Wash., to construct a temporary trestle over its Argo yards at First avenue in that city.

**SABINE & NECHES.**—This company, with a capital stock of \$100,000, has been incorporated to build a railroad from Kullif, Tex., westward via Deweyville to Gist, a distance of about 16 miles. The directors of this new road are R. J. Wilson, J. P. Hall, and C. C. Smith of Deweyville; A. J. Peavy, R. T. Moore and C. C. Cary of Shreveport, La.; J. B. Smythe and C. E. Walden, of Beaumont, Tex., and W. H. Mangen, of Westlake, La.

**TEMISKAMING & NORTHERN ONTARIO.**—This company, which was noted in the *Railway Age* of October 22 (page 804), as planning the early extension of its line 70 miles northward, will soon receive bids for this work, according to Vice-Consul J. H. Wetmore, North Bay, Ontario. The vice-consul offers to furnish the specifications for the work to any responsible contracting firm upon request as soon as they are available and will also undertake to deliver to the railway commissioners any bids sent in his care.

## Railway Financial News

**ASHLAND COAL & IRON.**—*Authorized to Issue Notes.*—This company has been authorized by the Interstate Commerce Commission to issue its promissory notes to the amount of \$180,000, payable to the order of the Ashland Iron & Mining Company.

**ATLANTA, BIRMINGHAM & ATLANTIC.**—*Bondholders' Committee.*—A committee has been formed to represent the holders of the 5 per cent 15-year income mortgage gold bonds, because of default on the road's first mortgage bonds. The committee consists of G. E. Warren, chairman; J. P. Bradshaw, F. R. Dick, E. P. Maynard and A. W. Hutchins, secretary. The Columbia Trust Company, 60 Broadway, New York, is depository.

**BALTIMORE & OHIO.**—*Annual Report.*—See article on another page of this issue entitled, "Baltimore & Ohio Shows Marked Improvement in 1921."

**CHICAGO & EASTERN ILLINOIS.**—*Pere Marquette May Buy Brazil Branch.*—See Pere Marquette.

**CHICAGO & ILLINOIS WESTERN.**—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$600,000 of 7 per cent non-cumulative preferred capital stock and deliver it to Dolese & Shepard Company in liquidation of interest-bearing indebtedness due that company amounting to \$600,000.

**CHICAGO, BURLINGTON & QUINCY.**—*Declares Dividends of \$20 a Share.*—This company has declared a semi-annual dividend of 5 per cent, and an extra dividend of 15 per cent, payable December 27 to stock of record December 17. In June last the company paid a dividend of 5 per cent (for no stated period).

As the Northern Pacific and the Great Northern each own \$82,933,700 Burlington stock, the extra dividend declared in Chicago on December 1 will mean additional income to each of the controlling roads of \$12,440,000, equivalent to 5 per cent on the Northern Pacific's \$248,000,000 stock and 4.97 per cent on Great Northern's \$250,000,000 stock.

See also Colorado & Southern.

**CHICAGO, MILWAUKEE & ST. PAUL.**—*Provision for Maturing Obligations.*—The Wall Street Journal quotes President H. E. Byram as saying that the road's cash position is strong, it has no bank loans, and funds are in hand to cover its interest requirements for several months ahead.

Mr. Byram is quoted further as follows:

As an indication of our sound position it might be mentioned that we are going to anticipate the January 15 instalment of the principal of our equipment trusts held by the Railroad Administration. The instalment is something over \$1,000,000. We applied to the Railroad Administration for permission to do this several days ago, and have received its approval. The advantage is that we will save a month's interest.

The company's \$25,000,000 note to the government, maturing on March 1, next, is well secured, as well and even better than bankers would require, so that there is no occasion to anticipate that the Commerce Commission, which administers the revolving loan fund, would refuse to refund it if borrowing the money elsewhere involved paying a higher interest rate than the 6 per cent which it bears. We are not at all worried about that.

Current traffic conditions in the West show the effect of the forthcoming reduction in rates on agricultural products. The reduction of 10 per cent proposed by the carriers, to be effective probably January 1, would coincide with remission of the 3 per cent federal tax on freight bills, making a difference of 13 per cent in charges to shippers. There is an evident disposition among the farmers to withhold their shipments until they can obtain the benefit of this reduction. For that reason, and on account of failure of coal users to stock up seasonably, November traffic had fallen off distinctly, in comparison with that of October, and was also below that of November, 1920.

After the first of the year it is expected that farmers would ship grain more freely, as no further reduction in freight rates would then be in prospect for some time in the future, and that coal would move in greater volume. Industrial users of coal must soon appreciate the necessity of stocking up against the probable interruption of mining at the end of March, when the present wage agreements expire.

**COLORADO & SOUTHERN.**—*Resumes Common Dividend.*—A dividend of 3 per cent has been declared on the \$31,000,000 of outstanding common stock, par \$100, the first since 1912, when 1 per cent was paid. The company has also declared the regular annual dividend of 4 per cent on the second preferred, and semi-annual dividend of 2 per cent on the first preferred. All dividends are payable December 31 to stock of record December 17.

The Chicago, Burlington & Quincy owns \$23,667,500 of \$31,000,000 common stock outstanding, \$1,130,000 of \$8,500,000 first preferred, and \$6,078,700 of \$8,500,000 second preferred stock outstanding.

**KANSAS CITY, MEXICO & ORIENT.**—*Granted Loan from Revolving Fund.*—The Interstate Commerce Commission has approved a loan of \$2,500,000 to the receiver for the purpose of meeting the maturity of a previous loan of like amount certified by the commission on October 11, 1920, which the receiver says he is unable to pay. The property has failed to earn any sum applicable to the payment of the loan, it has been impossible to procure funds from those already financially interested in the property, notably certain residents of Great Britain, and he does not know of any source from which he can at this time secure the necessary funds with which to meet the obligations. Commissioner Daniels wrote a strong dissenting opinion on the ground that for some time to come it is certain that this carrier as it stands today is unlikely to earn its operating expenses. For 1920 there was a deficit of \$1,321,304 and for the first nine months of 1921 there has been an operating deficit for every month except July and August. Mr. Daniels says it may well be argued that for a carrier of this length serving numerous communities solely dependent upon it for service, there is strong reason why the government should undertake to defray the deficit until the road can be made self-sustaining; but the commission has no authority to do this and the facts do not give reasonable assurance of the repayment of the loan. He believes the remedy required by this situation should be directly applied by Congress. The commission has also granted authority to issue a receiver's certificate for the amount of the loan for pledge with the Secretary of the Treasury as security.

**NEW YORK CENTRAL.**—*Acquisition of Cleveland Union Terminals Company Authorized.*—Upon re-hearing the Interstate Commerce Commission has reversed its previous conclusions in the Cleveland passenger terminal case and has authorized the acquisition by the New York Central, Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis of control of the Cleveland Union Terminals Company by the purchase of its capital stock. The commission also issued a certificate authorizing these roads through the control of the Cleveland Union Terminals Company to construct and operate the proposed terminal station and line of railroad constituting the purchase thereof in the city of Cleveland.

**NEW YORK CENTRAL.**—*Advance Repaid.*—This company has repaid to the War Finance Corporation an advance of \$17,500,000 made on January 23, 1919.

**OREGON SHORT LINE.**—*Bond Sale.*—Kuhn, Loeb & Co. have received subscriptions for \$16,424,000 consolidated first mortgage 5 per cent bonds, due July 1, 1946, guaranteed principal and interest by the Union Pacific Railroad Company. The purpose of the sale of these bonds is to provide the funds needed to retire the Oregon Short Line first mortgage 6 per cent bonds, due February 1, 1922. The new bonds are issued under the company's consolidated mortgage dated March 1, 1897. Their sale is subject to the approval of the Interstate Commerce Commission.

**PENNSYLVANIA.**—*President Rea Asks Stockholders' Aid.*—In a circular letter to the stockholders mailed with their dividend checks President Samuel Rea says in part:

Through the efforts of the Railroad Labor Board, the threatened railroad strike of the railroad brotherhoods was averted. We have made a large number of reductions in freight rates in individual cases, but we are still receiving requests for reductions on all classes of freight. The published earnings statement of the company show the results for each month, and from comparisons with the year 1920, it is quite evident that a general rate reduction cannot be made until operating expenses are substantially lowered, which can only be accomplished by a reduction in wages. Such wage reduction has been proposed, and if we are unable to agree with our employees, application will be made to the Labor Board to authorize such reductions in accordance with the terms of the present act.

The company urgently wishes to impress this thought upon you, that the prosperity of your company depends largely and directly upon your personal sympathetic support and co-operation. Therefore, you should ship your freight via the Pennsylvania system and direct that shipments to you be made over this system.

The company in which you are financially interested should have your fullest patronage and support and that of your business alliances and friends.

**PERE MARQUETTE.**—*Declares 10 Per Cent Dividend.*—The directors on Wednesday declared a dividend of 10 per cent on the 5 per cent preferred stock, payable January 3 to stock of

record December 15. The regular quarterly dividend of 1¼ per cent on the prior preference stock also was declared, payable February 1 to stock of record January 14.

After the meeting the following statement was issued:

The 10 per cent dividend on the preferred stock is the first dividend declared upon that stock since the organization of the railway company in 1917. The dividends upon the preferred stock are cumulative at a rate of 5 per cent per annum from January 1, 1919, so that on December 31, 1921, there will have accrued dividends to the amount of 15 per cent, of which there will remain 5 per cent after payment of the above dividend.

The preferred stock of the railway company was issued upon the reorganization of the Pere Marquette in 1917 and represents bonds of the old company. Although the dividend upon the preferred stock has been earned by the present company in each year since the reorganization was effected, no dividends have previously been paid thereon as the directors have considered it more prudent not to do so owing to conditions arising out of the war and the federal control of railroads by the government. The company's claim against the government has recently been settled and the directors feel that the condition of the company is now such as to permit the above distribution to be made to the holders of its preferred stock on account of the accumulated dividends to which said stockholders are entitled.

**May Purchase C. & E. I. Brazil Branch.**—Officials of the Pere Marquette have inspected the Brazil branch of the Chicago & Eastern Illinois with a view to purchasing the property when it is offered for sale on December 16. This branch extends between Mokena, Ill., and Brazil, Ind., about 130 miles.

**PITTSBURGH & WEST VIRGINIA.**—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the West Side Belt through an agreement providing for the joint operation of both properties by the Pittsburgh & West Virginia for the respective accounts of said companies.

**READING COMPANY.**—*Reports on Dissolution.*—Reports saying they have complied with the orders of the United States District Court for the dissolution of the Reading Company and its allied rail and coal subsidiaries were filed on December 5 in the Federal Court at Philadelphia by the Reading Company, the Philadelphia & Reading Company, the Philadelphia & Reading Railway Company and the Central Railroad Company of New Jersey.

Judges Buffington, Davis and Thompson, after reading the reports, directed that they be "filed," and made the additional provision in the case of the Jersey Central that the report be held for "further consideration and action as the court may deem proper."

The Jersey Central said it had sold all its stock holdings in the Lehigh & Wilkes-Barre Coal Company, 169,788 shares, under the plan approved by the court, to Jackson E. Reynolds, syndicate manager, of New York, for approximately \$32,500,000. The report stated there were 88 subscribers for the stock, each of whom has made an initial payment of 20 per cent. In conformity with the court's order, the report added, the stock was sold to persons not stockholders in any of the companies affected by the segregation plan, and affidavits that they were not in the class precluded from purchasing the stock have been filed by all the subscribers.

The report of the Reading companies consisted chiefly of a resume of the work of the trustees appointed by the court to receive from the Reading Company its interests in the Jersey Central.

The time for filing the reports expired December 5.

**SACRAMENTO NORTHERN.**—*Acquisition by Western Pacific.*—See Western Pacific.

**TENNESSEE CENTRAL.**—*Sole Postponed.*—The sale of this road has again been postponed, until January 10.

**UNION PACIFIC.**—*Directors Resign.*—Mortimer L. Schiff and Otto H. Kahn, of Kuhn, Loeb & Co., have resigned as directors in compliance with Section 10 of the Clayton Act.

**WABASH, CLEVELAND & WESTERN.**—*Asks Loan from Revolving Fund.*—This company has applied to the Interstate Commerce Commission for a loan of \$500,000 for 15 years.

**WESTERN PACIFIC.**—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Sacramento Northern through the purchase of its stock. The Western Pacific was authorized by the commission last May to issue \$4,180,000 first mortgage 5 per cent bonds. It was proposed to use these bonds for the purpose of acquiring bonds of the Sacramento Northern, but the commission ordered that steps to acquire or control the

property should not be taken until such acquisition had been approved by the commission. See *Railway Age*, May 27, 1921, page 1249.

**Tentative Valuations**

The Interstate Commerce Commission has recently issued the tentative valuations giving the final value of railroad properties as follows:

	Property Used	Property Owned
L'Angeville River.....1916	\$16,538	\$12,500
Lake Erie & Ft. Wayne.....1916	41,759	37,626
Elwood, Anderson & Lapelle.....1916	109,089	108,510
Lexington Terminal.....1916	28,500	
Little Rock, Manville & Western.....1917	355,362	300,530

**Additional Sales Equipment Trust Certificates**

The director general of railroads has, with the consent of the President, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government, as follows:

To a syndicate consisting of the Guaranty Company and Potter Brothers & Co., of New York; the Union Trust Company of Pittsburgh; The First Trust and Savings Bank of Chicago; The Fifth-Third Bank of Cincinnati; and the Union Trust Company of Cleveland:

Cleveland, Cincinnati, Chicago & St. Louis, 1923 to 1935, inclusive	\$4,507,100
---	-------------

To The Illinois Trust and Savings Bank, the Merchants Loan and Trust Company, the First Trust and Savings Bank, and the Continental and Commercial Trust and Savings Bank, all of Chicago:

Delaware & Hudson, 1922 to 1927, incl.....	\$1,592,400
New York Central, 1925 to 1927, incl.....	2,768,100
Chicago & Northwestern, 1925-1927, incl.....	1,994,700
Michigan Central, 1925 to 1927, incl.....	1,039,200
Chicago, St. Paul, Minneapolis and Omaha, 1922 to 1927, incl.....	940,800
<b>Total</b> .....	<b>8,335,200</b>

Total amount of these sales is.....\$12,842,300

The total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$132,910,600. "With reference to the sale of railroad equipment trust certificates to the syndicate of Chicago banks, totalling \$8,335,200, it is interesting to note that the investment demand for these securities, which at first was confined to the Eastern territory, is gradually spreading westward," said Eugene Meyer, Jr., managing director of the War Finance Corporation. "It appears to indicate that the general improvement in money market conditions is following precedent, and is gradually moving westward. It means that there will be a better market for farm mortgages in the not distant future, and that the agricultural sections will soon begin to feel the benefit of improving financial conditions."

**Dividends Declared**

- Aetehison, Topeka & Santa Fe.—Preferred, 2½ per cent, semi-annually, payable February 1 to holders of record December 30.
- Beech Creek.—\$0.50, quarterly, payable January 3 to holders of record December 15.
- Boston & Providence.—2½ per cent, quarterly, payable January 2 to holders of record December 20.
- Buffalo & Susquehanna.—Common, 1½ per cent, quarterly; preferred, 2 per cent, semi-annually; both payable December 30, to holders of record December 15.
- Chicago, Burlington & Quincy.—5 per cent, semi-annually; 15 per cent; both payable December 27 to holders of record December 17.
- Colorado & Southern.—Common, 3 per cent; first preferred, 2 per cent, semi-annually; second preferred, 4 per cent, annually; all payable December 31 to holders of record December 17.
- Great Northern.—Preferred, 1¾ per cent, quarterly, payable February 1 to holders of record December 31.
- Lackawanna Railroad of New Jersey.—1 per cent, quarterly, payable January 3 to holders of record December 6.
- New York & Harlem.—Common, \$2.50, semi-annually; preferred, \$2.50, semi-annually, both payable January 3 to holders of record December 15.
- New York, Chicago & St. Louis.—Common, 5 per cent, payable December 31 to holders of record December 16.
- New York, Lackawanna & Western.—\$1.25, quarterly, payable January 3 to holders of record December 14.
- Philadelphia & Washington—3 per cent, semi-annually, payable December 31 to holders of record December 15.
- Pittsburgh, McKeesport & Youngsboheny.—1½ per cent, semi-annually, payable January 3 to holders of record December 15.
- Rensselaer & Saratoga.—\$4, semi-annually, payable January 3 to holders of record December 14.
- St. Louis, Rocky Mountain & Pacific.—Common, 1 per cent, quarterly; preferred, 1¾ per cent, quarterly; both payable December 31 to holders of record December 17.
- Valley Railroad (N. Y.).—2½ per cent, semi-annually, payable January 1 to holders of record December 17.

POLAND has great supplies of oak timber suitable for railway ties, according to a report from Fayette W. Allport, secretary to the trade commissioner at Warsaw.

**Railway Officers**

**Executive**

**George T. Reid**, assistant to the president and western counsel of the Northern Pacific, with headquarters at Tacoma, Wash., has been elected vice-president and western counsel, with the same headquarters.

**Chas. D. Quinn**, assistant general freight agent of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to assistant to the vice-president in charge of traffic, with the same headquarters. Mr. Quinn was born at Louisville. He entered railroad service on March 16, 1895, as a stenographer in the traffic department of the Louisville & Nashville, and was later transferred to the rate department, where he successively held the positions of rate clerk, chief rate clerk, and chief clerk. On October 1, 1919, he was promoted to assistant general freight agent, with headquarters at Louisville, which position he was holding at the time of his recent promotion.

**H. R. Safford**, assistant to the president of the Chicago, Burlington & Quincy, with headquarters at Chicago, Ill., has been elected vice-president with the same headquarters.

He will continue in his present duties and will, in addition, have jurisdiction over all capital improvements and expenditures; the valuation, real estate, and industrial departments, insurance, and such other matters as may from time to time be assigned to him. Mr. Safford was born at Madison, Ind. After graduating from Purdue University, he began railway service in 1895 as a rodman on the Illinois Central. From 1897 to 1900, he was resident engineer in charge of construction work, and in the latter year he was promoted to roadmaster. From May, 1903, to March, 1905, he was principal assistant engineer, and on the latter date he was promoted to assistant chief engineer. In July, 1906, he was promoted to chief engineer, maintenance of way, which position he held until May, 1910, when he left railroad service to become assistant to the president of the Edgar Allen Manganese Steel Company. The following year he was appointed chief engineer of the Grand Trunk, which position he held until 1918, when he entered the service of the United States Railroad Administration and was appointed engineering assistant to the regional director of the Central Western region. In February, 1920, he was appointed assistant to the president of the Chicago, Burlington & Quincy, which position he was holding at the time of his recent promotion. Mr. Safford has also taken an active interest in association work, having been president of the American Railway Engineering Association last year. He was also a member of the Committee on Development of the American Society of Civil Engineers.



H. R. Safford

**Financial, Legal and Accounting**

**J. F. Wolfenden** has been appointed auditor of valuation of the Southern Pacific, with headquarters at San Francisco, Cal.

**Robert S. Henry** has been appointed to the newly created position of associate counsel and director of public relations of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn.

### Operating

**J. R. Skillen**, chief dispatcher of the Atchison, Topeka & Santa Fe, with headquarters at Raton, N. M., has been promoted to trainmaster, with the same headquarters. **T. C. Looney** will succeed Mr. Skillen as chief dispatcher.

**E. C. Blanchard**, assistant general manager of the Northern Pacific, with headquarters at Tacoma, Wash., has been promoted to general manager of the lines west of Paradise, Mont., with the same headquarters. **C. L. Nichols**, assistant general manager, with headquarters at St. Paul, Minn., has been promoted to general manager of the lines east of Paradise with the same headquarters. The position of assistant general manager at both St. Paul and Tacoma has been abolished.

**E. E. McCarty**, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at Needles, Cal., has been transferred to San Bernardino, Cal., succeeding **J. D. McCully**, promoted, as noted in the *Railway Age* of December 3 (page 1123). **R. S. Goodrich**, trainmaster, with headquarters at Gallup, N. M., has been transferred to succeed Mr. McCarty, and **O. W. Schlueter**, chief dispatcher, with headquarters at Winslow, Ariz., has been promoted to succeed Mr. Goodrich. **W. P. Arntz**, chief clerk to the superintendent at San Francisco, has been promoted to trainmaster, with headquarters at Prescott, Ariz., succeeding **H. C. Storey**, deceased.

### Traffic

**C. E. Jenney** has been appointed general agent, passenger department, of the Canadian National with headquarters at New York.

**A. B. Chown**, general agent of the passenger department, of the Grand Trunk, with headquarters at New York, has been promoted to assistant general passenger agent, with headquarters at Chicago.

**H. N. Roberts** has been appointed general freight and passenger agent of the Wichita Falls, Ranger & Fort Worth, with headquarters at Ranger, Tex., succeeding **J. M. Strupper**, who left to enter the service of another company.

**C. F. White**, commercial agent of the Chicago & Alton, with headquarters at Denver, Colo., has been transferred to St. Louis, Mo., succeeding **C. W. Wheeler**, who has resigned to enter the service of another company.

**H. D. Landry**, assistant general freight agent of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has been transferred to Little Rock, Ark. He will be succeeded by **W. F. Knobloch**. **T. L. Hershman** has been appointed general agent of the freight department, with headquarters at St. Louis.

**John M. Dewberry**, assistant to the vice-president in charge of traffic of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to general coal and coke agent, with the same headquarters. **C. D. Quinn**, assistant general freight agent, with headquarters at Louisville, will succeed Mr. Dewberry as assistant to the vice-president, and will be succeeded as assistant general freight agent by **Henry E. Kremer**.

**L. G. Lucia**, general agent of the freight department of the Chicago & Eastern Illinois, with headquarters at St. Louis, Mo., has been transferred to Milwaukee, Wis. **H. J. Dentzman**, division freight agent, with headquarters at Salem, Ill., has been promoted to succeed Mr. Lucia, and **C. C. King** will succeed Mr. Dentzman. **N. C. Calvert**, southwestern passenger agent, with headquarters at Dallas, Tex., has been promoted to general agent, with the same headquarters, and **Harry A. Perkins**, southwestern freight agent, with headquarters at Dallas, has been promoted to general agent of the freight department, with headquarters at Memphis, Tenn.

### Mechanical

**H. W. Salmon, Jr.**, acting fuel agent of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to fuel agent.

**W. N. Foster** has been appointed master mechanic of the Iowa division of the Chicago, Milwaukee & St. Paul, with headquarters at Marion, Iowa, succeeding **E. L. Nottley**, who has been assigned to other duties.

**J. A. Marshall** has been appointed acting master mechanic of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn., succeeding **J. E. Goodman**, who has been granted a leave of absence.

**W. R. Harrison**, master mechanic of the Atchison, Topeka & Santa Fe, with headquarters at Chanute, Kan., has been transferred to Argentine, Kan., succeeding **E. E. Machovec**, who was promoted to acting mechanical superintendent as noted in the *Railway Age* of November 19.

**George M. Davidson**, chemist and engineer of tests of the Chicago & North Western, with headquarters at Chicago, has been appointed industrial engineer, with the same headquarters. He will have general supervision of the laboratories, water supply, timber preservation, fuel consumption and other duties assigned to him by the president. **H. D. Browne** will succeed Mr. Davidson as engineer of tests.

### Engineering, Maintenance of Way and Signaling

**M. B. Clark**, division engineer of the Atchison, Topeka & Santa Fe, with headquarters at Needles, Cal., has been transferred to San Bernardino, Cal., succeeding **W. W. Kelly**, promoted, as noted in the *Railway Age* of December 3 (page 1124). **O. R. West**, assistant division engineer at San Francisco, has been promoted to succeed Mr. Clark. **F. D. Kinney**, assistant division engineer at Winslow, Ariz., has been transferred to succeed Mr. West, and **R. E. Chambers**, roadmaster, with headquarters at Prescott, Ariz., has been promoted to succeed Mr. Kinney. **F. S. Purdy**, roadmaster, with headquarters at Los Angeles, Cal., has been promoted to inspector of track and roadway, with the same headquarters, succeeding **J. E. McNeil**, who has been disabled.

### Obituary

**Edward H. Kennedy**, who retired as auditor of the Pittsburgh & Lake Erie on January 17, 1921, died on December 2, at his home at Westfield, N. Y.

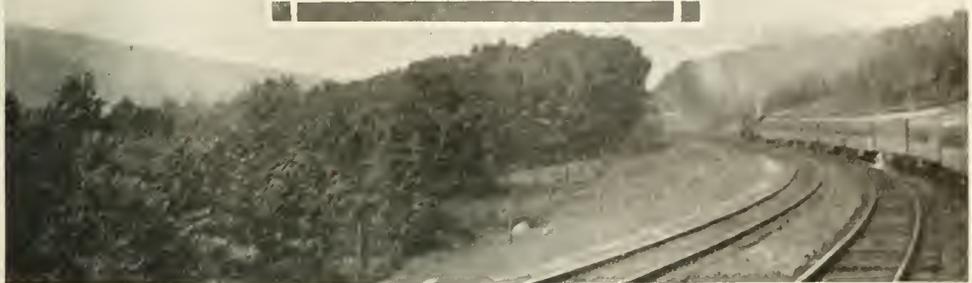


E. H. Kennedy

Mr. Kennedy was born at New Brighton, Penn., March 1, 1866, and was connected with the Pittsburgh & Lake Erie for 32 years. In 1888 he began his railroad work as a clerk in the accounting department; in 1890 he became chief freight clerk and, in 1893, chief traffic clerk. Later in the same year he was promoted to travelling auditor for the road. In 1900 he was appointed general bookkeeper, advanced in 1902 to assistant auditor and, in 1904, he was appointed auditor. In 1919 Mr. Kennedy was named federal auditor of five lines—the Pittsburgh & Lake Erie, the Monongahela, the Pittsburgh & West Virginia, the Lake Erie & Eastern and the West Side Belt. Because of ill health he retired from service on January 17, 1921.

# Railway Age

Vcl. 71 December 17, 1921 No. 25



Lackawanna Limited in the Pocono Mountains

## Contents

### Superpower Advocates Strive to Answer Criticisms ..... Page 1187

Take Sharp Issue With Railway Age's Editorials Criticizing Their Report—Railway Age Answers and Proves Reasonableness of Its Stand.

### Hooper Addresses New York Railroad Club ..... 1197

Public Member Who Played Leading Part in Strike Settlement Gives His Ideas About Board's Work, Defending It Against Critics.

### St. Paul Union Station Work Enters Third Stage ..... 1200

Traffic Was Thrown on First Six Tracks on November 21—Headhouse Was Completed Last Year.

#### EDITORIALS

A Change for the Better .....	1179
More Funds for the Laboratory .....	1179
First Cost of Locomotives vs. Operating Cost .....	1179
Protection for Outside Repairmen .....	1179
Home Brew and Color Blindness .....	1180
Is the Turbine Locomotive Coming? .....	1180
An Example of Progress .....	1180
The Cleveland Terminal .....	1180
Plumb Plan Vilification of Officers of Railways .....	1181
The Bryn Athyn Collision .....	1182

#### LETTERS TO THE EDITOR

Why Not a Service Reduction .....	1183
Advantages of the Mallet Type as Compared With the 2-10-2 .....	1183
"Man Failures" .....	1183
Prices of Rails, Salaries of Executives and Other Things .....	1184
Interior Boiler Treatment as an Alternative .....	1184
Corrosion in Service Tests and in Actual Service .....	1185
Fire Protection in Lumber Yards .....	1185
About Seniority .....	1186

#### GENERAL ARTICLES

Rock Island Mountain Type Handles Heavy Trains .....	1187
Superpower Advocates Strive to Answer Critics .....	1189
Says High Freight Rates Impose Burden on Farmers .....	1192
Cleveland Passenger Terminal Project Approved .....	1193
Asks Congress to Investigate Plumb Plan League .....	1195
Regulations Regarding Tax Collections and Refunds .....	1196
Hooper Addresses New York Railroad Club .....	1197
St. Paul Union Station Work Enters Third Stage, by G. H. Wilsey .....	1200
Zoelly Turbine Locomotive for Swiss Federal Railways .....	1204
Walker D. Hines Defends Transportation Act .....	1205
Freight Car Loading .....	1207
Shay Ceased Locomotives for Mountain Roads .....	1209
Commission Begins General Rate Investigation .....	1211
Director General Reports on Railroad Settlements .....	1213
Illinois Central to Rebuild Ohio River Bridge .....	1214
Labor Board Announces A other National Agreement .....	1215

#### GENERAL NEWS DEPARTMENT ..... 1217

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*

HENRY LEE, *Vice-Pres. & Treas.*

C. R. MILLS, *Vice-Pres.*

L. B. SHERMAN, *Vice-Pres.*

SAMUEL O. DUNN, *Vice-Pres.*

ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building CLEVELAND: 4300 Euclid Ave.

LONDON: England: 34, Victoria St., Westminster, S. W. 1

PHILADELPHIA: 407 Bulletin Bldg.

Cable address: *Urailmag, London*

CINCINNATI: First National Bank Bldg.

WASHINGTON: Home Life Bldg.

NEW ORLEANS: Maison Blanche Annex

#### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

E. T. HOWSON  
H. B. ADAMS  
H. F. LANK  
R. E. THAYER  
C. E. PECK  
W. S. LAGLER  
J. G. LITTLE

A. F. STUBBERG  
C. W. FOSS  
K. E. KELLENBERGER  
ALFRED G. OEHLER  
F. W. KRAEGER  
HOLCOMBE PARKES  
C. N. WINTER

MILBURN MOORE  
E. L. WOODWARD  
J. E. COLE  
J. G. LYNNE  
J. H. DUNN  
D. A. STEEL  
K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

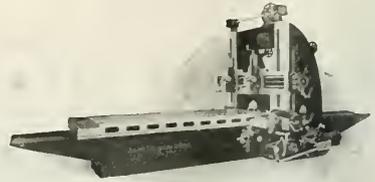
The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special and editions published from time to time in New York, or in places other than New York, payable in advance and postage free, United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through our London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE that of this issue 8,850 copies were printed, that of these 8,850 copies, 7,925 were mailed to regular paid subscribers, 54 were provided for counter and news-stand sales, 25 were mailed to advertisers, 65 were mailed to employees and correspondents, and 477 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 470,550, an average of 9,411 copies a week.



Selective Head Engine Lathe



Multispeed Planer

## Machine Tools Affect The Operating Ratio

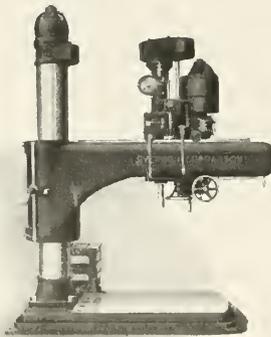
What does replacing obsolete inadequate shop equipment with Ryerson-Conradson machine tools mean to railroad operation?

It means power ready for the road when it's needed.

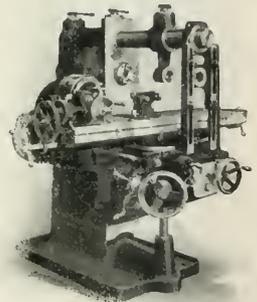
It means fewer engine failures on the road, for nothing makes for good workmanship more than good tools.

It means lower, more continuous service and lower maintenance costs—therefore a better operating ratio.

Ryerson-Conradson machine tools are an investment that vitally concerns railroad operation. Ask about them.



Twin Motor Driven Radial Drill



No. 2 Universal Milling Machine

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The changes made by the Railway Labor Board in the national agreement for maintenance-of-way employees, effective

### A Change for the Better

December 16, 1921, mark a definite improvement. While minor changes have been made all through this instrument, there are two modifications of primary importance. One is the elimination of overtime for the ninth and tenth hours and the other comprises those changes which allow a reasonable degree of local adjustment of arrangements between employer and employee. The adoption of the ten-hour basic day marks a definite recognition of the difference between conditions under which maintenance-of-way men are employed and those that hold in nearly all other lines of employment. A large part of the maintenance-of-way men are employed in camps with little opportunity for diversion during hours not employed. Consequently, the average man would rather be at work earning money than be sitting around idle. The section man, on the other hand, rides to his work on a motor car or hand car on company time, whereas the average city worker would be spending his own time on a street car. For this reason ten hours employment for the section man involves very little more time away from home than eight hours with the average workman in other lines. The railroads will welcome this change for two reasons. It will enable them to accomplish the same amount of work with a smaller number of men, while the proportionate time spent in traveling to and from work will be a relatively smaller part of the total time paid for. The new rules are also an improvement in that they make an appreciable reduction in the minutia of regulations governing the relation of the railroads to their men.

Few governmental agencies have paid larger returns to the railroads and other users of timber on the appropriations than

### More Funds for the Laboratory

has the Forest Products Laboratory at Madison, Wis., in the years of its existence. However, its usefulness has been seriously curtailed of late for lack of sufficient funds with which to disseminate

adequately the results of the investigations and tests made under its direction. Instead of publishing pamphlets or booklets available to anyone who had use for them the efforts to obtain publicity for its findings have been restricted largely to the presentation of technical papers by members of the staff before technical societies or in the pages of engineering and trade journals and through the publication of a small number of so-called technical notes. As a consequence, the general public is not obtaining the full benefit of the investment which the government is making in this laboratory. It is true that certain manufacturers and others have obtained valuable information from the laboratory by sending representatives to Madison to co-operate with members of the laboratory staff in developing practical applications for the facts ascertained as a result of research. While much good has been accomplished through this procedure, it is at best undemocratic in that the benefits are in large measure restricted to the small number of individuals who have the funds and inclination to go to this trouble. The current

annual appropriation for Forest Products research amounts to \$325,000, or less than 25 cents for every \$1,000 of raw manufactured value for the total annual cut of wood. This sum is only sufficient for the laboratory to continue its current research work and should be supplemented by at least \$100,000 more if the results of the research are to receive the widespread dissemination that they should have.

In the purchase of locomotives, price is often one of the most important considerations. Usually the number of locomotives required is settled first, a rough estimate of the price is made, and the officers of the road proceed by trying

### First Cost of Locomotives vs. Operating Cost

to get the motive power for the minimum expenditure. If a fixed sum is available for new power, it would be far better to reduce the number of locomotives bought than to cut down the price by revising the design and eliminating all but the bare essentials. The fixed charges on the first cost of motive power is a relatively unimportant item in operating expenses as was brought out in the paper by William Elmer published in the issue of December 3. Mr. Elmer cites the case of a locomotive costing \$50,000 for which the fixed charges are 60 cents an hour for the 24 hours, or about \$1.30 an hour for the time it is on the road only. This locomotive consumes about 7,000 lb. of coal an hour. At the unit prices for the various regions given in the Interstate Commerce Commission's report for the month of September, the cost of fuel would vary from \$11.10 to \$23 per hour. The wages of the engine and train crew for this locomotive amount to \$4 an hour. It is evident from these values that even a small saving in fuel or wages would justify a relatively large increase in the first cost of the locomotive. For example, so far as fixed charges are concerned, it would be economical to double the cost of the locomotive if necessary in order to save 15 per cent of the fuel. This is a thought that is seldom emphasized but should be kept in mind whenever the purchase of locomotives or locomotive appliances is considered.

In view of the unusually mild weather during the late fall months, little difficulty has been experienced in performing

### Protection for Outside Car Repairmen

car repair work outdoors even in sections of the country quite far north. During the winter, however, repair shops located in northern latitudes are subject to cold, rain, sleet and snow, which often materially delay the repairing of cars not under cover. It is impossible for men exposed to adverse weather conditions to work with the same degree of efficiency as when protected and sometimes it is impossible to work at all. This fact was emphasized by the recent severe sleet storm in New England which broke down trees and literally put out of commission hundreds of miles of telephone, telegraph and electric power lines. From Utah also comes word that car shops are being extended and sheds built so that car repair work can be done under cover. Certain states have

made it compulsory to erect structures which will afford a protection to workmen on this class of work and the railroads would do well to consider whether they should not, in the interest of efficiency and economy, provide these facilities before they are compelled to by the state authorities. Not only should provision be made for the protection of car repair men, but in specific instances it has proved a paying investment to provide firing-up sheds outside of locomotive shops. These sheds should be well lighted and equipped with steam lines to operate blowers and air lines for use with pneumatic tools. The final operations in locomotive repair work, including firing up and such adjustments as are always necessary after test runs, can then be performed by workmen protected from inclement weather conditions. The degree of protection needed at a given point will depend largely on its latitude but if this protection is furnished, repairmen can then concentrate on the work at hand irrespective of the weather and with a noticeably favorable result on output.

In the inquiry following a recent rear end collision the engineman testified that he had received a yellow or caution signal indication. An examination of the signal at the time of the accident

#### Home Brew and Color Blindness

showed that it was in the stop position and displayed a red light. At the investigation the engineman's vision was found to be perfect, but upon being asked whether he drank any "home brew" before starting on that particular run, he admitted having had a couple of glasses. He was then given some "home brew" to determine what effect, if any, it would have on his vision and on being examined four or five hours later he was found to be absolutely color blind. This effect, however, wore off in the course of 12 or 15 hours and the engineman's vision was again normal. Thus another problem presents itself to further harass our over-worked railway managements

The insistent demand for economies in locomotive operation which has resulted from the advancing cost of coal in the

#### Is the Turbine Locomotive Coming?

past few years has caused thoughtful engineers in several parts of the world to consider the possibilities of radical modifications in steam locomotive design. The present type of locomotive with its reciprocating steam engine forms a remarkable power plant, distinguished by unusual capacity for its small space and weight, and of great simplicity. It possesses to a high degree these characteristics that are of prime importance but unfortunately it does not compare favorably with some other engines when consideration is given to the amount of fuel burned to produce a given amount of work.

In casting about for a more economical means for converting the energy of steam into work, it is natural that the steam turbine which has given such excellent results in other fields should be one of the first devices considered. A number of designers are now devoting their energies to a solution of the problem of the adoption of the turbine to the driving of the locomotive. The turbine to show its best efficiency must run at a high speed and the exhaust instead of passing direct to the atmosphere must be led to a condenser where a high vacuum is maintained. The fact that the starting torque is relatively small, that the power is reduced as the speed is decreased and that the ordinary turbine is non-reversing introduces other problems that may delay the application of the turbine to the locomotive. It is too much, however, to say that these difficulties are insurmountable.

As the experiments which are now being made in several European countries indicate a coal consumption some 20 per cent less than that obtained with a steam engine the results will be watched with the interest that their importance demands.

The development of the highly efficient modern locomotive has been a gradual process, produced by a large number of changes, each in itself apparently of minor importance, but contributing its part toward the attainment of the final result. Because these changes occur so gradually they pass almost unnoticed.

#### An Example of Progress

The introduction of a new wheel arrangement, or the building of an engine which establishes new records for weight or tractive effort overshadowed in popular interest the less conspicuous, but more important advances in the art of locomotive design. It is only by definite comparison with past performance that progress can be measured. It is for this reason primarily that the description of the performance of the Rock Island Mountain type locomotives in this issue is of interest. It furnishes a comparison with a similar engine built in 1914 which is an impressive exposition of the progress in design that has taken place even in the short period of six years.

The Interstate Commerce Commission has changed its mind and the New York Central, the Cleveland, Cincinnati, Chi-

#### The Cleveland Terminal

ago & St. Louis and the New York, Chicago & St. Louis will be permitted to build a passenger terminal at Cleveland according to their original plans. Previously the commission had dismissed the application of the carriers for the authority they asked and the reversal of the decision comes as the result of further hearings. The proposed station is to be located on the public square in the heart of the city and will involve the building of a new passenger line through the city. This line and the station will be below the level of the city streets and electrification will be necessary. The station is proposed as a solution to the severe freight congestion in Cleveland and as a substitute for the antiquated stations now provided. Objection to the plan is strongest apparently on the part of certain local interveners who advocated as an alternative the construction of a station near the present union station on the lake front, the new station to form one of a group of monumental public buildings already standing there. Under such a plan the objectors estimated that by four-tracking the Cleveland Short Line (the New York Central's freight line south of the business section of the city) and by effecting certain other improvements the congestion could be relieved and that their plan would be much less costly than the public square station project. There was also some objection to the proposed methods of financing the project, whereby a traction line terminal is to be combined with the new station under arrangements which the objectors seemed to think prejudicial to the best interest of the railroads and to the fact that, under the plan, valuable air rights over the station are not retained by the railroads. The decision of the Interstate Commerce Commission in approving the application would seem, however, a wise one. Congestion at Cleveland presents a situation challenging solution and the interested carriers should be the best judges of what methods should be followed in tackling the problem. No alternative plan was presented, the lake front proposal being an idea, pure and simple, with no bona fide rail carriers as its proponents. At the same time it is to be regretted that the other carriers in Cleveland—

the Baltimore & Ohio, the Pennsylvania, the Wheeling & Lake Erie and the Erie—have not joined in on the project. These roads may, however, come in later under contract.

## Plumb Plan Villification of Officers of Railways

THE KIND OF PROPAGANDA which is being used by the railway labor unions to promote the Plumb plan is strikingly illustrated by testimony recently given by Frank J. Warne, an "economist and statistician" for the train service brotherhoods, before the Senate Committee on Interstate Commerce. The headlines over the story regarding Mr. Warne's testimony published in "Labor," the official organ of the railway labor unions and the Plumb Plan League, in its issue for December 10 read: "Rail Officials 'Milking' Carriers with Supply Contract Rakeoffs." "Managers Fatten Concerns in Which They Have Financial Interest." "Earnings are Dissipated in Extravagant Deals—Hundreds of Guilty Officers Named."

In the article in "Labor" Warne is quoted as having made the following statements, among others:

"It is common knowledge among those familiar with the facts that railway supply companies in which railroad officers are peculiarly interested have been and are fattening off purchases from them made by the railroads. . . . A Congressional investigation, or an investigation by the Interstate Commerce Commission, will undoubtedly disclose the significant fact that in recent years all the railway supply companies, and they number into thousands, have reported huge surplus earnings to be added to their already accumulated surpluses secured through high prices to the railroads for the supplies purchased. . . . It should not need the authority of a statute to establish the commonplace principle of right conduct that the plain duty of a railroad official forbids him to gain a personal profit at the expense of the railroad company through contracts with it or sales to it by supply companies. . . . Such profit is gained through participation in interest payments on bonds or dividends on stocks of supply companies to which the railway lets its contract at high prices, just as much as if an out-and-out bribe were given the railway official. . . . Railway managers are holding on to their sources of graft while they are pleading with the public to demand wage cuts for workers to prevent insolvency of carriers."

Although these charges were made by Mr. Warne in testifying before the Senate Committee, they received almost no publicity through the press generally. The obvious reason was that he offered no real evidence in support of them. "Labor" says he gave the names of hundreds of railway officials who have been getting graft, but with commendable regard for the laws of libel "Labor" refrained from publishing any of these names. The article in "Labor" indicates that Mr. Warne based his charges almost wholly on the ground that within recent years the railways have paid high prices for fuel, materials and equipment, and that the coal, equipment and supply companies have made large profits. But what relationship to charges of graft has evidence showing that the coal and supply companies have recently charged high prices and made large profits? What business concerns, except railways and public utilities, have not within recent years charged high prices and made large profits?

He said, as quoted in "Labor," that "in 1920 the railroads paid two-and-a-half times the pre-war price for locomotives, more than three times the pre-war price for steel cars, and 313 per cent more for composite cars. Passenger coach prices increased 218 per cent." The source of these figures is apparent. They are based on statistics published by the *Railway Age* in its issue for January 7, 1921. But some of the *Railway Age's* statistics are grossly misquoted. Our figures showed that between 1910-1914 and 1920 the average price of composite freight cars increased not 313 per cent, but 213 per cent, and that passenger coach prices increased not 218 per cent, but 118 per cent. We do not know whether Mr. Warne misstated the statistics given in the *Railway Age* or "Labor" misquoted Mr. Warne. At any rate "Labor" is published by the same labor organiza-

tions that employ Mr. Warne and through it these garbled figures were disseminated among railway employees.

The actual increases in the prices of equipment were surely great enough without being exaggerated. But if they are to be used as evidence of graft, what is to be said about some other increases in prices which occurred at the same time? In 1920 the price of wheat rose to a point where it was 252 per cent higher than in 1913. The price of leather became 335 per cent higher, of shoes 208 per cent; brick 281 per cent; Douglas fir lumber, 307 per cent; sugar, 423 per cent; potatoes, 620 per cent. If the advances in the prices the railroads paid to the coal companies and the equipment and supply companies are evidence of graft, then those who participated in this graft are the veriest pickers compared with those who grafted in the buying and selling of wheat, potatoes, shoes, lumber, leather and sugar. In May, 1920, the average wholesale price of all commodities was 172 per cent more than in 1913, while the average price of bituminous coal was 173 per cent higher, of pig iron 157 per cent higher and of steel billets 153 per cent higher. The railways are large purchasers directly and indirectly of coal, pig iron and steel billets and yet the prices of these commodities had increased only as much as, or less than as much as, the average price of all other commodities.

A man who will make the sweeping charges of grafting relations between railway officers and supply companies that Mr. Warne has made upon such flimsy grounds as he has based them is a reckless propagandist who disgraces the titles of "economist" and "statistician" in which he masquerades. He does, however, offer one suggestion which the *Railway Age* hopes will be promptly adopted. This is for an investigation by a congressional committee or the Interstate Commerce Commission of the relations between railway officers and concerns which sell to railroads. The Interstate Commerce Commission is charged with the duty of seeing that the railways are economically and honestly managed. The commission has just begun an investigation to determine whether a general reduction of rates at the present time would be justifiable. Charges that the railways are wasting hundreds of millions of dollars through inefficient management and graft are being peddled all over the country by Glenn E. Plumb, W. Jett Lauck, Frank J. Warne and other paid employees of the railway labor unions. If these charges were true it would be the duty of the Interstate Commerce Commission to find that the railways could afford to make large general reductions of rates and to order them to do so. Therefore, it is the commission's plain duty to call these men before it in the present investigation and compel them to prove their charges of wholesale grafting, or admit that they are willfully disseminating among railway employees and the public the most reckless and baseless libels.

Meantime, the railway officers should not overlook the significance of the publication of Warne's charges in "Labor." Warne is employed and this paper is published and circulated by the railway labor unions. Therefore, the heads of the labor unions stand sponsor for everything that Warne charges and that "Labor" publishes. The effect of the publication of Warne's charges is to convey to hundreds of thousands of railway employees the impression that most of the officers of the railroads, and especially the higher officers, are crooks who are stealing vast amounts of money from the railroads and are trying to reduce the wages of employees so that there may be more money for them to steal. A large part of the employees accept as gospel the propaganda disseminated by the heads of the 12 unions through "Labor" and in turn disseminate it on every train on which they work and in every community in which they live. The effects produced upon the attitude and morale of the employees and upon public sentiment

are obvious. The necessity for combating this propaganda in every possible way is even more obvious.

Railway employees complain because the railways seek to reduce their wages; and at the same time the heads of their unions and Lauck, Warne, Plumb and other paid spokesmen are constantly engaged by the foulest misrepresentation in trying to create a public sentiment which will force down the rates of the railways and thereby make necessary reductions in wages. The leaders of the labor unions constantly complain that some railway officers try to avoid dealing with the unions, and at the same time use the unions as agencies for blackening the reputation of railway officers and to carry on propaganda aimed at the destruction of private ownership and management.

"Men cry 'peace, peace,' when there is no peace!" How can there ever be anything but war between the railway companies and the labor unions as long as the labor unions, to promote their egregious Plumb plan, persist in carrying on a nation-wide campaign of misrepresentation of private management of railways and vilification against railway officers?

## The Bryn Athyn Collision

THE DISASTER at Bryn Athyn, Pa., on December 5, reported in our last issue, is of a character to focus attention on all phases of the collision problem. It is almost three years since the notable collisions at South Byron, N. Y., and Fort Washington, Pa. (January, 1919) and, except for Schenectady in June, 1920, there has been no such disaster of the first magnitude since that time anywhere in the country; and the block signal problem has been no exception among the various questions of railroad maintenance which, during these three years, have been almost totally smothered by the general financial paralysis in the railroad world, the causes of which are all too well known.

For it is the block signal problem, mainly, that is here at issue. Between the electric train staff, in perfect form, or automatic block signals, maintained at their highest perfection, on the one hand, and the simplest manual block system (as it is operated on thousands of miles of road) on the other, there is a very wide gap; and where the best is not attainable, this gap is bridged, more or less effectively, by a chain of less satisfactory precautions and safeguards; and in this case two weak links in the chain broke simultaneously.

A certain brilliant superintendent, of the old school, who had not much money for signals and whose company had not very high ideals in such matters, had in one location a lone semaphore, set high on a bank, outside of a siding, though it governed the main track. Criticized by a young signal engineer, he replied, with vigor, "My signals mean what I say they mean!" He could not afford to move that signal just to comply with some highbrow theory of uniformity. His runners all understood that signal; what more could be asked? But, some day, with some engineman, under some peculiar combination of circumstances which could be expected to occur not once in a hundred years, the principle of uniformity, at that signal, would be the one link—perhaps we should say the one thread—holding things together and preventing a disastrous collision. This principle, demonstrable in logic, but often so evasive that the operating officer is not able to sustain it wholly on the basis of experience, was illustrated at Bryn Athyn.

Nothing could be simpler, on paper, than to require the conductor and the engineman, when they are allowed to pass a signal in the stop position, to bear in mind that they have been allowed to pass it only by a suspension of the rules, and that to move beyond it at full speed they must first look back and see that it has not been changed; or else get

special written permission to go on. And this is particularly plausible at places where trains always make a station stop and the difficulties of fog and of high speed are therefore absent. But in point of fact no one has yet been able to insure enginemen against absent-mindedness, and the placing of signals immediately in front of the engineman's eyes is one of the safeguards which have been universally approved as a provision against that weakness.

So much for what is, without doubt, the one glaring broken link in the safety chain at Bryn Athyn. Depending on the conductor to check the engineman who fixes in his mind "154" for "156"; or who ignores words and figures on paper and identifies opposing trains by some rule-of-thumb process, is another weak link that has been proved weak a hundred times; notably at Nashville, Tenn., in July, 1918, when 101 persons were killed. Depending on firemen and brakemen to check the errors of their superiors is a weaker one, and the very words in the rule-book usually give evidence of its weakness. The futility of trying to hold a train by a fixed signal which is behind the locomotive is so well settled in the minds of all train dispatchers that the point has become one of the cardinal elements in their creed. This will have been noticed as a prominent element in the recent discussion in these columns concerning the use of train-order Form 19. That conductors and brakemen often will not carefully co-operate in reading orders; that firemen often prove ignorant or careless are facts of experience too common to need proof. We say that these weaknesses occur "often." Making comparisons with normal operations, this may seem a harsh word. The *percentage* of errors in train operation is so small that the mind does not grasp the fractions. The chance that a passenger will be killed in a collision, or even injured, is so small that we all enter the cars daily without thinking of it. But "often" is the proper word. As we have said, it is almost 36 months since the last country-wide proclamation on this subject; but the certainty that other disasters will occur is absolute.

We have spoken of the general paralysis of railroad treasuries. This collision illustrates a difficulty of a more permanent nature; the attempt to give good service for a poor income. The Philadelphia, Newtown & New York Railroad is one of the poverty-stricken members of the Reading family, never earning a profit. The government has laid down the principles of good block signaling, but it has not insisted that these should be adopted—at least not on a short branch doing a light business; while through another department it has put arbitrary limitations on railroad incomes. The government calls for the exclusive use of steel cars for transporting passengers; but its deliverances shed no light on how to get rich enough to throw away the thousands of wooden cars that are in service. Neither the government departments nor the railroads have the courage to reduce the dangers of travel by a reduction of speeds—and so we go on risking our lives.

The government, to be consistent, should adjust its financial requirements to its safety requirements. The railroads, generally speaking, try to be consistent in their appropriations for their profitable lines and for those which are unprofitable; but they have little success except as they favor the poor ones far beyond the reasonable limits of equity. In the meantime the keepers of the railroad treasuries have to contemplate the grim reality that when passengers are killed and injured, the drain on their companies' funds is usually the same, whether the wreck occurs on a poor branch or on the main line.

AT A CONFERENCE of petroleum shippers and railroad men of the Mississippi Valley at Memphis, Tenn., on November 28, a rate of 36 cents per 100 lbs. on petroleum shipped from New Orleans and from Louisville, was asked by the oil companies. The railroads suggested a rate of 38 cents.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### Why Not a Service Reduction?

TO THE EDITOR:

OMAHA, Neb.

Railway executives are clamoring for wage reductions and the employees, of course, are fighting this to a finish. Sometimes hard times are produced by over-production. Over-production means lower prices for the over-produced articles. Did it ever occur to railway executives that the "service" may be over-produced?

Just because a passenger representative may hear a drummer say that the I. X. L. has it all over the X. Y. Z. in train service and equipment and reports this to his passenger traffic manager, is it necessary for the latter to importune the general manager to place a rival train on his line although the earnings will not pay engine and car mileage, let alone the other expenses? Competing roads run many competing trains out of Chicago to large cities in every direction—trains de luxe which of course means a first class hotel on wheels. Railway managers know the cost of running these royally equipped trains and that many of them do not pay. It is said that competition is the life of trade. So it is, when the trade permits, but when the trade does not exist and cannot yet be built to fill the service, why keep up the service? Other businesses do not. They get together and close out the non-paying operations.

Then why should not railway executives get together and instead of fighting for a wage reduction, make it an operation or service reduction? This in itself means a wage saving as less trains operated means less men required. No objection can be made by the employee as he cannot expect pay when his services are not required. Let the executives take off each of their lines one or two trains and distribute the movement of the remainder to the best advantage for all. The public may kick, but inasmuch as it is demanding lower rates, it should accept less train service. E. H. B.

### Advantages of the Mallet Type As Compared With the 2-10-2

TO THE EDITOR:

KANSAS CITY, Mo.

One reads a lot about the efforts of the railroads to economize in the use of coal; while much has been done in the last few years along that line, it seems to me that the compound engine must be adopted if any big saving is expected. I noticed a description of some 2-10-2 type locomotives for the Southern Pacific in a recent issue of the *Railway Age* having cylinders 29½ in. by 32 in., a tractive effort of 75,150 lb. and a total weight of 385,900 lb. Contrasting this with some Great Northern Mallets used in road service, built about 12 years ago, of 2-6-8-0 type with 23 in. by 35 in. by 32 in. cylinders, tractive effort 74,000 lb. working compound and a total of 378,300 lb., one wonders why the Mallet is not used to a greater extent in road service. In the instances noted above the total consumption of the Mallet is about 10 per cent less than that of the 2-10-2 of practically the same power. The Mallet also has the great

advantage of being able to increase its tractive effort about 20 per cent in starting and also on hills where there is danger of stalling.

The first cost of the Mallet would be higher than for a 2-10-2 of the same power, but if properly designed and with the use of high grade materials as are generally used, the yearly upkeep should not be so much more but that the amount saved by more economical operation would still be sufficient to show a good profit by its use. On a road using large numbers of such locomotives, the profits would be considerable.

The Mallet would also be easier on roadbed and bridges, owing to its short rigid wheelbase but greater total wheelbase, the one making it easier on curves than the long rigid wheelbase of the 2-10-2 and the other by distributing the total weight over a greater amount of track. As regards speed, the Mallet can make 25 to 30 miles per hour which is fast enough for ordinary traffic.

P. D. ANDERSON.

### "Man Failures"

NEW YORK CITY.

TO THE EDITOR:

Your report of the terrible collision on the Reading Railway in Pennsylvania on the 5th of December gives the cause of the deplorable loss of life (so far as known) as failure of the human agency; that is, a "man-failure"; and, as usual, those railroad officers who express themselves (what extreme silence prevails, generally, among the higher officers, at such times!) seem to resignedly accept that as the complete and sufficient explanation.

But what a number of failures! It appears that in this, as in most cases, to put the responsibility on one man would be badly out of line with the facts. I understand that the engineer and the conductor who broke down were men of high morale, experienced, and with good records. They both failed. The fireman and the rear brakeman failed.

There must have been a bad man failure when the location of that semaphore signal was decided upon.

Your account indicates that the southbound train entered the block at 7:45, while the dispatcher's order to the northbound was not completed until 7:46. Is there a man-failure at that point also?

Knowing that the public demands steel cars, why do not the railroads, when they must use the old wooden cars, move their trains slower? An old-fashioned railroad would have held them down to 20 miles an hour through that narrow and steep-sided cut. This is a man-failure, though we are not honest enough to call it so.

The Interstate Commerce Commission has for years advocated steel cars, and numerous congressmen endorse the position of the commission; they even introduce bills on the subject; but it all ends in talk. Why do they not *do* something? This is a man-failure. Blaming nine commissioners and 400 congressmen is very cold comfort, I admit; but men fail, and we must face the facts.

For still longer years the commissioners have advocated the block system—the real and effective block system, not a makeshift such as was disclosed in this case—and one congressman, Mr. Esch, of Wisconsin, has ably backed them; *but nothing has been done*. Here is another glaring man-failure. When shall we ever realize the sorely needed accession of "sand" in our public men? Man-failures are so common all around us that one is almost driven to pessimism.

But the true term, alas! is "men-failure." A dozen individuals (not counting congressmen) can, if they search their hearts, accuse themselves for inaction which has helped to produce the conditions that result in collisions like this one at Bryn Athyn. One could almost pray that some of the

ugly qualities of Senators La Follette and Borah might agitate the breasts of some of the conservative congressmen. As long as the safety of our passenger trains depends on the actions of boards of railroad directors, we shall have the present situation continued indefinitely; not perhaps a man-failure, but man-action by men so extremely conservative that in effect they (the directors) are just as tragic failures as were the conductor and engineer at Bryn Athyn.

It behooves us to consider these things right here in

WALL STREET.

## Prices of Rails, Salaries of Executives, and Other Things

NEW YORK.

TO THE EDITOR:

You may be interested in the following extracts from a letter which I have sent to the Senate Committee on Interstate Commerce:

"Much publicity has been occasioned by a letter or statement which the newspapers report to have been placed in your hands by Dr. Frank J. Warne in behalf of the union railroad employees of the United States, in which Dr. Warne lays blame for the plight of the railroads upon the United States Steel Corporation. He cites in support of his contention a letter written last February by John Skelton Williams, then Comptroller of the Treasury. Mr. Williams claimed that steel prices could have been cut very severely without detriment to the position of the corporation.

"The statement by Dr. Warne, together with the statement of Mr. Williams, referred to the war-time profits of the Steel Corporation as "swollen and unconscionable." As you undoubtedly know, the prices for steel products during the war were fixed by a government commission, at a figure considerably higher than the Steel Corporation thought was just and proper. They were fixed at that higher figure, however, because smaller steel companies, lacking the corporation's financial strength, and lacking its ability to produce steel at low cost, would have been frozen out of the market at figures lower than those which were fixed. In other words, that was a war measure pure and simple, which was put into effect for the purpose of obtaining the largest possible steel production from all steel producers, even though some of those producers might reap excessive profits.

"Now, what was done with those excessive profits? You know and I know that the government took the greater part of them in the form of taxes. If these hundreds of millions of dollars thus taken had not been obtained from this source, they must necessarily have been obtained from the body of the American public. So much for the excess war profits.

"Open-hearth steel rails today are sold to the railroads at \$40 per gross ton. For a long period of years, beginning in the spring of 1901 and ending in the spring of 1916, open-hearth steel rails were sold regularly at \$30 per gross ton. (The \$28 price which we see mentioned so frequently was for Bessemer rails, which are now practically out of the market, and which for many years have been produced in smaller and smaller quantities, because most of the railroads will not accept them.) Now \$40 is 33 per cent above \$30, but the railroads' average charge for freight per ton-mile for the first six months of 1921 is 78 per cent above the average for 1913 and the railroads now charge 57 per cent more per passenger mile than in 1913. In fact, if you consider single fares in states where the old 2c. statute rates were in effect, such as New York, Illinois and others, the present price is 94 per cent above the old.

"It seems idle to charge a 33 per cent increase in steel rail prices with responsibility for continuing an increase varying from 57 to 94 per cent. If you extend the inquiry beyond

steel rails, you will find that other forms of steel are relatively lower than rails. As a matter of fact, steel bars are today lower than they were in 1913, and plates and beams are on identically the same basis as in 1913. Hence, the present price of steel has practically nothing whatever to do with the plight of the railroads. Perhaps the fact that railroad employees (not including the general officers) received, on the average, 106 per cent more in 1920 than in 1915, may have something to do with it.

"The same Dr. Warne has stated, in a way which has caused the newspapers to give it considerable publicity, that railroads have padded their payroll figures to show that the present average wage of railroad employees is higher than it should be. He states that this padding consists in the inclusion, in the average, of salaries of railroad presidents and other high officials, known ordinarily as general officers. It may interest Dr. Warne and others to learn that if all the general officers were to have their salaries cut to \$1 per year per man, and the amount so saved from the railroad salary list were to be distributed equally among all the other employees, each man would receive from this distribution an average of 6 $\frac{1}{3}$ ¢. per day.

"If, on the other hand, the general officers were to receive identically the same average salaries as the average of all other employees, down through the minor clerks, section hands and common laborers, and the amounts so saved from the railroad salary lists were to be equally distributed to all railroad employees, each employee would from this source have his wages increased to the extent of 4 $\frac{1}{4}$ ¢. per day.

"As a parting thought, it might be stated that the 1920 consumption of steel rails in this country, which was 2,055,172 gross tons, would amount at the present price of \$40 per ton to \$82,206,880, which is about one-tenth of the estimated annual *advance* in wages made to railroad employees in 1920. Thus, if that *advance* were cut only 10 per cent (and this does not mean that the whole wages should be cut 10 per cent) the railroads would save from that one source alone enough money to provide them with as many tons of rails as they bought last year."

SIDNEY G. KOON,  
Associate Editor Iron Age.

## Interior Boiler Treatment as an Alternative

St. Louis, Mo.

TO THE EDITOR:

Permit me to add a word to the excellent article by C. R. Knowles, published in your issue of November 12, entitled "The Interior Treatment of Boiler Waters," with special attention to the letter by L. F. Wilson in your issue of December 3.

The article by Mr. Knowles brought out many good suggestions. The complete treatment of water for boiler purposes is clean-cut chemical reaction and although it does not purify the water from a distillation or bacteriological standpoint, it does, where properly managed, remove the objectionable scaling matter before the water is given to the locomotives. There are points where this is clearly necessary and also others where the expenditure for complete treating plants is not warranted. Under the latter conditions, as but very few perfect boiler waters are encountered, the "internal treatment" is often advisable to promote the economical operation and maintenance of locomotives with the most efficient handling of traffic.

The problem of railroad water supply is a complex one and involves the combination of a suitable source with ample production and attention to quality. The railroads use a larger amount, by volume, of water than of any other single material, required for train operation, hence the importance of the quality.

The majority of the larger railroads have found it advisable to give this phase of railroading careful attention, and the results which have been secured, both in the elimination of water waste and the saving by the permanent improvement of quality conditions, fully justify the study given. It is not believed that any appreciable number of those "who have authorized expenditures of hundreds of thousands of dollars for treating plants" will be other than agreeably "shocked" by the perusal of the reports covering the results secured by these expenditures.

The quality of railroad water supply varies considerably. In the case of surface supplies this is readily evident, but even the mineral content of well waters frequently fluctuates. Only by frequent check and careful, intelligent attention can the best results be secured. "Complete treatment" is much more easily regulated than "internal treatment" as the check tests are simple and certain. However, very good results can be obtained with "internal treatment" when due allowance is made for the co-ordinating agencies.

Mr. Wilson wrongly infers that the "internal treatment" to which Mr. Knowles refers, applies exclusively to proprietary boiler compounds. There is no particular mystery in the composition of boiler compounds and very good results are being obtained with "compounds" prepared by railroad chemists in the company laboratories, as has been clearly demonstrated on roads where this feature has been given study and supervision. Of course, when railroads are not equipped, either with laboratory or technical staff, the boiler compound companies, at the present time, offer a very convenient solution. Several of these companies have efficient staffs and if they will give the water supply problem the careful attention and frequent check that is necessary, with co-operation by the railroad forces, good results will be secured. In either case, under the present conditions of necessity for conservation of material and resources, the possible economy by improvement of water supply cannot be well overlooked.

R. C. BARDWELL,  
Engineer of Water Service, Missouri Pacific

coppered puddled iron. And yet practically the same kind of material from which this car was made failed in the Pittsburgh test of the American Society for Testing Materials in 22 months. What I would like to know is, if a railroad engineer 60 years ago had been in a position to base his opinion upon the results of the Pittsburgh test, would he have said "no good" to this time-honored relic of high-coppered puddled iron which gave 60 years of faithful service?

And that is not all that bothers me. There is another wonderful old relic that has attracted the admiration and interest of railroad engineers. It is the old powder car of the Nashville, Chattanooga & St. Louis. Unlike its companion, the iron in this car contained practically no copper and the material compares favorably with the commercially pure iron of today. This car, too, saw more than 60 years of actual service, and yet iron sheets practically of the same analyses as the plates from which this old car was constructed, when subjected to the atmospheric corrosion test in the Pittsburgh district, failed in 28 months.

Years of actual service proved these two iron box cars, one made of coppered iron and the other made of pure iron, to be extremely durable, irrespective of the showing of the Pittsburgh test. What does all this mean? It means, to quote from a report of the Committee of the Institute of Engineers of Great Britain of 1920, just this: "That the only satisfactory method (of testing) lies in exposing the metals to corroding influences under conditions precisely similar to those to which the metals would be exposed in practice."

BENNETT CHAPPLE,  
American Rolling Mill Company

## Fire Protection in Lumber Yards

NEW YORK CITY

TO THE EDITOR:

Referring to the issue of your magazine dated December 10, and the article on The Care and Protection of Lumber in Storage. Under the section dealing with fire protection, the following statement is made: "The water in the barrels can be kept from becoming stagnant or from freezing by dissolving in each barrel from 100 lb. to 150 lb. of calcium chloride (common salt)."

Calcium chloride and common salt are entirely different substances, the technical term for common salt being sodium chloride. I am calling this to your attention as common salt is no longer recommended for use in fire barrels because of not protecting the water from freezing at low temperatures and also due to the increased cost of its use in fire casks over that of calcium chloride. The table and notes here-with give information on the use of calcium chloride.

Calcium chloride will, as the article states, keep the water from becoming stagnant, will also protect water from

## Corrosion in Service Tests and in Actual Service

MIDDLETOWN, Ohio.

TO THE EDITOR:

There has recently been considerable discussion of the relative corrosion of various kinds of iron and steel with particular reference to the life of sheets in freight cars. In this connection you may be interested in the enclosed table of comparative analyses of various metals which has just come to my attention.

The strange thing about it is that the famous old Baltimore & Ohio iron box car built in 1862 was made of high-

Material	Copper	Sulphur	Phosph.	Carbon	Manganese	Silicon	Life of material
Iron powder car N. C. & St. L. Ry.	Trace	.042	.332	.124	.048	.210	In service 60 years
Similar in analysis to "Y" Sheet A.S.T.M. tests.							
"Y" Sheet A.S.T.M. tests.	.020	.021	.139	.030	.055	.218	Failed in 28 months in "Atmospheric tests."
Low copper wrought iron.							In service 60 years.
Iron box car, Baltimore & Ohio R. R.	.540	.020	.034	Low	None		
Similar in analysis to "E" Sheet A.S.T.M. tests.							
"E" Sheet A.S.T.M. tests.	.283	.021	.114	.033	.034	.134	Failed in 22 months in "Atmospheric tests."
High copper puddled iron.							Failed first in "Atmospheric tests," last to fail in mine water test.
"A" Sheet A. S. T. M. tests.	.012	.039	.086	.043	.388	.012	Last to fail in "Atmospheric tests," failed first in mine water test.
Low copper Bessemer steel.							
"I" Sheet A. S. T. M. tests.	.061	.069	.098	.030	.372	.009	Failed first in mine water test.
High copper Bessemer steel.							
Iron band from cannon, Taken at the Battle of Tiennderoga, 1775.	.080	.005	.000	.010	.010	Trace	In good condition. Samples show hammer marks made by firing pieces.
Nails from the "Meigs Hill House," Plainville, Conn.	Trace	.007	.000	.15	.006	.048	In service 162 years.
Iron Pillar of Delhi, Erected prior to A. D. 300.	.034	.006	.000	.18	Nil	.046	In good condition after 17 centuries of service.
Iron from gunboat "Merrimack," Sunk in 1862.	.018	.016	.000	.11	.010	.038	Sample in good condition after 60 years, exposure in corrosive conditions.

freezing at lower temperatures, practically prevents loss from evaporation and requires no care once the calcium chloride has been put into solution.

FREEZING POINT AND GRAVITY OF CALCIUM CHLORIDE SOLUTION.

Temp., Fahr.	lbs. per gallon of water	Specific gravity	Degrees, Baume
+25	1 1/4	1.07	10
+10°	2 1/4	1.134	18
0°	3	1.178	23
-10°	3 3/4	1.206	26
-15°	4	1.216	27
-20°	4 1/4	1.226	28
-25°	4 1/2	1.236	29
-30°	4 3/4	1.246	30
-40°	5	1.267	32
-50°	5 1/2	1.277	33

The solution should be made of granulated 75 per cent calcium chloride, free from magnesium chloride, and should preferably be mixed in a vat before being placed in fire casks, care being taken to see that the calcium chloride is entirely dissolved by thorough stirring.

If wooden barrels are used, they must first be well coated inside with asphaltum, and all containers should be kept covered.

Containers should be examined at regular intervals to see that they are full and in good condition.

In cold weather, hydrometer tests should be made to make sure that the solution is of correct strength for temperatures likely to be encountered. Sufficient calcium chloride should be kept on hand in airtight receptacles to refill containers after use.

Calcium Chloride is far superior to salt, being non-corrosive, does not evaporate nor become foul, remains in solution without constant stirring, and has much lower freezing point.

Another paragraph to which I wish to take exception is as follows: "Where such apparatus is not available water barrels should be distributed throughout the yard at convenient points and strategically disposed so as to be most effective in an emergency."

When the major equipment is installed it is also essential to add minor equipment. Many times during the course of the 24 hours, only the watchman may be at hand who could not handle the fire hose, especially where high pressures are used, but who could accomplish results with fire pails or extinguishers on any incipient fire.

I notice that no mention has been made of the extreme exposure which lumber yards offer to the surrounding properties. This is a point which many railroads seem to ignore and they pile their lumber in close proximity to adjoining buildings. Lumber yards should be at least 200 ft. distant for safety.

Due to my extreme interest in matters of fire protection, I could not see this article published in your magazine without calling to your attention the additional points which I have stressed.

G. W. H. THOMAS.

## About Seniority

RAVENNA, KY.

TO THE EDITOR:

The Illinois Central advertisement stating that railroad-ing is as attractive for the young man as ever was well answered, when the "Ohio State University Student" (*Railway Age*, November 5, page 865) said college men were deterred from entering railroad service because of "an ancient system of seniority." The seniority system as forced on the railroads by the unions has produced stagnation and fosters inefficiency and disinterestedness. Like a stroke of paralysis it has hit the railroad organizations and where once men vied with one another for promotion, today they are content to sit back with their rights and let other forces than their own efforts push them ahead. More than any other thing, it turns intelligent young men away from the railroad field.

Strange to say, I am in favor of a seniority rule, but not the way the present one is written—i. e., ability being sufficient, seniority shall prevail. This puts grey hairs ahead of brains and makes you keep the weak brother in line

ahead of you. It takes all ambition out of a man for he knows that no matter how hard he works it will not count for the vacancy will go to the man longest in the service. Yet you say he should do his work well so as to gain an official position which is not controlled by seniority. This is well and good, but one must have years of experience properly to fill these and a young man placed in the present atmosphere of indifference, where all his little hopes are stifled, will leave the service long before he is able to be an officer. This forces the railroads to pick for their minor officials old fogies who have been content to dilly-dally along for years under this obnoxious rule.

Let us rewrite the rule—"Ability being the same, seniority shall prevail and between similar positions where the hours or location vary, let seniority rule." To illustrate: In train service let seniority govern as long as you remain a brakeman, so the oldest men can have the day work, best runs, and live at the terminal of their preference. But when we come to promotion to the positions of conductors, promote those who not only pass the best examination, but those whom the trainmaster readily feels he can trust with responsibility.

Take the clerical positions, where most officials in the operating department have to get a good part of their grounding. There are many different degrees of work in an office, all the way from mail clerk to chief clerk. Let seniority prevail between similar work, such as between the stenographic jobs, timekeepers, accountants, etc., and if a man's rights cover a group of offices let him choose as to the one in which he wishes to work and as to the more favorable hours.

Our friend from "Ohio State" talks about favoritism. I think it is generally admitted that there is no field where there is less favoritism than in the railroad. Just compare it to the industries which are run by the owners and you will have no "come back." When the Brotherhood of Railroad Clerks say that invariably where seniority does not exist the boss will go outside the office to fill the vacancy, they only admit that the average railroad clerk is listless and incompetent. All the officials I have known would first look for promising material in their own office before going elsewhere. They know that to reward the competent is the best stimulus for morale.

As the railroads no longer control the conditions under which their employees work, if the Labor Board does not wake up and change this vicious system the railroads will be driven to the point where "an effort to get good official material, they will have to adopt the cadet system, obnoxious as it is to Americans. They will have to take the college graduate who has been more fortunate in education than his fellows and move him over the system, through jobs created for the purpose and out of the reach of the unions, and thus over a period of several years of intensive training fit him for the minor official positions. The unions by insisting on this rule will in the long run only keep their able members out of places of responsibility and set up a class system, such as exists in older countries where the ambitious worker has no chance for advancement.

ALBERT FINK MILTON,  
Clerk, L. & N.

THE EAST ST. LOUIS & SUBURBAN, as a part of its safety first campaign, has painted one of its passenger cars white and covered its entire exterior surface with admonitions to the people to "watch their step." This car is run over the entire system, alternating over the 17 different lines which connect St. Louis with more than 20 Illinois towns, and thus carries its message to every part of the territory which the company serves. Each passenger using the car is given printed matter in support of the campaign.



Rocky Mountain Limited Leaving Rock Island Station

# Rock Island Mountain Type Handles Heavy Train

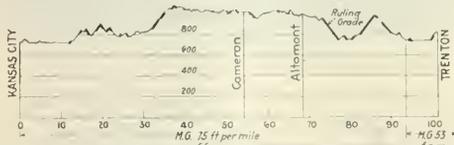
Latest Design Demonstrates Worth in Exacting Service—Excellent Fuel Performance

THE Rock Island lines traverse in general a section of the country which has been intensively developed by the railroads. Practically every important city reached by the road is a competitive point and in passenger service especially it is necessary to meet strong competition. For in-

tended primarily for service on the difficult Colorado division, where by consolidating two trains they effected a reduction of 180,310 passenger train miles per year. To determine whether these locomotives were suitable for use under other conditions they were tried on the Iowa division between Rock Island and Des Moines, where they were entirely successful.

The subsequent increase in the size of trains made it difficult at times to maintain schedule speeds with the heaviest Rock Island Pacific type locomotives, which have a rated tractive effort of 40,000 lb. For this reason the road's last order for locomotives included 10 engines of the Mountain type with 74 in. wheels and a tractive effort of 50,400 lb. These locomotives, which were designed with particular regard for the conditions existing on the Iowa and Missouri divisions, were described in the *Railway Age* for February 28, 1921, page 447.

Since being placed in service these locomotives have made enviable records hauling the Rock Island's fastest and heavi-



Profile of Missouri Division Between Trenton and Kansas City

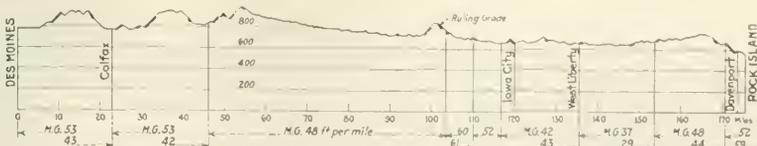
stance, between Chicago and Kansas City five roads provide trains making approximately the same running time. Between Chicago and Omaha there are four competing lines.



Profile of Missouri Division Between Rock Island and Trenton

A similar situation exists between the midwestern cities and points on the Pacific Coast and in the Rocky mountains. It naturally follows under these conditions that the road should

est passenger trains. On the Missouri division they are assigned to the Golden State Limited, making an average speed of 45 miles an hour, including stops. The westbound



Profile of Iowa Division Between Rock Island and Des Moines

make every effort to provide the most modern equipment and fast, dependable service.

To meet the exacting requirements for passenger motive power the Rock Island has in recent years introduced exceptionally heavy locomotives. It will be recalled that in 1914 the road ordered its first Mountain type engines. These were

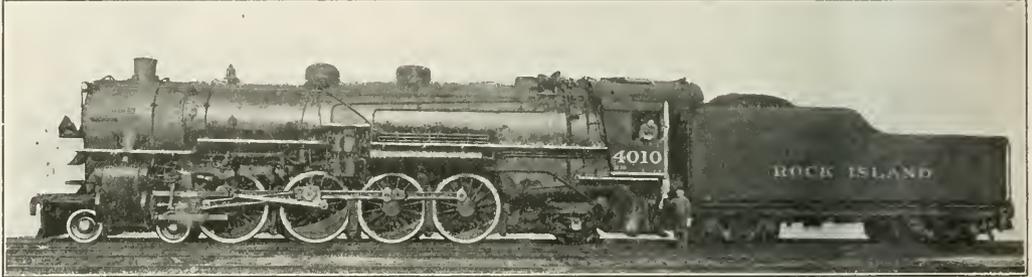
train, No. 3, carries 12 to 16 cars, and No. 4, eastbound, 11 to 15 cars. While in general the contour of this line is a succession of minor rises and descents it will be seen by reference to the profile that there are numerous rather heavy grades, some as steep as 1.5 per cent. Under such conditions it is difficult to maintain fast schedules unless the locomotive

has ample power to permit sustained high speed on the ascending grades.

On the westbound trips the coal consumption of these trains averages 104 lb. per train mile and on the eastbound trips 102 lb. This is an excellent performance as shown by comparison with the figures for the country as a whole. In the nine months ending September 30, 1921, the coal consumption per locomotive mile in passenger service was 108 lb., although the average number of cars per train was but 6.36. It should be borne in mind also that these locomotives operate on an unusually fast schedule and haul heavy steel cars, two factors which tend to increase the coal consumption.

In the operation of the Rocky Mountain Limited between Rock Island, Ill., and Valley Junction, Ia., four miles west

The effect of the syphons is well shown by a comparison with the Rock Island's first Mountain type. The earlier design had 28 in. by 28 in. cylinders and 185 lb. boiler pressure, the cylinder horsepower being 2,613. The boiler horsepower was 2,450, or 93.8 per cent of the cylinder horsepower. The latest locomotives have 28 in. by 28 in. cylinders, but the boiler pressure is 200 lb., which increases the cylinder horsepower to 2,824. The boiler horsepower is 2,840, giving a 101 per cent boiler, a remarkable achievement in a Mountain type locomotive. Without the syphons the boiler horsepower would have been only 90 per cent of the cylinder horsepower. The syphon also decreases the weight per horsepower as shown by the comparison of the weight per boiler horsepower with that for the engines built in 1914.



One of the Heavy Mountain Type Locomotives

of Des Moines, these locomotives also encounter difficult operating conditions. This train is usually made up of 13 cars during the Summer period and is scheduled at 39 miles an hour over a division of 181 miles. On different occasions these locomotives have made up as much as 45 min. on the running time. On this train the coal consumption averages 105 lb. per mile.

Engineers and road foremen of engines have commented on the ease with which trains are handled over one per cent grades at 40 and 45 miles an hour with these locomotives, indicating that the reserve steaming capacity is far more than ample to take care of any ordinary requirements with trains of 15 or 16 cars. The officers of the railroad have been highly pleased with the splendid steaming qualities of the Mountain type engines and also the economical fuel performance. Much of the credit for these results is attributed to the Nicholson thermic syphons with which they are equipped. The syphons improve combustion conditions and also increase the heating surface of the firebox.

This figure is 136 lb. for the earlier design and 129.3 lb. for the newest engines.

Another reason for the excellent performance of these locomotives is no doubt found in the fact that they are working well within the limits of their capacity over most of the runs. The average fuel consumption is 4,680 lb. per hour, or slightly under 75 lb. per sq. ft. of grate per hour. This is a fairly low rate for bituminous coal and under these conditions spark losses should be small, front end temperature low and boiler efficiency quite high.

One of the characteristics of this class of power which has been especially pleasing to those actually operating them is their consistent performance. In the year they have been in service the locomotives averaged 5,000 miles per month each. Not one delay has been experienced on account of hot bearings or rod bushings and a steam failure is unknown even under the most trying conditions. Roadmasters have commented on the fact that these locomotives are unusually easy on track.



Photo Copyright, Underwood & Underwood

Custom House and Freight Train; National Railways of Mexico, Tampico, Mexico

# Superpower Advocates Strive to Answer Criticisms\*

## Take Issue with Railway Age Editorials and Allege Failure to Give Report "Careful Perusal"

THE ATTITUDE of the *Railway Age* with regard to the electric operation of trains is one which favors the adoption of such operation in cases where it is advisable. This policy has led to the publication recently of four editorials commenting on and criticizing the Superpower Survey Report.\* The criticism was called forth largely because it was felt that by exaggeration, real and implied, the report would tend more to retard the adoption of electric operation than to further it.

The authors of the report have taken exception to the criticism and their answers to the editorials are set forth in the letter which follows. An answer by the *Railway Age* follows the letter.

### TO THE EDITOR:

1—Your editorial comments on the railway section of the Superpower Report, of November 5, 19 and 26 and December 3, call for a reply.

2—Your editorial of November 5, page 862, reads, "For example, it is assumed in the report that 7.5 lb. of coal are required by a steam locomotive to do the work at the rim of the drivers equal to one kilowatt-hour."

3—We expected that the "careful perusal of the report" which you claim to have made would bring forth a prompt correction of that statement, but on the contrary, the same statement is repeated in your editorial of November 26, where you state, "The coal consumption of the steam locomotive is assumed to be 7.5 pounds per kilowatt-hour."

4—There is nothing in the report to justify this statement. The paragraph you refer to is doubtless that on page 62 which is a mere statement of opinions of others tending to show that the figures arrived at in the report are in substantial agreement with those arrived at by others. On the other hand, it is clearly stated on page 59 that the coal charged to the steam railways is taken "from the reports of the railroads to the questions of Form A." The report would in effect be worthless as a comparison of operations were it based on any "assumption" of coal used by the railways.

5—Further, in the same editorial you have the following sentence: "Spoken of in report as 'full-jewelled' movement," which you say savors of partisanship. At this point it would seem fair to refer to your own paper which on page 1100, December 24, 1920, contains the following, attributed to Mr. McManamy, the assistant general director of railroads: "So many complicated specialties are now being applied to locomotives that it is now common to refer to these locomotives as being 'full-jewelled' and in many instances the application of these specialties has proved a detriment because the roads did not have adequate terminal facilities to insure their maintenance." This is one of many similar statements that might be quoted on the part of prominent railway authorities.

6—Your "careful perusal" should have disclosed to you that the report is not at all concerned with what might be done, in the opinion of its ardent advocates, who, of course, are entirely unbiased, by a "full-jewelled" locomotive equipment,—but solely and entirely with the actual operation of the railways in this zone, as reported to us by their responsible operating officers. Therefore, your statement Nov. 26: "In fact the failure to obtain accurate and up-to-date information regarding the steam locomotive wholly invalidates the conclusions regarding the possible saving in fuel," is either inaccurate or implies that the railways of the zone have not modern equipment. That may be left to the Pennsylvania or the New York Central for reply.

7—The principal cause of your befogging is your failure to differentiate between the actual operations of a railway system and the claims and tests of the extreme advocates of the "full-jewelled" locomotive. You ignore the human element; the electric locomotive eliminates it.

8—Your "broad-minded attitude" also is convincingly displayed in your editorial of November 19 in the words: "Large expenditures are admitted to be necessary to put the several plans

in effect, but the savings claimed put to shame the promises of a salesman of oil securities." The expenditures are not "admitted" but are proclaimed and set forth in detail; and you must have a singular conception of oil salesmen if you think 14 per cent to be their part!

9—Nor do we, as you state we do (p. 968) "compare operation with the most modern up-to-date electric locomotive working on mountain grades with the operation of the old steam locomotive displaced on these electrified sections." We have made no comparison even remotely resembling this, but we have compared the actual 1919 operation of the most modern, best-equipped and operated railways in the United States with what we know can be done with electric locomotives.

10—We think in view of these quotations that the statement in your editorial of November 19 that the "Methods are not quite as clear as might be expected" find a ready explanation in your failure to study the report. There is no statement in the report for which the reasons are not given; an explanation of all the methods of analysis is given. Details were necessarily omitted in many cases as space was lacking; nevertheless, our contention is that there is not a single point from beginning to end for which reasons are not stated.

11—Your editorial of December 3 shows the same misconception of the methods of the report: "The cost of repairs, including engine-house expenses for steam locomotives is assumed to average 42.6 cents per locomotive mile." Again, you err; it is not "assumed" but is the figure reported by the aforementioned responsible operating officers of the roads.

12—In conclusion, we deny that anything in the report is of the nature of "unfair propaganda;" that you can even hint at a connection of the report with propaganda fairly accurately locates the "unfairness."

W. S. MURRAY,

Formerly "Chairman, Superpower Survey."

CARY T. HUTCHINSON,

Formerly "Division-Engineer of Railroads, Superpower Survey."

### The Editors of the *Railway Age* Reply

Having quoted in full the communication from Mr. Murray and Mr. Hutchinson, we feel called upon to answer it. By way of assisting in making the answer clearer to the reader, we have numbered the paragraphs of their letter. Because of the reference in the fourth paragraph, and the importance it plays in the discussion, we reproduce the excerpt from page 62 of the report which under the title of "Coal Saved" reads as follows:

"The quantity of coal burned in a steam locomotive equivalent in work done to 1 kilowatt-hour delivered to an electric locomotive is estimated by the electrical engineer of the Baltimore & Ohio Railroad at 7.5 lb. and by the electrical engineer of the Chicago, Milwaukee & St. Paul at 8.4 lb. A committee of the American Electric Railway Association has published data for a modern Mallet locomotive with superheater, which makes the equivalent coal per kilowatt-hour with stand-by losses 7.5 lb. The same authority elsewhere gives 6.5 lb. as the equivalent of 1 kilowatt-hour at the power station, equal to 8.1 lb. per kilowatt-hour at the locomotive. Other electrical authorities give materially larger figures—some as much as 12 lbs. The weight of expert opinion is, then, that not less than 7.5 lbs. of coal is required to do the work of 1 kilowatt-hour at the locomotive."

### A Question as to an Assumption

As is noted in the second paragraph of the communication, the *Railway Age* in its editorial of November 5 stated "For example, it is assumed in the report that 7.5 lb. of coal are required by a steam locomotive to do work at the rim of the drivers equal to one kilowatt-hour." This statement, as noted in Paragraph 3, was repeated in the editorial of November 26 in the words "The coal consump-

\*The Superpower Report was abstracted in the *Railway Age* of November 5, in an article, beginning on page 881, entitled "Plan for Electrifying Sections of 11 Railroads." Editorial comment criticizing the conclusions given in the report appeared in the issues of the *Railway Age* as follows: November 5, page 967, "Why Tinker with an Inefficient Machine?" November 26, page 1073, "Extravagant Claims for Electrification," and December 3, page 1073, "Electric vs. Steam Locomotive Maintenance."

tion of the steam locomotive is assumed to be 7.5 lb. per kilowatt-hour."

The communication declares in Paragraph 4—"There is nothing in the report to justify this statement." That issue will be taken up presently. In the meantime, we should like to draw attention to the sentence in Paragraph 4 reading "It is clearly stated on page 59 that the coal charged to the steam railways is taken from the reports of the railroads to the questions of Form A." We must point out that Mr. Murray and Mr. Hutchinson fail entirely to understand the point we were trying to bring out. Form A, it is true, gives the total amount of coal used. It, however, contains no references to equivalent coal consumption on the basis of kilowatt-hours. The assumption mentioned in the *Railway Age* did not relate to the total tons of coal consumed. It related rather to the idea that 7.5 lb. of coal are required by the steam locomotive to do the work at the rim of the drivers equivalent to one kilowatt-hour. Now, were we correct as to that 7.5 lb. of coal?

#### How Much Coal Would Be Saved?

The editorial in the issue of November 26 is an attempt to apply to the steam locomotive one of the methods used in computing the equivalent coal for electric operation, in order to get the two figures on a comparable basis. The coal for steam operation given in the report is taken from the actual records of the railroads. The method applied to any particular division to get the electrical equivalent is nowhere revealed. In some cases the energy required was "determined from the records of lines already electrified" (page 60 of the report). The other method consists in calculating the work required for hauling the traffic due to train resistance, grades, curvature and acceleration (page 61). From the watt-hour output needed at the locomotive, as thus computed, the sub-station input was calculated, and from this in turn the equivalent coal was deduced.

The authors of the report have used these two methods and have reached the remarkable conclusion that electric operation would save 64.1 per cent of the coal used in freight service, 67.2 per cent in passenger service and 74.4 per cent in switcher service, or a weighted average of 66.8 per cent. To bolster up this conclusion the figure of 7.5 lb. of coal was cited as the amount required by the steam locomotive to do one kilowatt-hour of work. This, as mentioned in the issue of November 26, would give a saving of 57.6 per cent per unit of work done as compared with the coal rate assumed for the Superpower system.

The power output required at the head car of any train would be the same irrespective of the type of motive power and would furnish a comparative basis for comparing coal consumption. Information regarding the fuel consumption per unit of work done is available for various types of steam locomotives. In the issue of November 26 data for a modern locomotive were used to draw a comparison which showed that theoretically the Superpower system would save only 23 per cent in coal as compared with efficient up-to-date engines. The actual figure for coal saving by electrification on the Norfolk & Western is only 28 per cent as compared with the 66.8 per cent estimate in this report.

#### They Have Done Something Worse

Messrs. Murray and Hutchinson protest that they have not assumed the coal consumption of the steam locomotive to be 7.5 lb. per kilowatt-hour. We agree with them; they have not done this, but something worse. Even the extravagant rate of 7.5 lb. with a steam locomotive would give a saving of only 57.6 per cent; the Superpower report claims 66.8!

Thus from the figures set forth in the report we must conclude that either the figures for the amount of power used by the electric locomotives are wrong or the steam

locomotive performance on the eastern roads included in the report is decidedly inferior to the performance of Prairie type locomotives without fuel saving devices used on the St. Paul in 1910.

#### Or Was It 9.57 lb. of Coal?

This conclusion may be reached as follows: The report states "Item 12 on Form C, 'equivalent coal' is uniformly taken at 2 lb. per kilowatt-hour for energy delivered at sub-station." It also states that the output of the locomotive would be 63 per cent of this amount, which is equivalent to stating that the electric locomotive would deliver one kilowatt-hour of work to the rail for 3.18 lb. of coal burned. This value is apparently then multiplied by the total amount of work done by locomotives in the superpower zone with the product which indicates that 4,423,300 tons of coal per year would be sufficient for electric operation of the zone. At the same time they show that 13,313,500 tons are now required by steam locomotives. In other words, the steam locomotives are now, according to the report (see page 82 of

13,313,500  
 report), using  $3.18 \times \frac{13,313,500}{4,423,300} = 9.57$  pounds of coal

per kilowatt-hour of work done, which is as stated before a performance decidedly inferior to that obtained by tests of Prairie locomotives used on the St. Paul in 1910. Which is the logical conclusion: that the power used on these eastern roads is comparable to that used on the St. Paul in about 1905, or that there is some discrepancy in the report with regard to power consumption?

Quoting again from the letter—Paragraph 4—the authors say "the report would in effect be worthless as a comparison of operations were it based on any 'assumption' of coal used by the railroads." Much of the report including the conclusions suffers because it is based on a broad assumption, the assumption that theoretical results can be duplicated in practice. This is a fallacy, as the officers of some of our electrified roads know only too well.

At another point in the letter—Paragraph 6—appears this statement: "The report is not at all concerned with what might be done, in the opinion of its ardent advocates who, of course, are entirely unbiased by a 'full-jewelled' locomotive equipment, but solely and entirely with the actual operation of the railways in this zone." If the authors had used the same commendable discretion in dealing with the electric locomotive and had likewise confined themselves to the actual results secured with electrification, they would undoubtedly not have described electric operation in such glowing terms, but they might have made the report of some value in outlining the real field for electrification. Any implication that we have made "that the railways of the zone have not modern equipment" hardly needs comment. We do not understand that every locomotive on the Pennsylvania or the New York Central is of the most modern type. Each of these roads has several locomotives which were built and put in service prior to the present year.

#### The "Full-Jewelled" Locomotive and Its Terminals

The fifth paragraph of the letter from Messrs. Murray and Hutchinson contains a quotation from Mr. McManamy with a statement that is taken from page 1100 of the *Railway Age* of December 24, 1920. No such statement occurs on the page referred to, but this is immaterial. The important point is that the authors of the Superpower report have failed entirely to grasp the significance of Mr. McManamy's statement. If they had been more conversant with railroad conditions, they would have known that the criticism was directed not at the specialties, but at the inadequate facilities which made it impossible for the railroads to obtain the full benefit from these appliances.

### An Electric Locomotive Driven By a Mule

Paragraph 7 of the letter states that the electric locomotive eliminates the human element. If we believed that any one of us would just as willingly ride behind an electric locomotive driven by a mule as behind one driven by a careful and intelligent locomotive driver. Seriously, the human element has not been removed from electric street car operation and any experienced railway operating man knows how many complicated problems requiring human skill for solution present themselves while a long and heavy train is being taken over a division. Furthermore, an electric locomotive in some cases is more subject to damage by careless handling than is a steam locomotive. For example; if a steam locomotive is loaded beyond its capacity, it stalls; if an electric locomotive is loaded beyond its rated capacity, it does not stall—it continues to pull the load, but if the load is maintained, serious damage due to overheating may result. This damage may appear immediately or it may develop to the point of failure at some later date. Certainly the human element is not to be disregarded, still less eliminated.

### They Do Not "Admit"; They "Proclaim"

The eighth paragraph quotes from the editorial in the *Railway Age* of November 19 a statement reading "Large expenditures are admitted to be necessary to put the several plans in effect, but the savings claimed put to shame the promises of a salesman of oil securities." The expenditures, say Mr. Murray and Mr. Hutchinson, are not admitted, but are proclaimed and set forth in detail. Now, the Century Dictionary gives as one of the definitions of admit "to grant in argument; receive as true; concede; allow; as, the argument or fact is admitted." Another definition is "To acknowledge; own; confess; as, he admitted his guilt." Judging by what Mr. Murray and Mr. Hutchinson say and in the light of the definitions of the word admit, the *Railway Age's* statement was not strong enough. The superpower advocates not only "concede," "allow" or "acknowledge" that large sums of money will be necessary to put the several plans of the superpower report in effect; they proclaim it. They are, it would seem, proud of it. A singular attitude, indeed, for people proposing to railroad men the expenditure of large amounts of money under present conditions of railroad finance.

The communication from our Superpower survey friends continues, "You must have a singular conception of oil (securities) salesmen if you think 14 per cent to be their par!" None of the editors of the *Railway Age* has to our knowledge ever bought any so-called oil securities, still less have they engaged in their sale, so perhaps our ignorance of the salesmen's par is to be excused. Nevertheless, any financial student will agree that a security offering 14 per cent return would look like—what shall we say—a wild cat.

### That Matter of Comparisons

The reference to comparisons—in Paragraph 9—has been answered, it is believed, in what has already been brought out. It may be worth while, however, to refer again to the paragraph from page 62 which is quoted above. This paragraph is meant to give the results of investigations by other authorities and is introduced in the report as a check. The paragraph says among other things "The quantity of coal burned in a steam locomotive equivalent in work done to 1 kilowatt-hour, delivered to an electric locomotive is estimated . . . by the electrical engineer of the Chicago, Milwaukee & St. Paul at 8.4 lb." Steam railroad men will appreciate the reasons for our asserting that the report compares electric operation "with the operation of the old steam locomotive displaced on these electrified sections" when we point out that the steam locomotive in the St. Paul comparisons was of the Prairie type (2-6-2) without fuel saving devices. The communication from Mr. Murray and Mr.

Hutchinson says, "we have made no comparison even remotely resembling this, . . ." The *Railway Age* maintains that the bringing in of the St. Paul comparisons even in the form of a check quite closely resembles it and is certainly much nearer than "even remotely."

### With a Measure of Authority

The communication from Mr. Hutchinson and Mr. Murray contains various aspersions as to our "careful perusal" of the report. In Paragraph 10 they quote a sentence in the editorial in the issue of November 19, in which we said the methods are not quite as clear "as might be desired" and say that they think this statement finds, to quote their own communication, "a ready explanation in your failure to study the report." Our Superpower survey friends when they make this statement fail to realize two important things. One is that the editors of the paper are accustomed to reading and studying reports. The other is that the *Railway Age* would hardly commit itself as it has in the four editorials if it had not given the report careful perusal and study. We very much doubt if there are many outside of the writers of Appendix C who have given it more careful perusal than we have. When we say therefore that the methods are not as clear "as might be desired," we speak, we believe with a measure of authority. If, furthermore, it is not clear to us, what must it be to the railway operating man whose interest is much less than ours, but who is the man in the last analysis who will sign the contracts or at any rate propose electrification to his higher officers?

With these things in mind it is easy to answer the remainder of Paragraph 10. The writers say: "Nevertheless, our contention is that there is not a single point from beginning to end for which reasons are not stated." We will admit that the reasons are all given, but we maintain as we have maintained from the first that the reasons and the argument as a whole are not as clear as might be desired.

### Electrification Advocates Not Familiar

#### With Steam Operation

In the editorial in the *Railway Age* of November 19, the statement was made "It is very evident that the investigators tackled the problem of electrification with a decided prejudice against steam operation. A careful perusal of the report, and more particularly of that section dealing with electrification, Appendix C, may possibly excuse them. It is only too apparent that they were not sufficiently familiar with (steam) railway operation to be at all interested in its favor." This assertion has not been controverted in the letter from Messrs. Murray and Hutchinson, nor is it even referred to. The presumption is, we believe, that they must have felt this criticism to be justified.

The *Railway Age* editorial in question quoted a reference to double-time for overtime work in train service which appeared in the report, but which certainly could not have gotten by anyone familiar with actual railway operating conditions. We also commented on the statement made in the report that no more skill is required to operate an electric locomotive than is demanded of an ordinary chauffeur—which statement is actually ludicrous. There are many other similar statements.

On page 51 of the report appears this remark. "The effectiveness of the devices for increasing efficiency and capacity, such as brick arches, superheaters, stokers, siphons, automatic fire doors and power reverses necessarily depends on the intelligence and faithfulness of the average engineer, and in consequence the average results are low." We cannot believe that anyone speaking thus disparagingly of the intelligence and faithfulness of the American railroad man is well informed concerning railway operating conditions. It may be admitted that sometimes full use is not made of fuel saving devices—the reasons are, however, not the lack of

intelligence and faithfulness of the engineer. We must be charitable enough to believe that the Superpower advocates have not meant what they have said.

### How About the Albany Division

of the Boston & Albany?

There is another thing about the report that is of interest, although it has not received attention in any of our editorials. That is the fact that the report includes among the divisions proposed to be electrified the Boston division of the Boston & Albany, but not the Albany division of that road. This solution of the Boston & Albany's problem will no doubt be of special interest to New England railroad men who know somewhat more about the Boston & Albany's operating conditions than did the writers of the Superpower report.

The Boston & Albany is one of the busiest roads in the country—its tons of revenue freight carried one mile per mile of road in 1920 being 3,931,376. Nevertheless, the report says "The low percentage of saving shown by the divisions not included in the selected group except those of the New York Central, is due to light traffic." The Albany division has considerably more and considerably worse grades than the Boston division. Whereas the Boston division has ruling grades of about 40 ft. to the mile, the Albany division in crossing the Berkshires has to overcome grades of 80 ft., or 1½ per cent. Helper operation is frequently resorted to. The line is, of course, double-track and a feature of the division is the large mileage of third track provided for use by tonnage trains on the up grades. It would surprise New England railroad men to see the Boston division electrified prior to the much more difficult Albany division, particularly in view of all that has been said by electrification advocates concerning the advantages of mountain grade electric operation.

The inclusion of the Boston division of the Boston & Albany among the lines which it is proposed to electrify and the exclusion of the Albany division raises a question as to whether the logic used in the report is right and correct after all. At any rate it again raises the question as to whether the Superpower survey investigators knew as much about actual railway operating conditions as might be desired.

### Conclusions

In conclusion let us repeat from the editorial in the issue of November 19 our statement that "As has been said again and again in these columns, there are presumably few railway men left who do not believe that electrification is the proper development in situations suitable for it." We want to emphasize, however, our belief that the steam locomotive has progressed rather faster in recent years than the electrification advocates have given it credit for. We want to express our belief also that the more ardent advocates of electrification, at least, have as yet failed to get the steam man's point of view. They have still to realize that the steam man is the one whose point of view they have got to obtain. When they finally do obtain it, it is our firm belief that they will have a more willing audience and that their arguments will be much more effective. We do not believe that the Superpower survey report is going to help the situation—for reasons which we have now given—as much as its writers had hoped. That in the final analysis, is the reason for all we have said about it.

THE SOUTHERN PACIFIC reminds "hoboes" of the dangers of their traveling habits, by showing that in the period from January 1, 1921, to October 31, ten months, sixty trespassers were killed on its lines. Of this number 22 persons were killed as a result of falling under the wheels while stealing rides or while attempting to get on or off moving trains. Thirty-eight trespassers were killed by being struck by engines or cars.

## Says High Freight Rates Impose Burden on Farmers

WASHINGTON, D. C.

PICKING UP an agricultural state, transporting it one to three hundred miles from its natural market and setting it down again, is accomplished in economical effect, says the Secretary of Agriculture in his annual report, by "the simple process of marking up the transportation cost a few cents per hundred pounds." The effect of high freight rates on the farmers of the country during the past year or more of radical downward readjustment of farm produce prices is outlined by the secretary.

"The cost of getting farm products from the farm to the consumer's table has increased tremendously during the past three years. The freight charge is very nearly doubled, and in some cases more than doubled. When wheat was selling at \$2.50 per bushel, corn at \$1.75, cattle and hogs at \$16 to \$22 per hundred, cotton at 30 cents per pound, the increased freight rate was not a serious matter. It amounted to but few cents relatively and was a small item in the total price. But with wheat at \$1, corn at 48 cents, cattle and hogs at \$7 to \$10 per hundred, cotton at 17 to 20 cents (all these being primary market prices, not farm prices), the addition of even 10 cents per bushel or per hundred pounds imposes a burden grievous to be borne. When farm prices are ruinously low, any addition to the freight charge means added distress. At the present time the cost of getting some farm products to market is greater than the amount the farmer himself receives in net return. And the heaviest freight burden naturally falls on those farmers who live in our great surplus-producing States.

"Not only do the very large advances in freight rates impose a heavy burden on the producers of grain and live stock, cotton and wool, but on the growers of vegetables and fruits as well. Indeed, some of the latter have been compelled to see their products waste in the fields because the prices offered at the consuming markets were not large enough to pay the cost of packing and transportation.

"This transportation matter is one of vital importance to agriculture. The country has been developed on the low long haul. Land values, crops, and farming practices in general have been adjusted to this development. Large advances in freight rates, therefore, while bearable in a time of high prices, if continued are bound to involve a remaking of our agricultural map. Agriculture is depressed until the rates are lowered or until population and industry shift to meet this new condition.

"More than this, inasmuch as our heavy consuming population is massed so largely near the eastern coast and our surplus is produced long distances in the interior, substantial advances in transportation costs have the effect of imposing a differential against our own producers in favor of their competitors in foreign lands, especially to the south of us, who have the benefit of cheap water transportation, and who, in many cases, can lay down their products on our eastern coast more cheaply than our own people can ship their products to the same points by rail.

"Rail transportation is essential to our agricultural production. Good rail service is of tremendous importance. Our farmers realize that our railroads can not be maintained and operated efficiently unless permitted to charge rates which will cover all fair operating costs, maintain their roadbeds and equipment, and pay a fair rate on the money invested. No one has a greater interest than the farmer in efficient transportation. At the same time, the economic aspects of material changes in railroad rates must be considered more carefully than in the past. If these changes are made without due consideration of their effect on agricultural production, inevitably they will create profound disturbance and impose great injustice."

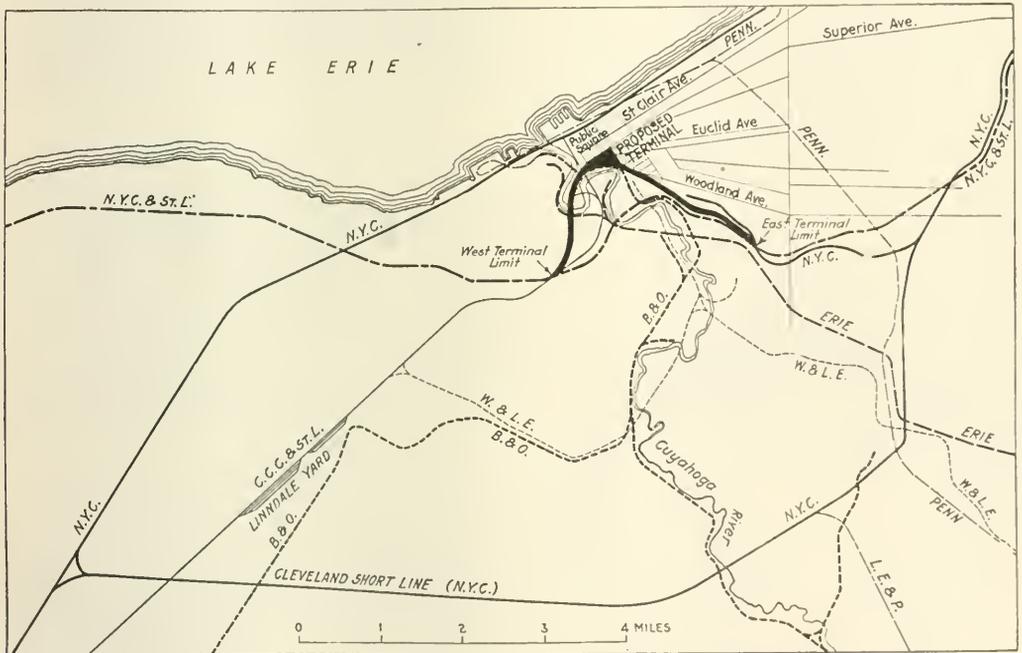
# Cleveland Passenger Terminal Project Approved

Interstate Commerce Commission Reverses Previous Decision  
Thus Making Possible Fulfillment of Plans

ON REHEARING the Cleveland passenger terminal case upon which it had reported adversely, on August 12, 1921, the Interstate Commerce Commission reversed its previous decision and by this reversal, announced December 6, 1921, made possible the fulfillment of the proposed terminal project for the city of Cleveland, Ohio. Through this decision the acquisition of the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis of the control of the Cleveland Union Terminals Company by purchase of capital stock, is approved and authorized. Also these companies are authorized to construct and operate a terminal station and

union passenger station on the lake front at what is called the Mall site. This structure was to have replaced the old union station located on the lake front and was to be an addition to and part of a group plan for a number of monumental public buildings. The old station is used by the New York Central, the Pennsylvania and the Big Four and is both antiquated and inadequate.

In the meantime a suburban residential district had been developed and an electric line built for a part of the distance into that district. This led the Van Sweringens, who had developed the residential district and had built the Cleveland & Youngstown—the electric line—and had also



A Map Showing the Relation of the Railroads to the Terminal Project

line by and through the control of the terminal company mentioned.

The terminal which is planned consists of a large, through-type passenger station with different floor levels above a common train level for steam and interurban railway lines, and necessary approaches, coach yards, etc. It will be situated in the center of the business section of the city of Cleveland, the station building facing the southwest corner of the Cleveland Public Square. The two approaches in connection with the station tracks form a large "U", the two legs of which extend to the south on the opposite sides of the Cuyahoga valley. It is a project which has been under consideration by the city and the railroads for a number of years, the negotiations between the city and the railroads culminating into something definite in 1915 when an ordinance was passed providing for the erection of a

gained control of the Nickel Plate, to introduce a plan for a stub-end passenger station at the Public Square for all electric lines and three railways, the Nickel Plate, the Erie and the Wheeling & Lake Erie. With this in view the Cleveland Union Terminals Company was organized. The plan was not acceptable to the Erie or the Wheeling & Lake Erie and upon suggestion of the New York Central, it was developed for a through passenger station for all roads.

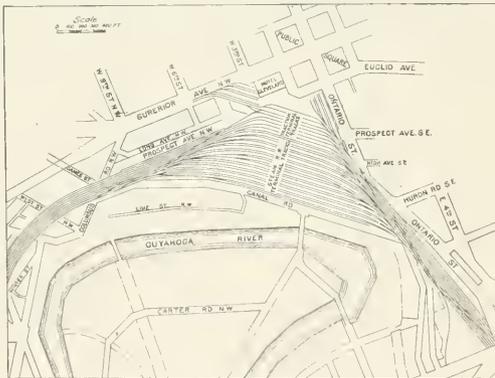
A later ordinance, approved by popular vote contemplated the substitution of this station on the square for the one on the Mall but required the commitment of the three companies involved in the first plan to use the substituted facilities. One of the roads, the Pennsylvania declined to do this and after investigation the ordinance was amended so that the commitment of two companies would suffice. The ordinance covering the change in station sites was sub-

mitted to the people of Cleveland and approved by them in January, 1919. The status of the project up to that time, as well as a description of the project as it stood then, appears in considerable detail on page 755 of the March 21, 1919, issue of the *Railway Age*.

At the present time, only the New York Central, the Big Four and the Nickel Plate are committed to the use of the new terminal which is to be constructed by the terminal company and financed by the sale of bonds issued by it and guaranteed by the three roads. Provision has been made, however, for the use of the facilities by other roads by agreement, the layout being sufficient in size and character to take care of the passenger traffic of all the roads for a long term of years through proper extensions. At present the Pennsylvania uses the old union station on the lake front but as this station will be abandoned the Pennsylvania will probably make use of an outlying station at East Fifty-fifth street and Euclid avenue.

### Railroad Operation and Construction Difficult

The topography of the city is such that the development of industries and railway lines has resulted in a complex situation, the seriousness of which was not thoroughly realized until the war. The land on which Cleveland is built rises abruptly from the shore of Lake Erie except where it is cut by the valley of the Cuyahoga river and tributary gullies. The river while narrow and winding has considerable shipping on it and the valley is well developed industrially.



Arrangement of the Tracks at the Station

The New York Central and the Nickel Plate are the only lines passing through Cleveland, while of the remaining roads, the Big Four is the only one entering with its main line, the remainder having short branches into the city from their main lines to the south. The main line of the New York Central along the lake front is generally four tracks east of the Cuyahoga river and passes through a highly developed industrial district, most of which lies to the south of the tracks. Such yard development as there is in this section is between the main line and the waterfront with the be carried on across the main line. As the tracks are used for passenger traffic, there is a large amount of congestion and interference to both switching and train movement, chiefly the former. At the Cuyahoga river the New York Central crosses on a single-track drawbridge of so low an elevation that it must be opened for nearly all boats. The Pennsylvania connects with the New York Central near the old union passenger station to the east of the river. Just west of the bridge the Pennsylvania has extensive ore docks

and its ore trains use the bridge and cross the tracks of the New York Central at grade. The Big Four also crosses at grade. Owing to the congestion of its main line, the New York Central built the Cleveland Short Line in 1904 as a cut-off, extending from Collingwood on the east to a point on the main line on the west of the city, to be used as a double track through freight line.

The terminal plans provide for 23 station tracks for the steam roads, of which 10 are to be constructed initially and a system of interurban tracks of which nine are to be included in the first construction. Differing from the original designs these tracks will all be on one level and about 30 ft. below the street at the Public Square. The main station facilities will be up one floor or level and will include separate concourses, ticket offices, waiting rooms, etc., for the two classes of travel. This covers the station proper, for above this level the building to be constructed will be used by the owner of the air rights. There are, however, two levels more included in the plans for handling passengers and non-passengers, connected by a well-planned system of ramps and stairways to the streets, concourses and train platforms, all designed to facilitate the passage of people in, out and through the station and to separate inbound and outbound passengers or passengers waiting for trains from persons merely passing through on other business.

### Operation of Terminal Calls for Electrification

The station will be flanked to the east and west by approaches built on a new right-of-way and having four tracks each for railway passenger trains and interurban electrics. Two of these approach tracks for each class of service are to be a part of the initial construction, the line extending from about West Twenty-fifth street on the west where the connection will be made with the Big Four, around a U-shaped loop to about East Fortieth street on the east where it will connect with tracks to be laid on the right-of-way of the Nickel Plate. The length of the terminal between these limits will be about 3½ miles. This trackage is to be electrified and the electrification of the steam railroad lines is to extend beyond these limits over the trackage to be provided along existing rights-of-way.

In the case of the New York Central, it will probably electrify from Collingwood on the east to somewhere in the vicinity of the connection with it of the Big Four and the Cleveland Short Line. East of the terminal limits, the necessary trackage is to be provided on the rights-of-way of the Nickel Plate and the Cleveland Short Line, connecting with the main line of the New York Central just west of the Collingwood yard. West of the terminal, the New York Central and the Big Four are to run over the latter's right-of-way to the connection of the two roads at Berea, Ohio.

In operation the New York Central will route all of its passenger travel over the Big Four from and to the west of the station and over the Cleveland Short Line and the Nickel Plate rights-of-way to the east. The lake front line will be used exclusively for westbound freight and switching movements. Eastbound freight will be sent over the Cleveland Short Line and a part of the Nickel Plate where the two roads parallel for a short distance east of the terminal. Both lines at this point are double track and will probably be operated jointly, plus such additional double track construction by the Cleveland Short Line as it will be found necessary to carry out. The connection of the Big Four with the New York Central on the lake front will remain as it now is, the terminal tracks passing over it.

The terminal plans have been worked out by the parties concerned represented by George A. Harwood, assistant to the president, and H. D. Jouett, terminal engineer, both of the New York Central, and W. E. Pease, chief engineer of the Cleveland Union Terminals Company.

# Asks Congress to Investigate Plumb Plan League

Estimated That League Expended \$1,000,000 to Defeat Candidates

Who Voted for Esch-Cummins Bill

**F.** J. LISMAN, investment banker, in testifying before the Senate Committee on Interstate Commerce in the hearings on the Capper and Nicholson bills on Tuesday stated that: "Congress has prescribed the expenditures for elections of candidates. I have not the proofs, but it is within the purview and power of Congress to investigate this. And I claim that large sums—I believe upwards of a million dollars—were expended by the Plumb Plan League in the last general election, to defeat candidates who voted for the Esch-Cummins bill; and this was to serve also a notice to future candidates that, if they opposed labor unions, they would be left at home. I think Congress ought to investigate that situation."

Mr. Lisman suggested also that the only mistake in the Transportation Act is in the labor provision which divides responsibility. He believes that the functions of the Labor Board should be transferred to the Interstate Commerce Commission.

## Criticises Labor Provision of Transportation Act

The Interstate Commerce Commission, said Mr. Lisman, really does not wish to handle this matter for the following reasons:

"1. It is grossly overworked already.

"2. The performance of the duties connected with such a function would bring about further political pressure on it, which is sufficiently burdensome already.

"3. Whenever the commission should reduce wages it would probably be expected to reduce rates; and vice versa; if wages were advanced, the railroads would insist on equivalent rate advances.

"As a matter of fact, it is not necessary for the Interstate Commerce Commission to adjust wages. The companies and their employees should be allowed to work this out for themselves, but a labor bureau should be created under the supervision of the commission, the function of which should be as follows:

"1. To lay down rules for the election of the labor union officials, which shall be by secret ballot, and to supervise such elections.

"2. If there appears to be any dissatisfaction or disagreement between a railroad corporation and its employees, the points of difference shall be submitted to the Labor Bureau, which shall clearly define them. In case five per cent of the employees or members of any union shall sign a petition favoring a strike, then the Labor Bureau shall order a secret strike vote, which shall be supervised by it. The names on such a petition should be kept secret.

"3. It shall prescribe a form of accounting, in accordance with which all books of such labor unions are to be kept.

"4. The accounts of the labor unions shall be audited by a certified accountant employed by the bureau, said reports to be printed and open to inspection by the public.

"Everyone knows that strikes are generally declared by a small minority of more or less irresponsible and restless young men who want excitement, while the majority of the loyal, steady employees are passive in these matters and merely go on strike because they fear that they or their families will be molested. The union leaders will vociferously object to such legislation, but I am convinced that if this proposed legislation were to be voted on, not only most working people but also a great proportion of union labor would favor it by a large majority.

"The result of such an act would be that there could be no secret funds which might be used for the hiring of ruffians for the purpose of destroying or damaging property or which could be used in other illegal ways. The profits or fancy salaries paid to labor union leaders would be made public, which would in turn result in a closer supervision of union activity by the men who are paying the dues. When the issues were clearly defined the demagogic, loud-mouthed, professional agitator could no longer succeed and a very much better class of men would come forward for leadership. It is perfectly absurd that men should be asked to vote on the question whether there should be a strike or not without knowing the issue on which they are voting. It is clearly obvious that most of the strike votes today, which are taken on glittering generalities, are meaningless.

"This suggestion for the regulation of unions is exactly in conformity with President Harding's recent message. If the capital of the companies should be regulated—and it is right that it should—the employees are just as much a part of the transportation system, and their organization should be supervised, so that they shall act within the law.

## Capper Bill and Railway Securities

It is now over five years since any substantial railroad financing has been done by the sale of stock. In the meantime, the bonded debt has increased; the proportion of bonds to stocks has greatly increased. Today there are only four railroad stocks left which are selling at a premium. That is, only four railroad companies could sell their stock under the law—the Union Pacific, the Delaware, Lackawanna & Western, the Louisville & Nashville and the Chicago, Burlington & Quincy Railroads. A large number of companies whose stock used to sell at a premium, cannot now sell their stock at par. The Chicago & Northwestern, the Southern Pacific, the Atchison, Topeka & Santa Fe, the Northern Pacific, the Great Northern, and other railroads can no longer sell their stock for their additional capital needs, and they have constantly to increase their bond burden. It is only possible to sell the bonds of the very best companies. For instance, the Union Pacific sold its securities last week on a 5-40 basis. This is probably the strongest railroad company that we have.

The market for securities is practically only for first mortgage bonds. We have had what is in effect a panic, although it has not had the exciting features of an ordinary one. And now, as a normal sequence, we are having a cheaper money market, which means that business is poor; that the working capital of a great many manufacturers, merchants and banks is lying idle in the banks, and seeking investment in other channels. In times like these, people are willing to buy the very best of securities, but they are not willing to buy any security about which there is the least doubt, because when business is poor, people fear further depression, and do not know how far the effects of such depression may affect securities which are the least doubtful. If this bill were passed, it would be impossible for any but a very few railroads to sell securities at any price.

Railroad mileage in the United States has been steadily reduced now for the last three years, at an average rate of over 1,000 miles per year. Money is utterly unobtainable for new enterprises, and it will be unobtainable even for existing lines. This year, if the railroads earn \$700,000,000, the net earnings will approximate 13 per cent of the

gross. To go under this will be absolutely suicidal. In order to make it possible for the public to get additional railroad facilities the remaining 80-odd per cent of the gross earnings will have to be cut into somewhere, or reduced somehow. Now, this 80-odd per cent consists of labor and supplies. I am not prepared to go into the question of whether labor is getting more than it should, or whether materials are higher than they should be.

There are, roughly speaking, about 200,000 more bad order cars than there were 12 months ago. Assuming—and I think that is conservative—that it cost \$250 per car to put these bad order cars into good shape, would mean an additional \$50,000,000, which is deferred maintenance.

I furthermore contend that I am not putting it too high at all when I say that the deferred maintenance on rails approximates 500,000 tons. That, at 125 tons per mile, would be about 4,000 miles of track which are to be relaid, or only about 1¾ per cent of the present mileage. There has been a deferring of the putting in of new rails now for some years. So that there we have another \$30,000,000. In addition to that, you have the deferred maintenance on locomotives, and ties, and ballast, and other things. Deferred maintenance is unquestionably in excess of \$100,000,000. If that were deducted from the \$700,000,000 you would have barely 2½ per cent earned on the capitalization.

## Regulations Regarding Tax Cancellations and Refunds

**D**ETAILS concerning the procedure to be followed by the railways in the matter of the cancellation of the taxes on transportation charges are embodied in circulars sent out to members of the Railway Accounting Officers Association, dated December 7 and 9. The circular dated December 7 contains a copy of a letter written to Secretary E. R. Woodson by A. C. Holden, acting deputy commissioner of internal revenue. The letter gives an application of the principles to be followed by the carriers in complying with the provisions of the new revenue bill cancelling the taxes on freight and passenger charges imposed by the Revenue Act of 1918. The letter follows:

The following is an application of the principals enunciated in T. D. 3255 and 3256, dealing with the repeal of Subdivisions (a), (b), (c), (d), and (e) of Section 500 of the Revenue Act of 1918, by the Revenue Act of 1921, effective January 1, 1922:

(1) **PREPAID FREIGHT SHIPMENTS.** On all freight accepted for shipment up to midnight December 31, 1921, on which the transportation charges are prepaid or contracted for prepaid, the tax shall be collected on basis of the transportation charges to destination, regardless of when the transportation service is completed.

(2) **"COLLECT" FREIGHT SHIPMENTS.** Where the transportation service is completed on or after January 1, 1922, with transportation charges to be collected at destination, the tax does not apply on such transportation charges.

(3) **DIVERTED FREIGHT SHIPMENTS.** When freight is diverted or reconsigned en route in accordance with the tariff provisions, in determining whether the tax is applicable, such transportation shall be regarded as a continuous movement from point of origin to ultimate destination.

(4) **TRANSIT PRIVILEGES.** When freight shipments are accorded transit privileges, such as milling in transit, dressing in transit, refining in transit, compression in transit, etc., such shipments in determining whether the tax is applicable, shall be regarded as involving two separate and distinct transportation movements; one into the point where the transit privilege is accorded, and a separate and distinct movement of the product out of such point.

(5) **EXPORT SHIPMENTS.** On freight consigned from a point in the United States for export to a foreign country, where the transportation within the United States is completed before midnight, December 31, 1921, the existing instructions of the Internal Revenue Bureau (Regulations No. 49) are applicable and the temporary and permanent exemption certificates must be furnished as evidence of the right to exempt such shipments from the tax.

(6) **IMPORT SHIPMENTS.** For the purpose of determining the applicability of the tax, an import shipment is regarded the same as a domestic shipment.

(7) **MISCELLANEOUS TRANSPORTATION SERVICES.** On miscellaneous transportation services completed before midnight, December 31, 1921, the tax is applicable. On warfage, storage, demurrage, etc., the date of delivery of the freight, or release of equipment, shall determine the application of the tax.

(8) **UNDERCHARGES, DELAYED COLLECTIONS, ETC.** When the whole, or

any part of the transportation charges for freight transportation services, completed before midnight, December 31, 1921, are collected, the tax applies on such charges, and shall be collected by the carrier from the person making such payments, regardless of the date on which collection is effected.

(9) **REFUNDS.** In adjusting freight overcharges, and in redeeming unused, and partially used, passage tickets and scrip books, no carrier and no agent, officer, or employee of any carrier, shall make any refunds or adjustments of the tax on and after January 1, 1922.

The requirement is that the claim for refund of tax must be filed on U. S. Treasury Department Form 46, with the Commissioner of Internal Revenue, within four years from the time the tax was paid, claim being barred by Statute of Limitation, if received after such time. In the event the transportation companies retain the freight receipts, express receipts, redeemed tickets, or mileage books, as part of their files on a claim, the papers filed by the taxpayer with the Commissioner of Internal Revenue for refund of tax must be accompanied by a statement or certificate from the proper officer of the carrier, issued to the taxpayer when the transportation charges is adjusted by the carrier, in the form of such statement or certificate being retained as a part of the files of the carrier; both the original furnished to the patron, and the carbon copy in the carrier's files containing the following information:

(a) Number assigned claim by transportation company, which is the claim number or file reference.

(b) Amount of transportation charges refunded by the carrier on the claim.

(c) Amount of tax actually collected on the transportation charges which are refunded by the carrier.

(d) Date (or dates) on which tax was collected.

There is no objection on the part of the Internal Revenue Bureau to the carriers adding such other information as may be necessary or desirable for their own purposes.

The Bureau of Internal Revenue requires that the claimant furnish to the Commissioner of Internal Revenue, in applying for refund of tax on freight transportation charges, either the original receipts evidencing payment of the tax, or the above statement or certificate in lieu thereof.

(10) **PASSAGE TICKETS SOLD DURING DECEMBER.** On all passage tickets or scrip books sold up to midnight December 31, 1921, that are for use or are susceptible of use before midnight, December 31, 1921, the tax shall be collected, except as specifically exempted under the existing instructions of the Internal Revenue Bureau.

(11) **PASSAGE TICKETS FOR USE ON AND AFTER JANUARY 1, 1922.** In the case of tickets or scrip tickets sold during December that cannot, under any circumstances, be used before January 1, 1922, no tax is to be collected.

(12) **UNUSED PORTION OF PASSAGE TICKETS AS OF JANUARY 1, 1922.** Where there is an unused portion of a passage ticket or scrip book in the possession of the public on January 1, 1922, on which tax has been collected, the Internal Revenue Bureau requires that claim for refund must be filed direct with the Commissioner of Internal Revenue by the person paying the tax, using U. S. Treasury Department Form 46, which should show the following:

(a) Statement of the facts on which claim is based.

(b) Statement that no claim is pending nor will any be filed with the transportation company for adjustment of the ticket or scrip book, in connection with which refund is requested, if in hands of claimant when claim is filed, has been marked to show the amount of tax for which claim has been filed.

The claim for such refund must also be supported by a written statement from an agent of the transportation company (or from a collector of internal revenue if such information can be furnished by him) giving the following data concerning the ticket or scrip book in connection with which refund is requested:

(a) The number  
(b) Date of purchase  
(c) Price paid  
(d) The proportionate part remaining unused on January 1, 1922, and  
(e) The proportionate amount of tax applicable to the unused part.

(13) **EXPRESS SHIPMENTS AND SLEEPING CAR TICKETS.** The term "freight" as used in this letter is intended to comprise, also, shipments by express, and the term "passage ticket" as used in this letter is intended to comprise, also, sleeping car and parlor car tickets.

(14) **PASSAGE TICKETS BY VESSEL TO FOREIGN COUNTRIES.** Title XI, Schedule A, Paragraph 9 of the new revenue bill continues, after January 1, 1922, the stamp taxes now applicable to passage ticket one way or round trip for each passenger, sold or issued in the United States for passage by any vessel to a port or place not in the United States, Canada, or Mexico.

(15) **TAX ON TELEGRAPH AND TELEPHONE MESSAGES.** Title V, Section 500 of the new revenue bill continues certain taxes on telegraph and telephone messages now in effect.

Under the interpretations of the Internal Revenue Bureau as contained in the letter reproduced above, it will be necessary for the carriers to have two forms; one for passenger service and one for freight service, relating to information required by the bureau for refund claims filed by the shipper with the bureau on and after January 1, 1922. The Railway Accounting Officers Association has prepared standard forms adaptable for that purpose for use of the carriers. These forms are R. A. O. A. Standard Forms Nos. 195 and 50. Form 195 relates to refunds of the tax on freight transportation charges and No. 50 to refunds on passenger charges. The two forms are given in a circular issued by the R. A. O. A. under date of December 9.

# Hooper Addresses New York Railroad Club

## Labor Board Vice-Chairman Analyzes Board Activities and Makes Plea for Co-operation

"It is indispensable that a magnified spirit of co-operation shall exist between the carriers and their employees" . . . "I am not going to ask you to assume that the Railroad Labor Board is essential to the public weal." For the consummation of this spirit of co-operation between officers and men, "the Railroad Labor Board pledges its earnest efforts." These were among the leading points brought out by Ben W. Hooper, vice-chairman of the Railroad Labor Board, in an address before the members and guests of the New York Railroad Club assembled at the third annual dinner of that organization at the Hotel Commodore, New York, on Thursday evening, December 15. Mr. Hooper analyzed the work that had been done by the Board since its organization; he pointed out the difficulties which it had had to overcome; he presented also for consideration the many criticisms of the work of the Board and in an interesting and pointed manner answered these criticisms. He also offered some opinions concerning labor union policies, particularly with reference to the recent strike threat. "The right of labor to organize," he said, "is based on sound principles." The evils of labor unionism "are merely the abuses of a thing inherently good." Discussing the point that labor has no moral right to tie up the railroads by a strike, he presented a plea for co-operation between officers and employees. In conclusion, he expressed his optimism of the present situation.

Over 2,000 were in attendance at the dinner. In addition to Governor Hooper, six other members of the Labor Board were present as guests of the club; they were R. M. Barton, chairman; J. H. Elliott, G. W. W. Hanger, Samuel Higgins, W. L. McMenimen and A. O. Wharton. The president of the club, J. A. Droege, general superintendent of the New York, New Haven & Hartford, opened the after dinner program and turned the meeting over to the toastmaster, Frank Hedley, of the Interborough Rapid Transit Company.

Mr. Hooper's address follows in part:

### Mr. Hooper's Address

For the purposes of this occasion, I am going to assume that the regulative legislation enacted by Congress prior to 1920 is not in excess of what it ought to be. I am going to take it for granted that the Interstate Commerce Commission, created away back in 1887, has justified its right to existence and to the exercise of the powers conferred upon it by Congress. But I am not going to ask you to assume that this new fangled tribunal, the Railroad Labor Board, is essential to the public weal. It is such a recent experiment that no arbitrary or conclusive presumptions stand in its favor. But, with your indulgence, I am going to present a few facts, upon which you may base an opinion, as to whether the Railroad Labor Board is entitled to your approval and that of the public in general. I shall not be such a daredevil, however, as to invite any expression of that opinion at this time.

The labor section of the Transportation Act of 1920 was enacted by a republican congress and signed by a democratic President, because they had a full realization of the dangers of the post-war conditions that surrounded the railways and involved the public. Railroad working rules and wages had been greatly influenced by the war and by Federal Control of the roads. The carriers contended that the labor conditions that existed at the termination of the war were artificial, unreasonable, uneconomic and burdensome, and that the roads could not live under them. The employees insisted that their

wages were among the last to be increased, that this increase was insufficient, and that the working rules established during Federal Control had given them little or nothing to which they were not entitled. Add to this sharp dispute the disturbed and uncertain industrial conditions that existed throughout the country, and you have enough explosives and combustibles to have rendered a conflagration inevitable.

It was at this juncture that Congress said through the Transportation Act, let us see if a way cannot be found to settle these railroad labor disputes, by the establishment of an impartial tribunal, before which they can be tried like any other lawsuit. This step was not taken by Congress because the people desired to intermeddle either with the affairs of the carriers or their employees. It was because the people knew that they would otherwise be ground to pieces between the upper and nether millstone.

Thus the Railroad Labor Board began to function at a most critical period, and there was immediately dumped upon the work bench in front of it more work than ever confronted any other government agency. Before it could scarcely perfect its organization, the wages of every railroad employee of every class in the Union were brought into dispute and the rules and working conditions of these two million men were likewise submitted to the Board. In addition to these two great controversies involving, in fact, several hundred disputes, scores of questions of secondary importance and hundreds of grievances have poured in upon the Board in a steady stream.

The Adjustment Boards, which the Transportation Act contemplated should be set up by the mutual agreement of the carriers and employees, to act as an inferior court for the trial of these grievance cases, were not established. Only recently, the first few Adjustment Boards began to function. The lack of them made the prompt and satisfactory action of our Board impossible. Under the strain of this crushing load the Board has been compelled to double back on the eight hour law, working eight hours before lunch and eight afterwards. For all this, we have received no punitive overtime, but much punitive maledictions for sins of omission and commission.

### Not a "Board of Mediation"

During these 21 months, the Board has disposed of two essential readjustments of wages, the revision of the rules of the six shop crafts and of the maintenance of way employees, has stopped one general strike, and decided 950 miscellaneous disputes. And despite all this, a newspaper punster has referred to us as a "board of meditation."

At any rate, we are not liable to the charge of having restricted the output.

There is one thing, however, that has given the Board a soothing feeling of self-satisfaction, and that is, the fine team work manifested by the carriers and their employees in "cussin" the Board. This has been accepted as conclusive evidence of the Board's fairness and impartiality. If only one side had criticized our decisions, we might have been suspicious of ourselves. This enflaming fire of criticism has been peculiarly beneficial to the public members of the Board in that it has removed all danger, if any existed, of their entertaining any feelings of partiality for either side. Of course, I mean that it has caused us to love both sides with equal fervor.

Returning to a serious discussion of the Board's work, it has been truly remarkable to see with what unanimity and

alacrity both the carriers and the employees have brought their differences to the Board for adjustment in accordance with the law. It is worthy of further emphatic notation that both parties in a vast majority of instances have respected and obeyed the decisions of the Board. On account of the fact that the holiday season of peace and good will is so near, I will not mention anybody that has violated the Board's decisions. It is not in good taste to hang lemons on the Christmas tree.

The law creating the Railroad Labor Board is a unique piece of legislation in this country, but has numerous counterparts in other lands, including Canada, Australasia and several European countries. It is an odd combination of voluntary and compulsory arbitration. Public attention has not been directed to the fact that there is anything compulsory in the law, but there is. There are three mandatory provisions in the statute, binding alike upon the carrier and the employee. The law says, in effect, that: *First.* The carrier and the employee, in case of a dispute, shall endeavor to settle the matter by conference and negotiation. *Second.* If they fail to reach an agreement by direct conference and negotiation, they shall submit the dispute to the Railroad Labor Board.

*Third.* The Railroad Labor Board shall decide the dispute.

If, upon investigation, the Board finds this final decision is violated by either party, the Board "may make public its decision in such manner as it may determine."

#### Finger of Scorn Only Penalty

In other words there is no penalty attached to a violation of the Board decision, except that the Board may point the finger of scorn at the violator. The Transportation Act, as it passed the United States Senate, contained a mild anti-strike provision, as well as penalties for the railroad officials violating the law. This provision was eliminated by the House, and the Board was left dependent on public sentiment for the enforcement of its decisions. By the way, it is an item of curious interest that the State of Texas, in the suit against the Board, takes the position that this power to direct public attention to a violation of the Board's decision conflicts with that provision of the United States Constitution which forbids "cruel and unusual punishments."

The train and engine brotherhoods in their recent strike ballots served to draw a sharp distinction between those provisions of the Transportation Act which they considered imperative and those which they did not consider imperative. The public, at the time, did not appear to grasp this idea. The Brotherhoods were really protesting against a further reduction and the change in rules which the carriers sought, but I could not get them to say so at the strike hearing. They shrewdly confined themselves to the July wage reduction, already accomplished; on the theory, I take it, that the law did not forbid their striking against the Board's final decision, but that it did command them to go through all the preliminary steps leading up to a decision before they struck, and that they would therefore be violating the law if they struck against a possible, future decision of the Board toward which the mandatory preliminary steps had not yet been taken. This must be noted as an interesting and important development in connection with the practical application of this new law.

It is proper to say just here, not in a controversial way, but as a matter of abstract interest to all students of the Transportation Act, that it is the contention of the Board that the Pennsylvania System in its dealings with the Shop Crafts, fell into this pitfall which the Brotherhoods sidestepped. The Pennsylvania, however, has very able counsel who do not accept this dictum of mine, and it remains to be seen whether or not the courts will accept it. Personally, I am glad that this honest difference of opinion as to the mean-

ing of law is to be judicially settled. The Labor Board is not sensitive about law suits brought against it. The only thing which really grates upon the delicate nerves of the Board is the resolutions occasionally adopted by ill-advised persons, favoring the abolition of the Board. It is now generally conceded that such resolutions are contrary to public policy, and they have grown gratifyingly few and far between.

#### The Group Make-Up of the Board

There is another feature of the Transportation Act that aroused debate at the time of its enactment, and that is the group make-up of the Board. Recently there has been a revival of the unfriendly criticism of this provision, which gives to the carriers three representatives, to the employees three, and to the public three.

As a member of the public group, I have watched at close range the actual test of this provision, and I am convinced of its wisdom. The usual objection to it is that it is an incongruous thing to place upon a quasi-judicial tribunal, advocates of the litigants. It is frequently stated that these two expert groups uniformly line up with the respective interests from which they came. This is not true. While such would be the obviously natural tendency of these men under ordinary conditions, it must be remembered that they are under the sanction of an official oath. A day rarely passes in the proceedings of the Board when one or more of the members of these two expert groups does not cross over the line and vote with the opposing interest. It cannot possibly happen that either the carrier or the employee is invariably in the right, and these expert groups are experimentally aware of this fact. Moreover, the Board, by reason of the presence of these gentlemen among its membership, constantly has at its command a wealth of information relative to all phases of the railroad labor question.

#### A Shower of Verbal Brickbats

At the end of October, the strike threat of the train and engine service brotherhoods came to a focus. The public thereupon suddenly awakened to the fact that there was a Transportation Act and a Labor Board. Without stopping to inquire whether or not the Board had teeth, it was enthusiastically admonished from all sides that somebody must be bitten. The Board officially and some of its members personally took steps that averted the strike. As soon as this was accomplished the Board was treated to a shower of verbal brickbats because it had, forsooth, violated the quasi-properties of a quasi-judicial tribunal.

There was one thing that a few sophisticated and hard-boiled individuals never could believe and that was that I did not promise the brotherhood officers, when addressing them, to take something away from the carriers and give it to them, and yet this was literally true. The memorandum which was adopted by the Board and, which was finally the means of averting the strike, merely called attention to the fact that it was premature to start a row about another reduction in wages, because the Board did not propose to readjust the wages of any class of labor, until the rules and working conditions of that particular class had been passed upon.

I maintain that this was a sensible, just and proper course for the Board to pursue, and it will finally receive the approval of both the carriers and the employees. Wages cannot be intelligently fixed, without having a known and established schedule of working rules to which to apply them. But many people were misled by erroneous statements in the press to the effect that I had definitely promised for the Board that the wages of the brotherhoods should not be touched for a year or until July next. No such statement was made and none was necessary. No statement was made that amounted to a prejudgment of any question that might

thereafter come before the Board. But it was said further that the Board's memorandum, in effect, closed the door in the face of the carriers and the employees who might want to ask for a readjustment of wages, because there would be an interminable delay in completing rules. On this point the Board has been thoroughly vindicated, because it has already issued its decision of shop craft rules, effective December 1st, and its decision of maintenance of way rules, effective December 16th, and it will be weeks and possibly months before any petition for a wage revision is filed with the Board. So the carriers and the employees are not waiting on the Board in this matter, but the Board is waiting on them.

Some of the carriers may not be altogether pleased with the rules handed down by the Board. Doubtless the Board has made a few scattering mistakes, but it has tried very hard to protect the rights of the employees, and, at the same time, interfere as little as possible with the discretion and judgment of the management in the operation of the roads. I am sure all of you would be surprised if you could examine the submissions on rules made by the various carriers, and see what a very wide diversity of plan, purpose and opinion is reflected by them. There is an entire absence of anything resembling co-ordination. That which one carrier strenuously opposed another as cordially approved, and that too, when it was a question of general application, unaffected by local conditions. While this situation served to add to the labor of the Board, it was considered creditable to the carriers in one respect, for it showed that they had not prearranged a hard and fast set of irreducible demands.

#### No Such Thing as Good Time for Strike

Reverting to the strike episode for a moment, there was a section of public opinion, outside of railroad circles, that wanted a strike. At least, they thought they wanted it. Their argument was that, if the railroad employees wanted to strike, they should not be hindered, that it was a good time for a strike, and that the railroad organizations could be crushed and union labor, in general, given a set back.

There were several weak spots in this argument. In the first place, there is no such thing as a good time for a railroad strike.

While this may have been an opportune time to fight labor union, the price of the fight would have staggered the Nation. This country has never experienced a general railroad strike, and but few men have any adequate conception of the ruin and misery it would bring to the people, not only the poor, but the well to do.

For the last few months, tens of thousands of men have been straining their credit and husbanding their resources in an effort to pass through this period of post war depression without bankruptcy. They have stood on the brink of a precipice and looked ruin in the face. A general railroad strike would have pushed them over the edge and plunged them into the abyss. They were not able to stand anything more.

Then another thought occurs to me, would it have been wise to crush the railroad unions, even if it could have been done? What would have taken their place? Is any man so blind to all the aspects of modern industry as to believe that the time will ever return when railroad labor is not organized?

If the brotherhoods had been crushed, rest assured that organizations of some character would have sprung up in their stead, and their successors, in all probability, would not have been animated by motives half so conservative and patriotic as those which control the brotherhoods.

The right of labor to organize is based on sound principles, recognized by Congress and sanctioned by the courts of the land.

The problem in this country today is not how to stamp out and destroy organized labor, but how to deal with its just demands fairly and humanely, and how to curb its unjust demands and control such of its activities as threaten the public welfare.

In my judgment, the survival of this republic depends upon the wisdom with which this question is handled.

Friendly as I am to theory and principle of organized labor, I am profoundly awed when I contemplate its possibilities for evil. If organized labor is to be permitted to throttle individuality, destroy initiative, exact inefficiency, dominate management, limit production, ignore the rights of the public, and set up a class government, then, indeed, is this country headed toward Bolshevism and death.

All of these things are the possible, but not the inevitable results of organized labor. They are merely the abuses of a thing inherently good.

On the other hand, if organized labor confines its efforts to the legitimate advancement of the cause of the workingman, by the procurement of a just and reasonable wage, the establishment of desirable working rules and conditions, the maintenance of an increasingly good standard of living, and the preservation of the political and civil rights of labor, then will organized labor not only serve its own interests, but it will constitute one of the bulwarks of the American republic.

#### No Moral Right to Tie Up Railroads

In the regulation of railroad labor there are certain principles involved which do not apply to labor in general. The people of the United States must have efficient and uninterrupted railway traffic. The employees must share with the carriers the execution of this public trust. When a man enters the employ of a railroad and every day that he is so engaged, he should understand that in a high sense he is serving the public. He should understand that whatever rights men may have to strike and tie up a strictly private business, they have no such right, morally at least, to tie up the railroads and destroy the property, business, health, comfort, and lives of innocent men, women and children.

This does not mean involuntary servitude. It would not mean that the railway employee would be compelled to work for a railroad. It would simply mean that he would have no right to conspire with his fellow employees to destroy, by concerted action, the transportation of the country for the purpose of enforcing his demands against the carrier. If this is not now the law, it ought to be, and it will be.

In consideration of such a legal regulation, it would be the duty of the public to make sure that an absolutely impartial tribunal was provided for the adjudication of all matters of dispute between the carriers and the employees, and this tribunal should place an exalted estimate upon the supreme importance of an honorable and patriotic discharge of this official duty.

The public should realize that a living wage means something more to an American citizen than a bare existence, and that highly skilled men into whose care the lives of millions are constantly entrusted are entitled to a wage commensurate with their skill, hazard and responsibility.

The employees would be expected to recognize the fact there is a limit to the ability of a carrier to pay wages and that there is no mysterious and miraculous fountain of inexhaustible gold flowing into the coffers of a railroad. Every cent of its revenues must come from the pockets of the people. It is not to the interest of either the employee or the public that wages should be made so high as to overburden the carrier. It is obvious, however, that the ability of the carrier to pay cannot be treated as a controlling consideration in fixing wages, for this might result, in some instances, in requiring the employee to work for little or nothing.



Looking Northwest Toward Sibley Street. Old Trainshed in the Foreground



Stairways to Track Level, Head-House in the Background

## St. Paul Union Station Work Enters Third Stage

Traffic Was Thrown on First Six Tracks on Nov. 21—Headhouse Was Completed Last Year

By G. H. Wilsey

Assistant Engineer in Charge of Design, St. Paul Union Depot Company, St. Paul, Minn.

THE SECOND PERIOD of construction work on the new passenger terminal of the St. Paul Union Depot Company is complete, traffic being thrown on the first six elevated tracks at noon on November 21. As described in the *Railway Age* of May 21, 1920, page 1442, the project under construction involves the complete rebuilding of the terminal, much of it on the ground occupied by the old layout, at an expenditure of \$15,000,000. The new station yard is located about 20 ft. above the old; and as the present facilities are inadequate to take care of existing traffic, it is essential that there be provided at all times at least as many tracks as there were at the beginning of the work, viz., 14. This necessitated building in sections. The headhouse, being located on new ground, was built first and was opened for traffic on April 5, 1920. This permitted of vacating the old warehouse that had been used as a depot since October, 1913, when the original station was destroyed by fire, and the building of structures and the laying of six stub tracks to the north of the old train shed.

The third period of work will involve the removal of six northerly tracks and the train shed of the old layout, together with the walls and foundations of the old depot, and constructing the necessary retaining walls and elevated structures for six more elevated tracks, four of which will be through ones. At the same time that portion of the waiting room over these new tracks will be built. In like manner the remainder of the yard will be built in the fourth and fifth periods. The sixth period will be for the construction of a signaling and interlocking system.

St. Paul is the clearing house of the Northwest for passengers, baggage, mail and express. It is necessary, therefore, to make provision for a much larger volume of business than is ordinarily encountered in a city of 250,000 inhabitants. This has been accomplished by building the waiting room over the tracks and providing baggage, mail and express rooms under the tracks. The station yard will contain 8 stub and 14 through tracks, with a seven-track throat on the east end and a four-track throat on the west end, the latter being used by through trains only.

The main floor plan of the completed headhouse and wait-

ing room is shown in one of the drawings. The part just completed extends from the headhouse across Third street and over the first six tracks. The smoking room, baggage-checking counter and the concourse leading to the waiting room, as well as direct access to the new tracks, are thus provided. The concourse is finished on the inside with buff Kittanning brick, with a timbrel tile arch ceiling. This portion of the building contains two stories, the upper part being used as a terminal railway post office. The waiting room, yet to be built, 80 ft. by 360 ft., will have a high arched ceiling, springing from about the ceiling line of the concourse, lighted by skylights, through ceiling lights curved to the radius of the arch. A row of columns across the building, which supports a terra cotta lintel, marks the northerly end of the waiting room. The baggage check counter is connected with the baggage room beneath with a spiral chute and dumbwaiter for handling hand baggage and a pneumatic tube for checks. Until the waiting room is built, the business lobby in the headhouse will continue to be used as a temporary waiting room.

The floor of the concourse and waiting room is built of two concrete slabs, with an air space about 18 in. deep between them, in which radiation has been placed for warming the floor.

The lower slab gives a smooth ceiling so that smoke and gases from locomotive exhaust will not collect. Cast iron plates, 30 in. wide, have been imbedded in this slab directly over the center lines of tracks, to protect the concrete against the direct blast from locomotives.

A separate door for each track, with a train indicator alongside, opens into a corridor from the waiting room to the track platform. Each pair of tracks is served by a stairway and passenger elevator, the latter being six feet square. The two large elevators shown at the northerly end are for mail, traveling from the undertrack rooms to the mail room on the second floor.

The platforms are 19 ft. 6 in. wide in the main portion of the yard, tapering to 8 ft. at the ends, where the tracks converge. Curbs are 8 in. and the crown 10 in. above the top of the rail. The platforms are built on cinder fill, and



Track Sheds Under Construction



Looking Northeast. Old Train Shed in the Foreground

consist of a 5-in. slab of 1 : 2 : 4 concrete, finished with cement and granite screenings.

The train sheds are of the butterfly type, built of steel framing, and with a wooden deck extending to within 18 in. of the center line of track. This shed is unique in that no plates, except small gussets at the top of columns, are used in its construction. Columns and cross girders are 12-in. Bethlehem I-beams, the girder being bent to give pitch to the roof. All columns are alike; the girders are simply shortened as the shed narrows, the bend being the same in all cases. The roof is covered with three-ply tar and gravel composition. The cornice is galvanized Armco iron. The sheds are narrowed and curved to follow the tracks and platforms, the outside channels being kept a constant distance from the cornice. The sheds are stopped where the platform width is 11 ft.

At the end of the stub tracks, an arrival concourse has been built, with doors opening at the street level for the use of those who do not wish to pass through the station on

All new track is laid with 90-lb. A. R. A. type A rail, on white oak ties, ballasted with gravel. One of the drawings shows a plan of the temporary connections at the east end. As it is necessary to maintain traffic in both the old and new yards at present, the old throat being left intact for low level movements, and as the final throat will be placed on the ground now occupied by the old one, this layout, not at all desirable from any standpoint, was the only solution possible. The ground now occupied by the leads to the new tracks will, when the project is complete, be used as a teamyard for baggage, mail and express cars, approached from the east by a 14 deg. curve on a 2 per cent grade, while the main leads will pass to the south with 6 deg. curves on a 0.75 per cent grade. The present connections are thus forced into the future teamyard location, with the resulting conditions shown, although the grade has been reduced to about 1½ per cent by using a longer run-off from the junction with the permanent grade.

In the station yard each pair of tracks is three inches



Track Layout for Temporary Connections at the East End of the Station

arriving. The doors are secured against opening from the outside, so that passengers may not gain access to the platforms without being checked by the gatemen in the station. Along Sibley street the arrival concourse is enclosed by a brick wall with windows. This wall is continued along Third street to the main building at the same height. The remainder of the yard has a brick fence about four feet high along the north side as far as the platforms extend, beyond which a handrail will be placed.

Bumping posts at the ends of stub tracks are large concrete monoliths, in which have been imbedded the structural frames of Ellis posts. An Ellis rubber buffer is placed on the face of each post.

lower than the pair to the north, brought about by the desirability of gaining access to the space under the tracks at the north side, and the reduction of the hump in the freight tracks at the southerly side to a minimum and yet permit of grade separation at Sibley and Jackson streets. The final grade for passenger tracks will be 0.75 per cent maximum at the east end and 0.3 per cent on the west; for freight tracks the grade will be 0.3 per cent at both ends. (See article before mentioned.)

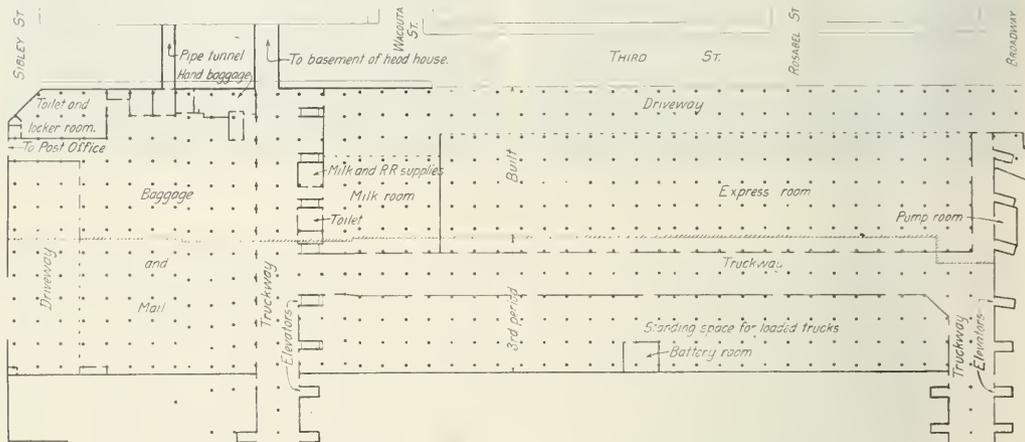
A considerable portion of the fill now in place was obtained from debris and excavation from the wrecked buildings that occupied the site of the headhouse and station yard. The remainder was obtained by train-haul from strip-

ping operations in a gravel pit about five miles away. Gravity walls were built to retain the fill, with expansion joints every 30 ft. A complete surface and sub-surface drainage system is provided for the whole yard.

From Broadway to Sibley street, about 930 ft., and from Third street south a distance of 264 ft., the station yard is

street to a line 10 ft. 6 in. north of the northerly wall of the truckway.

The track structure is designed according to the Chicago ruling as a flat slab for Cooper's class E-60 loading, with 25 per cent added for impact. Columns are spaced on 21 ft. centers in both directions, except at expansion joints and



Floor Plan on the Level Below the Tracks

supported on a reinforced-concrete structure, thus providing for handling baggage, mail and express in rooms beneath the tracks. One of the drawings shows a plan of these rooms, the part built being about 140 ft. wide, extending from Third

under the concourse and waiting room, and are 30 in. in diameter. Depressed heads are 9 ft. 3 in. square and 11 in. deep. The slab is 1 ft. 9 in. deep. Each rectangular band of reinforcing consists of nineteen 3/4 in. round rods on 6 in.

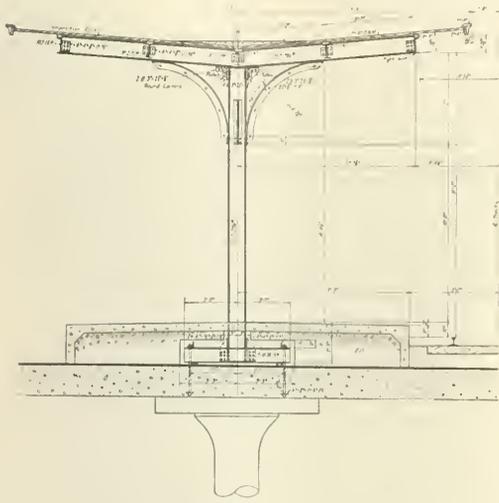


Looking Southeast at the New Track Structure, Old Trainshed in the Background

centers; each diagonal band has thirteen  $\frac{3}{4}$  in. round rods on 9 in. centers; the proportions of the slab and depressed head are such that, by bending up half of each band at each end, no additional steel is required over the column heads. All rods are bent to dimension before placing. Expansion is

and waiting rooms rest directly on the track slab, concentric with the reinforced concrete columns beneath, which are increased in size, up to 42 in., to take care of the added load.

For the construction of this slab, a fixed concreting plant was used, located at the east end of the work. Sand and gravel or crushed stone were delivered on an elevated track, or by auto truck at times, and dumped into receiving hoppers beneath, with capacity for nine carloads. A belt conveyor and vertical elevator discharged the material into storage bins, having gravity feed through automatic measuring hoppers to a one-yard mixer. A 200-ft. Insley steel tower, with quick-shift hopper and 100-ft. spout, was used for distribution near the plant. Beyond reach of the spout, one-yard industrial cars were used, hauled by gasoline locomotives. An accompanying view shows clearly the method of distribution. For the track structure a system of collapsible and movable forms, designed and built by the Blaw-Knox Company, was used. Each section, 21 ft. square, was a separate unit, which could be lowered and moved ahead on a track without disturbing the forms in front of it. Enough sections were supplied to form a strip across the structure three panels wide. The forms were supported on 8 in. by 8 in. timber posts at the corners of the depressed heads in such a manner that when they were collapsed the posts were not disturbed. This permitted of removing the forms in from four days to a week. The posts remained in place three weeks or more.

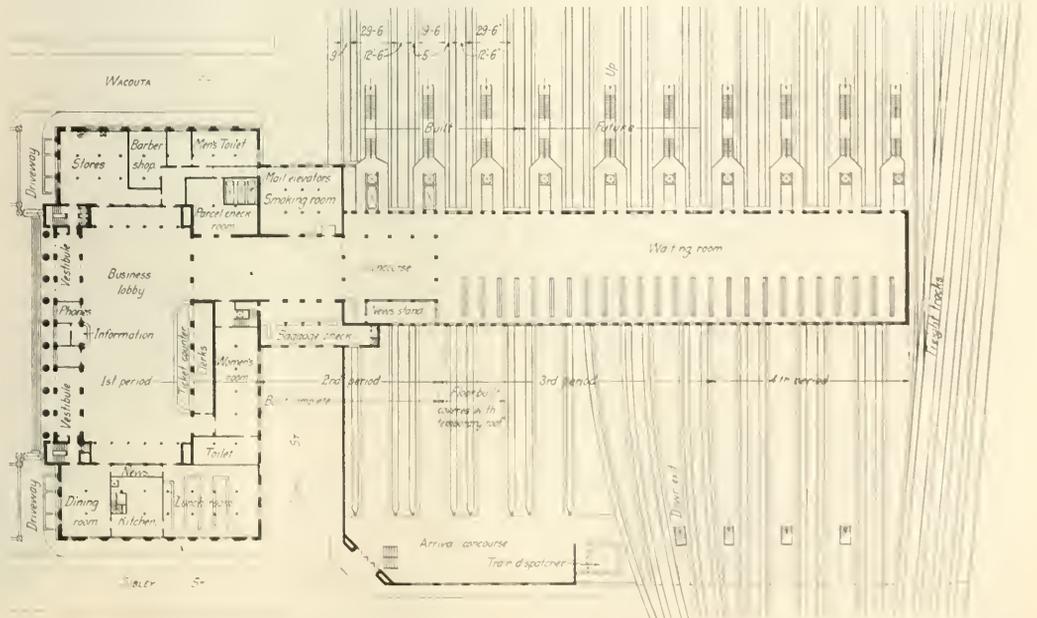


Cross Section of Platform and Trainshed

provided at three lines by leaving a 2 in. space between two 6 ft. 6 in. cantilevers. A typical section through the structure is shown in one of the drawings. Foundations are supported on piles driven through the outlying muck and fill to river sand. Steel columns supporting the concourse

Waterproofing consists of four plies of asbestos fabric and one of cotton duck, each layer being mopped with asphalt. This membrane is protected by  $1\frac{1}{4}$  in. of sand mastic. The waterproofing sheet is continuous under the platforms and train-shed anchorages. At expansion joints the fabric is looped into the space between sections and reinforced with copper. Drains are provided for the slab and train shed at about 42-ft. centers.

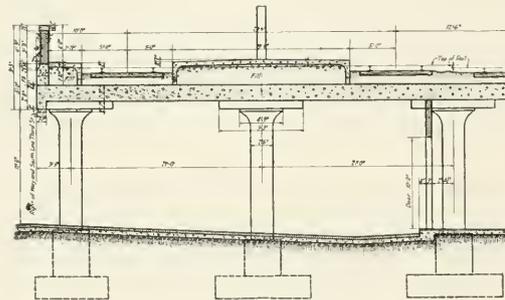
Each pair of tracks is served by an elevator at each end. These elevators are 6 ft. by 16 ft. in plan; have a capacity of 7,500 lb. at a speed of 100 ft. per minute; and are driven



Floor Plan at the Waiting Room or Concourse Level, Also Part Plan of the Track Level

by traction type, micro-leveling engines, with two-to-one roping, connected by worm-gears to alternating circuit-motors. Full automatic control is provided. Doors open automatically when the car reaches the level to which it has been sent, and are closed by pressing a push-button. The car cannot be moved when the doors are open; nor can the doors be opened unless the car is at the level in question.

The baggage and mail rooms are connected with the baggage checking counter and railway post office by spiral chutes, one blade serving the former and four the latter. Trucking and pipe tunnels under Third street connect these rooms with the headhouse and a trucking tunnel under Sibley street connects them with the distribution building of the St. Paul post office. To provide the driveways shown, it was necessary to lower the grades of Sibley street and Third street as much as five feet in places. Ten feet clear headroom under all pipes and other obstructions is provided in these rooms, and 12½ ft. is provided in the driveways. The floors of all rooms are finished with 1½ in. of asphalt



The Tracks Are Supported on Reinforced Concrete Flat Slab Construction

mastic. The driveways are paved with brick. All doors are steel rolling shutters, 7 ft. wide and 10 ft. high.

A large toilet and locker room is provided for baggage and mail employees, containing shower baths and individual steel lockers. No toilet provisions have been made for the express rooms as yet. All rooms are heated by overhead radiation and the small rooms are artificially ventilated. Heat, light and power are obtained from a public service corporation.

Temporary construction work, preparatory to starting work on the third period, is now in progress.

W. C. Armstrong is in charge of the project as chief engineer. The writer is assistant engineer in charge of design and O. L. Hoebel assistant engineer in charge of construction. Charles S. Frost is architect for the headhouse and waiting room. Neiler, Rich and Company are the consulting mechanical and electrical engineers. Morris, Shepard and Dougherty and Geo. J. Grant Construction Company, a co-partnership for this work only, are the general contractor, for whom W. R. Powrie is superintendent.

ON THE PIEDMONT & NORTHERN, an electric road in North Carolina and South Carolina, doing a good deal of freight business, the station agent and the commercial agent are eligible each month to a prize, Vice-President E. Thomason having offered \$100 for agents in class A, \$50 to those in class B and \$25 for class X. In each case the prize goes to the agency showing the largest percentage of increase in business in the month, and it is divided between the agent and the commercial agent. Under a somewhat different plan prizes have been given for some time past, and J. P. King, general agent at Spartanburg, S. C., recently received \$100.

## Zoelly Turbine Locomotive for Swiss Federal Railways

THE INCREASING operating expenses resulting from the rising costs of fuel have given an added importance to locomotive efficiency. Careful study is not only being made of the means for securing an increase in the amount of work obtainable from the fuel used by locomotives of the usual type, but consideration is being given also to the possible substitution of locomotives of a radically different character. The high efficiency of the steam turbine and its rapidly increasing adoption in the stationary and marine fields has caused a number of designers to attack the problem of adapting a steam turbine to the driving of a locomotive.

One of the most notable efforts now being made in this direction is that of Dr. Zoelly, the well-known turbine engineer and general manager of Escher, Wyss and Company, Zurich, Switzerland. A 4-6-0 type locomotive of the Federal Swiss Railways has been converted by the Swiss Locomotive Works at Winterthur from a standard type locomotive with the usual reciprocating steam engine to a turbine-driven engine.

A Zoelly turbine of special reversible type was placed forward of the smokebox, the power being transmitted from the rotor by means of 30 to 1 gearing to a transverse jack shaft above the front truck. The connecting rods were extended forward and coupled to crank pins on discs located on either end of the jack shaft. The turbine was designed for a speed of 8,000 r.p.m. which corresponds to a running speed of 48½ m.p.h.

The boiler is provided with a superheater and a condenser is located between the frames. The cooling water is taken from the tender and after passing through the condenser is returned to a longitudinal pipe underneath an elevated hood built over the tender, from which it is sprayed in narrow streams. The air currents formed by the moving locomotive furnish an effective means of recooling the water.

The condensate, which is pure and free from oil, is pumped back into the boiler, it being necessary to add only sufficient fresh water to make up for the losses from the safety valves, whistle and leakage. By continually using the condensed water for feeding the boiler, the formation of scale is practically eliminated. The condensate which is at a temperature of about 125 deg. F. is passed through a preheater and raised to about 250 deg. F. before it goes into the boiler.

As there is no exhaust pipe a blower is used to furnish the necessary draft. The control is by means of three valves, one for the ordinary forward operation, another for starting and for heavy pulls on grades and a third for running backward. The water capacity of the tender is comparatively small as the evaporation of the water while being cooled is only a small loss.

The trial runs which have thus far been made are reported to have shown a saving of some 25 per cent over similar compound locomotives handling the same trains. It is also reported that the running was remarkably smooth, due doubtless to the absence of reciprocating parts. The results of these experiments as well as those now being made by others in Sweden and other European countries will be watched with interest by American engineers.

THE BURLINGTON has recently completed at Montgomery, Ill., 40 miles west of Chicago, what is believed to be the largest sheep shelter in the United States. It consists of seven barns, each 450 ft. long and 130 ft. wide. These are surrounded by 1,000 acres of pasture and farm land; and there is a hay barn, a feed barn, a granary and a modern concrete grain elevator with a capacity of 100,000 bushels. The plant will accommodate 70,000 head of sheep and has been constructed for the accommodation of sheep in transit.

# Walker D. Hines Defends Transportation Act

Gives Special Attention to Section 15a and to Intrastate Rates and State Commissions

WASHINGTON, D. C.

WALKER D. HINES, former director general of railroads, testified before the Senate Committee on Interstate Commerce on December 9 in opposition to the repeal of the rate-making provisions of the Transportation Act as proposed in the Capper and other bills pending before the committee. Mr. Hines appeared at the request of Chairman Cummins and said that he was testifying merely as a citizen and not on behalf of any client. Before he began, Senator Cummins pointed out that he had conferred with Mr. Hines on many occasions while the Transportation Act was under consideration.

Discussing first the principle involved in the proposal to repeal Section 15a of the interstate commerce act, which provides for a net return of 5½ to 6 per cent, Mr. Hines said that this section constitutes the first affirmative dealing by Congress with the regulation of railroad rates and the corner-stone of the new policy which was adopted in the Transportation Act. It would be indescribably unfortunate, he said, to take a backward step at the present time by repealing that section. If it is repealed, the interstate commerce act will stand as a scheme of negative and restrictive regulation, the very scheme that 33 years have proved to be wholly inadequate. Thirty-three years of federal railroad regulation beginning in 1887 had finally led public opinion to the conclusion that an affirmative and constructive policy was necessary.

## An Affirmative Policy of Regulation

"I fully realize," Mr. Hines said, "that for the time being the new scheme has not produced an adequate revenue for the railroads or rates that are satisfactory to the public, and I appreciate that the rates have been especially unsatisfactory to the great agricultural interests, which have seen the prices of their products deflated far in advance of deflation of other prices and of wages. But this situation cannot be corrected by abandoning the affirmative policy of railroad regulation and returning to the purely negative and restrictive policy of the past. Indeed, in the long run the agricultural interests would suffer as seriously as any other interest could possibly suffer through the impairment of railroad service which would result from the abandonment of an affirmative policy of railroad regulation.

"The fact that the present scheme has not worked with satisfaction is not because a scheme of negative and restrictive regulation would have worked better, but is because conditions have been so completely upset by the war that no scheme whatever could give satisfaction for the time being. It is of the highest importance to give a reasonable time for the trial of the new plan and not to engage in the costly step of abandoning this plan simply because of temporary difficulties. These difficulties are the outgrowth of the war and are not the outgrowth of the policy of Section 15a.

"Adequate railroad service in this country in the future is dependent upon greatly enlarging the railroad facilities of the country, and this will demand enormous quantities of capital. In view of the fact that the war has necessitated the postponement of many sorely needed railroad additions and betterments, I should think that the annual expenditures for capital purposes ought to be considerably in excess of a billion dollars per year for many years to come. This universally recognized need for raising tremendous amounts of additional capital was the principal reason for adopting the new policy embodied in Section 15a of the Transportation Act. To a greater extent than ever before it is necessary to

stabilize railroad conditions and to give some encouraging basis for the investment of the needed additional funds in railroad facilities.

"I do not claim that the scheme of the Transportation Act by itself will prove a permanent solution of the railroad problems of the country, but I do claim that the affirmative policy embodied in Section 15a represents an important forward step in the evolution of the country's railroad policy."

## Intrastate Rates

Mr. Hines then discussed the principle involved in the proposal to repeal the authority which the commission now possesses to modify intrastate rates when necessary to prevent discrimination against interstate commerce. "The practical application of this principle is indispensable to any orderly control and development of the railroads of the country," he said. "There cannot be two supreme governmental masters with respect to the same subject-matter. If anything is practically clear as the result of our experience during the last quarter of a century it is that the railroad problem of this country is, in a broad sense, a single and indivisible subject-matter. The theory that the whole railroad plant can be so separated as to look at intrastate traffic entirely separate and apart from interstate traffic is wholly opposed to the indisputable physical facts. From a financial standpoint the inseparability of the railroad problem is equally apparent. The vital thing that supports railroad credit and admits of raising funds to provide facilities for both interstate and intrastate business is the net operating income, and it is a single thing. It would be utterly destructive of any orderly regulation to give two different sets of tribunals independent final authority to deal with that net operating income.

"Congress has been forced to legislate to secure adequate railroad service for the country. To prevent interruptions to railroad transportation it has provided an elaborate plan for the regulation of labor questions, has indicated the standards to be taken into consideration in the fixing of wages, and has created a situation where the view of the Labor Board is practically final as to railroad wages. This view is not confined to interstate railroad wages because there is no such thing. It applies to the wages of all the employees who operate railroads and therefore embraces intrastate services indiscriminately with interstate services. How can any federal tribunal deal with any degree of confidence with this subject if a very large part of the net operating income is finally controlled, regardless of federal intervention, by a state authority?

"Likewise, Congress has legislated to compel adequate facilities and has adopted exclusive legislation to control the issue of railroad securities and to determine the reasonable rates of interest that may be paid thereon. How can these things be effectively accomplished if tribunals, entirely independent of federal authority, are free to determine with finality an important part of the net operating income of the railroad companies?"

The fact that federal courts could set aside as confiscatory rates fixed by state commissions, Mr. Hines said, would be no satisfactory protection in this matter. Many of the influences of intrastate rates could not be met at all by such processes and, besides, the railroad business of this country cannot be properly developed through a series of law suits. Experience has shown that there must be an affirmative and constructive policy, and that policy cannot be successfully realized unless there can be one final and supreme authority

to reconcile differences of view between state authorities and federal authorities.

"As I look at it," he continued, "the original provision of Section 3 of the Interstate Commerce Act is broad enough to correct intrastate rates which defeat the policy of Congress by creating a prejudice to interstate traffic, which is certainly a particular description of traffic within the meaning of Section 3. Therefore, I do not think any new principle needed to be involved in order to accomplish the result which has been produced under the Transportation Act. The express language of that act, referring to unjust discrimination against interstate traffic, is more emphatic and therefore more desirable. Certainly it is at least as strong as the expression 'burden upon interstate traffic,' and probably stronger.

"There is a curiously inverted view involved in assuming that an intrastate rate ought to be corrected by federal authority if it appears that it hurts the business of a particular interstate shipper, but that all intrastate rates ought not to be corrected if it appears that as a whole they defeat a salutary policy of Congress. Such a contention amounts to saying that Congress intended by the Interstate Commerce Act to prevent a series of little wrongs but deliberately restricted what it did so as to avoid the possibility of correcting a vastly greater wrong if it should be committed.

"As I view it, the present situation really arises not out of any new principle which has been incorporated in the act, but out of an extraordinarily difficult emergency which has resulted from the war. When it became necessary after the war to increase rates, it at once became clear that the maintenance of intrastate rates on the old level, in conjunction with such heavy increases in interstate rates, would bring about the most widespread undue prejudice against interstate traffic and undue preference in favor of intrastate traffic. It was this unprecedented state of facts that has produced the conditions which have caused the existing complaints.

"I have examined the various decisions of the commission in these intrastate cases and I believe these decisions constitute a complete defense to the attacks which have been made upon them, and I urge the committee to examine the decisions themselves. They do not show any purpose to usurp the functions of the state commissions, but they do show the purpose to avoid what would have been an obvious undue prejudice against interstate commerce if the intrastate rates had not been corrected.

"I understand the view has been urged upon the committee that the action of the Interstate Commerce Commission has resulted in 'freezing' the intrastate rates so as to render the state commissions incapable of dealing with them. I take it that exactly the same result existed in cases like the Shreveport case prior to the war. In other words, where the state adjustment violated the Interstate Commerce Act and the Interstate Commerce Commission had to prescribe a remedy, this necessarily hampered the state commissions in thereafter dealing with these adjustments. This is a natural consequence arising from the necessity of correcting the state adjustment, but this is no reason for not making the correction. If it were, it would mean that a remedy could not be afforded, no matter how obvious the evil, and indeed the more extensive the wrong the more impossible it would be to give a remedy.

"But as a practical matter I do not believe these embarrassments will arise in the future. The Interstate Commerce Commission has been called upon in a great crisis to exercise a very grave responsibility in order to carry out a highly important Congressional policy. I think the Interstate Commerce Commission in the decisions which it has rendered has shown the most earnest desire to preserve unimpaired, as far as possible, the activities of the state commissions, and I believe that if once this question can be set at rest by Congress adhering to the established policy of the Interstate Commerce Act, the Interstate Commerce Commis-

sion and the states commissions should find no difficulty in getting together upon plans which will give every possible element of freedom to state action, but always consistent with the fundamental proposition that in dealing with an indivisible subject-matter there must be one paramount authority in the last analysis and that this paramount authority must be the federal authority.

#### Co-operation Between I. C. C. and State Commissions

"I make these remarks with the liveliest appreciation of the necessity for local assistance in dealing with these great problems. No one appreciates better than I do, or has said more positively than I have said, that these local questions ought to be handled locally just as far as possible and that it is highly undesirable to have them centralized at Washington, except so far as is unavoidable in making effective the paramount federal authority. It seems to me the logical events, as well as what I believe to be the entirely sympathetic attitude of the Interstate Commerce Commission with the necessity for local assistance, will bring about a most beneficial co-operation between that commission and the state commissions, provided only the question of principle shall be settled emphatically in favor of the ultimate paramount authority of the federal government.

"I might add that I not only think local attention to local intrastate rates is desirable, but also to local interstate rates. I trust that there may be an evolution of the regulation under the Interstate Commerce Act so as to bring about this enlarged local attention to all local rates, both interstate and intrastate. Perhaps this can be accomplished by associating members of state commissions in adjoining states with local representatives of the Interstate Commerce Commission so as to pass, in the first instance, on purely local rates in that portion of the country, whether interstate or intrastate. Certainly the local intrastate rates are no more in need of local attention than the local interstate rates. But whatever is done to secure adequate local attention to rates, it seems to me indispensable that this should be done without impairing the exclusive paramount authority of the federal tribunal. It seems to me any revision in this direction must be in the nature of an evolution from the existing status and cannot successfully be in the direction of destroying the existing status."

Replying to questions by Senator Pittman, Mr. Hines said that where the Interstate Commerce Commission has made no order the state is entirely free to make adjustments in its intrastate rates without in any way undermining the general rate level or prejudicing interstate commerce, but where it has been necessary for the Interstate Commerce Commission to make an order the state commission's hands are naturally somewhat tied. But that is only a temporary matter.

"But," said Senator Pittman, "the state commission cannot lower the general rate level fixed by the Interstate Commerce Commission."

"Not if this discriminates against interstate commerce," replied Mr. Hines, "and the Interstate Commerce Commission must be the final authority. There may be adequate reasons for a difference, but if there is a difference of opinion there must be final authority to decide."

Mr. Pittman said that the proposition then comes down to the point that the state commission has no right to lower the general rate level in its state below the level fixed by the Interstate Commerce Commission.

Mr. Hines said this was true, but that it has nevertheless the power to make a great many readjustments and if there are rates above the general level it has the right to reduce them.

Mr. Pittman said the Interstate Commerce Commission would do that, but Mr. Hines said it would hardly undertake to do so unless the rates were such as to constitute an undue prejudice against interstate commerce. There will be

found in every state, he said, many variations in rates that make it important that there should be corrections and the state body has an important field there without in any way prejudicing interstate commerce. The Interstate Commerce Commission, he said, would not have authority to raise state rates directly in the first instance in order to produce a given income.

Enactment of pending legislation repealing the so-called rate-making section and amending the Transportation Act so as to specifically provide that the Interstate Commerce Commission shall have no control over intrastate rates would undoubtedly force the government to take over the railroads of the country through the resulting inability of the carriers to establish credit by which they could provide for the transportation needs of the nation. Daniel Willard, president of the Baltimore and Ohio, told the committee on December 12.

The passage of the Transportation Act, Mr. Willard said, made possible the future successful operation of the railroads under private ownership. If the two amendments are adopted, however, it would result in the inability of the roads to establish adequate credit, thus preventing them from being able to keep in condition to handle the traffic of the United States.

He said that the provision in the act relative to the right of the Interstate Commerce Commission to regulate intrastate rates that discriminate against interstate commerce is as important as 15a, the rate-making section.

"Section 15a made private ownership possible," he continued, "but it can't make it possible if the right of the Interstate Commerce Commission to establish rates necessary to bring the return provided for in the law is taken away. I am opposed to anything being done to change the efficacy of the Transportation Act."

Mr. Willard said a return of 5½ per cent on the property investment can not be considered unreasonable as the carriers have been forced to pay 7 per cent on loans made to them while the government has refused to loan money to the railroads at less than 6 per cent and then only on good collateral.

Alfred P. Thom, general counsel of the Association of Railway Executives, told the committee that the act has left to the state commissions initial power over state rates as well as every power "except to discriminate unjustly against

of the United States to have adequate transportation facilities. That is to be done, he said by machinery established under Section 15a, which specifies that rates shall be fixed so as to provide a certain return to the carriers based on the aggregate value of the property used for transportation purposes. Neither the Transportation Act nor the Valuation Act makes any attempt to separate the valuation of the property used in interstate or intrastate commerce, Mr. Thom declared.

Regarding criticisms that have been made as to the grouping of railroads for the purpose of making rates, Mr. Thom said this plan has been followed by the Interstate Commerce Commission for many years. It has become universally recognized, he added, that one rate can not be made for one railroad and another rate for another road.

F. J. Lisman also appeared in opposition to the bills because of the effect on the ability of the roads to finance themselves. Only the best bonds are now salable, he said, and the bills would make it even more difficult to sell securities.

The testimony on behalf of the railroads was concluded with Mr. Thom's statement and the committee expected to conclude the hearings at the end of this week or the first of next by hearing from one of the Interstate Commerce Commissioners.

### Freight Car Loading

WASHINGTON, D. C.

THE LOADING of revenue freight for the week ended December 3, was 747,454 cars, according to the weekly report of the Car Service Division of the American Railway Association, an increase as compared with the previous week, which included the Thanksgiving holiday, of 73,627. For the corresponding weeks of 1920 and 1919 the loading was 882,604 and 789,286 cars, respectively. The report shows a decrease as compared with the week before Thanksgiving of 39,000 cars. There were increases as compared with the previous week in the loading of all classes of commodities except coal and ore.

The summary for the week of November 26 is as follows:

REVENUE FREIGHT LOADED WEEK ENDED SATURDAY, NOVEMBER 26, 1921										Total revenue freight loaded		
District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Misc. I. C. L.	Miscellaneous	This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	8,178	2,766	38,209	1,609	4,156	1,057	55,134	58,068	169,177	185,290	178,300
	1920	5,433	3,391	53,184	2,643	5,070	6,154	41,519	67,946	142,177	142,177	142,177
Allegheny	1921	2,071	9,041	41,077	3,128	6,008	1,966	47,735	45,661	173,179	173,179	157,741
	1920	1,662	3,415	60,916	7,121	2,735	6,513	35,751	35,075	149,810	149,810	149,810
Peachontas	1921	192	100	15,501	147	1,114	129	4,582	3,072	31,622	31,622	36,644
	1920	95	123	21,251	132	1,438	481	33,046	32,084	103,662	103,662	103,662
Southern	1921	2,876	1,663	17,152	456	15,954	481	30,670	35,288	121,190	121,190	102,293
	1920	2,577	1,784	31,565	1,406	15,326	2,574	23,219	22,068	79,288	79,288	79,288
North Western	1921	9,282	6,745	7,933	734	8,594	713	23,219	22,068	107,234	107,234	107,881
	1920	10,580	8,450	9,884	1,671	11,621	13,219	23,189	28,620	98,664	98,664	98,664
Central Western	1921	9,241	9,351	14,536	121	4,788	682	26,990	32,886	120,789	120,789	101,984
	1920	9,117	10,639	26,011	545	4,876	2,881	27,146	39,574	120,789	120,789	101,984
South Western	1921	3,291	2,300	3,023	112	6,251	642	13,923	26,171	64,397	64,397	53,885
	1920	3,844	2,185	6,155	127	7,008	494	14,629	29,925	64,397	64,397	53,885
Total all roads	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,000	19,757	673,817	673,817	673,817
	1920	33,308	29,987	208,966	14,445	48,014	11,964	177,517	259,500	803,701	803,701	803,701
	1921	37,449	35,195	116,985	10,889	52,130	17,536	138,657	330,356	730,197	730,197	730,197
Week ended—												
November 26	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,000	19,757	673,817	673,817	673,817
November 19	1921	37,455	34,538	166,786	6,487	50,309	7,924	228,866	254,315	786,671	880,138	854,601
November 12	1921	34,402	34,269	152,309	6,450	50,661	9,658	215,439	250,858	753,046	927,586	898,204
November 5	1921	40,921	31,126	122,875	6,739	51,188	10,979	234,777	281,124	829,722	915,675	886,724
October 29	1921	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,935	952,671	881,242	855,176

interstate commerce." "They didn't have that power before, did they?" inquired Senator Kellogg. "No," was the reply.

Mr. Thom said that Congress in the Transportation Act declared its policy to be "to foster and preserve in full vigor both rail and water transportation" while the act provides that revenues must be provided to enable the people

Lessening demand for freight cars is also resulting in an increase in the number of cars idle because of business conditions. For the period ending November 30, the surplus cars averaged 282,962. Surplus box cars in good repair totaled 113,874, or an increase of 24,050 within a week, while surplus coal cars numbered 132,693, which

was an increase of 43,648 cars. Surplus stock cars increased within that time 922 cars while coke cars increased 69.

The following is taken from the Information Bulletin published by the Car Service Division.

A recent government report of commercial stocks of coal on hand November 1, 1921, says "The steel industry in particular illustrates how greatly the size of the stocks necessary for safety is affected by the rate of consumption. Measured in terms of days' supply at the present diminished rate, the stocks of both coking coal and steam and gas coal appear greater than ever before. Measured in tons actually on hand, however, the present stocks at steel plants are barely half of those in January, 1919. To re-accumulate the reserve on hand at that time would require putting in storage another million and a third tons of coking coal, and nearly two million tons of gas and steam coal."

It is of interest in connection with this report of stocks, to observe the trend of blast furnace operation during the years 1920 and 1921, and the contemporaneous production of bituminous coal. A fairly close relation between the two will be noted and it is of especial interest that blast furnace operation fell off from the peak two months before any marked decline occurred in the production of bituminous coal.

As compared with the second week previous, that ending November 19, all commodities declined except grain and grain products, with respect to which the last week reported showed an increase of over 25 per cent. The especially heavy decline was in the loading of coal, ore and miscellaneous. It is of interest to note that the report of the U. S. Geological Survey showing bituminous production for the

week ending December 3, states that the production of the mines "touched the lowest level reached at any time since last April;" April being almost uniformly and by long odds the month of lowest coal production year by year.

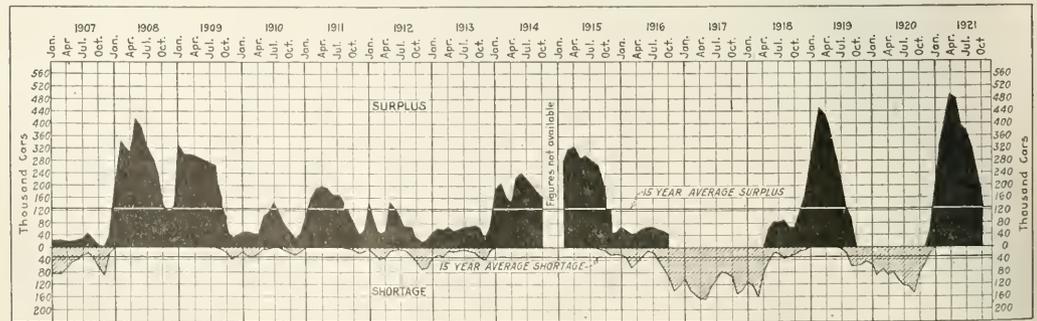
The number of cars reported in bad order as of December 1, all classes, totalled 320,292. Of these box cars numbered 153,666 and gondolas 135,050, a decrease respectively over the figure for November 15 of 5,988 and 5,616 cars. The total reduction of 13,324 cars in bad order December 1 as compared with November 15 represents a percentage reduction of four tenths or from 14.4 per cent November 15 to 14.0 per cent December 1.

The Car Service Division has compiled a series of charts showing the trend of loading of the classified commodities in 1920 and 1921 which displays with the exception of the switchmen's strike period in April 1920, a remarkable degree of uniformity in respect to the extent to which the total loading of all commodities in 1921 is below the figure for the same period of 1920. That uniformity of trend as to the total revenue freight loading does not obtain with respect to each classification. Concerning these, the outstanding features are the heavier grain loading in the present year, particularly since the harvesting of the new crop began in July, and the regularly heavier loading of L. C. L. merchandise. The former is generally attributed to the rapid marketing of this year's crop by the farmers, and the latter to the tendency in 1921, to do business in smaller units than in the previous year. The other outstanding feature of these charts is the decline in 1921 of the loading of coal, coke and ore, none of which have at any time sustained any approach to the totals reached in the previous year.

The summary for the week of December 3 follows:

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 3, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L. C. L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	9,415	3,748	40,998	1,545	4,256	759	63,021	65,210	189,552		
	1920	6,285	3,592	63,704	2,975	6,412	6,550	48,593	81,138		219,249	157,018
Allegheny	1921	2,759	3,370	41,241	3,098	2,573	3,375	46,732	51,924	154,072		
	1920	1,940	3,266	68,160	7,694	2,964	8,220	38,732	60,698		191,674	164,506
Pocahontas	1921	232	106	12,475	158	1,212	1	5,762	3,267	23,213		
	1920	94	142	20,650	947	1,564	124	5,233	2,850		31,654	37,393
Southern	1921	3,237	2,078	16,063	468	16,740	460	37,658	35,078	111,782		
	1920	2,874	2,197	33,419	1,255	16,690	2,278	34,609	34,804		128,106	120,960
Northwestern	1921	13,686	9,345	8,369	807	10,915	279	27,444	26,213	97,058		
	1920	11,519	8,909	10,940	1,506	12,387	6,008	26,320	32,474		110,063	109,452
Central Western	1921	13,314	10,696	15,238	168	4,955	794	30,772	35,103	111,030		
	1920	9,310	11,052	28,484	496	5,030	2,471	30,542	44,051		131,436	108,145
Southwestern	1921	4,584	2,612	2,919	101	7,152	649	16,517	26,213	60,747		
	1920	4,086	2,105	7,871	131	7,536	473	16,792	31,429		70,422	55,756
Total, all roads	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286
	1920	36,108	31,263	233,228	15,004	52,583	26,103	300,871	287,444		882,604	
	1919	39,734	39,574	121,768	10,915	59,477	15,774	154,210	347,834			780,286
Week ended—												
December 3	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286
November 26	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,000	219,577	673,827	803,701	739,197
November 19	1921	37,455	34,538	166,786	6,487	50,300	7,924	228,866	254,315	786,671	889,138	854,601
November 12	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	250,588	753,046	927,586	808,304
November 5	1921	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	915,615	826,724



Car Surpluses and Shortages, 1907 to 1921



150-Ton Shay Geared Locomotive for the Greenbriar, Cheat & Elk.

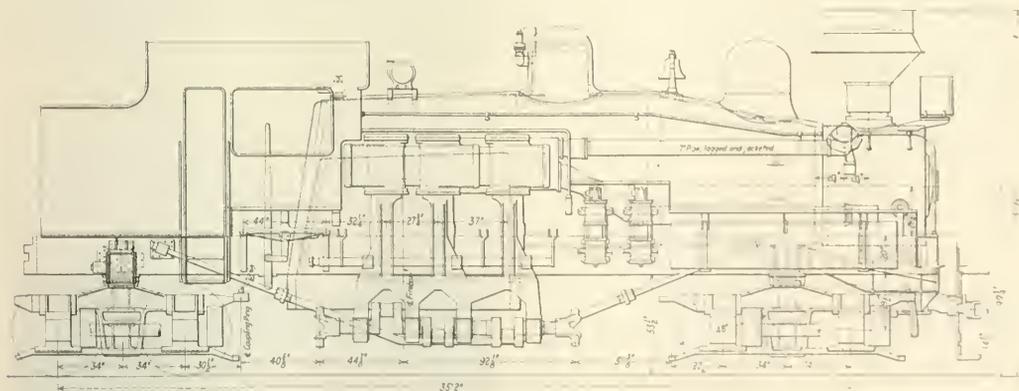
## Shay Geared Locomotives for Mountain Roads

150-Ton Shay for Greenbriar, Cheat & Elk—High Sustained Tractive Effort Compared with Mikados

SHAY-GEARED LOCOMOTIVES are frequently used on private railroads in rough country, for which service they are particularly suited. The entire weight of the engine and tender being utilized for adhesion, the locomotives are adapted for climbing steep grades at relatively low speeds, while the arrangement of trucks and flexible couplings in the driving shaft provides a short rigid wheelbase, which enables

and curve makes it necessary to have a locomotive of high tractive effort, and at the same time with a very flexible wheelbase.

The freight hauled consists principally of logs, lumber, pulpwood and coal. These products are brought out over this line to the main line railroads for distribution to various points. The cars used are the standard flat or gondola types



Side Elevation of 150-Ton Shay Geared Locomotive

the locomotive to round sharp curves. Furthermore, the distribution of weights makes it possible to operate the locomotive satisfactorily on lighter rails and poorer track than would be possible with locomotives of the usual type.

The Greenbriar, Cheat & Elk Railroad operates between Cass and Elk, W. Va. The country through which the railroad runs is very mountainous and the use of many switchbacks is required to get over the mountains. There is practically no level or tangent track in the 115 miles operated either in the 85 miles of line or in the spurs. The grades are heavy and in many places are as much as seven per cent combined with 32 deg. curves. This combination of grade

now in general use on main line roads. The road is laid with 85 lb. and 100 lb. rails, which allow the use of heavy axle loads in providing the necessary motive power.

To meet the requirements of the freight traffic the Lima Locomotive Works, Inc., in conjunction with the officers of the railroad company, designed and built a 150-ton locomotive of the Shay-g geared three-truck type with a gear ratio of 1 to 2.45. This locomotive has been in service for several months hauling freight satisfactorily.

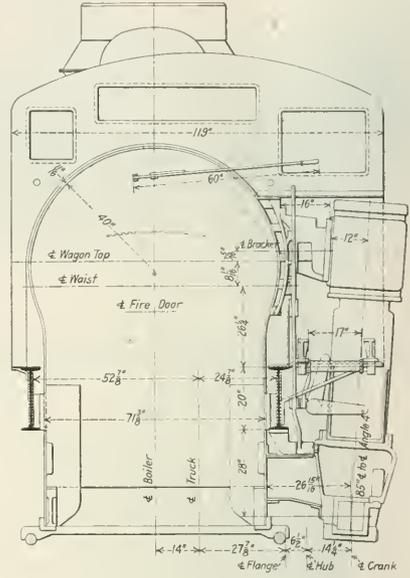
A comparison between the 150-ton Shay used on the Greenbriar, Cheat & Elk and the U. S. R. A. heavy Mikado is exceedingly interesting. Table 1 shows the general

weights and dimensions of the two locomotives, both of which have practically the same rated tractive effort. The total weight of the Shay locomotive, including tender, is 308,000 lb., all of which is used for adhesion. The locomotive alone of the U. S. R. A. heavy Mikado weighs 325,000 lb., of which 240,000 lb. is used for adhesion and 85,000 lb. is dead weight. The tender weighs 172,000 lb. in addition,

tender used for adhesion, and high sustained tractive effort at low speeds on heavy grades make them a desirable type of locomotive under certain conditions. There are many places in main line service where pushers are required and also in

TABLE 1—COMPARATIVE WEIGHTS AND DIMENSIONS OF 150-TON SHAY AND U. S. R. A. HEAVY MIKADO

	U.S.R.A. Heavy Mikado	150-Ton Shay
Tractive effort (85 per cent)...	60,000 lb.	59,740 lb.
Cylinders, number.....	2	3
Cylinders, diameter and stroke..	27 in. by 32 in.	17 in. by 18 in.
Weights in working order:		
On drivers.....	240,000 lb.	308,000 lb.
On front truck.....	28,000 lb.	.....
On trailing truck.....	57,000 lb.	.....
Tender.....	172,000 lb.	.....
Total dead weight.....	287,000 lb.	.....
Total engine and tender.....	497,000 lb.	308,000 lb.
Maximum weight per axle.....	61,000 lb.	51,350 lb.
Wheel base, driving.....	16 ft. 9 in.	49 ft. 0 in.
Rigid.....	16 ft. 9 in.	5 ft. 8 in.
Total engine.....	36 ft. 1 in.	35 ft. 2 in.
Total engine and tender.....	71 ft. 9½ in.	49 ft. 0 in.
Driving wheels, diameter.....	63 in.	48 in.
Boiler, style.....	Con. Wagon Top	Ext. Wagon Top
Diameter, outside first ring.....	86 in.	62¾ in.
Steam pressure.....	190 lb.	200 lb.
Firebox, length and width.....	120½ in. by 84¾ in.	114 in. by 61¼ in.
Grate area.....	240.8 sq. ft.	48.5 sq. ft.
Tubes, number and diameter.....	247, 2½ in.	166, 2 in.
Flues, number and diameter.....	45, 5½ in.	26, 5½ in.
Tubes and flues, length.....	19 ft.	13 ft. 6 in.
Heating surface, firebox, including arch, tubes.....	319 sq. ft.	226 sq. ft.
Heating surface, tubes and flues.....	3,978 sq. ft.	1,656 sq. ft.
Heating surface, total evaporative.....	4,297 sq. ft.	1,882 sq. ft.
Superheating surface.....	993 sq. ft.	411 sq. ft.
Tender:		
Water capacity.....	10,000 gal.	6,000 gal.
Coal capacity.....	16 tons	9 tons
Ratios:		
Weight on drivers ÷ tractive effort.....	4.0	5.16
Total weight, engine and tender ÷ tractive effort.....	8.28	5.16



End Elevation of Shay Locomotive

which brings the total weight of the locomotive and tender up to 497,000 lb. This, possibly, is hardly a fair comparative weight as the capacity of the tender on the Shay locomotive is only about 60 per cent as much as that of the Mikado, but in this connection it must be borne in mind that the boiler capacity is much less and the necessary tender capacity may be correspondingly reduced.

branch line traffic where a Shay geared locomotive could be used with advantage instead of the heavy direct-connected locomotives commonly employed.

Further interesting differences in characteristics will be

TABLE 2—COMPARATIVE DRAWBAR PULL UNDER VARIOUS SERVICE CONDITIONS OF 150-TON SHAY AND U. S. R. A. HEAVY MIKADO

	U.S.R.A. Heavy Mikado	150-Ton Shay	Per cent
Tractive effort (85 per cent)...	60,000 lb.	59,740 lb.	98
Drawbar pull:			
On level.....	56,000 lb.	58,500 lb.	104½
On 1 per cent grade.....	51,000 lb.	55,400 lb.	108½
On 2 per cent grade.....	46,000 lb.	52,350 lb.	113½
On 4 per cent grade.....	36,100 lb.	46,200 lb.	128
On 6 per cent grade.....	26,150 lb.	40,000 lb.	153
On 8 per cent grade.....	16,350 lb.	33,850 lb.	206
Sharpest curve for engine.....	300 ft. rad.	179 ft. rad.	60
Lightest rail advised.....	90 lb.	80 lb.	89

noted by comparing the drawbar pull on various grades as shown in Table 2. While both locomotives have practically the same train starting capacity on a level track, the Shay locomotive is capable of exerting 28 per cent greater pull on a 4 per cent grade and more than double the pull on an 8 per cent grade. Furthermore, on a 4 per cent grade the drawbar pull of the Shay locomotive is still 77 per cent of the rated tractive effort, while the pull of the Mikado has fallen to 60 per cent, and the difference is still more marked as the grade increases.

The advantages of the characteristics of the Shay locomotive, low total weight, all the weight of the locomotive and



Photo by Keystone.

A Chicago & North Western Ore Dock at Escanaba, Mich.

# Commission Begins General Rate Investigation

## Endeavor to Determine Whether and to What Extent Further Rate Reductions Are Justified

WASHINGTON, D. C.

**A**FTER A DECADE of intermittent proceedings in which the railroads have sought general advances in freight rates, the Interstate Commerce Commission began a hearing at Washington on December 14 in a general investigation, the purpose of which is, if possible, to bring about reductions in rates. According to the commission's order, the investigation is to determine whether and to what extent, if any, further general reductions in rates can lawfully be required by order of the commission in accordance with the provisions of the interstate commerce act upon any commodities or descriptions of traffic, and by an amendment to the order the proceeding is also to determine what will constitute the percentage of fair return after March 1. The railroads indicated, however, that they expected to show that further extensive reductions will not be justified until there has been a further reduction in wages.

Preceding the general hearing and connected with it in a way, although the two were officially separated by the commission just before the hearing began, arguments were heard by the commission on the petition filed by the railroads asking for a reopening of the case in which the commission ordered general reductions in the rates on grain, grain products and hay in the western districts. This argument was held in the morning before the full commission and the general investigation was begun in the afternoon before Commissioners Aitchison, Esch, Hall and Lewis. After an opening statement by Howard Elliott, chairman of the Northern Pacific, the hearing was adjourned until the following morning, when George M. Shriver, vice-president of the Baltimore & Ohio, was to present the statistical testimony for the eastern roads and to some extent for the railroads of the country. The plan was to have testimony presented by an accounting and traffic witness for each of the three territories, east, south and west. The hearing room of the commission was crowded as it never had been before except possibly at the opening of the general rate advance case of 1920. Hundreds of representatives of the railroads and of the shippers were present, but the first week of the hearings was to be devoted to testimony on behalf of the railroads. Adjournment was then to be taken until January 9, after which there will be opportunity for testimony by shippers and cross-examination by them of the railroad witnesses.

### Opening Statement by Howard Elliott

Mr. Elliott said in part:

"The owners and managers of the carriers welcome this opportunity afforded by the commerce commission to lay the entire situation before the commission and, through them, before the country.

"The carriers are here to help in every way they can. We are most anxious to

"1. Give to you and to the country all the facts we can.

"2. Impress upon you and the country that while we are anxious to co-operate in every reasonable way, through readjustments of rates, with agriculture, industry and labor so as to bring about better economic conditions, we believe that the carriers must be allowed to live and grow in the interest of the country as a whole.

"3. Point out to you that there was practically no inflation in the transportation business during the war and, therefore, there is now a very small opportunity for deflation.

"4. Point out there is danger of giving too much weight to the freight rate itself and its effect on business. Reductions

below the limit of adequacy may do the country more harm than good.

"5. Suggest that the principles adopted, after long discussion and debate, in the Transportation Act are pretty safe guides to be followed at this time.

"6. Assure you that we are each day doing all we can with our powers (limited in our dealings with the men by the Transportation Act) to manage the property entrusted to our care, honestly, efficiently and economically.

"7. Bring about as rapidly as we can with proper regard to maintaining the properties entrusted to our care, reductions in rates that will be helpful to agriculture, manufacturing, and commerce generally.

"8. Urge upon you that the greatest speed consistent with the complete examination of the facts and conditions be made in conducting these hearings, so that a prompt decision may be reached. The present uncertainties and the constant talk about reduced rates are having a very substantial interest in deterring business more so than the rate itself.

"The payments made by the country through rates for transportation service are large; so is the country and the amount of transportation service furnished. The production of the service is costly and today there is no adequate return to the plant that furnishes the service. Rates for many years prior to the war were not on a high enough basis to protect the national industry of transportation and there was danger to all in its not being adequate for the needs of the country. Present rates are higher than they were before the war, but they were far too low then for safety, and we are comparing today with an indefensible basis.

"A sweeping reduction in all rates would not, in my judgment, at this time increase business and many other things must be settled before we obtain what we all want—a complete revival of industry in this country.

"Railroad officers realize that under the extraordinary economic conditions now confronting the world, the principles laid down by the Transportation Act cannot be carried out to an exact arithmetical conclusion. This spirit has been shown already by the voluntary reductions already made by the railroads generally."

Pointing out that the country is now going through a period of deflation, Mr. Elliott said:

"All must bear the burden if the country is to go ahead again on a sound economic basis. The farmer has felt the full force of this. It naturally hurts him and it hurts the situation.

"Manufacturing enterprises are also deflating and the same may be said about the jobbing and distributing business. What is called 'Labor' has already been hurt by unemployment and by some reduction in wages, which, however, has not affected the great transportation interests to the extent that it should. A sound policy with the great labor leaders would seem to be to admit that deflation must come and allow lower wage scales on the railroads, in the mines and in the building trades, all of which would mean greater employment of men and a lower unit price on many articles that are used by all, thus reducing the cost of living and helping to break all the present endless chain of expense."

### Carriers Ask Six Months' Suspension of Grain Order

Alfred P. Thom, counsel for the Association of Railway Executives, opened the argument in the grain case on behalf of the railroads, asking the commission to postpone its order

in the grain case, which becomes effective on December 27, for six months or for the period during which the railroads have proposed an experimental general 10 per cent reduction on agricultural products except in New England, for the purpose of extending more widespread relief to the agricultural industry. Mr. Thom also announced that the railroads had decided to add to the list of commodities to be covered by this reduction so that it would amount to a reduction in revenues estimated at approximately \$94,000,000, including any reductions that have been made in these rates since the general advance of last year. The reduction ordered by the commission on hay and grain rates, which is confined to the western districts, he estimated at \$32,000,000 to \$33,000,000 a year.

Mr. Thom also declared that the proposal for the general reduction was in no way contingent upon the postponement of the commission's order, and that the carriers proposed to put it into effect on December 31. This, he said, represents an earnest effort on the part of the railroads to help toward the restoration of general business in the country and to relieve the particularly acute condition in the agricultural industry which they consider far beyond their power to offer as far as justified by present conditions, but have based on their hopes for the future. If the commission will suspend the grain order for six months, he said, it would be in a position to put it into effect at the end of that period if it sees fit. Meanwhile, while its investigation is going on it can see what the situation is and make a full review of the railroad and rate situation in order to determine what should be done for the future. Mr. Thom also pointed out that the reduction proposed by the railroads is their attempt to comply with the wishes expressed to the railroads by the highest authorities of the Government at the conferences which the executive committee of the Association of Railway Executives held in Washington about the first of October.

Representatives of the state railroad commissions interested in the grain case and the American Farm Bureau Federation vigorously opposed the request for a suspension and insisted that the order be allowed to go into effect in addition to the more general 10 per cent cut. Mr. Thom said the railroads were urged by the highest authority to disregard their ordinary business judgment, take a hopeful view of the situation and take a risk that a rate reduction would improve business so that it would not reduce their revenues. He pointed out, however, that traffic increased for four months under the new rates and that the movement of grain in 1921 had been larger than ever before. The railroads felt that a reduction of rates could not be depended upon to create an increase in traffic under present market conditions; it would be only an experiment and if it failed it would be at the expense of the efficiency and adequacy of the transportation facilities of the country. The carriers, however, undertook to see what they could do but the recommendation of the executive committee made to the general meeting of the roads in Chicago on October 14 that agricultural rates be reduced 10 per cent was not adopted because many roads felt it would be disastrous to them. That was before the commission issued its order. After the order the subject was taken up again and the new proposal was made. It was decided, Mr. Thom said, that the agricultural industry was entitled to special treatment.

When Commissioner Potter asked if the roads considered the suspension of the grain order necessary to enable them to make the 10 per cent reduction Mr. Thom replied in the affirmative but said the general cut had not been made contingent; the railroads had taken an irretrievable step in offering it. Commissioner Aitchison remarked that the commission had received thousands of inquiries on that point which it had not been able to answer.

The commission, Mr. Thom said, is going to have applications for reductions from all sorts of industries and should

not be hampered by its grain decision until it has had an opportunity to consider the entire subject.

Mr. Thom told the commission that the labor situation was one of the principal "obstacles to a fair adjustment of railroad costs."

"We have hoped with the support of public opinion and the shippers to obtain a readjustment of labor costs," he added. "We have hoped that the shippers would come to see that that is the chief obstacle and that the present level of rates is due more to that than anything else. We have hoped that they would come to see that it is to their benefit as well as the railroads to see that a readjustment in wages is made.

"We have given notice that we will apply to the Labor Board for a reduction of that cost, but we find that a member of the Board had presented to the unions a program that would put off for many months such a readjustment and would delay consideration of this matter by the Board. Because of that, the unions postponed their strike. The necessity is for an early and fair consideration of the labor bill of the railroads and if it is too high, it ought to be cut down, but the railroads cannot control that matter or when it is to be considered by the board."

Reviewing the financial situation of the carriers, Mr. Thom said that since the Government took over the roads on January 1, 1918, there had been an increase in the wage bill of approximately \$2,250,000,000. In 1920, he said, the net operating income of the carriers was only \$21,000,000 out of more than six billion dollars gross revenues, and during the first ten months of this year the net operating income was approximately \$494,500,000, or at the annual rate of return on their valuation of 3.2 per cent while their interest charges for the year are approximately \$475,000,000. For the twelve-month period which ended on September 30, 1921, their return on the basis of their tentative valuation fixed by the commission was at the rate of 2¾ per cent. In October this year it was 5.4 per cent, but for November, owing to a reduction in traffic, estimates place it at 4 per cent.

Commissioner Potter asked as to what was being done relative to bringing the wage situation before the Labor Board. Mr. Thom replied that this was being done as rapidly as compliance with the Transportation Act would permit.

"I understand that the railroads gave the unions assurance that there would be no reductions until the wage matter was taken up with the Labor Board," said Mr. Potter.

"Yes, we did that for the peace of the country," replied Mr. Thom.

## State Commissions and Shippers

### Want Both Reductions

John E. Benton, solicitor for the National Association of Railway and Utilities Commissioners, appeared on behalf of 16 commissions. His argument was that the railroads were disregarding the rule of law that all transportation charges shall be just and reasonable and that, the commission having declared by formal order that the present rates are unjust and unreasonable, the commission cannot unmake its order and the rates thus come within the condemnation of the law. He said the railroads' petition for rehearing alleges no error of law or of fact and it is not sufficient to deprive the shippers of the rights that have accrued to them under the decision. He characterized the carriers' proposition as a trading proposition after the time for trading has gone by, saying that it might have been possible to reach a compromise before the decision was issued. Commissioner Potter asked Mr. Benton whether, assuming the commission accepted his argument, but did not feel that the railroads could afford to stand both reductions, the commission could order the carriers not to make the 10 per cent reduction. Mr. Benton replied that if other shippers are entitled to reductions they are entitled to

them in their own right and not at the expense of the rates already adjudicated.

Clifford Thorne, representing the American Farm Bureau Federation, asked that the grain case be not reopened on the ground that grain today is bearing more than its fair share of the transportation cost, because grain is one of the two basic food products, because the prices of agricultural products have been forced down to the pre-war level and the present condition of the industry cannot continue. He said that to make the reductions ordered by the commission, in addition to those proposed by the carriers, would involve a reduction of only \$14,000,000 to \$16,000,000 more than that proposed by the roads, but he said he did not see how the additional list of commodities proposed by the roads can possibly add \$40,000,000 to their previous estimate of \$55,000,000. On the other hand, he pointed out that the railroads had already made large reductions in export grain rates in the East, and that they claim to have made reductions during the past year amounting to \$175,000,000 to \$200,000,000 for the benefit of other shippers. Mr. Thorne said that with only two exceptions the Class I railroads in the West have paid this year dividends at the regular rate which they paid in the test period and three had paid dividends last year that had failed to pay in one or more years of the test period. He said the railroads in the western district in September had earned 4.76 per cent on their property investment and in October 5.4 per cent, while most of the farmers are making no return on their investment, and agriculture is in a prostrate condition. Commissioner Potter also asked Mr. Thorne whether, if the commission, which has a general responsibility for railroad revenues, felt that the carriers could not afford both reductions, it would be its duty to suspend the 10 per cent reduction. Mr. Thorne said that the idea that the carriers could not stand both was preposterous in view of the fact that they have received a wage reduction of \$400,000,000.

Clyde M. Reed, chairman of the Kansas Public Utilities Commission, objected to any further delay in the enforcement of the grain reduction. He said when the reduction was asked early in July it was agreed that time was of the essence and that the commission expedited the hearing. After the hearing, however, he said, the expedition stopped, although he thought that was not the fault of the commission. He ridiculed the claim of the railroads that they cannot afford a \$38,000,000 reduction while offering a \$90,000,000 reduction, on the ground that the western carriers are the most prosperous. He rather belittled the 10 per cent reduction, however, on the ground that grain rates in the East have already been reduced more than 10 per cent. Mr. Reed also derided the assertions of the railroads that the more favorable showing they have recently made is largely due to deferred maintenance. He said the proportion of maintenance expenditures to total operating expenditures during the past year has been only a fraction of a per cent under the average for a series of years and only shows a reduction as compared with 1920, when, he said, the maintenance expenditures were extravagant for the purpose of influencing the general rate advance case. He referred to this as "persistent misrepresentation on the part of the carriers of the plain facts involving hundreds of millions of dollars" and said that they had already delayed the grain reduction for six months because when they were asked last June to make the reduction they were unwilling even to discount the wage reduction which had just been ordered to become effective on July 1.

Mr. Thom made a brief statement in rebuttal, saying there was a singular confusion of argument when it was asserted both that the railroads are offering too much and that what they are offering is insignificant. "We were appealed to," he said, "by the most responsible parties to try and do something to help the restoration of the country to more normal conditions, and when we have tried to do something instead of receiving any recognition from these gentlemen, they come

as opponents and impediments in the way of our efforts to carry out what we were urged to do. We are trying to do as big a thing as we were asked to do, and in a way which should meet the approval of the public. We should have the help and support of these people instead of their denunciation."

Mr. Thom said that he could challenge the legal soundness of the commission's order and the theory that one industry must give up for the support of another when it is already receiving an inadequate return itself, but he did not choose to make that kind of an argument. Mr. Thorne said he did not want any impression left that the American Farm Bureau Federation does not appreciate the offers of the railroads but that it merely opposes the method proposed.

Chairman McChord announced that it would be impossible for the full commission to sit during the general rate hearing and that Commissioners Aitchison, Esch, Hall and Lewis had been selected to hear the testimony. A full digest of the testimony will, however, be made for the benefit of the other commissioners, who will attend the hearings whenever possible. They will receive copies of the exhibits and the whole commission will, of course, hear final arguments in the case.

## Director General Reports on Railroad Settlements

WASHINGTON, D. C.

A COMPREHENSIVE REPORT on the status of the accounts of the Railroad Administration with reference to the settlement of the claims of the railroads growing out of federal control was transmitted to the Senate on December 10 by Director General James C. Davis in response to a resolution adopted by the Senate on November 22 on motion of Senator La Follette. In this the amount due the carriers from the government as of December 1 on accounts growing out of federal control, including compensation, money taken over, maintenance, materials and supplies, depreciation and all other accounts, exclusive of additions and betterments, was estimated by the Railroad Administration at \$750,670,589, while the railroads owed the government a balance of \$507,628,508 on account of additions and betterments undisposed of as of December 1, leaving a balance of cash required for final settlement, based on the estimate of the Railroad Administration and assuming that the balance due on additions and betterments would be collected by deduction from the indebtedness of the government to the roads, of \$243,042,080.

The available cash assets of the Railroad Administration were \$152,380,880 on December 1, and it also held securities of the roads including equipment trust certificates which the President has express authority to sell and of which \$109,000,000 had been sold up to December. "While general authority to sell other obligations may exist," Mr. Davis said, "no express authority is found granting this power." Up to December 1, final settlement had been made with the carriers of claims aggregating \$436,145,307, representing 107,063 miles of road or 44 per cent of the entire mileage (exclusive of short lines) under federal control. There was paid in final settlement of these claims \$132,221,840. The number of final settlements was 151 but these included 64 subsidiary companies so that final settlement has actually been made of the accounts of 215 federally controlled carriers. The total claims filed up to December 1 in final settlement aggregated \$940,587,257, representing 208,721 miles of road. If the remaining roads, 32,473 miles, file claims on the same basis it is estimated that the total amount of claims will be about \$1,100,000,000. The report did not, however, include the information called for in the resolution as to the itemized details of all final settlements made with

individual carriers. Mr. Davis said that presenting this would hinder him and delay the progress of the work of the Railroad Administration and that he had been instructed by the President to respectfully submit that it is against public interest to furnish it other than in a general way.

The expenditures of the Railroad Administration for additions and betterments for the carriers as shown by its books aggregated \$1,144,681,582. Of this, \$381,649,957 represents the standard equipment, which has been taken care of partly in cash and mainly by equipment trust certificates, and \$42,250,000 had been funded prior to final settlement, leaving a balance to be adjusted in the course of final settlement of \$720,781,625.

In the settlements that have been made \$179,710,117 of additions and betterments were charged to the carriers and \$33,443,000 was funded, leaving a balance of additions and betterments yet to be adjusted of \$507,628,508, either to be funded in such an amount as the administration may refrain from setting off those claims against amounts due the carriers from the government, or deducted from the amounts due from the government to the carriers.

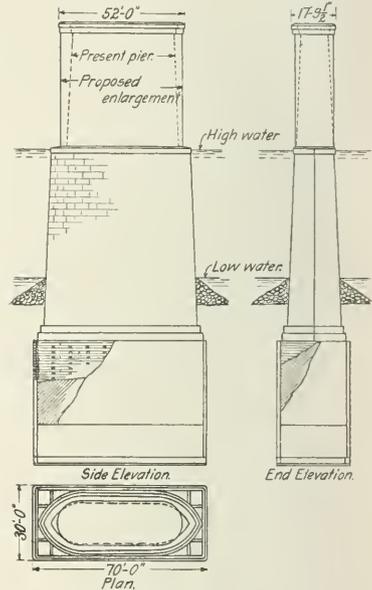
The estimated balance of \$243,042,080 is based on future adjustments being made upon the Railroad Administration's construction of the standard contract and on the assumption that future settlements will be perfected upon the same general lines as those which have heretofore been made, as well as that final judgment decrees and awards in actions, suits or reparation claims will be paid out of the special appropriation made for that purpose in connection with the \$300,000,000 revolving fund provided in Section 210 of the act.

This report by the director general shows that by selling some additional equipment trust certificates the Railroad Administration would have funds with which to make all final settlements according to its estimate, without the use of the authority provided for in the Winslow bill to the War Finance Corporation to purchase and carry for a time its railroad obligations. Additional funds would be needed, however, if it were to fund any large proportion of the \$507,000,000 of additions and betterments yet unadjusted. One possibility is understood to be the sale of the obligations of the railroads now held or to be acquired in case of further funding, direct to the investment bankers without the intervening purchase by the War Finance Corporation, but if this could be done on favorable terms, many of the railroads could also place their own securities to cover the additions and betterments and complete their settlements with the government.

## Illinois Central to Rebuild Ohio River Bridge

THE LATEST PROJECT to involve a railway bridge of first magnitude contemplates the renewal of the superstructure of the Illinois Central crossing over the Ohio river at Cairo, Ill. The railroad obtained approval of this plan from the Secretary of War on November 10 after a formal hearing held at Cairo on September 28. The work involves the replacement of the existing single-track spans with double track and the enlargement or alteration of the piers so as to adapt them to the new superstructure. The total cost is estimated at \$8,500,000.

The present bridge was built between April, 1887, and October, 1889, and was opened for traffic on March 1, 1890. At the time of its completion it was the longest metal bridge in the world with the single exception of the Tay bridge. The length was 20,460 ft., divided into a south approach of 7,850 ft., a north approach of 7,963 ft. and a main crossing 4,646 ft. Subsequent filling shortened the bridge to 7,597 ft., consisting from north to south of a single 50-ft. deck girder span in the north approach, 12 truss spans in the main river crossing and 22 spans in the south approach. The river crossing comprises nine through truss spans of which two are 523.5 ft. spans and seven are 405 ft. spans, as well as three 250 ft. deck truss spans. The south approach consists

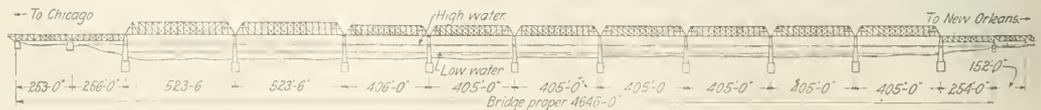


Proposed Method of Enlarging the Piers

of twenty-one 150-ft. deck truss spans and one 106-ft. deck truss span. The truss spans are composed of pin-connected, Whipple trusses.

The substructure of the river span consists of stone masonry piers carried to a depth of 75 ft. below the low water level of the river and supported on sand foundation, it being impossible to carry the piers to bedrock although the pneumatic process was used. The approach spans on the south end of the bridge are carried on steel cylinder piers filled with concrete.

Analyses has demonstrated the feasibility of supporting the new river spans on the existing piers without excess foundation pressure under the double-track loading. Therefore to accommodate the new spans, it is proposed to lengthen the piers at the top from 43 ft. to 52 ft. and widen them from 14 ft. to 17 3/4 ft. by rebuilding or jacketing the old stone masonry from the level of the belt course at the top of the stalling. The piers at that level are of sufficient dimensions



Elevation of the Main Spans of the Present Bridge

in plan so that a reconstruction above that elevation with the faces of the piers vertical or nearly so will afford the necessary increase in length and breadth at the top. Provision for new superstructures for the south approach will probably entail the construction of a new substructure.

Plans for the renewal of the present bridge had their inception as early as 1902 when increased train loading and increased volume of traffic pointed to the need of a more adequate structure. However, it was not until 1914 that application was finally made to the United States War Department for authority to build a new bridge. This was denied at that time on the grounds that the government would not accept a plan providing for a channel span less than 800 to 1,000 ft. clear opening. As the officers of the road concluded that they would not be justified in making the greater expenditure that this would entail, steps were taken to strengthen the bridge so as to use heavier locomotives and thus relieve congestion by handling the freight traffic over the bridge in longer trains. This consisted in the introduction of some additional counters in the trusses and two additional lines of stringers in the floor system and was completed in 1915.

Since the completion of this work the traffic over the

bridge has greatly increased so that at the present time the need for double track is far more urgent than it was at the time that the previous plan was submitted to the War Department. In the meantime, there has also been a gradual change in the character of the river traffic, the large tows of coal barges being no longer operated on the river. It was believed, therefore, that river conditions no longer demanded the great length of clear span imposed as a requirement by the War Department in 1914. Accordingly, the proposal for replacement of the bridge was again submitted to the War Department and approval subsequently obtained.

The superstructure of the new bridge will probably consist of simple spans as at present, although studies have not been carried far enough to determine whether the advantage to accrue from the elimination of a portion of the falsework would warrant the complications incident to the adoption of a cantilever or continuous type of superstructure. The loading will probably be the equivalent of Cooper's E-60 or heavier. The plans under consideration also contemplate the reduction of the grade on the Kentucky approach from 0.75 per cent to 0.5 per cent.

The permit for the construction of the new bridge requires that the work is to be started within one year.

## Labor Board Announces Another National Agreement

### Maintenance of Way Employees to Get Punitive Overtime After Ten Hours Instead of Eight

**P**UNITIVE OVERTIME for all employees "performing work properly recognized as work belonging to and coming under the jurisdiction of the maintenance of way department" will start after the tenth hour instead of the eighth hour as has been the case under the provisions of the maintenance of way national agreement, according to one rule of a new code promulgated by the Railroad Labor Board to govern the working conditions of these employees. Furthermore many of the iron-clad provisions of the old national agreement are remanded to negotiation between the individual carriers and their own employees or so revised as to leave the points covered subject to local adjustment. These are the outstanding features of the new code of rules which the Labor Board handed down on December 14, as the result of the long controversy over the continuation of the national agreements. The new rules are to be placed in effect on December 16 wherever the carriers and their employees have been unable to reach agreements. They are not to be applied where agreements have already been reached. If, for instance, a carrier has reached an agreement with its maintenance of way workers as to discipline rules, the new rules on this point are not to supersede the rules agreed upon, but if the same carrier could not reach an agreement as to the rules governing overtime, the new provisions are to be applied as the decision of the Labor Board on that disagreement. It is true on the other hand that eventually these new rules will be incorporated in all agreements between the carriers and their maintenance of way employees. Revisions of the rules already agreed upon to conform to the rules promulgated by the Board will undoubtedly be asked by either the carrier or the employees depending upon which the Board's rulings favor as compared with the existing provisions. The net result will be the establishment of a new "national agreement."

The principle of paying punitive overtime after the tenth hour was recognized by the maintenance of way national agreement as applicable to "laborers in extra or floating gangs

whose work is seasonable or temporary in character, when engaged in work not customarily done by regular section gangs." The Board's ruling extends this principle to all employees in the maintenance of way department as the result of the objections of the carriers to the old rule and of the employers of similar labor in other industries, particularly farmers. At the same time the Board has included in the new "national agreement" a specific recognition of the eight hour day stating that "eight consecutive hours exclusive of the meal period, shall constitute a day's work."

#### Large Part of National Agreement

##### Remanded or Readjusted

The national agreement with the maintenance of way employees was composed of six articles dealing with (1) the scope, (2) seniority, (3) promotions, (4) discipline and grievances, (5) hours of service, overtime and calls and (6) general conditions. Of these articles, two, those dealing with seniority and promotions, are remanded by the Board because of the fact that almost all of the carriers were able to reach agreements with their employees on the new provisions to cover these subjects. Article IV, dealing with discipline and grievances is approved in toto for the same reason. As a matter of fact, there were marked disputes on only six of the rules of the national agreement on the majority of the carriers. On some roads complete agreements between the managements and the men were reached; on many others agreements were reached on the bulk of the points covered by the national agreement. In those cases where but one or two carriers were unable to reach satisfactory agreements with their men on some particular rule the Board merely remanded the disputes to further negotiation between the parties involved.

Comparison of the new rules with the similar rules of the national agreement indicates the modifications which have been made and the character and extent of the relief which may be derived from the application of some of these

rules now and their eventual application on all carriers.

Article I of the national agreement dealing with the scope of the agreement is changed in that instead of excluding employees in the signal, telegraph and telephone maintenance department, workers subject to the national agreement with the shop crafts, certain clerical forces and boarding car and camp employees, the new rules apply to "all other employees performing work properly recognized as work belonging to and coming under the jurisdiction of the maintenance of way department."

Articles II and III, of the national agreement dealing respectively with seniority and promotions have been remanded for further negotiation as noted before. Likewise Article IV, dealing with discipline and grievances has been adopted in toto. Article V of the national agreement dealing with hours of service, overtime and calls has been changed as outlined below:

That portion of the clause providing for the payment of punitive overtime where the reassignment of hours gave an employee more than ten hours' service is eliminated, making the payment of but pro rata rates necessary.

The clause requiring the payment of punitive overtime for working through regular meal periods is changed to provide for the payment of but pro rata rates.

The clause providing for the computation of the hourly rate of monthly paid employees on the basis of the number of days in the calendar year, multiplied by eight and divided by the total hours worked (exclusive of overtime and disregarding time absent on vacations, sick leave, holidays or for any other cause) is changed so that the hourly rate is derived by dividing the monthly salary by 204.

The provisions for paying one half time to employees traveling in boarding cars between 10 p. m. and 6 a. m. are eliminated.

The clause providing that "gangs will not be laid off for short periods when proper reduction of expenses can be accomplished by first laying off the junior men" is qualified by the statement that "this will not operate against men in the same gang dividing time."

The provisions for paying straight time for overtime hours of employees not in the outfit cars but traveling by train are changed to necessitate the payment of but one half time for overtime hours.

The section requiring the payment for a full day of the rate applicable to the class of work an employee may have performed for the "perponderating" part of a day is made more specific by changing "perponderating" to "four hours." A "protection" clause, part of this section, reading "this rule not to permit using regularly assigned employees of a lower rate of pay for less than half of a work day period, to avoid payment of higher rates" is also eliminated.

The iron clad and restrictive clauses dealing with the starting and ending time of shifts, meal periods and provisions prohibiting the reduction of working hours to avoid reductions in forces are changed to permit local adjustment.

In addition to these changes many of the clauses of this Article and of Article VI, have been eliminated or changed to conform to the revisions already noted.

#### S. M. Felton Comments on

##### New "National Agreement"

In commenting on the new rules, S. M. Felton, president of the Chicago Great Western said:

"It is evident from a hurried reading of the new rules to govern the working conditions of railway employees in the maintenance of way department that they are merely revisions to eliminate many of the onerous effects of the old national agreements. The provisions calling for the payment of punitive overtime after ten hours instead of after eight hours and for the local adjustment of several disputed points promise an improvement over existing conditions. It should

be remembered, however, that these new rules unless otherwise agreed upon will be applied on all railroads throughout the country and it was against the effects produced by the universal application of rules regardless of varying local conditions that the carriers' fight was largely directed. The benefit that may or may not ensue from their application is entirely a matter of guess work until they have actually been in effect in a period when extensive work is being done."

This entire code of rules was considered and decided upon by the Board in less than a week. Within 45 days of the withdrawal of the recent strike orders of the train service organizations, the Board has disposed of the controversies over the national agreements with the shop crafts and with the maintenance of way employees, leaving but comparatively little to do before the consideration and disposal of all disputes regarding the rules and working conditions of all classes of employees. From this it may safely be inferred that the decks will soon be cleared for the consideration of the requests of the carriers for further wage reductions.

#### Pennsylvania Obtains Injunction

##### Against Labor Board

Another chapter in the controversy between the Pennsylvania and the Labor Board as to the right of the latter to rule as to how and with whom negotiations between that carrier and its employees should be conducted was opened in Chicago on December 9, when Federal Judge K. M. Landis issued a temporary injunction restraining the Labor Board from publishing a decision which was expected to charge the carrier with violation of the order of the Board. The petition of the carrier to the federal court closely follows the position of the Pennsylvania as outlined before the Board in the several hearings in this case, all of which have been reported in previous issues of the *Railway Age*. The move was not made as an attack upon the Board, but with the approval of several members who are anxious to have the Board's legal status definitely determined by the courts.

The following day when arguments on a plea for a permanent restraining order were to be heard, members of the Labor Board appeared before Judge Landis and asked for sufficient time to consult with the Department of Justice. The arguments in the case were subsequently set for December 21. It was pointed out at that time by members of the Board that if the Pennsylvania is able to prevent the issuing of decrees, statements or announcements of violations, the Board will be bereft of all power, inasmuch as the only means of curbing willful violation of its orders is by the force of public opinion formed as a result of the publication of decrees. Counsel for the carrier contended on the other hand that the case is one involving only interpretation of the Transportation Act.

It was announced later that when arguments are heard on December 21, United States Solicitor General J. M. Beck would represent the Board and at the same time prepare a defense in the action which has been brought against the Board by the state of Texas which also contends in substance that the Board is without jurisdiction in that state.

R. M. Barton, chairman of the Board, in discussing the case said:

"I welcome any judicial proceeding that will define and settle the proper limitations of the Board's power. The Board certainly has no desire to exceed the power conferred upon it by law. The Board also has no desire to exceed or shirk the full performance of any duty imposed upon it.

"There are two conflicting views as to the proper construction and effect of the labor section of the Transportation Act. One is that the Board has only advisory powers, and that its decisions can only be made effective so far as approved and enforced by public opinion. The other is that they are legally binding, and can be enforced. While this is a debatable question, I hold the latter view."

# General News Department

The American Wholesale Lumber Association will hold its second annual convention at the Congress Hotel, Chicago, on March 9 and 10, 1922.

The directors of the Chicago, Burlington & Quincy have authorized a pension plan for the employees of that road. Prior to the announcement of the plan, a study is being made of the pension systems of other roads.

## D. L. & W. Again Asking for Electrification Bids

The Delaware, Lackawanna & Western has asked the General Electric Company and the Westinghouse Electric and Manufacturing Company to prepare estimates for the electrification of about 40 miles of gradients near Scranton, Pa. The work will cost over \$5,000,000 and has been contemplated for some time. Bids were received for the work last summer, but these were all rejected.

## A Correction

In the issue of December 10, the discussion of a paper presented by James Partington at the Railroad Session of the annual meeting of the American Society of Mechanical Engineers was published. The first discussion of this paper beginning with the second paragraph on page 1151, was contributed by John L. Nicholson of the Locomotive Firebox Company. Through an oversight Mr. Nicholson's name was omitted.

## Wage Conferences on Eastern Roads

January 16 has been set as the date on which the managements of the eastern railroads will meet employees to discuss proposed reductions in wages. Notices to this effect were mailed on December 15. These conferences were delayed until January 16 because of a ruling by the Labor Board requiring the carriers to set forth in detail the reductions proposed when calling conferences of this character. The maintenance and shop forces propose to counter the roads' requests for a reduction by demands for an increase in wages.

## Government Ownership of Cape Cod Canal Proposed

Purchase by the federal government of the Cape Cod Canal was recommended to Congress in a report submitted by the Secretaries of War, Navy and Commerce submitted to Congress on December 12 by the budget director. The report said that \$11,500,000 would be a reasonable price for the property, of which \$5,500,000 would be paid in cash, while the government would assume \$6,000,000 in bonds now outstanding. A value of \$16,801,000 for the canal and the franchises of the operating company was set in condemnation proceedings at one time by the federal district court in Massachusetts, but the judgment was later set aside by a higher court.

## I. C. C. and Labor Board Appropriations

An appropriation of \$5,194,970 for the Interstate Commerce Commission for the fiscal year ended June 30, 1923, is recommended in the budget submitted to Congress by President Harding with the report of the director of the bureau of the budget. The director made some reductions in the amounts requested by the commission. The commission asked \$2,400,000 for general expenses and \$2,330,470 is recommended; \$600,000 for enforcement of Section 20 and \$575,000 is recommended; \$380,000 for enforcement of the safety acts and \$350,000 is recommended; \$350,000 for locomotive inspection and \$300,000 is recommended; \$1,630,000 for the valuation work and \$1,500,000 is recommended. The recommendation for salaries of commissioners is \$139,500. For the Railroad Labor Board the budget carries an appropriation of \$400,000 as against \$370,000 in the preceding fiscal year.

## "Take a Chance—You Can Make It"

This is the title given to advertisements which are being published by the Louisville & Nashville in the territory served by its lines in order to bring the hazards at railroad crossings to the attention of the public. In addition cards of warning are being distributed along the line of the road and posters are being displayed prominently in freight and passenger stations, designed to impress the public that: "The average American railroad train goes approximately 88 ft. in one second and cannot be stopped in less than a quarter of a mile; that the driver of an automobile should not be traveling at any such rate of speed, and that crossing signs are so located that it is possible for him to come to a dead stop long before he reaches the danger zone."

## One Hundred Tons of Paper Weights

A press dispatch from Tokio says that the fiftieth anniversary of the inauguration of railway service in Japan was celebrated recently with appropriate ceremonies in a large pavilion in front of the Central Station in that city, about 3,000 persons participating. The first rail of the present system was laid in 1871, the line from Tokio to Yokohama, eighteen miles, having been opened for traffic June 12, 1872.

As a souvenir for those attending there was distributed to each a thin section of rail, bound in brass, for use as a paper weight, cut from the first rails laid. More than 100 tons of such rails were cut into 170,000 slices for this purpose.

The first locomotive used in Japan, with types of other early equipment were on exhibition, together with the imperial coaches of the early days. There are now 8,500 miles of railway in Japan proper and 11,400 miles counting the lines in South Saghalien, Corea, Formosa and South Manchuria.

## Accident on the Oregon-Washington

Six persons killed and 22 injured is the record of a head-on collision of passenger trains on the Oregon-Washington Railroad near Celilo, Ore., 96 miles east of Portland, on December 1. The trains were the Oregon-Washington limited, No. 17, westbound and eastbound train No. 12. Train No. 12, because of washouts east of Portland, had been



Photo from Underwood & Underwood

## Collision on the Oregon-Washington Near Celilo, Oregon

routed over the Spokane, Portland & Seattle to the crossing of the Columbia river at Fallbridge, Wash. It had just crossed the river to Celilo, and started east over its own line, on the Oregon side of the river, when the collision occurred. Three of the killed were passengers and one was a soldier (marine) acting as mail guard.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1921

Table with columns: Name of road, Average mileage operated during period, Operating revenues (Passenger, Freight, Total), Operating expenses (Traffic, Transportation, General, Total), Operating ratio, Net from railway operation, Operating income (or loss), Net after rentals, Not after rentals.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1921.—CONTINUED

Table with columns: Name of road, Average mileage during period, Freight, Passenger, Operating revenues, Maintenance of way and structures, Equipment, Traffic, Trans-shipment, General, Total, Operating ratio, Net from railway, Operating income (loss), Net after rentals, Not after rentals. Rows include Chicago Junction, Chicago, Milwaukee & St. Paul, Chicago, Peoria & St. Louis, Chicago, Rock Island & Pacific, Chicago, Rock Island & Gulf, Chicago, St. Paul, Minn. & Omaha, Cincinnati, Indianapolis & Western, Colorado & Southern, Ft. Worth & Denver City, Wichita Valley, Columbus & Greenville, Delaware & Hudson, Delaware, Lackawanna & Western, Denver & Rio Grande Western, Denver & Salt Lake, Detroit & Mackinac, Detroit & Toledo Shore Line, Joliet & Iron Range, Duluth, Missale & Northern, Duluth, South Shore & Atlantic, Duluth, Winnipeg & Pacific, Elgin, Joliet & Eastern, El Paso & Southwestern, Florida East Coast, Fort Smith & Western, Galveston Wharf, Georgia, Georgia & Florida, Grand Trunk Western, Atlantic & St. Lawrence.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1921—Continued

Table with columns: Name of road, Average mileage during period, Operating revenues (Freight, Passenger, etc.), Operating expenses (Traffic, Trans-portion, etc.), Total, Operating ratio, Net from railway operation, Operating income (or loss), Net after rentals alter, Net after rentals 1920.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage carried during period, Freight, Passenger, Total, Operating revenues, Maintenance of way and structures, Equip. structures, Equip., Traffic, Trans. poration, General, Total, Operating ratio, Net from railway, Operating (or loss), Net after rentals, Net after 1920. Rows include Missouri Pacific, Mobile & Ohio, Monongahela, Alton, Montreal, Nashville, Nevada, Newburg, New Orleans, New York Central, Cincinnati, (Tev., Cin., Chi. & St. Louis), Indiana Harbor, Kewaunee, Lake Erie, Michigan, Pittsburgh & Lake Erie, Toledo & Ohio Central, New York, Chicago & St. Louis, New York Central, N. Y. New Haven & Hartford, Central New York, New York, Ontario & Western, Norfolk & Western, Norfolk Southern, Northern Pacific, Northwestern, Pennsylvania, Illinois, Chesapeake & Atlantic, Cinc., Lebanon & Northern, Grand Rapids & Indiana, Long Island, Maryland, Del. & Virginia, N. V., Phila. & Norfolk.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total revenues (Inc. misc., Way and equipment, Maintenance of way and equipment, Operating expenses), Traffic, Trans- portation, General, Total, Operating ratio, Net from railway operation, Operating income (or loss), Net after rentals after 1920.

Table with columns: Name of road, Average mileage operated during period, Freight, Passenger, Total revenues (Inc. misc., Way and equipment, Maintenance of way and equipment, Operating expenses), Traffic, Trans- portation, General, Total, Operating ratio, Net from railway operation, Operating income (or loss), Net after rentals after 1920.



### A Correction

In the article in the *Railway Age* of December 10 bearing the title, "Baltimore & Ohio Shows Much Improvement in 1921," there was an error in the make-up of the table relating to charges for repairs, etc., to locomotives and cars which appeared on page 1166. The error occurred in the next to the last column headed "Average per car." The column is included in the bracket designated "passenger," but it is believed that those who read the article observed that it should have been included under the bracket designated "freight." In other words, the figures quoted in the next to the last column in the table represent the average cost per car of repairs, retirements and depreciation, of "freight" and not of "passenger" cars.

### Some Senate Views on Rates

Senator Kendrick, of Wyoming, made a speech in the Senate on December 8, in support of an amendment which he had proposed to the railroad funding bill to repeal that provision of Section 15-a of the interstate commerce act providing for rates to enable the railroads to earn  $5\frac{1}{2}$  to 6 per cent. As the law stands today, he said, "the commission has no choice but to levy a toll upon all industry sufficient to pay the railroads a fixed profit, though every other industry in the land may operate at a loss." If his amendment is adopted, he said, the commission in passing upon any proposed modification of the rates will be free to determine whether the charge can be made without imposing an unreasonable burden upon shippers and consumers. The result of the advance made in Ex Parte 74, he said, is "nothing less than ruin to producers in many sections of the West." To indicate that the rate increase was not justified on the ground of necessity so far as the western transcontinental lines are concerned, he submitted a table showing the dividends paid from 1915 to 1920 by the Southern Pacific, Union Pacific, Chicago, Burlington & Quincy, Atchison, Topeka & Santa Fe, Great Northern and Northern Pacific.

As a sample of the kind of reasoning that is often used in the Senate in discussing freight rates, Senator Trammell of Florida, who has been advocating a modification of a law to provide for a lower percentage of return to the railroads, remarked that according to his understanding, the railroads prior to the enactment of this law had earned  $2\frac{3}{4}$  per cent. That being true," he said, "when you raise it to  $5\frac{1}{2}$  per cent, you are practically doubling your transportation charges."

### Telephoning on Railroad Power Wires

On a trolley railroad near Schenectady, N. Y., on Thursday, December 1, the General Electric Company gave a demonstration of its "carrier current" system of communication by telephone over the propulsion wire of an electric railroad, conversation being held between different trains on the same track, and from trains to operators in stations and vice versa. A second current is superimposed on the trolley wire and the message is conveyed to any desired distance, being picked up at any convenient point and made to energize a telephone instrument. The telephone current is generated at higher frequency than the power supply. Experiments in this line have been carried on by the General Electric Company for a number of years, and on the Chicago, Milwaukee & St. Paul electrified line communication has been carried on in this way for a distance of 60 miles.

In telephoning from the train to the station, the message was amplified, in the waiting room of the station, by a loud speaking telephone instrument. On the St. Paul road extensive tests were made; and, with the great length of some of the trains on that road, the facility with which conversation could be carried on between the front and the rear end of the same train was demonstrated with marked satisfaction. The apparatus used for the carrier current is simple, consisting essentially of vacuum tubes used as oscillators, rectifiers and detectors.

Among those who witnessed the Schenectady demonstration was J. D. Jones, superintendent of telegraph and signals of the Eastern Region of the Pennsylvania Railroad, who is chairman of committee No. 12 of the Telegraph and Telephone Section

of the American Railway Association; S. L. VanAkin, Jr., assistant superintendent of telegraph of the New York Central, and other officers of the Pennsylvania and the New York Central.

### Conference on Standard Contract Forms

At the instance of Herbert Hoover, secretary of commerce, a conference of constructors, architects and engineers is being held in Washington to consider the adoption of a standard contract form. Those appointed to attend this conference include: William S. Parker, secretary, American Institute of Architects, Boston; W. D. Faucette, chief engineer, Seaboard Air Line, Norfolk, Va., representing the American Railway Engineering Association; H. Eltinge Breed, New York, representing the American Society of Civil Engineers; J. Waldo Smith, chief engineer, New York Board of Water Supply, representing the American Water Works Association; A. P. Davis, director, United States Reclamation Service, representing the American Engineering Council; Onward Bates, consulting engineer, Chicago, representing Western Society of Engineers; J. W. Cowper, president, John W. Cowper Company, Buffalo, N. Y., representing the Associated General Contractors of America; E. W. Reaugh, president, Reaugh Construction Company, Cleveland, N. Y., representing the National Association of Builders' Exchanges. The object of this conference is to develop a form of contract containing standard provisions that will be applicable to all classes of construction work and also to establish individual standard forms for the special clauses applicable to particular classes of work. It is believed that the successful conclusion of this work will be effective in reducing the expense of preparing contracts, in effecting a better safeguard of the rights and privileges of the parties to contract and in improving construction service throughout the country.

### Interstate Commerce Commission Authorizes

#### Interlocking Directors and Officers

The Interstate Commerce Commission has issued a large number of orders authorizing until further order of the commission the holding of positions as officers or directors in more than one company and the press table in the secretary's office, where applications to the commission and announcements and orders of various kinds by the commission are made public, is daily crowded with additional applications for this authority under Paragraph 12 of Section 20-a of the interstate commerce act. Among the orders that have been thus far issued a large number authorize interlocking officers and the directors among the subsidiary companies of large systems and on smaller roads in various parts of the country which are in no way in competition. Several of the orders also authorize men to hold offices or directorates in two or more of the larger systems which are not in direct competition.

As examples of some of the orders, Festus J. Wade has been authorized to continue as director of the St. Louis-San Francisco and also of the Cleveland, Cincinnati, Chicago & St. Louis; officers of the Chicago, Rock Island & Pacific have been authorized to hold similar positions with various subsidiary companies, most of which are leased by the Rock Island; officers of the Chesapeake & Ohio have been authorized to hold similar positions with the Chesapeake & Ohio Northern, Chesapeake & Ohio of Indiana and the Hocking Valley, also in various subsidiary and terminal companies; officers of the St. Louis-San Francisco have been authorized to hold similar positions with various subsidiaries; Howard Elliott has been authorized to hold his position as chairman and director of the Northern Pacific, director of the Chicago, Burlington & Quincy and the Colorado & Southern and various subsidiaries of the Northern Pacific, while also being assistant to the president of the New York, New Haven & Hartford and director of that company and subsidiary and affiliated companies. A. C. Rearick has been authorized to retain his position as director and counsel of the Chesapeake & Ohio and subsidiary and affiliated companies, while being a director of the Chicago, Rock Island & Pacific and the Missouri, Kansas & Texas and as counsel for the receiver of the Missouri, Kansas & Texas. The order provides, however, that it is effective after the receivership of the Missouri, Kansas & Texas only as to the other corporations mentioned.

The commission, however, has ordered further investigation in the case of the applications of M. L. Bell, L. C. Fritch,

Charles Hayden and William F. Peter, who hold offices with the Chicago, Rock Island & Pacific and also with the Minneapolis & St. Louis. Mr. Hayden is also director of the Pere Marquette and several other companies. Objection to common officers on the Rock Island and the Minneapolis & St. Louis was made at the recent hearing before the commission by Newman Erb. The applications are assigned for hearing before an examiner at Washington on January 30, but the applicants are authorized to hold their positions until further order of the commission.

## Traffic News

George A. Schroeder, secretary of the Milwaukee Traffic Club and formerly traffic manager for the Milwaukee Chamber of Commerce, died at Milwaukee, Wisconsin, on November 28, 1921.

Western roads have announced a special holiday rate of a fare and one-half for the round trip for fares of \$25 or less one way, effective on December 22, 23 and 24, with a return limit of January 4.

E. H. Poetter, for the past sixteen years traffic manager and export manager of the Barrett Company, has been elected vice-president of Thomas T. Bond & Co., freight forwarders, 11 Broadway, New York.

The St. Louis-San Francisco has notified the Public Utilities Commission of Kansas that it will establish a rate of 21 cents per 100 lb. from Kansas fields to St. Louis, Mo., on salt of low grades used by the packers and ice makers. The new rate is a reduction of five cents.

A committee to enlist the aid of other Illinois cities in bringing down freight rates on the materials used in public improvements was authorized by the City Council of Decatur, Ill., on November 28. The city is just completing a \$2,000,000 water impounding project and is also constructing a \$1,500,000 sewerage disposal plant.

At a conference of petroleum shippers and railroad men of the Mississippi Valley at Memphis, Tenn., on November 28, a rate of 36 cents per 100 lbs. on petroleum shipped from New Orleans and from Louisville, was asked by the oil companies. The railroads suggested a rate of 38 cents. A decision is not expected until the question of petroleum rates to the southeast has been settled.

The North Carolina Traffic Association has entered a complaint before the Corporation Commission of that state against the Atlantic Coast Line and two of its subsidiaries, charging that freight rates on these smaller roads are maintained at too high a basis; under which shippers are made to pay unreasonable prices. The tariffs are made out as though these were separate companies, whereas, it is charged that, being really part of the Atlantic Coast Line, they should figure as branches of the system; and, under the law, this would necessitate making the rates lower than they are now. The two lines in question are the East Carolina Railway, 39 miles long, and using three locomotives, and the Washington & Vandemere, 41 miles long, with two locomotives.

### R. B. A. Dinner February 1 To Be Addressed by Meyer and Fish

February 1 at the Waldorf-Astoria, New York, is announced for the annual meeting and dinner of the Railway Business Association. The dinner speakers will be Eugene Meyer, Jr., of New York and Frederick P. Fish of Boston.

In announcing the meeting President Alba B. Johnson says: Business recovery through resumption of railway purchases is the object sought for our meeting. The problem presents itself almost if not quite as a national crisis. In 1920 the federal government declared its responsibility for the financial results of railway regulation. It authorized sanction of rates designed to yield adequate income. It also authorized regulation of railway working conditions to yield the employees fair compensation. Since the act went into effect the country has come to question whether the labor clause comprises a lasting solution in respect of adjusting labor cost to income requirements, while a formalist movement is revealed to retard improvements and hence international responsibility for the financial results of regulation and to break down by clamor the orderly processes of negotiating and adjudicating rate revisions.

The leading feature of our business sessions will be reports setting forth this situation, how the association has acted to meet it and plans for continuing activity to the same end.

In accordance with our custom the utterances at the dinner will deal with problems the most pressing and the speakers will be eminent authorities on the timely aspects which they discuss.

#### EUGENE MEYER, JR.

Eugene Meyer, Jr., managing director of the War Finance Corporation, is a dollar-a-year volunteer who, like General Dawes, after retiring to private business was reënlisted for a reconstruction period. As an investment banker, Mr. Meyer conceived a War Finance Corporation as a federal instrument for giving timely and essential aid to business, agriculture and transportation with negligible cost or none to the government. Author of the so-called railroad funding bill, its postponement found him promptly and actively applying in the most enterprising business spirit other means for attainment in part of the same purpose—release of funds for investment remittances on accounts due the railways. What government policy is now essential if the credit of the railways is to be strengthened and stabilized? What program for railways and the distributors of securities is required if the public power to purchase railway stocks and bonds is to be more fully converted into railway improvements and hence into national prosperity? Answers to these questions have been requested of Mr. Meyer, whose oral delivery before committees of Congress and addresses on other public occasions have won him high esteem as an expositor and as a speaker.

#### FREDERICK P. FISH

Frederick P. Fish, former president of the American Telephone & Telegraph Company, outstanding lawyer, pioneer in conservative social progress, has for a number of years as chairman of the National Industrial Conference Board led an enterprise of systematic research concerning relations of employees to employers and to the public. Studied in his independence, bold in his acceptance of local conclusions, Mr. Fish conceives a distinctive position of influence by reason of his tolerance of spirit and his moderation of utterance. Taking as it stands the federal railway labor legislation of 1920, what course is it essential for citizens and other organizations to pursue in order that the administration of the labor clause may fully protect the public as well as the employers and the employees? If it is at all should the law be amended for future performance of the functions committed in 1920 to the Labor Board? Responses to these inquiries have been requested of Mr. Fish, who has a high reputation as a robust extemporaneous orator before large assemblages.

### A Direct Appeal

The San Diego & Arizona has an employees' club, which is bestirring itself to stimulate the road's business. Already an increase in the volume of freight is evident.

A postal card sent by the club to business men in San Diego reads as follows:

**THE SAN DIEGO & ARIZONA RY. WANTS YOUR BUSINESS**

Its Reasons are as follows:

- It represents an investment of more than \$18,000,000.
- It paid in taxes in California in 1920 \$77,372.
- It paid in taxes in San Diego County in 1920 \$24,878.
- It spent for supplies in San Diego in 1920 \$322,838.
- It employs 316 men in San Diego.
- It pays these men \$45,000 a month.
- Its employees spend their earnings in San Diego.
- Its earnings are materially affected by auto truck and bus competition.
- It endeavors to serve effectively.
- Its employees aim to be contented.
- It maintains its own roadbed.
- It is *The Short Line Fast*.

We, therefore, solicit your close cooperation with us for our mutual benefit. Prosperity to the road means prosperity to you and our city.

### Coal Production

Production of soft coal in the week ended November 26 dropped to 7,093,000 net tons. The decrease of 1,811,000 tons below the output of the week preceding was mainly due, according to the weekly bulletin of the Geological Survey, to the occurrence of Thanksgiving Day and to slackening demand for coal.

Production of soft coal continued to plunge downward, and during the week ended December 3 touched the lowest level reached at any time since last April, according to the weekly bulletin of the Geological Survey. The total output, including lignite and coal coked, was approximately 7,077,000 net tons. The daily rate—1,179,000 tons—showed a decrease of 16 per cent in comparison with the rate in Thanksgiving week.

In comparison with production in late October, the decrease was 36 per cent. The present slump is in large part a reaction against the artificial stimulus lent by the apprehension of consumers over a possible stoppage of transportation. While that apprehension was felt, coal was flowing into

storage. Now that it is for the moment allayed, coal is flowing out of storage. How acute is the present depression may be judged by the fact that the output of 7,077,000 tons was the smallest in any full-time week since that of April 30, when 6,984,000 tons were produced.

### Anthracite Shipments—November, 1921

The shipments of anthracite for November as reported to the Anthracite Bureau of Information at Philadelphia, amounted to 5,314,014 gross tons against 5,872,783 tons the preceding month, and with 5,765,347 tons in November, 1920. The decrease last month as compared with the other two periods is accounted for by the fewer number of working days in November as compared with October, of this year, and by a decided falling off in the washery tonnage from November, 1920, with an additional holiday on Armistice Day last month.

Shipments by initiating carriers were as follows:

	November 1921	October 1921	November 1921	October 1921
P. & R. ....	1,017,409	1,104,828	Penna. ....	429,638
L. V. ....	913,737	1,048,996	Eric. ....	503,488
C. of N. J. ....	512,613	570,189	N. Y. O. & W.	136,945
D. L. & W. ....	814,131	759,492	L. & N. E. ....	229,455
D. & H. ....	756,598	898,376		
			5,314,014	5,872,783

### Commission Prescribes Through Export Bill of Lading

The Interstate Commerce Commission on December 2 made public its decision prescribing a form of through export bill of lading to be issued by carriers subject to the interstate commerce act for the transportation of property in connection with ocean carriers whose vessels are registered under the laws of the United States, from points in the United States to points in non-adjacent foreign countries.

In its report of April 14, 1919, the commission prescribed a uniform domestic bill of lading and a uniform export bill of lading. This order was suspended by an injunction of the district court for the Southern district of New York in which the majority held that the commission had no authority to prescribe bills of lading for either domestic or export traffic. An appeal was taken to the Supreme Court, which held that the passage of the transportation act made the case a moot case and reversed the order of the district court.

In August, 1920, the commission reopened the proceeding, forms of through export bills of lading having been submitted by the Southern, Eastern and Western carriers.

There was conflict of view among the parties as to the commission's jurisdiction. The question is one of law, but the commission says that pending judicial interpretation of the pertinent provisions of the act it must construe them in endeavoring to perform the administrative duties which they impose. The inland carriers, more particularly the Eastern carriers, challenged the commission's power to do more than prescribe the form, as distinguished from the substance, of the bill of lading. Counsel for American ocean carriers claimed that the commission has no power to prescribe any condition applicable to them without their consent. A representative of the United States Shipping Board who was present at the hearings did not think that the commission has jurisdiction over water carriers and on behalf of the Shipping Board saved any proper objections and exceptions to the jurisdiction of the commission and exceptions to the evidence.

The commission in its report holds that it has power to prescribe rules and regulations, which shall determine the form of the bill of lading, and, as to the transportation until delivery to the ocean carrier, will be adequate and complete; for the intent of Congress to require a uniform through export bill of lading and to have the terms prescribed by the commission seems clear. At the hearing the discussion centered principally upon the forms proposed by the National Industrial Traffic League and by the Eastern carriers. In discussing these the commission says:

"The shippers seek the benefit of full common-carrier liability from starting point to final destination. The carriers wish to restrict their liability to the lowest degree consistent with the law.

"In view of the confusion which appears to exist it is appropriate to point out the difference between our functions and

those of the courts respecting bills of lading. There are innumerable provisions which, if agreed to by the parties and incorporated in a bill of lading, might be sustained by the courts as reasonable, and the variations of language in which such provisions might be expressed are almost infinite. The courts determine the validity of such provisions just as they do in the case of other contracts, and do not consider whether or not particular provisions, not contrary to the law, should be included or omitted. We, on the other hand, must deal with the terms of the bill of lading as rules and regulations which affect the value of the service rendered to the shipper in the same way as it is affected by rules and regulations published in the carriers' tariffs.

"Viewed as an administrative matter, the question of what rules and regulations are reasonable, or will be reasonable for the future, in connection with the transportation covered by the bill of lading, depends principally upon the adjustment of the carrier's compensation to the degree of risk which it incurs. That degree of risk is reflected in operating expenses. The greater the risk, the greater is the value to the shipper of the service rendered, which should be rewarded correspondingly. A lesser compensation is appropriate in cases where the carrier is to a large extent relieved from the full liability of common carriers.

In other words, the question before us is not merely whether certain provisions would or would not be valid if incorporated in a contract between the parties, but is rather: What should be the terms of the contract of carriage, the charges for which we are authorized and required to regulate? It must be borne in mind that section 15a of the Interstate Commerce Act imposes upon us the duty of initiating rates which shall yield to the carriers . . . a fair return upon the value of their property."

A form is prescribed (Appendix D) with rules applying to the service "until delivery at the port of export," in connection with ocean carriers whose vessels are registered under the laws of the United States, for the transportation of property from points within the United States . . . to points in non-adjacent foreign countries.

### No Early Reduction in Coal Rates To Be Expected

J. D. A. Morrow, vice-president of the National Coal Association, has issued a statement characterizing as "baseless" reports in various parts of the country to the effect that a reduction in freight rates on coal might be expected within the next few days.

"There is absolutely no foundation for these reports," said Mr. Morrow. "Careful inquiry here from all official sources concerned justifies the definite statement that no freight reductions on coal shipments may be expected while general rate reductions are under consideration by the Interstate Commerce Commission. This precludes the slightest probability of any such coal freight reductions before next Spring at the earliest.

"The commission, which begins its general hearings today, will not finish with the shippers alone, it is understood, until January 9 and not until after that time can there be definite consideration of reductions. It is quite clear, with the time needed to prepare tariffs and put them into effect, that no freight reduction on coal shipments in the United States can be expected before next April. Shipments of bituminous coal from the mines are going out at the rate of only about 7,000,000 tons a week, an extremely low output. A part of the explanation for this decrease in the movement of coal has been the circulation of rumors that the rates on coal were to be immediately reduced.

"Every coal producer and distributor will perform a service to his customers if he will make these facts unquestionably clear to them and let them understand the danger to their own interests in paying any attention to groundless rumors of imminent coal freight reductions."

SIX ELECTRIC LOCOMOTIVES left for foreign markets during October. Five of these valued at \$228,345, went to Brazil for the new electrification equipment being installed there; one, invoiced at \$8,500, went to British South Africa.—Bureau of Foreign and Domestic Commerce.

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until April 9, the operation of items published in a supplement to Agent W. J. Kelly's tariff, insofar as they effect reductions in the rates on sub-limed lead from Central Freight Association territory to Trunk Line territory.

The commission has suspended from December 15 until April 14, 1922, the operation of certain schedules published in a supplement to Agent J. J. Cottrell's tariff which propose increased rates on refined sulphate of magnesium (epsom salts) from Eastern and Virginia cities to Johnson City, Tenn.

The commission has suspended until April 9, the cancellation of commodity rates on wooden paving block material from Alabama, Florida and Georgia to Norfolk, Va., etc., as published in supplements to Agent J. H. Glenn's tariff, effective December 10. After the date of cancellation it is proposed to apply the existing rate on lumber.

The commission has issued a decision modifying the rules and regulations made in its previous order prescribing the form of a uniform domestic bill of lading to conform to the regulations of the interstate commerce act as amended by the transportation act and also prescribing rules and regulations for the form of a uniform livestock contract.

The commission has suspended until April 8, the operation of certain schedules published in a supplement to a Central of Georgia, reducing by tariff 5 cents a ton the rates on coal from Alabama mines to Gulf Ports when for bunkering or for export, or when for points in Florida and Texas accessible by water, but an increase of 20 cents a ton when handled through tippie for other purposes.

The commission has further suspended until February 2 the operation of schedules published by the Chicago, Rock Island & Pacific which provide that the rates on forest products, carloads, from points in Arkansas and Louisiana to destinations in Central Freight Association territory and Canada, applying through Memphis, Tenn., and Louisville, Ky., will not be subject to transit privileges such as yarding, grading, drying, dressing or further manufacture en route between points of origin and destinations, subjecting shipments accorded such privileges to local rates to and from transit points, the operation of which was suspended until January 3, 1922, by an order previously entered.

### Commission Declines to Allow Continuation of Reduced Ore Rates

The Interstate Commerce Commission on December 12 declined to issue special permissions under the sixth section of the interstate commerce act to allow carriers in eastern territory to continue, to March 31, reduced rates on iron ore. Shippers at Buffalo, Cleveland, Erie, Chicago and other lake ports protest that the proposed rates result in undue discrimination against them and preference for competing furnace interests at Pittsburgh and other interior points.

The commission issued a notice saying:

"Coal and iron ore are two of the important elements entering into steel manufacture. Most of the iron ore used in the east comes from Minnesota by lake. Lake front furnaces, therefore, pay no rail freight charges on ore but transport their coal by rail from Pittsburgh and other interior points. Interior furnaces on the other hand, while paying rail freight from Lake Erie ports on ore, are in most cases located in close proximity to the coal fields and pay only short haul rates on coal.

"In 1917, iron ore was transported from Lake Erie ports to Pittsburgh for 82 cents a ton, whereas coal was charged

\$1.40 from Pittsburgh to Buffalo. Iron ore rates in the east were not increased during federal control, but coal rates were increased approximately 25 per cent. Rates on both commodities were increased in August, 1920, resulting in rates on ore and coal of \$1.14 and \$2.51, respectively.

"Under the adjustment now proposed by eastern railroads the ore rate would be 82 cents or the same as in 1917, whereas the coal rate would continue \$2.51, including the increases of 1918 and 1920 and being higher by \$1.69, or 206 per cent, than the ore rate. The rates on iron ore which will apply after January 1, 1922, will include materially less increase over the pre-war basis than rates on commodities generally—even less than the reduced rates on farm products soon to be made effective.

"The action of the commission is in no sense to be interpreted as a disinclination to approve justifiably lower rate levels, but is based upon the continuance of premature reductions confined to certain rates, the outcome of which is to unduly prejudice iron and steel manufacturers located on the lake front to the advantage of competing interior furnaces."

### I. C. C. Prescribes Form of Time and Train Records, Beginning Next July

The Interstate Commerce Commission has issued an order prescribing the method and form of records to be kept by carriers relating to the time on duty of employees and the movement of trains, including time return and delay report of engine and train employees; daily time report of employees who use the telegraph for orders, etc., pertaining to train movements; dispatcher's record of movement of trains (the regular daily train sheet) and station record of train movements. This latter, like the other records, requires each employee to enter the times at which he goes on and off duty.

The order goes into effect on July 1, 1922, and the order of the commission concerning train delay reports, issued on June 12, 1912, is rescinded upon the taking effect of the new order.

### State Commissions

The Public Utilities Commission of the State of Michigan has set January 18, 1922, for a hearing on the application of the Pere Marquette for authority to abandon its branch lines from White Cloud to Big Rapids; from Haynor to Sheridan; from Leota to Harrison, and from Ionia to Lyons.

The Public Utilities Commission of the State of Michigan at a hearing on December 6 at which were present representatives of the Michigan Manufacturers' Association and of more than 20 railroads, decided to defer, until next month, consideration of the association's petition for a substantial reduction in intrastate freight rates.

### Court News

#### Escape of Livestock Before Loading

A railroad maintained stockyards, and also a plot of ground on which cattle were customarily held preparatory to shipment and where prospective shippers were directed to feed, water and hold their cattle while awaiting access to the stockyards. While there, 60 head of cattle wandered through unprotected openings in spoil banks of an artificial reservoir maintained by the railroad, and off steep banks into an open space of thin ice and deeper water, causing the loss of 44 head. In an action against the Agent in charge of railroads, a North Dakota jury returned a verdict for the plaintiffs for \$2,640. The trial court, on motion, ordered judgment for the defendant notwithstanding the verdict. The North Dakota Supreme Court reverses the order and orders judgment on the verdict, holding that the railroad's breach of duty and the shippers' contributory negligence were questions of fact for the jury.—Booker & Olson v. Payne, 184 N. W. 803.

## Louisville & Nashville Not Bound To Provide Telegraphic Service

A telegraph company having by decree been required to remove its poles, etc. from a right of way, and having sold the poles, etc., to the railroad, which used them only in the operation of its road, the Alabama Supreme Court holds that the sale did not require the approval of the Public Service Commission, being the legitimate result of the decree following upon section 3867 of the Alabama Code, in effect declaring it to be the public policy of the state that the telegraph company should no longer be allowed to maintain its lines on the right of way; and the railroad could not be required by the Commission to maintain a public telegraph service to the towns and villages affected by the sale.—Alabama P. S. C. v. L. & N. (Ala.), 89 So. 524

## Decisions Under Federal Employers' Liability Act

The Minnesota Supreme Court holds that an engineman who was taking a number of empty cars from a point on a spur line to a yard on the main line in the same state, where they were to be put upon a siding used where convenience required, the cars having no further present destination, was not within the act.—Kraemer v. Chicago & N. W. (Minn.) 181 N. W. 847.

The New York Appellate Division holds that an engineman, injured by the escape of carbon monoxide gas when returning from performing an interstate service with his engine, which he was about to put up for the night, was within the federal act and not within the state Workmen's Compensation Act.—O'Brien v. U. S. R. A., 194 App. Div. 63, 185 N. Y. Supp. 447.

The Court of Appeals of Kentucky holds that, where an engineman was called for an interstate trip and began preparations, during which he went through the yards to procure oil for the journey and was killed on returning, he was engaged in interstate commerce, so that action for his death must be brought under the federal act.—Hines v. Burns' Adm. (Ky.) 226 S. W. 109.

The Delaware Superior Court holds that an employee injured while directing the moving of a coal car from one point to another in a yard connecting with the sleeping car company by which he was employed, was not within the act.—Pullman Car Lines v. Riley (Del.) 114 Atl. 920.

The California District Court of Appeals, Second District, holds that an employee, in general shops, repairing an engine, which had been used in interstate commerce, who, while tapping the boiler, was injured in the eye by a piece of steel blown from the exhaust of a compressed air motor operated by men working near him, was within the federal act and not within the state Workmen's Compensation Act.—Payne v. Industrial Accident Commission of California (Cal.) 195 Pac. 81.

The Pennsylvania Supreme Court holds that where a train engaged in interstate commerce is disabled and taken to a repair shop before continuing in such service, the delay in the repair shop does not suspend the interstate character, and an employee injured while working on the train in the repair shop is engaged in interstate commerce.—Koons v. P. & R. (Pa.) 114 Atl. 262.

The Pennsylvania Supreme Court holds that a claimant under the state Workmen's Compensation Act for the death of a train inspector killed while returning from work after inspecting several trains, some of which were interstate, has the burden of proving that the last train inspected was an intrastate train; following Polk v. Philadelphia & Reading, 41 Sup. Ct. 518, and Di Donata v. Same, 41 Sup. Ct. 516, holding that there is no presumption, that the duties performed in works partaking of interstate and intrastate commerce were performed in the latter.—Scanlon v. Payne (Pa.) 114 Atl. 493.

The New York Court of Appeals holds that a terminal railroad, switching indiscriminately foreign and domestic cars, must be classed, when handling interstate or foreign shipments, as an instrumentality of interstate or foreign commerce, subject to the act, whether or not it knows that the particular cars are interstate or foreign.—Cott v. Erie (N. Y.) 131 N. E. 737.

The Texas Court of Civil Appeals holds that an employee engaged in the repair of an engine in the roundhouse after completion of its round trip, was not within the act, although the engine was used in interstate and intrastate commerce both before and after being placed in the roundhouse for repairs.—Payne v. Wynne (Tex.) 233 S. W. 609.

The New York Appellate Division holds that a trackman on a

railroad incidentally engaged in interstate commerce, in a gravel pit not on the railroad's premises, hurt while loading gravel for ballast for the right of way, was not engaged in interstate commerce.—Malandrino v. Southern New York Power & R. Co., 190 App. Div. 735.

The California Supreme Court holds that a train which carried mail coming from and destined to points outside the state was engaged in interstate commerce.—Baker v. Southern Pacific (Cal.) 193 Pac. 765.

## United States Supreme Court

### Failure to Allow Creosoting-in-Transit

#### Held Not Discriminating

The Supreme Court of the United States has reversed the decree of the federal district court for New Jersey, denying, without written opinion, the application of the Central Railroad of New Jersey, the Pennsylvania and 21 other railroads to join in the enforcement of an order of the Interstate Commerce Commission. The defendants in the suit were the United States and the Interstate Commerce Commission. The Commission, upon a petition of the American Creosoting Company ordered these 21 carriers to establish the creosoting-in-transit privilege at Newark, N. J. (American Creosoting Co. v. Director General, 61 I. C. C. 145). The petitioner had a creosoting plant which was connected by tracks with the Central and the Pennsylvania; these carriers had failed to establish there the privilege known as creosoting-in-transit; this failure was claimed to be unjust and unreasonable and also unjustly discriminatory in violation of section 3. The Commission found that failure to establish this transit privilege was not unjust or unreasonable and denied relief under section 1. But it found that this failure subjected the Creosoting company to unjust discrimination; and granting relief under section 3, the Commission directed that the discrimination be removed by the railroads, the appellants before the Supreme Court.

The Supreme Court's opinion, by Mr. Justice Brandeis, reads, in part:

"It is urged (by the creosoting company) that while the undue prejudice found results directly from the individual acts of southern and mid-western carriers in granting the privilege locally, the appellants (the railroads), as their partners, make the prejudice possible by becoming the instruments through which it is applied. Discrimination may, of course, be practiced by a combination of connecting carriers as well as by an individual railroad; and the commission has ample power under section 3 to remove discrimination so practiced. The St. Louis & Southwestern v. United States, 245 U. S. 136, 144. But participation merely in joint rates does not make connecting carriers partners. They can be held jointly and severally responsible for unjust discrimination only if each carrier has participated in some way in that which causes the unjust discrimination; as where a lower joint rate is given to one locality than to another similarly situated [citing cases]. If this were not so, the legality or illegality of a carrier's practice would depend not on its own act, but on the acts of its connecting carriers. If that rule should prevail, only uniformity in local privileges and practices or the cancellation of all joint rates could afford to carriers the assurance that they were not in some way violating the provisions of section 3.

"What Congress sought to prevent by section 3, as originally enacted, was not differences between localities in transportation rates, facilities and privileges, but unjust discrimination between them by the same carrier or carriers. Neither the Transportation Act, 1920, nor any earlier amendatory legislation has changed, in this respect, the purpose or scope of section 3."—Central Railroad of New Jersey et al. v. United States et al. Decided December 5, 1921.

THE DIRECTORS of the Chicago, Burlington & Quincy have authorized a pension plan for the employees of that road. Prior to the announcement of the plan, a study is being made of the pension systems of other roads.

# Foreign Railway News

## Serbia to Receive German Locomotives

LONDON.

The kingdom of the Serbs, Croats and Slovenes will receive on account of reparation 50 locomotives and 2,500 freight cars from Germany.

## Austrian Cars Allotted to Italy

LONDON.

The conference of the states of the former Austro-Hungarian Monarchy at Cortorose has decided that 2,000 Austrian cars are to be transferred to the Italian State Railway Administration.

## Stinnes a Locomotive Builder

LONDON.

It is reported that the factories purchased by Hugo Stinnes in Rumania have begun the construction of 2,000 locomotives for the Russian Soviet Government.

## Italy to Reorganize the South Russian Railways

LONDON.

According to the new Italian-Russian economic treaty, the Italian Government is to undertake the reorganization of the railways in South Russia and will send to Odessa 100 Italian locomotives and a large number of Italian workmen and engineers.

## Rumania to Build Rolling Stock

LONDON.

The Societe Franco-Roumaine du Materiel du Chemin de Fer has been formed in Bucharest for the construction of railway rolling stock. On the other hand, the Rumanian State Railway Administration has ordered 150 locomotives and 1,500 freight cars from Germany.

## Construction in Argentina

Work continues on the Salta-Huatiquina Railway, in Argentina, according to Commerce Reports. Consul General Robertson at Buenos Aires reports that the Chilean government has informed the Argentine government that construction on the Antofagasta-Huatiquina section is receiving preferred consideration. It is expected that work will soon begin on the line from Embarcacion to Yacuiba on the eastern frontier of Bolivia.

## Electrification of Hungarian State Railways

LONDON.

The Hungarian State Railway Administration has decided to electrify 870 miles of line. The plans for the electrification call for completion in about four years. By electrifying these lines the Hungarian State Railway will, it is said, save 800,000 tons of coal yearly and reduce the consumption of coal to 1,500,000 tons. It is estimated that if all the railways are electrified there will be no need for Hungary to import coal.

## Daniels' Automatic Train Stop

J. J. Daniels is the inventor of a mechanical trip automatic train stop which has been installed, for experiment, on the track of the Great Eastern Railway of England, at Bruce Grove, on the Enfield branch. The apparatus is described in the *Railway Gazette* (London) of November 4. The track member is enclosed within a case, sandproof and snowproof; and the engine member is a jointed rod, carrying at its lower end a rubber tired wheel. There are three engine members, arranged side by side, these members coming in contact with different track members arranged for different indications.

## Britain Active in Peru

British-Canadian interests and the Peruvian government are approaching an agreement whereby the Britons are to construct some 1,500 miles of railway in various parts of Peru and receive in return large grants of agricultural and mineral lands, according to the *Times* (London). Negotiations are reported to have gone so far that the government is prepared to send the contracts to congress for ratification as soon as assurance is given by the enterprisers of their financial ability to complete the undertaking.

## Boiler Explosions in Great Britain

According to the annual railway accident reports of roads in Great Britain during the 20 years, 1901 to 1920 inclusive, 99 cases of bursting of boilers or tubes of locomotives occurred in that period, resulting in seven railway employees being killed and 111 injured. According to *The Engineer*, from which these figures are taken, the reports do not distinguish between explosions of boilers and explosions of tubes but as in all but six cases employees were injured, the consequences were apparently serious on each occasion.

## Locomotive Exports in October

Because of a shipment of 52 locomotives to Mexico during October, the month's total mounted to 92. The September total was but 36. The detailed figures by countries as prepared by the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Number	Dollars
Salvador	3	75,000
Mexico	52	1,870,270
Cuba	2	70,000
Dominican Republic	1	11,800
Brazil	10	334,300
Colombia	3	89,000
China	19	1,027,000
Japan	1	13,250
Philippine Islands	1	18,820
<b>Total</b>	<b>92</b>	<b>3,509,440</b>

## Exports of Car Wheels and Axles in October

Exports of car wheels and axles in October were valued at \$142,895 in October, as compared with only \$90,574 during the previous month. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Dollars	Countries	Dollars
Canada	33,736	Peru	3,463
Costa Rica	2,287	Uruguay	865
Honduras	1,961	Venezuela	876
Nicaragua	378	China	37,200
Mexico	5,899	British India	42,776
Jamaica	261	Japan	2,970
Cuba	3,433	Australia	928
Dominican Republic	2,537	Philippine Islands	332
Argentina	100	British East Africa	833
Brazil	470	<b>Total</b>	<b>142,895</b>
Chile	189		
Colombia	1,480		

## Stinnes' Visit to London Calls Forth Comment

The visit of Hugo Stinnes, the German capitalist, to London has called forth much comment in the German Press, according to the *Economic Review* (London). The papers of the *Left* (i. e. radical) are somewhat violent, the "Freiheit" calling Stinnes a megalomaniac and reproaching him with having attempted to wreck Spa negotiations. His present intention, says the journal, is to mobilize the Entente against Germany in order to carry out his plan of having the German railways transferred to his management. The *Frankfurter Zeitung*, while deprecating personal attack, considers that Stinnes will make use of his stay in London to justify to Germany's powerful creditors the plausibility of the intention of the German industries with regard to the railways. One of Stinnes' own journals, the *Deutsche Allgemeine Zeitung*, openly pleads for the transference of the railways to private management. The state, it claims, lacks the three pre-requisites for carrying on great undertakings—discipline, credit and permanent economic conditions. It is not a matter of pure expediency, but under the circumstances that have developed a matter of stern necessity that the state

should relinquish its present form of management of large undertakings. When once it has been realized that the deficit in the budget is largely due to the state undertakings, Germany must have the courage to put an end to this disastrous state of affairs. Meanwhile the minister of railways, Herr Groener, at an interview accorded to press representatives in Berlin on November 19, expressed himself as resolutely opposed to the denationalization of the railways.

**Car Exports in October**

No passenger cars were exported in October and but 83 freight cars, valued at \$278,412. Parts of cars shipped totaled \$425,750. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Freight and Other		Parts of Cars Dollars
	Number	Dollars	
Belgium	..	..	4,967
France	..	..	569
Spain	..	..	456
England	..	..	3,427
Scotland	..	..	568
Canada	2	2,000	66,246
Costa Rica	..	..	1,562
Guatemala	..	..	3,116
Honduras	..	..	4,679
Nicaragua	..	..	611
Panama	..	..	274
Mexico	14	27,515	7,426
Newfoundland and Labrador	..	..	111
Jamaica	..	..	3,005
Trinidad and Tobago	..	..	1,831
Cuba	27	210,277	16,666
Dominican Republic	..	..	3,519
Brazil	30	30,300	12,878
Chile	..	..	1,181
Colombia	..	..	6,743
Peru	..	..	1,755
Uruguay	..	..	11,300
Venezuela	..	..	240
China	..	..	203,268
Kwantung, leased territory	..	..	11,517
Chosen	..	..	8,000
British India	..	..	14,424
Japan	..	..	21,395
Philippine Islands	10	8,320	12,797
British South Africa	..	..	1,071
Other countries	..	..	145
Total	83	278,412	425,750

**Paulista Railway Begins Electric Operation**

The freight locomotives recently shipped by the Westinghouse Electric & Manufacturing Company to the Paulista Railway of Brazil are now in service in that country between Jundiaby and Louveira. These locomotives haul trains of from 43 to 45 units over grades as steep as 1.5 per cent. The so-called "unit car" is of 10 tons gross weight and the term refers to the old wooden car of 30 years ago. Modern cars are said to be two, three or four units according to their size and load. Thus a train of 45 units represents 450 tons weight and is approximately 675 ft. long.

Under former steam operation such trains could not be carried over a 1.5 per cent grade at a speed greater than about nine miles an hour. The electric locomotives make such grades at 29 miles an hour.

**Locomotive Repairing in Soviet Russia**

One day I suggested to Lenin that better transport would mean better food and raw material; more food and material would mean better workmen; better workmen would mean better production; better production would mean better locomotives; and better locomotives would mean better transport; also that without better transport there could be no hope of industrial betterment, that better transport required better locomotives and better locomotives again depended upon locomotive repair, so that the fundamental and first step in betterment should be locomotive repair. That, like electrification later, became a slogan of the administration. An order was issued that locomotives requiring repair should be taken into all factories, and that for every locomotive repaired the crew of workmen should receive a bonus in Soviet cash and in addition be permitted to take the locomotive for a trip into the country and bring food for themselves.

As a result we had the strange spectacle of locomotive repairing shoved into all kinds of plants where previously

there had been no spur tracks, no pits and no appropriate equipment or skilled workmen. At the same time, all the locomotive building and repair plants of Russia were standing practically idle. The order was that locomotive repairing should be taken only where it did not interfere with regular production. As there was no regular production worth mentioning, that was not a serious consideration, but if there had been it would have been destroyed by the upheaval. In sight of the bonus and the trip to the country, the locomotives got only a lick and a promise with the further advantage to the workers that they were soon back for a further bonus and another trip to the country—Royal R. Keely in the American Machinist.

**Track Material Exports in October**

Exports of track materials dwindled to small totals in October—1,035,484 lb. of spikes, valued at \$41,780; 9,976 tons of steel rails, valued at \$362,527, and switches, frogs, etc., valued at \$194,855. The totals by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as given below:

Countries	Railroad spikes	Rails of steel	Switches, frogs, splice bars, etc.
	Pounds	Tons	Dollars
Denmark	..	..	830
France	..	..	12
Norway	..	..	503
England	..	..	787
Scotland	..	..	17,278
Canada	12,200	3,450	101,287
Costa Rica	..	..	30
Guatemala	10,360	170	180
Honduras	..	117	1,165
Nicaragua	..	..	180
Salvador	6,000	16	334
Mexico	105,400	366	4,790
Newfoundland, Labrador	..	..	1,339
Jamaica	7,000	..	..
Other British West Indies	..	..	..
Cuba	62,430	7	8,842
Virgin Islands	1,000	37	300
Dominican Republic	17,600	..	924
Argentina	..	..	5,961
Brazil	..	30	4,195
Chile	..	..	210
Colombia	5,000	..	2,171
Ecuador	5	..	5
Peru	..	4	4
Venezuela	..	11	150
China	680,800	9	985
Kwantung, leased territory	..	..	825
Chosen	5,000	..	..
Japan	83,600	5,644	33,072
Australia	..	..	205
New Zealand	..	17	275
Philippine Islands	7,036	100	3,890
Portuguese Africa	..	..	3,601
Total quantity	1,035,484	9,976	..
Total value	\$41,780	\$362,527	\$194,855



Photo. by Underwood & Underwood

The "William Crooks" at the Formal Opening of the St. Paul Union Station

## Equipment and Supplies

### Locomotives

The CENTRAL OF NEW JERSEY is asking for prices, it is reported, on 25 Mikado type locomotives.

The SIERRA RAILWAY OF CALIFORNIA has ordered 1 Mogul type locomotive from the Baldwin Locomotive Works.

### Freight Cars

The GRAND TRUNK is inquiring for 250 refrigerator cars of 30-ton capacity.

The VERDE TUNNEL & SMELTER RAILROAD is inquiring for 100 or more, hopper ore cars, of 60-ton capacity.

The WARNER SUGAR REFINING COMPANY, 79 Wall street, New York City, is inquiring for 10 steel logging cars to be 36 feet long and to have a capacity of 30 tons.

The CENTRAL OF GEORGIA, reported in the *Railway Age* of December 10 as contemplating the purchase of freight cars is now inquiring for 500 box cars of 40-ton capacity.

The SEABOARD AIR LINE is now inquiring for prices on 1,500 ventilated box cars of 40-ton capacity, 200 flat cars with steel underframes, of 40-ton capacity and 300 steel phosphate cars of 50-ton capacity.

THE NORTHERN PACIFIC reported in the *Railway Age* of December 3, as inquiring for 1,200 steel center frame constructions, has ordered this equipment from the Western Steel Car & Foundry Co. These are to be applied to box cars in the railroad company's shops.

### Passenger Cars

The HUDSON & MANHATTAN is inquiring for 25 steel motor cars.

The LONG ISLAND is inquiring for 40 motor cars for electric service, and 10 steel coaches for steam service.

The ILLINOIS CENTRAL is inquiring for 5, 72-ft. steel suburban cars.

The BOSTON & MAINE will apply Commonwealth platforms and steel underframes to 100 passenger cars in its own shops.

The PERE MARQUETTE is inquiring for 2 steel dining cars and contemplates asking for prices in the near future on additional cars for passenger service.

THE PHILADELPHIA & READING has ordered 30 coaches and 5 combination baggage and smoking cars from the Bethlehem Shipbuilding Corporation, Harlan Plant, and 15 coaches from the Standard Steel Car Company.

### Machinery and Tools

The CHICAGO, ROCK ISLAND & PACIFIC has issued a list of about 70 machines, many of large type, which may aggregate in value about \$800,000 on which it is inviting bids. The list includes presses, cutters, grinders, lathes, shapers and two power hack saws.

### Signaling

The PENNSYLVANIA has awarded a contract for one 50 lever Model 2 unit lever type electric interlocking machine and one operating switchboard for installation at Rochester, Pa., to the General Railway Signal Company. The machine will have 38 working levers and 18 spare spaces and the installation will be made by railroad forces.

## Supply Trade News

The General Contracting & Engineering Company has removed its office from 280 Broadway to new and larger offices in the Barrett building, 40 Rector street, New York City.

Andrew Fletcher, president of the American Locomotive Company, has been elected a director of the American Car & Foundry Company to fill the vacancy on the board caused by the resignation some time ago of Walter G. Oakman.

Charles F. Smith has been elected chairman of the board of directors of the New Britain Machine Company, New Britain, Conn., succeeding F. G. Platt, who resigned on account of ill health. Mr. Smith is chairman of the board of directors of Landers, Frary & Clark, New Britain, and was formerly chairman of the board of the American Hardware Corporation.

The Greenfield Tap & Die Corporation, Greenfield, Mass., has consolidated its small tool and drill divisions. P. T. Irvin, formerly manager of its drill division, is in charge of the consolidation, which will be called the small tool division. Mr. Irvin has for the past three years been sales manager of the Lincoln Twist Drill Company and prior to that was sales manager of Wells Brothers Company, Greenfield.

Arthur P. Bowen, whose election as vice-president of the Ryan Car Company, Chicago, was noted in the *Railway Age* of December 3 (page 1120), was born in Chicago on February

27, 1864, and entered business in 1881 as a clerk in the Continental National Bank of that city. Five years later he left the banking field to enter the retail coal business. After a wide experience in the coal business, both in the promotion and selling branches, Mr. Bowen became purchasing agent of the Western Steel Car & Foundry Company, Chicago, in 1904, continuing his duties with the Pressed Steel Car Company as director of purchases, when the last named company acquired the former interests. In

1910, he resigned from the Pressed Steel Car Company to enter the service of the Republic Iron & Steel Company, and one year later was appointed director of purchases and stores of the Pullman Company. During the last year of the war, Mr. Bowen served as acting treasurer of the Pullman Company.

The Cincinnati Shaper Company and its subsidiary, the Cincinnati Gear Cutting Machine Company, have arranged for a branch sales office in Indianapolis, Ind., with headquarters at 940 Lemcke annex. T. C. McDonald, who has been appointed local representative at Indianapolis, will cover the Indianapolis and Louisville districts, also certain states in the southwest, and will continue as local representative of the Reed-Prentice Company.

Anton Becker, for 15 years connected in official capacities with The Ralston Steel Car Company, Columbus, Ohio, has resigned to enter the railroad supply business. He has organized The Becker Sales Company with office in the Union Central building, Cincinnati, Ohio. In connection with railroad specialties The Becker Sales Company will also have the sales representation of The Ralston Steel Car Company, in certain territory in middle western states.



A. P. Bowen

## Railway Construction

**BALTIMORE & OHIO**—This company, in conjunction with the Pennsylvania and the Erie, contemplates the elimination of the crossing of Forge street at Akron, Ohio.

**CANADIAN NATIONAL**—This company has awarded a contract to G. M. McLeod, Winnipeg, Man., for the construction of a pedestrian subway under its tracks at Dauphin, Man. This same company has awarded a contract to J. H. Simmons, Winnipeg, Man., for the construction of a frame warehouse at Prince Rupert, B. C.

**CANADIAN PACIFIC**—This company contemplates the reconstruction of a station at Schreiber, Ont., to cost about \$80,000. The former station was destroyed by fire last winter, since which time business has been carried on in a temporary frame structure.

**CHAFFEE RAILROAD**—The Interstate Commerce Commission has issued a certificate authorizing this company to operate a line from Vindex, Md., to a connection with the Western Maryland at Chaffee, W. Va., approximately 3½ miles, formerly operated by the Chaffee Coal Company as a plant facility.

**CHICAGO & NORTH WESTERN**—This company contemplates the construction of a station at Sterling, Ill.

**CHICAGO, BURLINGTON & QUINCY**—This company contemplates the construction of a freight and passenger station at Aurora, Ill.

**ERIE**—This company has applied to the New York authorities for permission to construct a pier, 100 ft. by 800 ft., two stories high, at Weehawken, N. J., replacing one of four recently destroyed by fire.

**GULF, COLORADO & SANTE FE**—This company has started the construction of a subway under its three tracks at South Adams street, Fort Worth, Tex., the work involving the placing of 1,000 yards of concrete, 9,000 yards of embankment for the raising of the grade and 7,000 yards of excavation.

**HOLLY SUGAR CORP., DENVER, COLO.**—This corporation contemplates the construction of a 15-mile railroad extending from Hardin, Mont., to Foster, at an estimated cost of \$300,000. This will open an area where this corporation has a large sugar beet acreage. The Chicago, Burlington & Quincy has been considering the possibility of building this extension in connection with a new line it will construct in that vicinity.

**NEW YORK CENTRAL**—This company will receive bids until 12 o'clock, noon, December 20, for two complete 100 ft. turntables with circular rims. It will also receive bids until the same time for overhead contact supports for its suspension bridge at Corning, N. Y.

**NEW YORK, NEW HAVEN & HARTFORD**—This company has awarded a contract to the Roberts & Schaeffer Company, Chicago, for two 1,200-ton capacity, three-track automatic electric coaling plants to be erected at East Hartford, Conn., and Providence, R. I., at cost of \$110,000.

**PACIFIC GREAT EASTERN**—This company contemplates the reconstruction of its wharves at Squamish, B. C., which were recently washed away by heavy floods. The work is estimated to cost about \$120,000.

**SOUTHERN**—This company contemplates the construction of a station at Riceville, Tenn.

**SOUTHERN PACIFIC**—This company contemplates the construction of a station at Currie, Tex., with company forces.

**SOUTHERN PACIFIC**—This company, which was noted in the RAILWAY AGE of December 3 (page 1121), as contemplating the construction of a levee fronting its yard at Algiers (New Orleans), La., has reached a final agreement with the Orleans Parish Levee Board, and will begin construction about February 1, 1922. The project is estimated to cost \$185,000, of which, \$25,000 will be contributed by the Levee Board in consideration of the public interest in the levee.

## Railway Financial News

**ALABAMA, TENNESSEE & NORTHERN**—*Authorized to Issue Securities*—The Interstate Commerce Commission has granted authority for the issuance of \$100,000 of prior lien mortgage 30-year, 6 per cent gold bonds, \$372,000 of 6 per cent equipment trust notes and for the pledge of these securities, together with \$100,000 of similar bonds as security for a loan from the revolving fund.

**CENTRAL NEW JERSEY**—*Petition Against Sale of Coal Stock*—A petition was filed in the United States District Court at Philadelphia on December 9 by the Continental Insurance Company and the Fidelity-Phoenix Insurance Company of New York asking the court to set aside the sale of the Lehigh & Wilkes-Barre Coal Company stock to the Reynolds syndicate, and to order the sale of the stock to the Franklin Securities Corporation, whose bid, the petitioners assert, exceeded the Reynolds offer by at least \$2,000,000. The petition asserts that if the sale to the Reynolds syndicate is confirmed, it will result in great and irreparable damage and injury to the Jersey Central stockholders.

The sale of the stock of the Lehigh & Wilkes-Barre Coal Company was noted in the *Railway Age* in the issue of November 26, 1921, page 1059.

**CHICAGO, INDIANAPOLIS & LOUISVILLE**—*Dividends Declared*—This company has declared a dividend of 1½ per cent on the common stock and the regular semi-annual dividend of 2 per cent on the preferred stock, both payable December 29 to stock of record December 21. The last dividend on the common stock was 1½ per cent declared in June, 1920, and before that none had been declared since December, 1917.

**GREAT NORTHERN**—*Asks Authority to Issue Bonds*—This company has filed an application with the Interstate Commerce Commission for authority to issue \$30,000,000 of general mortgage 5½ per cent gold bonds dated January 1, 1922, and maturing in 1952, not to be redeemable before maturity. It is proposed to sell the bonds prior to March 1 to a banking syndicate for the purpose of providing funds to repay a loan of \$15,000,000 from the United States Government maturing March 1, to pay \$2,800,000 of first mortgage bonds of the Minneapolis Union maturing July 1, \$5,040,000 for new equipment and improvements to existing equipment and the balance for additions and betterments.

**MANCHESTER & ONEIDA**—*Authorized to Issue Bonds*—The Interstate Commerce Commission has authorized the issuance of \$65,000 of new first mortgage 6 per cent bonds to be exchanged for a like amount of first mortgage 5 per cent bonds now outstanding.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE**—*Authorized to Abandon Line*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line of 3.9 miles in Crow Wing County, Minn.

**MISSOURI & NORTH ARKANSAS**—*Application for Loan*—Application has been made to the Interstate Commerce Commission for a loan of \$3,500,000 to pay receivers' certificates and floating indebtedness and to provide \$750,000 for expenditures on the road.

**OREGON SHORT LINE**—*Asks Authority to Issue Bonds*—This company and the Union Pacific have filed an application with the Interstate Commerce Commission for authority to issue \$16,424,000 of 5 per cent bonds under the consolidated mortgage of the Oregon Short Line, maturing July 1, 1946, to be guaranteed by the Union Pacific, to provide for the payment and refunding of \$14,931,000 of first mortgage bonds of the Oregon Short Line maturing February 1.

**TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS**—*Asks Authority to Sell Bonds*—This company has applied to the Interstate Commerce Commission for authority to sell \$65,000 of its general mortgage 4 per cent bonds.

**UNION PACIFIC**—*Guaranty of Oregon Short Line Bonds*—See Oregon Short Line.

### More Equipment Trusts Sold

The director-general of railroads has announced additional sales of railroad equipment trust certificates, held by the government as follows:

To Alfred Borden and Farmers Loan & Trust Company, of New York, Ft. Worth & Denver City, 1922 to 1935, inclusive, \$474,600; to Robinson & Co., of New York, Kanawha & Michigan, 1922 to 1925, \$966,000; to Third National Bank of Cincinnati and Potter Bros. & Co., New York, Cincinnati, New Orleans & Texas Pacific, 1922 to 1927, \$382,800; to Cassatt & Co., of Philadelphia, Atlantic Coast Line and Louisville & Nashville, lessees of Georgia R. R., 1920 to 1927, inclusive, \$473,400; to Poe & Davies, of Baltimore, Atlantic Coast Line, 1929, \$425,300; making a total of \$2,722,100.

The total of equipment trust certificates sold by the government to date at par plus accrued interest is \$135,632,700.

### Treasury Department Payments

The Treasury Department has issued a statement showing its payments to the railroads under the Transportation Act as of December 1 since its previous statement on November 1. Under section 209 (advance of guaranty) \$16,543 has been paid to the Alabama & Mississippi; under section 212 (partial payments on guaranty) \$10,000 to the Carolina & Northeastern. Under section 210 (loans) payments have been made as follows: Central Vermont, \$128,000; Chicago & Eastern Illinois, \$785,000; Evansville, Indianapolis & Terre Haute, \$50,000; National Railway Service Corporation on account of the Chicago, Rock Island & Pacific, \$400,000; New York, New Haven & Hartford, \$400,000; Norfolk Southern, \$50,000; Western Maryland, \$200,000; Wheeling & Lake Erie, \$260,000. Total payments made by the Treasury under the Transportation Act amounted to \$693,452,894. Repayments of loans from the revolving fund have been made by 12 railroads to the amount of \$21,466,067.

### Tentative Valuations

The Interstate Commerce Commission has issued tentative valuations in which it states the final value of the property owned and used, as follows:

Norwood & St. Lawrence, 1917, property used, \$533,973; property owned, \$533,078.

Louisville & Jeffersonville Bridge Company, 1915, property used, \$2,977,210.

Narragansett Pier, 1916, owned, \$310,000.

Nelson & Albemarle, 1916, used, \$259,960; owned, \$141,825.

Norfolk & Portsmouth Belt, 1916, used, \$1,010,881; owned, \$971,881.

Pecos Valley Southern, 1917, used, \$373,672; owned, \$373,409.

### Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts: Nashville, Chattanooga & St. Louis, \$700,000.00; Woodstock & Blocton, \$19,000.00; High Point, Randleman, Asheboro & Southern, \$25,000.00. The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the Railroad Companies and the administration during the 26 months of federal control.

### Dividends Declared

Chicago & North Western.—Common, 2½ per cent, semi-annually, preferred, 3½ per cent, semi-annually; both payable January 16 to holders of record December 12.

Chicago, Indianapolis & Louisville.—Common, 1½ per cent; preferred, 2 per cent, semi-annually; both payable December 29 to holders of record December 21.

Chicago, St. Paul, Minneapolis & Omaha.—Common, 2½ per cent, semi-annually; preferred, 2½ per cent, semi-annually; both payable February 20 to holders of record February 1.

Juliet & Chicago.—1½ per cent, quarterly, payable January 3 to holders of record December 20.

Lehigh Valley.—Common, 1¾ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable January 7 to holders of record December 17.

Michigan Central.—4 per cent, payable January 28 to holders of record December 30.

Northern Pacific.—1¾ per cent, quarterly, payable February 1 to holders of record December 30.

Pere Marquette.—Prior preferred, 1¾ per cent, quarterly, payable February 1 to holders of record January 14; preferred, 10 per cent, payable January 2 to holders of record December 15.

Western Pacific.—Preferred, 1½ per cent, quarterly, payable January 3 to holders of record December 19.

## Railway Officers

### Executive

Howard Elliott, executive assistant of the American Sugar Refining Company and editor of the New York Traffic club bulletin, has been appointed editor of the Union Pacific



H. Elliott

Magazine, with headquarters at Omaha, Neb. Mr. Elliott was born in Indianapolis, Ind., in 1883, and was educated in the public schools of that city and at the college of law of the University of Southern California, after graduation from which he was admitted to the Los Angeles bar. He entered railway service in 1901 as a messenger for the Illinois Car Service Association and during the next nine years held clerical positions with various western roads. From 1910 to 1917 he was in the service of the Los Angeles & Salt Lake consecutively as secretary to the general manager, secretary of the central safety and efficiency committee and inspector of transportation. From 1915 to 1917 he served as a member of the A. R. A. special committee on grade crossing accidents and of the special committee on the relation of railway operation to legislation in Utah.

Edward W. Mason, whose appointment as vice-president and general manager in charge of operation and maintenance of the Western Pacific, with headquarters at San Francisco,



E. W. Mason

Cal., was announced in the *Railway Age* of November 26 (page 1071), was born at Moberly, Mo., on March 23, 1877. He entered railroad service in June, 1893, as a call boy on the Northern Pacific. After learning telegraphy, he worked as an operator at various stations on the line from the fall of 1895 to 1898. From 1898 to 1899 he was a dispatcher at Missoula, Mont., and from June, 1899, to September, 1900, an operator and ticket clerk at Helena, Mont. From the latter date until September, 1902, he was a dispatcher and night chief dispatcher at Tacoma, Wash., following which he was made trainmaster of the Seattle-Tacoma Interurban, with headquarters at Kent, Wash. He returned to the Northern Pacific in May, 1903, as night chief dispatcher at Missoula, Mont., and in May, 1904, was promoted to chief dispatcher and trainmaster with headquarters at Seattle, Wash. He entered the service of the Western Pacific on November 28, 1909, as car accountant and superintendent of telegraph, and was soon after appointed division superintendent with headquarters at Sacramento, Cal. On August 1, 1916, he was promoted to general super-

intendent with headquarters at San Francisco, which position he held until June 1, 1918, when he left to enter the army as a major in the engineers, serving overseas in the transport corps. He returned to the Western Pacific in September, 1919, as general manager with headquarters at San Francisco, which position he was holding at the time of his recent promotion.

**Edward E. Bashford** has been elected executive vice-president of the National Railways of Mexico with headquarters at New York.

**L. C. Gunter** has been elected president of the Knoxville & Carolina, with headquarters at Knoxville, Tenn. **S. B. Luttrell** was elected vice-president, and **J. A. Wallace**, secretary and treasurer, with the same headquarters. This company was recently organized to take over the Knoxville, Sevierville & Eastern.

### Operating

**F. A. Rutherford**, trainmaster of the Grand Trunk with headquarters at London, Ont., has been appointed to passenger trainmaster with the same headquarters. He will be succeeded by **A. F. Sharpe**, chief dispatcher, who in turn will be succeeded by **W. M. Doherty**.

**R. A. Gamble**, trainmaster of the Winnipeg terminal division of the Canadian Pacific, with headquarters at Winnipeg, Man., has been appointed acting superintendent of that division with the same headquarters, succeeding **R. C. Morgan** who has been granted a leave of absence. **F. W. Stone** has been appointed acting trainmaster to succeed Mr. Gamble. **W. J. Stinson**, assistant superintendent of the Trenton division, with headquarters at Havelock, Ont., has been transferred to London, Ont., succeeding **R. G. Edwards**, and he will be succeeded by **N. McMillan**. **G. M. Cordingly**, dispatcher, has been promoted to chief dispatcher, with headquarters at Saskatoon, Sask., succeeding **A. B. Harshaw**.

**June C. Browne**, assistant superintendent of telegraph of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to superintendent of telegraph, with the same headquarters, succeeding **E. A. Chenery**, deceased. Mr. Browne was born at Richmond, Va., on July 13, 1866. He entered railroad service on December 22, 1882, as a telegraph operator on the Missouri Pacific. On November 7, 1887, he was promoted to manager of the telegraph office. He was made general foreman of telegraph on July 1, 1907, and supervisor of telegraph December 10, 1908. On December 1, 1918, he was promoted to assistant superintendent of telegraph, which position he was holding at the time of his recent promotion.

**C. L. Nichols**, whose appointment as general manager of the Northern Pacific, Lines East of Paradise, Mont., with headquarters at St. Paul, Minn., was announced in the *Railway Age* of December 10 (page 1178), was born at Wyandot, Ill. He began railroad work in the service of the Chicago, Burlington & Quincy and since that time has successively been chief dispatcher of the Atchison, Topeka & Santa Fe at Emporia, Kan., trainmaster, with headquarters at Topeka, Kan., and division superintendent, with headquarters at Fort Madison, Iowa; superintendent of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill.; dispatcher of the Chesapeake & Ohio at Huntington, W. Va.; dispatcher of the Missouri, Kansas & Texas at Sedalia, Mo.; chief dispatcher of the Chicago, Rock Island & Pacific at Horton, Kan., and at Blue Island, Ill., and division superintendent with headquarters at Fairbury, Neb.; superintendent of the Chicago, Cincinnati & Louisville (Chesapeake & Ohio of Indiana), with headquarters at Richmond, Ind., and later at Peru, Ind., and general superintendent, with headquarters at Cincinnati, Ohio; division superintendent of the Chicago Great Western, with headquarters at Des Moines, Iowa; superintendent of the Montana division of the Northern Pacific with headquarters at Livingston, Mont., in 1908, superintendent of the Central district from 1908 to 1912 and general superintendent with headquarters at St. Paul, Minn., from 1912 to

1919. During the latter year he was promoted to assistant to the general manager, with headquarters at St. Paul, which position he was holding at the time of his recent promotion.

**Edwin C. Blanchard**, whose appointment as general manager of the Northern Pacific, Lines West of Paradise, Mont., with headquarters at Tacoma, Wash., was announced in the *Railway Age* of December 10 (page 1178), was born on July 29, 1854, at Wapello, Iowa. He entered railroad service in December, 1874, as a telegraph operator on the Burlington, Cedar Rapids & Northern, now a part of the Chicago, Rock Island & Pacific, which position he held until 1876, when he left to become a telegraph operator on the Kansas Pacific, now a part of the Atchison, Topeka & Santa Fe. He was later promoted to train dispatcher, and from 1882 to 1883 he was a dispatcher on the Denver & South Park. He entered the service of the Northern Pacific in 1883, on which road he has successively held the positions of dispatcher, from 1883 to 1885; chief dispatcher, to 1897; division superintendent, with headquarters at Minneapolis, Minn., to September 1, 1903; division superintendent with headquarters at Duluth, Minn., to April 25, 1909; general superintendent of the eastern district, with headquarters at St. Paul, Minn., to April 25, 1912; and assistant general manager of the lines west of Paradise, with headquarters at Tacoma, up to the time of his recent promotion. The position of assistant general manager has been abolished.

### Traffic

**H. H. Bolton** has been appointed agricultural agent of the Alabama, Tennessee & Northern with headquarters at Mobile, Ala.

**H. R. Bullen** has been appointed assistant general agent, passenger department, of the Canadian National with headquarters at Los Angeles, California.

**J. V. Lanigan**, whose appointment as general passenger agent of the Illinois Central, with headquarters at Chicago, Ill., was announced in the *Railway Age* of December 3 (page

1123), was born at St. Louis, Mo. He entered railroad service as a clerk in the passenger department of the Chicago, Burlington & Quincy, and held various clerical positions with that road until 1904, when he left to become rate clerk in the passenger department of the Missouri, Kansas & Texas. In 1906, he entered the service of the Illinois Central as a rate clerk in the passenger department, and in January, 1908, he was promoted to chief rate clerk of that department. On April 15, 1911, Mr.

Lanigan was promoted to assistant general passenger agent with headquarters at Chicago, which position he was holding at the time of his recent promotion.

**S. G. Reed**, assistant general freight agent of the Southern Pacific, Texas lines, with headquarters at Houston, Tex., has been promoted to assistant to the traffic manager with the same headquarters.

**P. W. Clarkin** has been appointed acting division freight agent of the Canadian National at Charlottetown, Prince Edward Island, succeeding **A. McDonald**, on leave of absence on account of ill health.

**G. E. Bunting** has been appointed general traffic manager of the Canadian National with supervision over all freight



J. V. Lanigan

and passenger traffic in New Zealand and Australia, with headquarters at Auckland, N. Z.

**H. E. MacDonnell** has been appointed special freight traffic representative of the Canadian Pacific. **W. C. Bowles** has been appointed assistant freight traffic manager, Eastern lines, succeeding Mr. MacDonnell.

**Charles P. Gaither** has been appointed foreign freight agent of the Seaboard Air Line with headquarters at Norfolk, Va., with supervision over export and import traffic, including Pacific Coast traffic via the Panama Canal, effective January 1.

**J. F. Hogan**, general agent of the El Paso & Southwestern, and the Morenci Southern, with headquarters at San Francisco, Cal., has been transferred, with headquarters at Chicago, Ill., succeeding F. W. Pullen, who has left to enter other business.

**William Haywood**, whose appointment as general freight agent of the Illinois Central, with headquarters at Chicago, Ill., was announced in the *Railway Age* of December 3 (page

1123), was born at Lanchester, England, on May 30, 1884. He entered railroad service in October, 1901, as a messenger boy in the office of the traffic manager of the Illinois Central. He was later appointed secretary to various traffic officers, including the vice-president in charge of traffic, and from September 21, 1909, to July 1, 1912, he was secretary to the president. On the later date he was promoted to chief clerk to the vice-president in charge of traffic, which position he held until April 1, 1917,

when he was promoted to assistant general freight agent of the Northern and Western lines, with headquarters at Chicago. On March 1, 1920, he was promoted to assistant to the traffic manager, with the same headquarters, which position he was holding at the time of his recent promotion. The activities of the general freight department of the Northern and Western lines have been segregated. Mr. Haywood's newly created office will have charge of solicitation and matters related thereto, while C. C. Cameron, general freight agent, with headquarters at Chicago, will have charge of rate adjustments, rate quotations, tariffs, division and other relative subjects, with the exception of coal and coke traffic.

**J. C. Peterson**, general agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Winnipeg, Man., has been transferred to Minneapolis, Minn., and will be succeeded at Winnipeg by **C. F. Ronnan**, commercial agent, with present headquarters at Minneapolis.

**Stanton Curtis**, division passenger agent of the Southern, with headquarters at St. Louis, Mo., has been appointed general passenger agent of the Mobile & Ohio, with the same headquarters, succeeding Charles Rudolph, resigned. **D. L. Jones** has been appointed commercial agent, with headquarters at Memphis, Tenn.

**J. L. McCloskey** has been appointed acting general agent of the Canadian Pacific, with headquarters at Juneau, Alaska, succeeding **R. F. Richardson**, deceased. **T. McNeil**, traffic agent, with headquarters at Liverpool, England, has been promoted to general agent, with the same headquarters. **R. E. Swain** will succeed Mr. McNeil.

**Henry E. Kremer**, whose appointment as assistant general freight agent of the Louisville & Nashville, with headquarters at Louisville, Ky., was announced in the *Railway Age* of

December 10 (page 1178), began railroad service as a clerk in the mailing department of the Louisville & Nashville, at Louisville. Since that time he has been promoted successively through various positions in the rate and tariff departments, including chief tariff clerk, assistant chief clerk and chief clerk to the general freight agent at Louisville, which latter position he was holding at the time of his recent promotion.

**J. W. Stevenson**, whose appointment as assistant general passenger agent of the Illinois Central, with headquarters at Chicago, Ill., was announced in the *Railway Age* of December 3 (page 1123), was born in that city on September 17, 1888. He entered railroad service on July 1, 1903, as a clerk in the offices of the Western Passenger Association at Chicago. On October 7, 1909, he left to become a rate clerk in the passenger department of the Chicago Great Western, which position he held until November 15, 1912, when he entered the service of the Illinois Central as a rate clerk in the passenger department. He was promoted to assistant chief clerk of that department on March 16, 1914, and to chief clerk on May 13 of that year. On March 1, 1920, Mr. Stevenson was promoted to district passenger agent, with headquarters at Chicago, and on April 1, of that year, to chief clerk of the traffic department with the same headquarters, which position he was holding at the time of his recent promotion.

**B. A. Rogers**, whose appointment as assistant general freight agent of the Kansas City Southern, with headquarters at Kansas City, Mo., was announced in the *Railway Age* of November 19 (page 1018), entered railroad service on July 4, 1900, in the general freight office of the Atchison, Topeka & Santa Fe at Topeka, Kan., and through various promotions became rate clerk in the same office. In May, 1904, he was transferred to Chicago as rate clerk, which position he held until May, 1905, when he left to become rate clerk in the vice-president's office of the Chicago & Eastern Illinois. He entered the service of the St. Louis-San Francisco on March 1, 1906, as clerk to the traffic manager, and he was tariff clerk for that road from July 1, 1907, to February 1, 1908. On the latter date he went to the Kansas City Southern as tariff clerk and was promoted to assistant chief clerk on June 1, 1910, and to chief clerk on June 16, 1916. He was promoted to general agent, with headquarters at St. Louis, Mo., on January 5, 1920, which position he was holding at the time of his recent promotion.

### Mechanical

**G. W. Lillie**, whose appointment as superintendent of motive power of the Denver & Salt Lake, with headquarters at Denver, Colo., was announced in the *Railway Age* of

November 26 (page 1071), was born at Omaha, Neb., in 1868. He entered railroad service as an apprentice in the Omaha shops of the Union Pacific and was later promoted to draftsman. He became chief draftsman of the Oregon Short Line at Salt Lake City, Utah, in 1897. In 1899, he left railroad service to become mechanical draftsman for the United States naval construction base at Newport, Va. He re-entered the service of the Oregon Short Line in 1901 in the mechanical department. In

1907 he left to become superintendent of the passenger department of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., and in 1908, he was promoted to superintendent of the Springfield shops with headquarters at Springfield, Ill. In



W. Haywood



G. W. Lillie

again returned to the Oregon Short Line in 1910 as master mechanic with headquarters at Pocatello, Idaho. He left again in 1913, to become mechanical superintendent of the second district of the Chicago, Rock Island & Pacific, with headquarters at Topeka, Kan. In 1915 he entered the service of the Bingham & Garfield as master mechanic, with headquarters at Salt Lake City.

**P. G. Feick**, formerly general foreman at Oklahoma City and other points on the St. Louis-San Francisco, has been appointed district foreman of the Oregon Short Line with headquarters at Nampa, Idaho.

**E. W. Lostrom** has been appointed road foreman of engines of the Northern Pacific, with headquarters at Duluth, Minn., succeeding J. A. Marshall, promoted, as was noted in the *Railway Age* of December 10 (page 1178).

### Purchasing and Stores

**Robert J. Elliott**, whose appointment as purchasing agent of the Northern Pacific, with headquarters at St. Paul, Minnesota, was announced in the *Railway Age* of November 26 (page 1071), was born at Louisville, Kentucky. He entered railroad service in March, 1892, as a clerk in the accounting department of the Northern Pacific. Later he was transferred to the general manager's office, and after serving the company in various capacities he was in 1905 promoted to general storekeeper, with headquarters at St. Paul, Minnesota. In 1907, he was appointed assistant purchasing agent, with the same headquarters, which position he held at the time of his recent promotion.



R. J. Elliott

### Engineering, Maintenance of Way and Signaling

**J. F. George** has been elected treasurer of the Norfolk Southern, succeeding Captain Matthias Manly, deceased.

**S. H. Carroll** has been appointed roadmaster of the Alabama, Tennessee & Northern with headquarters at York, Ala.

**B. F. Beckman** has been appointed chief engineer of the Fort Smith & Western, with headquarters at Fort Smith, Ark., succeeding W. J. Rider, resigned to enter business.

**W. W. Kelly**, whose appointment as engineer of the Grand Division of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., was announced in the *Railway Age* of December 3 (page 1124), was born at Winfield, Kan., on November 30, 1885. After graduating in engineering from Rose Polytechnic Institute, he entered railroad service as a chairman on the Illinois division of the Atchison, Topeka & Santa Fe, in July, 1903, and was chairman and rodman on maintenance and construction work until September, 1906. He left in 1907 to accept a position as instrument man on the Chicago, Milwaukee & St. Paul, at Milwaukee, Wis., returning to the Atchison, Topeka & Santa Fe as transitman in September, 1907. He was successively transitman, inspector, assistant engineer, and chief pilot engineer on valuation until May, 1917, when he was promoted to engineer of the Albuquerque division, with headquarters at Winslow, Ariz. In September, 1919, he was transferred to the Los Angeles division, with headquarters at San Bernardino, Cal., which position he was holding at the time of his recent promotion.

## Obituary

**Walter H. Oliver**, engineer of the Grand Division of the Atchison, Topeka & Santa Fe Coast Lines, with headquarters at Los Angeles, Cal., whose death was mentioned in the *Railway Age* of November 26 (page 1061), was born at Fergusonville, New York, on March 11, 1886. He entered railroad service on June 4, 1895, as a transitman on the Los Angeles division of the Atchison, Topeka & Santa Fe. In 1900 he left to become a draftsman of the Mexican Central, and later was successively levelman, transitman on location, and assistant engineer on construction on the line from Papotlan, Mexico, to Colimo. He re-entered the service of the Atchison, Topeka & Santa Fe on January 1, 1902, as a transitman on the Los Angeles division. He was promoted to assistant engineer of that division in January, 1905, and to engineer of the Arizona division, with headquarters at Needles, Cal., in March, 1906. He was transferred to the Los Angeles division in June, 1915, with headquarters at San Bernardino, Cal., and in October, 1919, he was promoted to engineer of the Grand division which position he held up to the time of his death caused by a motor car accident which occurred on November 22.



W. H. Oliver

**William Matthie**, superintendent of the Albuquerque division of the Atchison, Topeka & Santa Fe, with headquarters at Winslow, Ariz., whose death was mentioned in the *Railway Age* of November 26 (page 1061), was born at Lindsay, Ontario, on August 2, 1868. He began railroad work on the Canadian Pacific in the north western part of Canada in 1885. He entered the service of the Great Northern in 1887, and worked on construction projects between Minot, N. D., and Great Falls, Mont. He left in 1888, to become an agent on the Northern Pacific, which position he held until 1889 when he entered the service of the Chicago Great Western as an operator at Dubuque, Iowa. From this position he was promoted successively to dispatcher, night chief dispatcher, day chief dispatcher and trainmaster. In 1904, he was promoted to superintendent of terminals, with headquarters at Oelwein, Iowa, which position he held until 1906, when he left to become an agent on the Atchison, Topeka & Santa Fe, at Barstow, Cal. He was promoted to chief dispatcher at Needles, Cal., in 1907 and to trainmaster with the same headquarters in 1909. He was transferred to San Bernardino, Cal., on July 10, 1918, and was promoted next to the position of superintendent of the Albuquerque division on January 1, 1920, which position he was holding at the time of his recent death in a motor car accident on November 22.



Wm. Matthie



Il glory be to God on high,  
And to the earth be peace;  
Good-will henceforth from heaven to men  
Begin and never cease."



# Railway Age

Vol. 71 December 24, 1921 No. 26



The South Manchurian Railway's Train and Steamer Connection at Dairen, Photo from Underwood & Underwood, N. Y.

## Contents

### Justifying Expenditures for Grade Reductions ..... 1243

A Paper Read by George J. Ray, Chief Engineer of the Delaware, Lackawanna & Western Before the Western Society of Engineers. Point Made That Clarke Summit-Hallstead Line of Lackawanna Fully Warranted by Operating Results.

### First Part of Rate Hearing Concluded ..... 1251

Preliminary Testimony Given by Railroads Who Oppose Further Rate Reductions at Present Hearings Adjourned Until January 9.

### The Development of the Robinson Connector ..... 1259

Latest Type Incorporates Improvements Suggested by Extensive Service of Earlier Design.

#### EDITORIALS

October Operating Statistics .....	1237
C. P. R. Sells Stock in New York .....	1237
Ford Proposes Simplified Reports .....	1237
Standardizing Train Line Connectors .....	1237
Support the Technical Bureaus .....	1237
Net Income of Ford's Railroad Steadily Declines .....	1238
Conceiving the Supervisory Officers .....	1239
Central of Georgia .....	1239

#### NEW BOOKS ..... 1240

#### LETTERS TO THE EDITOR

A Question of Priority; R. C. McCormick .....	1241
The Interior Treatment of Boiler Waters—A Criticism; C. H. Koyl .....	1241
The Public's Right to Steel Cars .....	1242
Railroad Statistics; C. D. Hicks .....	1242
Practical Questions About Steam Locomotive Operation .....	1242

#### GENERAL ARTICLES

Justifying Expenditures for Grade Reduction; by George J. Ray .....	1243
Freight Car Loading .....	1250
First Part of Rate Hearing Completed .....	1251
Accounts for Six Months Guaranty to Be Closed .....	1257
Interlocking Directors Authorized Except on Competing Lines .....	1258
The Development of the Robinson Connector .....	1259
Railroads May Not Evade Consolidation Provisions of Law .....	1263
A Plea in Behalf of the Supervising Officers; by J. L. Eldridge .....	1265
Amendment to Transportation Act Opposed .....	1266
Contract Work Under Fire Before Labor Board .....	1267
The Seriousness of the Egg Claim Situation; by A. L. Green .....	1270
Loading Guides Solve Difficulties of L. C. L. Freight .....	1271
Economic Speeds for Freight Operation; by H. Ashton .....	1273
Railroad Administration Accounts .....	1275
New Wall Unit Simplifies Standardized Buildings .....	1275
Recent Improvements in Adjustable Crosshead .....	1276

#### GENERAL NEWS DEPARTMENT ..... 1277

Published weekly and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *President*  
L. B. SHERMAN, *Vice-Pres.*

HENRY LEE, *Vice-Pres. & Treas.*  
SAMUEL O. DUNN, *Vice-Pres.*

C. R. MILLS, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*

CHICAGO: Transportation Building  
PHILADELPHIA: 407 Bulletin Bldg.  
CINCINNATI: First National Bank Bldg.

CLEVELAND: 4300 Euclid Ave.

LONDON: England: 34, Victoria St., Westminster, S. W. 1.

Cable address: Urasimco, London  
NEW ORLEANS: Maisou Blanche Annex

WASHINGTON: Home Life Bldg.

#### Editorial Staff

SAMUEL O. DUNN, *Editor*

ROY V. WRIGHT, *Managing Editor*

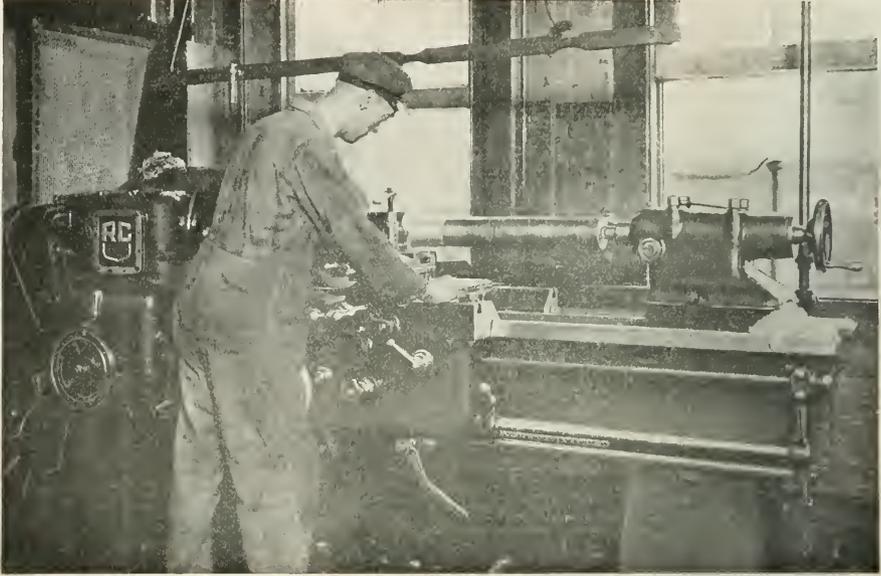
E. T. HOWSON	A. F. STUEBING	MILBURN MOORE
H. B. ADAMS	C. W. FOSS	E. L. WOODWARD
H. F. LANE	N. E. KELLENBERGER	J. E. COLK
R. E. TRAYER	ALFRED G. OEHLLER	J. G. LYNSF
C. B. DECK	F. W. KRAEGER	I. H. DUNN
W. S. LACHIER	HOLCOMBE PARKES	D. A. STEEL
J. G. LITTLE	C. N. WINTER	K. H. KOACH

Entered at the Post Office of New York, N. Y., as mail matter of the second class.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free, United States, Mexico and Canada, \$6.00. Foreign Countries (excepting daily editions), \$8.00. Foreign subscriptions may be paid through any London office in £ s. d. Single copies, 25 cents each.

WE GUARANTEE, that of this issue 8,850 copies were printed, that of these 8,850 copies 7,955 were mailed to regular paid subscribers, 34 were provided for counter and news company sales, 37 were mailed to advertisers, 65 were mailed to employees and non-residents and 447 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 479,400, an average of 9,400 copies a week.



Roughing down a knuckle pin on a Ryerson-Conradson lathe from an engine truck axle, taking a 15/16 inch cut at a .083 inch feed—a thing you have to do sometimes.

## Are your Locomotives earning Dividends?

Locomotives spend over half their time in the hands of the mechanical department.

During that time money invested in them earns no returns.

To reduce the idle time of expensive power is the purpose of the modern machine tool.

In the lathe this is best exemplified by the Ryerson-Conradson machine.

Among its time-saving features are centralized apron control, unusual range of feeds and speeds, direct motor drive, constant meshing of all gears permitting rapid shifting, and many others, such as plenty of power at the tool.

*Bulletin 1,301 gives the details.*

*Write for it.*

**JOSEPH T. RYERSON & SON**

Established 1842

Incorporated 1888

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

**RYERSON MACHINERY**

# EDITORIAL

## Railway Age

# EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The operating statistics for October of roads with annual operating revenues above \$25,000,000 are somewhat more interesting than has been the case with the figures for previous months. The statistics in question have been issued this week by the Bureau of Statistics and appear on another page of this issue. The net ton-miles—including both revenue and non-revenue freight—for October will unquestionably show that much less traffic was handled in that month this year than in October, 1920. However, perusal of the October statistics will show that there are five roads which handled more net ton-miles in October this year than in October last year. These are the Long Island, the Louisville & Nashville, the Oregon-Washington, the Chicago, Rock Island & Pacific and the Oregon Short Line. In addition, the traffic handled by the Atchison, Topeka & Santa Fe and the Union Pacific was practically on a par with the 1920 figure. One must, of course, not grant too much importance to these details because presumably a decided falling off in traffic will be evidenced when the November totals are issued. Nevertheless, the fact that five roads in October this year had traffic in excess of, and two on a par with, that for October last year—particularly when one considers that October, 1920, was with the single exception of August, 1920, the busiest in the railroad's history—will not serve to encourage the pessimists.

### October Operating Statistics

The sale in the United States market of \$25,000,000 Canadian Pacific consolidated 4 per cent coupon debenture stock formally announced on Monday, December 19, is worth more than passing notice. The technical name given the securities is somewhat unfamiliar, but the debenture stock is what we in the United States would call a prior lien bond. The Canadian Pacific balance sheet as of December 31, 1920, showed ordinary stock of \$260,000,000; four per cent preference stock amounting to \$80,681,921 and the four per cent consolidated debenture stock amounting to \$216,284,882. The latter stock—or, as noted, what we would call prior lien bonds—has no maturity date. It has paid its 4 per cent regularly since its issuance in 1885. The Canadian Pacific is truly a British company as indicated by the ownership of the common stock. Of the 2,600,000 shares outstanding on March 1, 1921, 1,242,837 shares or 47.8 per cent were held in the United Kingdom; 460,838 or 17.73 per cent in Canada and 626,510 or 24.1 per cent in the United States. Insofar as concerns this coupon debenture stock, it is pointed out by the bankers that this is the first issue of the debentures which has been placed directly in the United States. Heretofore, it is noted, the road has gone to London. There is an additional point in that the stock is to be issued with coupons; hitherto the practice has been to issue the stock as a registered stock. There can be no question about the reception the stock will be given by American investors. The Canadian Pacific is truly an American railroad. Students of the American railroad situation will give due appreciation to the fact that while Canada had a heavy burden to carry during the war, the C. P. R. was excused from 26 months of government control.

### C. P. R. Sells Stock in New York

A press despatch under a Detroit date line appeared in last Saturday's papers as follows: "Henry Ford's railroad, the Detroit, Toledo & Ironton, which has objected to the present system of railroad reports prescribed by the Interstate Commerce Commission, has presented a simplified proposal to the commission. Ford's officials believe that adoption of the plan would save thousands of dollars to the country's railroads and at the same time be adequate for all public needs. The commission is now studying the proposal." The news in this item is in the last sentence, "The commission is now studying the proposal." The commission has been studying such proposals since 1887.

### Ford Proposes Simplified Reports

Probably few of the readers of the *Railway Age* outside of Canada are familiar with the extensive application of automatic connectors described in an article in this issue. The development of this device has gone on steadily for several years and the fact that the road which has the largest installation is continually equipping more cars is conclusive evidence that the connector has passed the experimental stage. As it is now coming into general use on a number of roads, the question of interchange naturally presents itself. Up to this time the designers of connectors have contented themselves with devising arrangements for interchanging with the standard air and steam hose. The time is approaching when interchange between various types of connectors must be considered. If conflicting types are developed, employees will resort to unsatisfactory make-shifts to permit cars to be interchanged. The connector performs the important function of conveying the air upon which depends the control of the train and hence the safety of its passengers. Even more important than the expense that would result from the use of varying contours for the coupling parts of connectors is the dangerous inefficiency of the brake system which such a situation would involve. This is a matter which ultimately may involve nearly 60,000 passenger cars and 3,000,000 freight cars. The magnitude of the problem makes it worthy of thorough consideration by the railroads and by the American Railway Association with a view to establishing standards for the interconnecting parts of various makes of connectors.

### Standardizing Train Line Connectors

The Department of Commerce is a unique governmental institution in that its activities are directed primarily in furthering the interests of industry and business. The ninth annual report of the Secretary of Commerce is of particular interest because it is the first report to be made by the present secretary. Herbert Hoover. In view of the fact that the object of this department is to aid rather than to hamper business and in the light of the enormous gross appropriation for our national government, the estimated requirements for the Department of Commerce for the fiscal year of 1923, namely, \$24,641,000, is indeed modest. In justifying this estimate

### Support the Technical Bureaus

1237

which is \$7,051,000 in excess of the appropriation for the fiscal year 1922, the report places particular stress on the difficulties experienced because of restriction of previous appropriations. As a minor illustration, a master track scale purchased by the Bureau of Standards several years ago as an adjunct to its work of testing railroad track scales, is still of no use owing to the lack of a building in which to house it. The United States Coast and Geodetic Survey, which is responsible for the skeleton work of highly accurate surveys and levels that form the primary basis for much of the survey and map work conducted by the railroads and others, has been seriously hampered by a low salary scale in recruiting the technically trained men required for its exacting work. It is only with extreme difficulty that the high standard of its performance has been maintained. Another technical bureau, although outside of the Department of Commerce, which has suffered from the starvation policy as to salaries is the Patent office, which is now admittedly incapable of coping with the work imposed on it. The result has been to retard invention and development work and the railways and railway industries are by no means the least of the sufferers. The appropriation requirements of these technical departments, as with those of the Forest Products Laboratory previously referred to in these columns, are small as compared with allotments to activities enjoying a greater popular demand, but the business and industrial interests of the country can ill afford to see their work throttled for want of adequate support.

## Net Income of Ford's Railroad Steadily Declines

REPORTS of the earnings and expenses of the Detroit, Toledo & Ironton Railroad for September and October, which have just been filed with the Interstate Commerce Commission after considerable delay, indicate that Henry Ford is learning that it is not so easy to operate a railroad at a profit as it appeared last spring. Not only has the net operating income of the road since April been less each month than in the preceding month, but for the last three months reported, which are the months since his wage increase took effect, it has been less than it was in the month during which the Ford management took charge. For the month of October it was only \$15,191, as compared with \$77,985 for March, when the Ford management was installed. This is in marked contrast with the showing made by the railroads generally, whose net operating income has increased almost steadily throughout the year.

The reports of the Detroit, Toledo & Ironton for September and October have been delayed while Mr. Ford's accountants have been trying to convince the commission that the amount of detailed information which the commission requires of Class I roads to report to it monthly is unnecessary. Mr. Ford has let it be known that he has some ideas on the subject of simplified bookkeeping and while he has been arguing with the commission on the subject it has gone to press with its monthly summaries for September and October covering only 200 roads instead of 201 and with a footnote saying that the D. T. & I. report had not been filed. The commission apparently, however, has let Mr. Ford understand that even he is subject to its requirements and the reports reached the files on Monday morning. Mr. Ford's reports of his railroad operations have been awaited with unusual interest because he has been going around the country giving interviews as to how he could revolutionize railroading if he were in charge of all the railroads of the country.

As has been previously shown, Mr. Ford's newspaper reputation as a railroad wizard was based primarily on the sud-

den jump in his net operating income for the month of April, which was nearly \$200,000 greater than it was for March, as the result of the diversion of Ford tonnage to the line and an increase of \$258,000 in the earnings with an increase of only \$42,000 in operating expenses. These results were made public at about the same time that Mr. Ford announced an increase in wages to become effective on July 1 and a 20 per cent reduction in rates, which except as to local intrastate traffic in Ohio was suspended by the Interstate Commerce Commission. The gross earnings continued to increase for several months but the handling of increased tonnage also brought an increase in expenses, which was accentuated by the wage increase in July, and the net operating income has continued to fall ever since. For August it had been reduced to \$70,643, or less than it was in March. For September it was only \$46,749 and for October only \$15,191, or \$261,000 less than it was in April. The revenues, expenses, operating ratio and net operating income for the eight months during which the Ford management has been operating the road as shown by the reports to the Interstate Commerce Commission, have been as follows:

Month	Operating Revenues	Operating Expenses	Oper. Ratio Per Cent	Net Oper. Increase
March, 1921.....	\$439,052	\$352,970	80.4	\$77,985
April.....	697,491	395,816	56.7	276,452
May.....	744,406	423,328	56.7	263,293
June.....	713,527	376,383	52.7	261,159
July.....	744,498	444,794	59.7	187,395
August.....	763,840	548,246	71.8	70,643
September.....	759,737	372,378	75.3	46,749
October.....	652,438	514,504	78.8	15,191

It will be noted that the increase in revenues did not keep up after August and that the expenses were somewhat reduced in October after the earnings had fallen, but that the reduction in net was in spite of an increase of \$213,386 in earnings in October as compared with March. In addition to the increases in expenses, the reports show a large debit balance of equipment rents.

It is true that the D. T. & I. has made a much better showing this year than it did in 1920. For the ten months, January to October, 1921, the net operating income was \$887,596 as compared with a deficit of \$1,097,265 in the ten months of 1920. In this connection it will be recalled that the D. T. & I. in common with other roads had a 40 per cent increase in freight rates on August 26, 1920, and the railroads generally have been earning some return this year, in spite of a decrease of revenues, whereas they earned practically no return last year. The roads generally, however, have been gaining throughout the year up to and including October, which was their best month so far as net operating income is concerned. For the ten months' period the Detroit, Toledo & Ironton had \$5,953,606 of operating revenues, an increase of \$1,722,699 as compared with 1920, or 40 per cent, while the railroads generally had a decrease in earnings of eight per cent. Its operating expenses were \$4,292,418, a decrease of \$707,321, or 14 per cent, while the railroads generally reduced their expenses 17 per cent. The increase in the D. T. & I. earnings was entirely in freight revenue and represents just the amount of the rate increase, which, however, was also in effect in September and October last year. Passenger and other revenues decreased. In expenses most of the decrease was in maintenance, which was \$470,679 less than for 1920, or 19 per cent. On the railroads as a whole the maintenance expenses were 21.7 per cent less than in 1920. Transportation expenses were reduced by \$220,137, or about ten per cent. The net operating revenues for the ten months were \$1,661,188 as compared with a deficit of \$768,832 in 1920. Equipment rents paid showed an increase of \$394,831 and the net operating income was \$887,596 as compared with a deficit of \$1,097,265 in 1920. As the freight revenues for the ten months were \$5,701,734, a 20 per cent reduction in rates would have amounted to \$1,140,000, and would have completely wiped out the net operating income unless it would

have induced Mr. Ford as a shipper to buy more transportation from his own railroad.

Mr. Ford has said in an interview that he could operate all of the railways of the United States just as well as he does the D., T. & I. Since he has reduced the net operating income of the D., T. & I. 95 per cent in six months, while the other railways of the country have been gradually improving their net returns, his statement of what he could do with the railroads as a whole can be accepted as unquestionably correct.

## Concerning the Supervisory Officers

UNFORTUNATE as it is, it must be admitted that within recent years there has been a serious increase in the controversies and antagonisms between railway managements and railway employees. The labor situation on the railways was very unsatisfactory before government control. The labor policies followed by the Railroad Administration aggravated the situation by taking the settlement of almost all matters affecting labor out of the hands of the officers of the individual railways and their employees, and centralizing it in Washington. There was a large increase in the number and strength of railway labor unions, and, whatever may be said for or against the organization of labor, there can be no question that since the railways were returned to private operation this increase of unionism has increased the difficulty of establishing harmonious relations between them and their employees.

It long has been, and still is, a question whether the various classes of supervisory officers of the railways finally will identify themselves with the managements and act according to the principle that they have the full duties and responsibilities of officers, or will decide to regard themselves merely as employees and organize themselves into full-fledged labor unions and employ the methods of labor unions. This is a question of great importance, both to the railways and the supervisory officers.

The main reason why there is any doubt as to the future attitude and conduct of supervisory officers is that many of them honestly believe the railway managements have not treated the various classes of them fairly. They believe the managements have granted many concessions to organized employees because they were forced to; that in consequence many classes of employees have been treated relatively better than the supervisory officers; and that the only way the supervisory officers can get what they are entitled to is by organizing and employing similar coercive methods.

We publish elsewhere in this issue an article on the situation of the supervisory officers by J. L. Eldridge, vice-president of the Yardmasters' Association of America. Mr. Eldridge is one of the fairest and most intelligent of the leaders of these supervisory officers' organizations. He discusses principally the duties and responsibilities of the yardmasters and the way in which he feels they have been dealt with, but undoubtedly what he says expresses the views of supervisory officers of other classes. His article is temperately written and well worth reading.

The supervisory officers are the points of contact between the railway managements and the employees. They can do much to increase the efficiency of the work of the employees. They can do much to determine the attitude of employees toward the managements. If the supervisory officers are given wages and working conditions which are reasonably satisfactory to them they are sure to perform their duties and to deal with the employees in a manner which will be much more beneficial to the railways than if they are required to work for wages and under conditions which they strongly feel are unfair as compared with those of the employees below them or the other officers above them.

There is another point of great importance which should be considered in this connection. The railways should recruit a very large part of the higher officers in the mechanical, maintenance-of-way and transportation departments from the supervisory officers. Therefore they should make the wages and working conditions of these officers such as to secure and develop in supervisory positions men who will be fit for promotion, and who, when promoted, will be able efficiently to perform the duties of higher, and even of the highest official positions.

Unquestionably, mistakes have been made in dealing with the various classes of supervisory officers in the past. In many cases their wages and working conditions have been made such that they have not been attractive to men of ability and promise. The very fact that organizations which are practically labor unions have been formed among them indicates a state of mind which is far from healthy.

While there have been evidences of serious discontent among the supervisory officers, there also have been afforded in certain recent trying periods some striking evidences that the old spirit of loyalty to the railways is still dominant among them. In every instance within recent years, when the railways have had to fight strikes in their shops and yards, a large part, or even a great majority, of the supervisory officers have not only stuck to their work, but have done it efficiently, courageously, and regardless of the hours they were supposed to be on duty. Since there is nothing the railways need more than efficiency and loyalty among their supervisory officers, they should spare no reasonable effort to restore and maintain these qualities among them.

## Central of Georgia

THE CENTRAL of Georgia operates 1,914 miles of line, of which 1,423 is owned, 476 is leased and 15 is trackage rights. Of the total mileage, 1,333 is in Georgia, 577 in Alabama and 4 in Tennessee. The road is one of the most prosperous in the South; it has paid the six per cent on the cumulative preferred regularly since that stock was issued in 1912 and has maintained a rate of five per cent on its common stock since 1913. All of the stock of both issues is owned by the Illinois Central. The latter in 1920 received dividends on its Central of Georgia stock amounting to \$900,000 on the \$15,000,000 preferred and \$249,925 on its \$5,000,000 (or to be exact \$4,998,500) common.

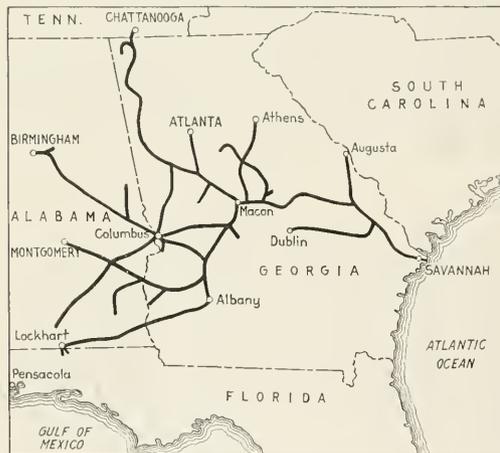
The fact that the Central of Georgia is controlled by the Illinois Central is of great importance outside of the income which is brought to the parent company. The Illinois Central system by its control of the Central of Georgia is given access to southeastern Alabama and central Georgia as well as an outlet at the important port of Savannah. The fact that the Illinois Central's high standards of operation and service are reflected in the activities of the Central of Georgia is further a factor of no small importance to the territory which the latter serves.

*Dividend Income Makes Big Difference in 1920.*—The Central of Georgia's line into Savannah is the leading line serving that port. The Ocean Steamship Company which operates out of Savannah to New York and Boston is controlled through ownership of the entire stock. For a period of years the steamship company has been paying regular dividends of 16 per cent and in addition extra dividends from time to time. In 1920 an extra dividend of 40 per cent was paid, the railroad company receiving \$799,640. The Central of Georgia owns also a majority of the stock of the Wrightsville & Tennille, all of the stock of the Wadley Southern and one-half that of the Western of Alabama. In 1920, as shown in the income account which appears on another page of this issue, the Central of Georgia had a net corporate income of \$1,516,707 as compared with \$1,282,650

in 1919. The 1920 income included the standard return for January and February, the last two months of federal control, and the guaranty for the guaranty period. It will be noted, however, that in 1920 there was an item of dividend income of \$1,477,826, or \$1,031,654 more than in 1919.

**Record Traffic in 1920.**—Insofar as railway operations alone were concerned, 1920 was not a very successful year. The road handled a record traffic. It carried 7,517,302 tons of revenue freight. Its revenue ton-mileage was 1,283,298,476 which compared with a figure for 1918, the best previous year, of 1,143,774,783. The net railway operating income for the year as reported in the December, 1920, monthly statement to the Interstate Commerce Commission was but \$23,969. It was only as a result of the good earnings of the last two months of the year that a net operating deficit was avoided. The standard return based on operations for the three years ended June 30, 1917—which figure we introduce by way of comparison—was \$3,450,903. In 1918 the road had a net railway operating income of \$3,894,069; in 1919, \$1,551,954.

**Results to Date in 1921.**—Inasmuch as the figures for 1920 are now several months old, we are interested rather



The Central of Georgia

more in the figures for 1921 insofar as they are available. We find first that the road's traffic has held up rather well during the year. The latest figures available are those for the ten months ending September 30. In the first ten months of 1921 the net ton-miles carried—including both revenue and non-revenue freight—were 1,108,439,000 as against 1,226,087,000 in the same period of 1920. The two lowest months in 1921 were August and September; October was much better than either of these months. Insofar as concerns earnings, figures are available for ten months. The gross to the end of October, 1921, was \$18,835,161 as compared with \$21,169,584 in the first ten months of 1920. The net railway operating income for the first ten months of 1921 was \$1,036,317 as compared with a deficit to the end of October last year of \$1,159,912. It has been noted that from the standpoint of traffic August and September, 1921, have shown a falling off in traffic. On the other hand, the net railway operating income in September was considerably in excess of that of any other previous month except July. It totaled \$249,217. The net in October was \$424,844. For that month the road had an operating ratio of 75.6; for the first ten months of 1921, of 90.6. The transportation ratio in October was but 36.05.

**Diversified Traffic.**—The Central of Georgia's traffic is rather diversified. In 1920 products of agriculture made up 14.92 per cent; products of animals, 1.38 per cent; products of mines, 28.33 per cent (bituminous coal 20.38 per cent); products of forests, 16.32 per cent; and manufactures, 31.34 per cent. In view of this diversification and the present more optimistic attitude of the South, it is a bit difficult to understand the reason for the falling off in traffic in August and September; but the figures of net railway operating income which have been given, as also the operating ratio of 75.6 for October, indicate that the road has its situation in hand. Plainly, it should evidence continued improvement in following months.

**Some Operating Statistics.**—The Central of Georgia in its 1920 annual report shows a figure of "tons of freight carried per revenue freight and mixed train-mile." The figure given for 1920 is 487.43, this comparing with figures for previous years as follows: 1916, 343.61; 1917, 370.85; 1918, 388.75; 1919, 467.19. This increased train loading is noteworthy. In the first nine months of 1921, in spite of the falling off in traffic, the road had secured an average of net tons per train of 476. During 1920 the road secured seven new Mountain type locomotives; at the end of the year the tractive effort of all locomotives was 314,938 lb. in excess of what it was at the end of 1919.

A progressive increase has taken place in car loading similar to that in train loading. The figure for 1920 was 24.74; in 1916 it was 19.74. For the first nine months of 1921 an average of 23.9 has been maintained. During a part of 1921 the Central of Georgia showed a rather large percentage of bad order cars. Whereas the average for 1919 was but 5.2 per cent or for 1920 but 5.4 per cent, in May, 1921, it averaged 22.1 per cent. The bad order car situation has since been taken in hand. The percentage on November 15, the latest date for which figures are at this writing available, was 14.1 per cent. The average for the country on November 15 was 14.4 per cent.

## New Books

*Coal Manual.* F. R. Woodleigh. 184 pages, 4½ in. by 6 in. Published by the National Coal Mining News, Cincinnati, Ohio.

Numerous books dealing with the subject of fuels and coal have been issued from time to time, but they usually have been written from the technical viewpoint of the engineer or chemist, or to meet the needs of the man in charge of power plants or locomotives. Few books have been available, however, which gave in a concise and accurate manner the general elementary information desired by a large number of men, such as purchasing agents, storekeepers and others who are more or less interested in some phase of the coal question other than that of actual mining. This manual has been prepared by a man who evidently knew his subject and in addition recognized the wants of the men for whom he was writing.

The subject matter has been well arranged and by the use of frequent subheads and an excellent index any information desired can be found readily—features which will increase the usefulness of the book for reference purposes.

Among the subjects covered are: kinds and commercial grades of coal; information in regard to the location of coal fields and the essential differences in the character of coal from various fields and seams; the preparation of coal; coke and gas manufacture; the use of coal in locomotives, stationary boilers and furnaces; storage and prevention of spontaneous combustion; specifications and their use; analyses and effects of various impurities, together with a brief bibliography on the subject of coal.

## Letters to the Editor

*[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]*

### A Question of Priority

SAULT STE MARIE, ONT.

#### TO THE EDITOR:

The enginehouse built at Hornepayne, Ont., by the Canadian National, as described in the *Railway Age* of November 26, is a duplicate in general design of the enginehouse in the Algoma Central terminal at Sault Ste. Marie, built in 1912 by the writer. This enginehouse was described in the *Railway Age Gazette* of October 16, 1914, and the general idea covering this locomotive house is original on this railway. This house was designed by P. L. Battey, then chief engineer of the industrial department of the Arnold Company, in conjunction with the writer, and was constructed by the Arnold Company, acting as general contractors in the construction of the terminal buildings of the Algoma Central terminals at this point.

R. S. McCORMICK,

General superintendent and chief engineer,  
Algoma Central & Hudson Bay.

### The Interior Treatment of Boiler Waters—A Criticism

CHICAGO.

#### TO THE EDITOR:

The article with the above title which appeared in the *Railway Age* of November 12, page 935, and so appropriately illustrated on page 936, can be understood by reference to the editorial page which helps to explain its meaning. But it is a step backward. It reads like a paper of 20 years ago, and there has been much progress since then.

Today there is no more controversy between the advocates of water treating plants and of boiler compounds than there is between the advocates of locomotives and of mules. We are all advocates of each in its place. Where water is 12 grains per gallon hard, or more, railway water engineers advise water treating plants to keep scale out of boilers, if there is money to build them and ordinary traffic to use them, and in the meantime use soda ash or a boiler compound to keep the scale soft. Every honest boiler compound man advises the same thing.

Nor is there controversy as to the relative costs of using hard water alone, hard water with soda ash or an anti-scale compound, or water treated before use. Hard water alone is very costly in use; a good anti-scale compound used with such water saves much more than it costs; and a complete set of water treating plants will pay for themselves every year over and above all the good that the best anti-scale compound can do. This has been proved on several railroads during the past ten years.

The two expressions to which the author of the paper takes exception, "A boiler is designed to produce steam, not chemical reactions" and "The only thing to put into a boiler is pure water," are not to be criticised lightly. They are classics in the creed of the American Railway Master Mechanics' Association. They were first used by that association in 1871—just 50 years ago—in the report of the

Committee on Better Water for Locomotives; they have never been rescinded by that association nor any of its committees, and they are still the guide to intelligent work on the improvement of boiler water. They were used in a discussion of the advantage of softening hard water before it went to the boiler; they referred only to what are now called anti-scale compounds and ought not to be quoted in a paper devoted mostly to the value of anti-foam compounds.

Twenty years ago it was commonly said, as now by this author, "Water softening consists of adding lime and soda ash to the water, which is then allowed to stand until chemical reaction has taken place." Nowadays all experienced men say "Water softening consists of adding lime and soda ash to the water, which is then stirred until chemical reaction has taken place."

Twenty years ago it used to be said "an increased tendency to foam is characteristic of all water treated with soda ash." Nowadays we know that the tendency of most treated waters to foam is caused by the sludge in the boiler—the flocculent precipitated limestone, the last three grains per gallon of calcium carbonate which most treating plants do not precipitate from cold water but which the heat of the boiler precipitates at once. But this sludge is not left by the soda ash treatment but by the lime treatment.

The amount of sludge left in a boiler by well-treated water is so much less than that produced by the action of soda ash or any other anti-scale compound on the hard water inside the boiler that, in treated water districts, the amount of anti-foam compound used is usually much less than that previously used.

All this ancient talk of sodium salts causing foaming started from a test once made of the value of soda ash to precipitate incrusting matter from the water and to loosen the scale already in the boiler. When a certain amount of sludge and of fine scale had been set loose, the boiler began to foam; and because it happened that the soda ash then in the water amounted to 200 grains per gallon, it was announced that 200 grains of sodium salts per gallon of water in a boiler would cause foaming. But I can show you boilers fed with water containing sodium salts but no limestone, in which the concentration of sodium salts usually amounts to 1,000 grains per gallon and in which there is no sign of foaming.

The object of an anti-scale compound is not to put sludge in the boiler bottom but merely so to act on the water as to cause a deposition of soft scale instead of hard scale. If sludge is deposited so that the boiler foams, too much compound is being used. And since soda ash is more than twice as effective as any of the compounds of which it forms a part, less of it should be used if foaming is to be avoided.

Much is made by this author and others of the fact that the use of anti-foam compound reduces the frequency of boiler washing, and of course at less expense. But I believe that any experienced boiler man will say that it is an expensive saving. The real charges in boiler maintenance are not on account of washing or of any roundhouse expense, but on account of the deterioration of the metal of the boiler. The ends of the flues in boilers which are washed frequently last much longer than those in boilers in which washing is skimmed. Furthermore, on roads where water is free from acid, pitting takes place only in waters carrying sodium sulphate or sodium chloride, and at a rate determined by the amount of these materials; and it is evident that if such water is not changed with some frequency concentration of these salts will take place and increased pitting will follow.

Lastly, there is no such thing as boiler water of "too high purity." These waters of imaginary too high purity are merely waters from vegetation districts, containing little mineral matter but a small amount of organic acid; or, in

the case of distilled sea water, containing a little magnesium chloride which under the heat of the boiler soon becomes magnesium and free hydrochloric acid.

I quote you again the guiding principle laid down by the Committee of the American Master Mechanics' Association of 1871-3, and still adhered to by its successors. "Get, if possible, a supply of clean, soft, natural water." "If a natural supply of soft water is not available, the only way to prevent incrustation and corrosion is to purify the water before it enters the boiler, and the accomplishment of this result will be the '*ne plus ultra*' of this important subject."

C. H. KOYL,

Engineer Water Service, Chicago, Milwaukee & St. Paul.

## The Public's Right to Steel Cars

NEW YORK CITY.

TO THE EDITOR:

A great hue and cry has been raised down in Philadelphia because of the use of wooden coaches on the Newtown branch of the Reading. An outburst of this sort naturally follows an accident such as that at Bryn Athyn, but the unreasoning virulence of the Philadelphia papers on the subject of the wooden car calls for an answer.

Wooden cars taken out of service have practically no market value, whereas used in trains they earn the same revenue for the railroads as steel cars, and that with considerably less interest charges. These cars can be economically replaced by steel cars only when unfit for further service. Is the railroad's income from the Newtown branch sufficient to pay operating expenses, fixed charges, a reasonable return to capital, the carrying charges on all-steel equipment and, in addition, interest charges on serviceable wooden cars thus relegated to the scrap heap? I should guess the contrary.

Passengers are riding in wooden cars because they, as a whole, are not paying for all-steel equipment. If citizens of Pennsylvania want to ride in steel cars, how about having their state government buy the necessary equipment and reimburse itself by taxation? The people would be paying for modern equipment and would have a right to expect it. They have no such right now.

FAIR PLAY.

## Practical Questions About Steam Locomotive Operation

NEW YORK CITY.

TO THE EDITOR:

There seems to be a lot of necessary missionary work to be done among our steam locomotive friends. I refer rather generally to the exponents of the steam locomotives including apparently some of your own staff. The following statement commenting on the super-power survey report appeared in the November 26 issue of the *Railway Age*, page 1019: "An efficient modern locomotive uses about 2.5 lb. of coal per horsepower hour while working. Standby losses, firing up, etc., increases this to 3.1 lb."

I often wonder if the chap that wrote the script expected it to go down with one swallow. Personally, I recall the information published by the Pennsylvania Railroad covering a test plant run with a special hand-fired set-up on one of their modern locomotives. The information was based on the supposed relative rating of the locomotive when stoker fired. What I wish to bring out are answers to the following questions:

If we are to base our locomotive ratings on 2½ lb. of coal per horsepower hour:

1. How are we to instill in the average locomotive crew the skill and supervision of the test crew of the locomotive testing plant?

2. How can we arrange to have all of our locomotives constantly loaded, up and down hill?

3. How can we insure that all locomotives will be loaded at the most efficient rating at all times?

4. How can we convince all of the motive power officials to accept the constant cut-off and other mechanical details developed by the Pennsylvania Railroad?

5. How can we manually fire a locomotive of this size and compete with a stoker?

6. If we put on two firemen, how much additional coal would we purchase with the wages of the second man?

7. How are we to maintain a steam locomotive constantly in 100 per cent operating condition with respect to valve motion, leaky valve rings, and leaky piston rings?

I might add innumerable other things. I mention the above as some of the details which your editorial writer has no doubt forgotten or overlooked. The figures given in the super-power report may or may not be wrong, but even granting that they are wrong, I feel that the error is not one so glaring as your *Railway Age* writer would have us believe. A mechanical engineer who has been designing steam locomotives for over 20 years states that 4 lb. of coal per horsepower hour is a very good figure indeed.

While the matter is still in mind, I would like to inject another thought into the argument. That is, after the details are threshed out and before everybody is tired of reading the "hot air" and opinions of all kinds, let someone rise up and drive home the fact that had the so-called American Railway Association, particularly the Mechanical Division, been on the job as it should have been years ago, such a situation as we now have before us could not have possibly come about. If you can persuade some of your "big guns" in the editorial field to come out good and hard and follow it up with some well-placed criticism of the conspicuous apathy with which the average S. M. P. and some of the other folks higher up seem to have toward this subject and you can succeed in arousing the same amount of interest in this phase of the work as you already have in other phases, I am sure that untold benefit will result to the railroads in general and to a lot of individuals in particular. ELECTRICAL ENGINEER.

## Railroad Statistics

ST. LOUIS, MO.

TO THE EDITOR:

Statistics are compiled showing the sources of income and the channels of expenses. An equal interest in both is paramount to a healthful situation. These statistics should be used to the greatest advantage looking toward greater sources of revenue and economies in operation.

Many know the extent of the earnings, but I dare say few realize the magnitude of the expenditures—where the money goes after it is earned. The figures are rarely published in an understandable way. These facts may be learned through operating statistics now compiled, if advantage is taken of them. Aside from this, they are valuable analysis of existing conditions but furnish little information as to what would happen under different conditions.

The predetermination of operating results, which is most important from the standpoint of orderly and improved operation, is largely dependent upon the researches of the individual and a co-ordinated organization. Vast numbers of both related and unrelated figures are compiled, but they are not a panacea to the solution of general problems. A statement of the expenses under fixed conditions will not ultimately suffice, but the rate of change of expenses under certain varying conditions, such as trainload and speed, is needed. If such data were available, the study and analysis of operating results would be made more truly a diagnosis, rather than a post mortem.

C. D. HICKS.



The Tankhannock Viaduct on the Clarks Summit-Hallstead Line

## Justifying Expenditures for Grade Reductions\*

Clarks Summit-Hallstead Line of the Lackawanna Fully  
Warranted by Operating Results

By George J. Ray

Chief Engineer, Delaware, Lackawanna & Western

THE OLDER PORTIONS of the Delaware, Lackawanna & Western, like many of the other railroads built through rough country in the early days, were constructed with many sharp curves and heavy grades. The main line crosses the Pocono mountains at an elevation of approximately 2,000 ft. above sea level. At Scranton, in the center of the anthracite coal fields, where much of the railroad's traffic originates, the elevation of the main track is about 735 ft. above sea level. Scranton is a terminal point for both passenger and freight service. The distance from Scranton to Hoboken, the eastern terminal, is now 135 miles. The middle operating division extending from Scranton west to Elmira had a length of 119 miles prior to the completion of the Clarks Summit-Hallstead cut-off. The first 50 miles west of Scranton to the New York state line was built in the early fifties. The western end of the road from Binghamton to Elmira was constructed in the early eighties with fairly good alignment and a maximum grade of approximately 13 ft. per mile.

The topography of the country in the vicinity of Scranton is such that heavy grades are required for both east and westbound traffic from that point. The lowest available summit westbound is approximately 500 ft. above the tracks at Scranton and is so located that a  $1\frac{1}{2}$  per cent grade is necessary from Scranton to this point which is known as Clarks Summit. For 40 miles west of Clarks Summit the old line traversed a very broken country approximately at right angles to the water sheds, with the result that the line was built with heavy grades against both east and westbound movement as indicated by the profile, Fig. 1. These grades consisted of two stretches of uncompensated 65-ft. grade and one 46-ft. grade against eastbound movement, one

21-ft. and one 28-ft. grade against westbound movement. As the tonnage increased this line became more and more difficult to operate. It will readily be seen that where an engine handled full tonnage over the line between Hallstead and Elmira, either east or westbound, pusher service was necessary on that part of the line between Hallstead and Clarks Summit. Because of unbalanced traffic, the great variation between the east and westbound pusher grades, and of a very bad tunnel at one summit east of Nicholson, pusher engines could not be used economically. As a result a very low mileage for the pusher engines was obtained. Not only was it necessary to push freight trains both east and west, but it was also necessary to use puller engines on passenger trains eastbound between Nicholson and Clarks Summit.

Through this same territory the old line was very crooked, the total amount of curvature in the 41 miles between Clarks Summit and Hallstead being 3,845 deg. Four to six degree curves predominated.

### Transportation Problems

The net tons of coal and freight handled by the Lackawanna in 1910 amounted to approximately 21,750,000. The total number of passengers handled was 26,243,000. All anthracite coal westbound from Scranton, whether going over the main line to Buffalo or to Syracuse and Lake Ontario, passes over this line as does all eastbound tonnage originating west of Scranton. Fig. 2 shows the net tons of freight and coal carried per year from 1900 to 1920 inclusive. The broken line represents the actual tonnage carried; the dotted straight line indicates the average increase from 1900 to 1909. This line extended was used as a basis of estimating probable future tonnage. It will be noted that the estimated tonnage fits the actual in 1910 but was

\*Abstracted from a paper presented before the Western Society of Engineers, Chicago, December 15, 1921.

high for the later years excepting for the three war years, 1916-17-18.

The old line was expensive to operate and maintain. The heavy tonnage over sharp curves and heavy grades caused extensive rail wear and the track was expensive to maintain from every standpoint. In the 40 miles there were 29 public grade crossings, which could be eliminated only at a very material expense. The problem to be solved therefore was one which required the best possible alignment with grades over which increased tonnage could be handled and at the same time reduce pusher service in both directions to the utmost. The tonnage had reached such a point that additional main running tracks would soon have been required on the heavy grades in order to avoid excessive delay to fast freight and passenger trains due to the long time required for slow freight trains to get over the road. Additional passing tracks would not have solved the trouble and would only have caused additional delay to slow freight. To build additional tracks along the old alignment would have been expensive, and the construction would have greatly interfered with traffic. Incidentally the construction of a new line would provide an up-to-date roadbed and eliminate all grade crossings. Study demonstrated that it was impossible to locate a new line which would be a big improvement as to curves, grades, etc., without encountering very heavy construction.

Thirteen feet per mile was fixed as the maximum grade against westbound movement, in order to eliminate the pusher service westbound and permit full tonnage to be

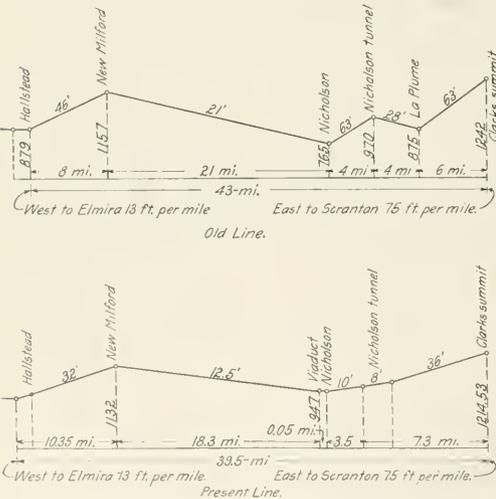


Fig. 1. The Profiles of the New and Old Lines Compared

handled west over the entire division. The eastbound pusher grades were determined by actual test on other parts of the line where it was possible to pick out a grade on which the required tonnage could be handled with one engine and a pusher (See Fig. 3.) Grades were compensated for curvature by using 0.03 per cent per degree of curve. This allowance was used for curvature on a change of line made at another point on the road in 1908 and proved to be about the correct allowance.

After the surveys had been completed and the estimates prepared for the various proposed lines, extensive calculations were made to determine the probable saving to be expected in operation and maintenance costs due to the reduction of distance, elimination of curvature, rise and fall, and

the reduction of gradient. After an extended study of all available information covering the savings in operation to be expected by such a change in line, the conclusion was reached that it was absolutely necessary to work the problem out in a more or less independent way, being governed by the conditions at hand. In cases where important improvements had been made on other lines, the conditions dealt with were so very different that the conclusions reached could not be consistently used without a very careful examination as to whether or not they were applicable to the case in hand.

**Grade.** Where a reduction in grade is made which will enable an engine to pull a heavier train and thus reduce the number of train miles required to handle a given tonnage, we must arrive at the possible saving due to the elimination of one train. It is evident that the elimination of one train

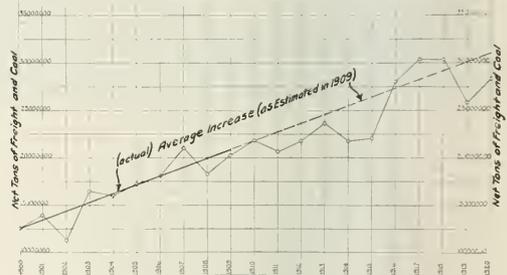


Fig. 2. The Actual Traffic in the Years 1909 to 1920 as Compared with the Estimated Growth of Traffic

in handling a given tonnage will entirely eliminate certain expenditures such as coal for fuel and wages of enginemen and trainmen. The wear on the rail, ties, ballast, and other track materials, will be less because of eliminating the engine. On the other hand such items of expense as superintendence, cost of traffic department, floating equipment, etc., will in no way be reduced by the change.

**Distance.** In like manner the reduction of one mile in distance will eliminate one train mile for every train run, hence we must calculate the probable saving due to the elimination of one mile in distance. It is also evident that the cost of maintaining one mile of track is eliminated and likewise the trainmen's wages.

**Pusher Engines.** Where the grade is reduced so as to reduce the number of pusher engines, our problem is to calculate the saving due to the elimination of one pusher-mile.

**Curvature.** The total value of reducing curvature cannot be readily reduced to a basis of dollars and cents, but some features of the value of curve reduction such as rail wear can be determined fairly accurately. In order to arrive at a fair value for the elimination of curvature it is necessary to make a comparison of known conditions on the various parts of the line where the general operating conditions are the same. In a general way the amount of rail wear due to curvature on any given territory depends upon the total curvature and not so much on the degree of the curves. In other words the total rail wear due to 30 deg. of central angle in a mile of level track will be about the same whether the curvature consists of 500 ft. of 6 deg. curve or 3,000 ft. of 1 deg. curve. What is true with respect to rail wear is also more or less true with all other items of roadway expense affected by the elimination of curvature. Damage to equipment and loss and damage to freight due to curvature is greater with sharp curves, but in general the additional wear on rolling stock due to curvature depends, like the

track, on the total degree of curvature and not on the degree of the curves.

Since all items of the accounts making up operating expenses are based on the average alignment (in the case under consideration 50 min.), for convenience the estimated savings due to elimination of curvature are based on the comparison of a mile of 5-deg. curve and the same amount of 50-min. curve.

**Rise and Fall.** The elimination of rise and fall will reduce the cost of operating a given train over the road. In estimating the savings to be expected by eliminating rise and fall we have considered that the resistance on a 0.5 per cent grade is just double the resistance on straight level track. Therefore, an engine would have to overcome the same re-

In all the calculations the figures have been based on the total cost per train mile including all expenses in connection with the operation of the railroad, except general expenses. I know of no accurate way to figure the cost per train mile for any given part of a railroad as the accounts are never kept in such a way as to determine a proper allocation for a specific section of the line such as that under consideration; hence it is necessary to include the total cost of operating the railroad, figure the percentage that each item of the accounts bears to the total, then estimate the percentage that each item is affected, if at all, by the changes under consideration. This method of figuring is at least on the safe side as the cost per train mile on the section of line under consideration was certainly above the average.

Table 1 shows the estimate of the per cent that each item of the accounts will be affected: (1) by a reduction in grade such as to permit the same tonnage to be handled with one less train; (2) by the elimination of one mile in distance; (3) by a change in grade which will permit the elimination of one helper engine, and (4) by a reduction of one mile of five-degree curve to the average curvature of 50 min. At the foot of this table the total cost per train mile for the

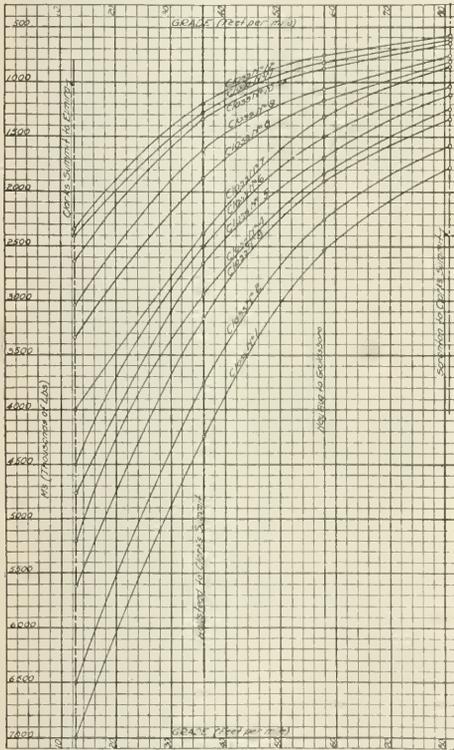


Fig. 3. Engine Rating Curves Used in the Calculations

sistance in pulling a load up a 0.5 per cent grade a mile long as it would on a two-mile stretch of level track. It is easy to see that it will cost something to move the train from the hump a mile down a 0.5 per cent grade.

Since the estimate of economies to be expected from the change of line was first made the Interstate Commerce Commission's classification of accounts has been changed. Furthermore, a marked change has taken place in the motive power. Therefore, in order to make a fair comparison of the savings to be expected due to change of grade, curvature, distance, etc., as estimated in 1909 for the business of 1908 with the probable results attained for 1920, we have found it necessary to estimate the number of trains that 1920 business would have required if handled over the old line but moved with 1920 power. This done, we can compare the result with the actual trains over the new line in 1920.

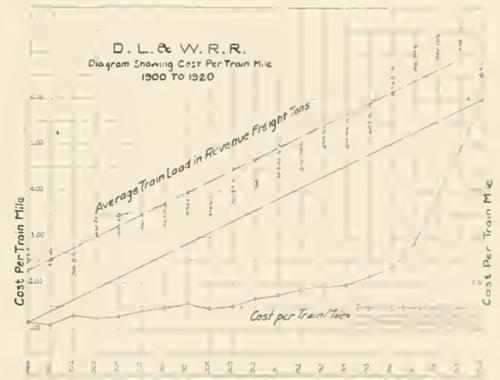


Fig. 4. The Relation of the Increase in Train Load to the Increase in the Cost of Train Operation

year 1920 is shown as \$6.02. This amount is found by dividing the total operating expense for 1920 by the total revenue train miles. The cost per train mile thus figured for each year from 1900 to 1920 is shown on Fig. 4. A division of the charges as between passenger and freight for the year 1920 as reported to the Interstate Commerce Commission shows the total cost per passenger train mile of \$3.28 and per freight train mile of \$8.77.

**Savings to Be Expected**

**Elimination of Grade.** In regard to the per cent that the various items of expenditure will be affected by the addition or elimination of one train in handling a given business and as indicated in Table 1, the following explanation is offered with reference to some of the main items. In the first place passenger trains are not affected, except that they can make better time and the puller engines (which are included under helper engines) will not be required. The same number of passenger trains are run as before the change.

Account 212-Ties will be affected about 12 per cent by the elimination of one train on the basis that the engines do approximately 20 per cent of the mechanical destruction to ties by traffic. This would not necessarily be a fact where ties are not crosscut, but in the case under consideration all ties are treated and protected with heavy tie plates. As

TABLE 1 EFFECT OF CHANGES IN GRADE, CURVATURE, DISTANCE AND RISE AND FALL ON MAINTENANCE AND OPERATING EXPENSE

Item	1920 maintenance and operating expenses		Grade		Distance		Helper		Curvature	
	Amount	Per cent of total	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile
Maintenance of Way										
Superintendence	\$406,934.91	.55	...	...	...	...	...	...	...	...
Roadway maintenance	1,084,379.54	1.50	...	...	100	150	...	...	...	...
Tunnels and subways	25,897.40	.35	...	...	...	...	...	...	...	...
Bridges, trestles and culverts	315,408.54	0.44	...	...	100	044	...	...	...	...
Right of way fences	605,900.35	.81	...	...	100	091	09	109	50	51
Rails	503,980.68	.69	12	09	100	069	09	06	400	276
Other track material	500,684.82	.59	12	09	100	69	09	06	200	138
Ballast	272,820.57	.58	12	05	100	038	09	04	30	11
Power lines, poles and fixtures	1,064.19	.00	...	...	...	...	...	...	...	...
Track laying and surfacing										
Applying	1,073,389.55	1.43	12	17	100	148	09	13	100	148
Track maintenance	1,709,821.70	2.33	20	47	100	233	15	35	100	233
Track service	120,007.67	.17	25	04	100	07	12	02	100	17
Other expenses	2,842.08	.01	...	...	100	01	...	...	...	...
Right of way fences	605,900.35	.81	...	...	100	08	...	...	...	...
Snow and land fences, snow sheds	6,266.22	.01	...	...	100	01	...	...	...	...
Crossings and signs	173,732.59	.24	...	...	100	24	...	...	...	...
Miscellaneous structures	255.53	.00	...	...	100	...	...	...	...	...
Station and office buildings										
Hotels and restaurants	4,029.23	.01	...	...	...	...	...	...	...	...
Other stations and office buildings	652,683.61	.90	...	...	...	...	...	...	...	...
Roadway buildings	33,022.54	.05	...	...	100	05	...	...	...	...
Water stations	94,652.06	.13	...	...	...	...	...	...	...	...
Fuel stations	93,999.43	.13	...	...	...	...	...	...	...	...
Shops and engine houses	353,027.04	.48	...	...	...	...	...	...	...	...
Wives and docks	400,436.04	.43	...	...	...	...	...	...	...	...
Coal and ore wharves	69,138.29	.10	...	...	...	...	...	...	...	...
Gas producing plants	6,337.38	.01	...	...	...	...	...	...	...	...
Telegraph and telephone lines	145,460.97	.20	...	...	25	05	...	...	...	...
Signals and interlockers	648,923.74	.90	30	27	100	45	25	23	...	...
Power plant buildings	7,592.27	.01	...	...	...	...	...	...	...	...
Power distribution systems	52,027.38	.07	...	...	...	...	...	...	...	...
Power transmission systems	15,755.76	.02	...	...	...	...	...	...	...	...
Power sub-station buildings	7.48	.00	...	...	...	...	...	...	...	...
Under ground conduits	1,502.60	.00	...	...	...	...	...	...	...	...
Paving	566.45	.00	...	...	...	...	...	...	...	...
Roadway machines	38,468.74	.05	...	...	50	00	...	...	...	...
Small tools and supplies	120,281.26	.17	15	02	100	17	11	02	100	17
Removing ice, snow and sand	483,333.46	.66	...	...	30	33	...	...	...	...
Assessments for public improvements	7,143.00	.01	...	...	...	...	...	...	...	...
Injuries to persons	68,168.25	.09	75	07	50	05	50	05	...	...
Insurance	19,172.05	.03	...	...	...	...	...	...	...	...
Stationery printing	23,845.22	.03	...	...	...	...	...	...	...	...
Other expenses	14,405.09	.02	...	...	...	...	...	...	...	...
Maintaining joint tracks and facilities	23,193.97	.03	...	...	...	...	...	...	...	...
Maintenance of equipment										
Superintendence	332,792.94	.45	...	...	...	...	...	...	...	...
Shop machinery	508,601.68	.70	25	18	50	35	25	18	...	...
Power machinery	1,021,901.91	1.38	...	...	...	...	...	...	...	...
Steam locomotive repairs	6,350,455.37	8.70	62	53	80	696	46	400	30	261
Depreciation	587,004.93	0.82	62	051	80	066	46	64	30	25
Retirements	20,658.85	.03	62	02	80	02	46	01	30	01
Freight train cars: Repairs	5,716,524.94	7.83	...	...	...	...	...	...	...	...
Depreciation	1,634,976.51	2.11	...	...	...	...	...	...	...	...
Retirements	73,533.17	.10	...	...	65	07	...	...	20	02
Passenger train cars: Repairs	1,062,411.03	1.46	...	...	75	110	...	...	20	29
Depreciation	158,783.65	.22	...	...	75	17	...	...	20	04
Retirements	46,468.83	.07	...	...	75	08	...	...	20	01
Floating equipment: Repairs	2,506,661.95	3.44	...	...	...	...	...	...	...	...
Depreciation	132,645.01	.19	...	...	...	...	...	...	...	...
Retirements	23,596.91	.03	...	...	...	...	...	...	...	...
Work equipment: Repairs	228,333.46	.32	15	05	60	19	39	09	03	06
Depreciation	41,845.12	.06	15	01	60	04	09	01	20	01
Retirements	4,380.38	.01	15	00	60	01	09	00	20	00
Miscellaneous equipment: Repairs	19,787.11	.03	...	...	...	...	...	...	...	...
Depreciation	...	...	...	...	...	...	...	...	...	...
Retirements	...	...	...	...	...	...	...	...	...	...
Injuries to persons	56,631.64	.08	...	...	...	...	...	...	...	...
Insurance	36,950.96	.05	...	...	...	...	...	...	...	...
Stationery and printing	31,579.53	.04	...	...	...	...	...	...	...	...
Other expenses	14,107.11	.02	...	...	...	...	...	...	...	...
Traffic										
Superintendence	275,349.20	.39	...	...	...	...	...	...	...	...
Outside agencies	473,297.87	.65	...	...	...	...	...	...	...	...
Advertising	67,652.91	.09	...	...	...	...	...	...	...	...
Traffic associations	93,586.54	.13	...	...	...	...	...	...	...	...
Operating freight lines	19,258.46	.03	...	...	...	...	...	...	...	...
Industrial and immigration bureaus	19,299.34	.03	...	...	...	...	...	...	...	...
Insurance	300.29	.00	...	...	...	...	...	...	...	...
Stationery and printing	138,925.65	.19	...	...	...	...	...	...	...	...
Other expenses	303.79	.00	...	...	...	...	...	...	...	...
Transportation: Rail line										
Superintendence	659,139.28	.90	...	...	...	...	...	...	...	...
Dispatching trains	275,486.95	.38	...	...	...	...	...	...	...	...
Station employees										
Agents, clerks and attendants	3,090,059.45	4.23	...	...	...	...	...	...	...	...
Labor at stations	3,957,961.23	5.40	...	...	...	...	...	...	...	...
Weighing, inspection and demurrage	1,640,615	2.23	...	...	...	...	...	...	...	...
Coal ore wharves	234,785.45	.38	...	...	...	...	...	...	...	...
Station supplies and expenses	142,264.78	.20	...	...	...	...	...	...	...	...
Yard masters and yard clerks	1,261,448.83	1.73	...	...	...	...	...	...	...	...
Yard conductors and brakemen	19,299.34	.03	...	...	...	...	...	...	...	...
Yard, switch and signal tenders	119,632.33	.17	...	...	...	...	...	...	...	...
Yard enginemen	1,445,344.04	1.98	...	...	...	...	...	...	...	...
Fuel for yard locomotives	1,392,955.39	1.91	...	...	...	...	...	...	...	...
Water for yard locomotives	20,448.40	.03	...	...	...	...	...	...	...	...
Lubricants for yard locomotives	15,184.61	.02	...	...	...	...	...	...	...	...
Other supplies for yard locomotives	14,960.70	.02	...	...	...	...	...	...	...	...
Engine house expenses: Yard	749,850.26	1.02	...	...	...	...	...	...	...	...
Yard supplies and expenses	96,039.40	.13	...	...	...	...	...	...	...	...
Operating yard yards and terminals	19,292.53	.03	...	...	...	...	...	...	...	...
Train enginemen	3,190,338.75	4.38	74	324	95	416	74	324	25	278
Fuel for train locomotives	8,150,510.96	11.10	100	111	090	999	60	66	25	278
Water for train locomotives	242,376.59	.34	100	34	90	31	60	20	25	09
Lubricants for train locomotives	130,892.08	.19	100	19	90	17	100	19	25	05

Item	1920 maintenance and operating expenses		Grade		Distance		Helper		Curvature	
	Amount	Per cent of total	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile	Per cent affected	Per cent cost per train mile
Maintenance of Way										
Other supplies for train locomotives	91,851.64	.13	100	13	90	12	100	13		
Engine house expenses: Train	1,549,143.53	2.13	100	21 1/2	100	21.3	100	21.3		
Trainmen	3,402,994.45	4.66	69	3 1/2	95	44 1/2	2	17		
Train supplies and expenses:										
Cleaning cars	319,125.84	.45								
Heating cars	62,988.64	.09								
Lighting cars	85,110.70	.12			30	4				
Lubricating cars	226,203.68	.31			90	2.8				
Iceing cars and watering cars	13,163.69	.02								
Y. M. C. A.	27,804.38	.04								
Detouring trains	1,884.49	..								
Train supplies	73,464.14	.10	50	.05						
Other expenses	261,204.46	.38	56	14			50	14		
Signal and interlocker operation	768,881.20	1.04								
Crossing protection	585,281.25	.80								
Drawbridge operation	47,168.74	.07								
Telegraph and telephone operation	119,718.80	.17								
Operating floating equipment:										
Superintendence	170,346.75	.24								
Wages of crews	1,671,607.30	2.29								
Fuel	381,175.69	.52								
Lubricants	17,195.76	.02								
Other supplies and expenses	96,181.68	.13								
Other expenses	147,476.45	.20								
Elevation and longshore labor	426,472.25	.58								
Elevation and shore expenses	440,000.00	.60								
Stationery and printing	248,640.00	.35								
Other expenses	409,154.43	.56								
Operating joint tracks and fuel	13,473.43	.02								
Insurance	92,713.34	.13								
Clearing wrecks	121,544.91	.17			50	0				
Damage to property	127,690.82	.18			50	0.9				
Damage to live stock on right of way	10,795.91	.01			62	0.1	100	0.1		
Loss and damage: Freight	1,259,717.34	1.73	15	26	25	4.3			17	
Loss and damage: Baggage	2,285.46	..								
Injuries to persons	431,459.98	.59	10	06	50	30	10	06		
Miscellaneous Operations										
Dining and buffet service	253,153.52	.35								
Hotels and restaurants	738,502.31	1.01								
<b>Total</b>	<b>\$7,921,875.17</b>	<b>100.00</b>		<b>2842</b>		<b>4807</b>		<b>1984</b>		<b>602</b>
Total passenger train mileage	5,600,540									
Total freight train mileage	6,344,882									
<b>Total</b>	<b>11,945,422</b>							<b>1984</b>		<b>602</b>
Cost per freight train mile for 1920	= 8.77									
Cost per passenger train mile for 1920	= 8.28									
Cost per train mile			Grade	Distance	Helper	Curvature				
			19.84		6.02					
Interest charge			1.194		.065					
Saving in dollars per mile			1.259							
Cost per passenger train mile	28.42	48.07			17.29					
	3.28	3.28			3.28					
Interest charge	0.932	1.577			0.567					
	.057	.073			0.0					
Savings in dollars per train mile	0.989	1.650			0.567					
Cost per freight train mile	28.42	48.07			17.29					
	8.77	8.77			8.77					
Interest charge	2.491	4.216			1.516					
	.057	.073			0.0					
Saving in dollars per train mile	2.549	4.289			1.516					

the life of the tie primarily depends upon its ability to stand mechanical wear this life is shortened as the number of engines passing over it increases. Since the per cent of road freight engines to the total number of engines is approximately 60 per cent, the ties would be affected about 12 per cent by the elimination of one train.

Account 214—Rails, Account 216—Other Track Materials and Account 218—Ballast will likewise be affected about 12 per cent. Before the change was made on the line in question all traffic was handled on two tracks, with high speed first-class passenger trains and both slow and fast freight service on the same tracks. About 40 per cent of the freight service consists of coal trains and a large part of the other freight is manifest traffic which is moved over the road at high speed. It is very hard to keep high grade tracks for passenger service where all sorts of freight trains are handled over the same tracks at both slow and high speed. It is thought by those best qualified to know that many heavy loaded freight cars with small diameter wheels do more damage to rails and the rest of the track structure than the engines, although the latter have much heavier wheel loads.

as reported to the I. C. C.

Note—Figures for grade are based on the addition or elimination of one train in handling a given business.

Figures for distance are based on the elimination of one mile.

Figures for helper engines are based on the elimination of one helper mile.

Figures for curvature are based on one mile of 5-deg curve compared with the average curvature of 50 min.

Figures for rise and fall are based on the comparison between two miles of level tangent track and two miles of tangent track with a hump of 264 ft. in the middle.

While the elimination of rise and fall will slightly affect track maintenance, locomotive and car repairs, etc., the main item affected and the only one amounting to a considerable saving is reduction in fuel, water and lubrication for locomotives. These items would be affected approximately 5 1/2% = 5 1/2% of items affected = 5.31. Say 5% X cost per train mile \$6.02 = \$0.30 savings in dollars per train mile.

As a result it is very expensive to maintain track where many heavy loaded large capacity freight cars are handled. Originally I placed a higher percentage on the effect of eliminating the engine than I now believe warranted. As a result I have fixed 20 per cent as a fair amount for rail ties, other track materials and ballast. Since only 60 per cent of the power is used in road freight service the above percentage is reduced to 12 per cent.

Account 249—Signals and Interlockers. A total of 31 per cent is allowed for this account on the ground that about 50 per cent of the expense of maintaining signals and interlocking is directly due to train movements. The life of an automatic signal depends upon its use. The cost of maintenance increases with the number of train movements and as the train movements increase the signals must be placed closer together.

Accounts 308, 309 and 310—Steam Locomotive Repairs, Depreciation and Retirement will be affected about 62 per cent, this being the ratio that road freight engines bear to the total engines in service.

Account 392—Train Enginemen: This is affected about

74 per cent, this being the ratio of the freight train engineers to the total.

Accounts 394, 397, 398 and 399—Fuel, Water, Lubricants and Other Supplies for Train Locomotives: These items are made 100 per cent on the ground that a reduction in grade entirely eliminating a freight locomotive will also make a marked decrease in the amount of coal, water, etc., consumed by the passenger locomotives.

Account 400—Enginehouse Expenses Train: This account will be affected 100 per cent.

Account 401—Trainmen: This will be affected 69 per cent or the ratio that the wages of freight trainmen bear to the wages of all trainmen.

*Elimination of Distance.*—Account 405—Crossing Protection: If the charges to this account were uniform over

TABLE II. ESTIMATED SAVINGS OF CLARKS SUMMIT-HALL-STEAD CUT-OFF OVER OLD LINE BASED ON 1908 TRAFFIC

Savings due to grade reduction.		
Slow freight, 6,136 x 41 x .4851.....		\$122,039.52
Fast freight, 779 x 61 x .4851.....		23,051.47
Fast freight, 327 x 57 x .4851 Binghamton to Elmira.....		9,041.78
18,396 x 3.56 x .9155 Savings due to distance eliminated.....		59,955.88
Savings due to curvature eliminated.....		43,391.01
18,396 x 8.1 x 0.2912 Savings due to rise and fall eliminated.....		31,321.45
18,396 x 475 x 0.09463 divided by 26.4.....		39,541.08
99,026 x 0.3993 Savings due to pusher miles eliminated.....		7,442.55
18,639 x 0.3993 Light engine Binghamton to Elmira.....		29,499.30
Savings due to Hallstead Yard.....		
Total savings.....		\$365,284.04
Savings capitalized at 4 per cent.....		\$9,132,101.00
Total cost of new line.....	\$14,259,340.21	
Less savings on account of the eliminating of flagmen on 29 grade crossings, the elimination of the necessity of additional third track along the old line, value of salvage old line, etc.....	1,905,900.00	\$12,353,440.21
Net loss.....		\$3,221,339.21

BASED ON TRAFFIC IN 1920		
Savings due to grade reduction.		
Slow freight, 3,050 x 41 x 2.549.....		\$349,340.45
Fast freight, 994 x 61 x 2.549.....		154,556.10
Fast freight, 1,060 x 57 x 2.549, Binghamton to Elmira.....		154,010.58
14,081 x 3.56 x 4.289 Savings due to distance eliminated.....		215,000.50
Passenger, 10,416 x 3.56 x 1.650.....		61,183.60
Savings due to curvature eliminated.....		
Freight, 14,081 x 8.1 x 1.516.....		172,909.05
Passenger, 10,416 x 8.1 x 0.567.....		47,837.60
Savings due to pusher miles eliminated.....		
148,600 x 1.259.....		187,087.40
27,176 x 1.259 Savings due to rise and fall eliminated.....		34,214.60
24,497 x 475 x 0.30 divided by 26.4.....		132,228.12
Total savings.....		\$1,508,368.00
Savings capitalized at 6 per cent.....		25,139,466.67
Total cost of new line.....	\$14,259,340.21	
Less savings on account of the elimination of flagmen on 29 crossings, the elimination of the necessity of additional third track on old line, value of salvage old line, etc.....	1,905,900.00	12,353,440.21
Net gain.....		\$12,786,026.46

Note: If the savings are capitalized at 4 per cent as figured in 1909 the net gain becomes \$25,355,760.

the entire road, this item would be affected 100 per cent. As a matter of fact it cannot be so considered. For the territory in question there were 29 public grade crossings and numerous private crossings at the time of the change. For the crossings which were at that time protected by gatemen 50 crossing watchmen would now be required and the wages and other expenses in this connection would amount to the interest on not less than one million dollars. Therefore the saving in connection with the elimination of crossings has been considered as a separate item.

Account 202—Roadway Maintenance; 208—Bridges, Trestles and Culverts; 212—Ties; 214—Rails; 216—Other Track Materials, and 218—Ballast: All the track laying and surfacing subdivisions; roadway buildings and damage to live stock on right-of-way will be affected 100 per cent. These items will be entirely eliminated.

Account 249—Signals and Interlockers will be affected 50 per cent on the ground that the automatic signals will be eliminated, but the number of interlocking plants will not be affected.

Accounts 308, 309, 310—Steam Locomotive Repairs, Depreciation and Retirements: These items will be affected 80 per cent for the reason that 80 per cent of all locomotives are in road service.

Accounts 314, 315, 316—Freight Train Car Repairs, Depreciation and Retirements will be affected 65 per cent on the basis that 65 per cent of all repairs are due to road service. In like manner Accounts 317, 318 and 319—Passenger Train Car Repairs, Depreciation and Retirements will be affected 75 per cent.

Accounts 392 and 401—Train Engineers and Trainmen will be affected 95 per cent on the basis that 5 per cent of the total expenditure is made up of constructive mileage.

Accounts 394, 397, 398 and 399—Fuel Water, Lubricants and Other Locomotive Supplies will be affected 90 per cent on the basis that 10 per cent of the expenditure is due to supplies paid for while trains are standing on the sidetracks, stations, etc.

Account 400—Enginehouse Expense Train will be affected 100 per cent.

*Helper Engines.*—Assuming that one-half the pusher mileage is light and that a light engine will do one-half as much damage to the track and to itself as it will do when handling tonnage, we can apply 75 per cent to all the items of roadway maintenance and maintenance of equipment which will be affected by a change in grade as shown in Table I.

Account 392—Train Engineers will be affected 74 per cent, this being the ratio of freight engineers' expense to the total expense of train engineers.

Accounts 394 and 397—Fuel and Water will be affected about 60 per cent owing to the fact that the engines are running light part of the time.

Accounts 398, 399 and 400—Lubricants, Other Supplies for Train Locomotives and Enginehouse Expenses (Train) will be affected 100 per cent.

Account 401—Trainmen will be affected about 25 per cent since only one trainman is required for each pusher. As a matter of fact at the present time trainmen are not used on pusher engines.

*Curvature.*—Account 212—Ties is affected 50 per cent on the basis that a better grade of tie is required on a five-degree curve than on a straight track, costing in the neighborhood of 25 per cent more money. Furthermore, the life of ties on straight track is approximately 30 per cent longer than on a five-degree curve.

Account 214—Rails is affected 400 per cent based upon records of rail renewal.

Account 216—Other Track Material is affected 200 per cent or one-half that applied to rail on a basis that new bars, bolts and spikes are required when rail is relaid, whereas the same tie-plates can be continued in service.

Account 218—Ballast is affected 30 per cent on account of the increased amount of ballast being required to form a shoulder and to provide for the elevation. There is also a greater wear on the ballast and consequently a shorter life on account of necessary additional tamping.

Account 220—Track Laying and Surfacing is affected 100 per cent, this being a fair average of the percentage applied to Ties, Rails, Ballast, etc.

Accounts 308, 309 and 310 are affected 30 per cent on the basis that 15 per cent of the cost of engine repairs and renewals is chargeable to drivers and ties and this expense will be at least twice as much on a five-degree curve as on the average alignment.

Accounts 314, 315, 316, 317, 318 and 319, Freight, and Passenger Car Repairs, Depreciation and Retirements will be affected 20 per cent.

*Rise and Fall.*—While several items of the accounts will be affected in a slight manner by rise and fall, the only one that amounts to any considerable sum is the question of fuel for locomotives. We have considered this item as 50 per cent affected due to the fact that there is considerable loss when the engine is working at low efficiency while pulling a heavy load, say at ten miles per hour; also a loss due to poor combustion at low speed. A very considerable increased amount of coal is necessary where engines are operating at low rates of speed. Furthermore, more steam is consumed and more or less energy wasted in braking down the train on descending grades.

### The Summary of Savings to Be Expected

In order to apply the total percentages arrived at, and as shown in detail on Table I, it is necessary to estimate the number of trains which would be required to handle the 1908 business over the proposed new line and thus determine the total train miles saved per annum on account of reduced grades. It is likewise necessary to determine the number of pusher engine miles saved. In arriving at the number of train miles saved, care was used to give full consideration to the movement of light engines over the road because of unbalanced traffic. It was also necessary to consider carefully the total distance over which the increased tonnage per train would be handled. While that part of the old line revised was only 43 miles long, all fast freights would be affected from Scranton to Binghamton, a distance of 61 miles, and part of these trains would be affected from Binghamton to Elmira, an additional distance of 57 miles. It was only a matter of multiplication to determine the net saving per annum.

In figuring the total amount saved on account of eliminating curvature, the total reduction of curvature is reduced to miles of five-degree curve. The result in miles is multiplied by the total number of trains per annum.

In Table II, attached, will be found the estimated savings for the Clarks Summit-Hallstead Cut-off as compared with the old line, based upon the traffic of 1908, and also on the actual traffic for 1920. The savings as computed for the 1908 business as given in Table II, are exactly as figured in 1910.

It will be noted that the total saving figured on 1908 business is \$365,284.04, which, capitalized at four per cent, is \$9,132,101. The actual cost of constructing the line was \$14,259,340.21. This amount can be reduced by \$1,000,000 for the cost of eliminating the grade crossings which would have been necessary if the old line had been retained. The cost of building a third track on the old line, together with the credits for rail amounted to \$905,900, making a total credit of \$1,905,900. Therefore, the net savings to be expected based on 1908 business would fall short of building the new line by about \$3,221,339.

The other computation at the foot of Table II is based on actual traffic on the new line for 1920 compared with the estimated traffic that would be necessary to take care of the 1920 business on the old line, taking into account the increase in tonnage per train mile in 1920 as compared with 1908. The total net saving as figured is \$1,508,368 which, capitalized at six per cent, amounts to \$25,139,466.67; deducting the net cost of construction leaves \$12,786,026.46. This latter figure is increased to \$25,355,760 if we use four per cent as the interest rate, as was done in 1909.

### The Tunkhannock Viaduct

This paper is not complete without a word about the Tunkhannock viaduct and the reasons for building a concrete structure in preference to a steel one. In order to construct the line with the established grades it was found necessary to cross Tunkhannock creek at an elevation of approximately 240 ft. above the water, which would require

a structure from 2,500 to 3,000 ft. in length. After spending much time in arriving at what was considered the most economical design for a concrete viaduct, plans and specifications were submitted to contractors for bids. At the same time five or six bridge companies were asked to submit bids on a steel structure. The bridge companies were all requested to submit bids both on the design made by the railroad and on their own designs, thus giving each bridge company an opportunity to work out the most economical design for a steel structure.

When the bids were received it was found that the first cost of a steel viaduct consisting of an 8-in. reinforced concrete floor slab supported on transverse I-beams which in turn were supported by three lines of deck and two lines of through plate girders carried on towers, was slightly over a million dollars. It was estimated that a \$200,000 sinking fund at four per cent interest was necessary to paint, inspect and otherwise maintain the steel viaduct. It was assumed that 50 years would be the maximum life of a steel viaduct and that a sinking fund of approximately \$150,000 would be required to replace the structure in 50 years, provided that the viaduct could be rebuilt as cheaply at that time. The total cost of the steel viaduct, therefore, on the 50-year life basis, amounted to approximately \$1,350,000. The estimate for the concrete structure, based upon the figures received from contractors, was \$1,349,000. The actual cost of the concrete viaduct including all extras, waterproofing, etc., was \$1,424,950.

Several points in favor of the concrete viaduct caused it to be adopted in preference to steel. These may be summarized as follows:

1. With any future increase in live load up to 50 per cent over the loads of 1912 the unit stresses will not be increased over ten per cent.

2. The concrete structure, as designed and built, is a more substantial structure and less liable to be damaged by derailment or a wreck of any kind. In the case of an engine or car falling over the side of the structure no damage could possibly be done to the concrete viaduct, whereas a steel viaduct might be very seriously injured and traffic tied up for an indefinite time. With the concrete viaduct, there is little possibility of a derailed car or engine ever falling over the side of the structure. A very substantial retaining wall was provided on both sides and will act as a guard in case of derailment. Such a guard could not be provided on a steel structure without a very large increase in the cost.

3. It would be impracticable to rebuild the steel structure in the future on the original foundations when necessary to replace. This would require a change in line with increased cost for rock excavation and embankment.

Careful consideration was also given to the possibility of constructing a fill across the valley, but this was found to be exceedingly expensive. Nearly 7,000,000 cu. yd. of fill would have been required and a very large quantity of masonry for arches to carry Tunkhannock creek and the public highway on the west side of the valley.

### Conclusions

Finally, in considering the advantages gained by the construction of this new line, it must not be overlooked that with the exception of the tunnel and the Tunkhannock viaduct, the roadbed for the entire line was constructed for three tracks. Three tracks were built from the tunnel to Clarks Summit and four tracks on the western 10 miles from New Milford to Hallstead.

On the old line there were two narrow, single track, poorly ventilated tunnels with insufficient side and overhead clearance. The one tunnel, 3,600 ft. in length, on the new line, affords standard clearances, two good ventilating shafts and was lined with vitrified brick throughout. The cost of maintaining this tunnel is materially less than the cost of main-

taining the old tunnels, to say nothing of the more satisfactory operation.

While the new line cost somewhat more than was originally estimated, it was not anticipated that a four-track railroad would be built over any portion of the line and a third track was only provided on the heavy grades. A very material change was also made at Clarks Summit where westbound slow trains pass under the main tracks in order to avoid crossing these tracks at grade at the summit as was the practice on the old line.

The year 1920 cannot be considered a safe year as a basis for computing transportation costs. Nevertheless the figures indicate that there would still be a wide margin in favor of the new line if the cost per train mile should be cut in two, to say nothing of increased traffic in the future.

In conclusion I wish to give full credit to M. H. Doughty and L. L. Tallyn, division engineers, who worked with me in all the computations and deserve much credit for the vast amount of work which was necessary in order to reach the conclusions. I also wish to mention F. L. Wheaton, now division engineer of the Buffalo division, who had charge of the construction work.

### Freight Car Loading

WASHINGTON, D. C.

LOADING of revenue freight totaled 742,926 cars during the week ended on December 10, as compared with 747,454 cars during the previous week, or a reduction of 4,528, according to reports received by the car Service Division of the American Railway Association. This was a decrease of 95,027 cars compared with the corresponding week last year and 19,014 cars less than were loaded during the corresponding week in 1919.

Small increases were reported in the loading of all commodities during the week compared with the week before, except merchandise and miscellaneous freight, which includes manufactured products. Loading of this last named class of freight totaled 461,741 cars compared with 470,914 the week before or a reduction of 9,173 cars. It was, however, an increase of 3,500 over the total for the corresponding week in 1920 but 18,000 cars less than were loaded during the same week in 1919.

Loading of grain and grain products amounted to 48,680 cars, 1,453 cars more than were loaded during the preceding week and 12,955 cars more than were loaded during the same week last year. It also was an increase of 11,551 cars over the corresponding week in 1919.

There were 32,159 cars loaded with live stock, an increase

of 204 cars over the previous week and within 66 cars of reaching the total for the corresponding week last year. An increase over the previous week of 533 cars was reported for coal, the total being 137,836 cars, while coke, with a total of 6,638 cars, showed a gain of 293 over the same period. Forest products totaled 49,744 cars, an increase within a week of 1,341 cars and a gain of 151 cars over the same week last year. Ore also showed an increase of 811 cars over the week before, the total being 6,128 cars.

Compared by districts, the Pocahontas and Southern were the only ones to report an increase in loadings over the week before while all showed reductions compared with the corresponding week last year.

Freight cars idle because of business conditions totaled 528,158 on December 8, compared with 455,376 on December 1 or an increase of 72,782 cars within that period.

Of the total, 368,042 were surplus cars, an increase within a week of 85,116. The remaining 160,116 were idle freight cars in need of repairs over and above the number normally in bad order.

Surplus box cars totaled 129,995, which was an increase of 16,121 over the total on December 1, while surplus coal cars numbered 166,063, an increase of 33,370 within the same period. An increase within a week of 2,412 was reported for stock cars, but a reduction of 64 in the number of surplus coke cars.

While there was an increase in the number of surplus cars, the reports showed a reduction in the number of bad order cars, the total number needing repairs on December 1, the latest date available, being 320,292 or 14 per cent of 2,288,228, the total number of cars on line on that date. This compares with 333,616 or 14.4 per cent reported in bad order on November 15. Assuming 7 per cent of the cars on line to represent the number normally in need of repairs, this would leave 160,116 as the number of bad order cars which are idle because of business conditions.

THE GOLDBENALE BRANCH of the Spokane, Portland & Seattle, from Lyle, Wash., north to Goldendale, 42 miles, and the line of the Oregon Trunk, from Fallbridge, Oregon, south to Bend, 156 miles, resumed service on December 10, after a suspension of three weeks on account of snow blockades.

A VETERANS' ASSOCIATION, for the Metropolitan District, is proposed by the New York Central to its employees in New York City and Weehawken, N. J., in a circular inviting the employees and their families to attend a meeting to be held on Sunday afternoon, January 8. President A. H. Smith and other officers will address the meeting.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 10, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise I. C. L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	10,153	3,993	39,711	1,597	5,174	1,310	62,487	62,304	186,729		
	1920	6,350	4,055	62,722	2,617	11,231	4,824	47,657	70,749		205,265	193,613
Allegheny	1921	2,959	4,223	41,031	3,386	2,676	2,420	45,288	50,231	152,214		
	1920	2,034	3,662	66,917	7,327	2,953	6,528	39,262	56,762		185,445	163,338
Pocahontas	1921	264	160	14,979	171	1,286	21	5,859	3,125	25,865		
	1920	122	130	22,628	816	1,667	129	5,198	2,893		35,583	35,981
Southern	1921	3,741	2,047	16,437	474	16,783	522	38,313	36,456	114,773		
	1920	2,753	2,355	32,748	1,102	15,808	2,227	33,626	36,005		126,524	113,763
Northwestern	1921	13,826	8,382	7,126	746	11,119	333	26,601	24,668	94,001		
	1920	11,062	9,060	9,849	1,338	11,236	1,505	25,800	29,169		99,011	102,613
Central Western	1921	13,350	10,570	15,581	165	5,004	813	30,867	34,554	110,904		
	1920	9,792	10,942	27,726	489	4,580	2,653	29,519	37,024		122,725	98,115
Southwestern	1921	4,387	2,584	2,971	99	6,702	709	16,303	24,685	58,440		
	1920	3,632	2,121	7,360	100	7,074	567	16,550	27,996		65,400	54,517
Total all roads	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926		
	1920	35,725	32,225	229,950	13,789	49,593	18,431	197,642	260,598		837,953	
	1919	37,129	36,188	131,416	9,279	54,432	13,679	149,622	330,195			761,940
Week ended:												
December 10	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926	837,953	761,940
December 3	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286
November 26	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,090	219,757	673,827	803,701	739,197
November 19	1921	47,453	34,538	166,759	6,487	50,500	7,024	228,866	254,315	786,671	889,138	854,601
November 12	1921	34,402	34,269	152,309	6,450	50,661	8,558	215,439	250,858	753,046	927,586	802,304

# First Part of Rate Hearing Concluded

## Preliminary Testimony Given by Railroads Who Oppose Further Rate Reductions at Present

WASHINGTON, D. C.

THE FIRST STAGE of the hearings before Commissioners Aitchison, Esch, Hall and Lewis of the Interstate Commerce Commission in its investigation as to what, if any, further reductions in rates may lawfully be required and the future percentage of net return to be allowed, was completed on December 17. Four days had been consumed in introducing the preliminary testimony of the carriers of the eastern, southern and western districts in response to the questions propounded in advance by the commission, when the hearing was adjourned to January 9. The commission had allotted seven days for this testimony but the roads had been unable to complete the compilations requested in time and additional statistical information will be presented when the hearing is resumed. R. H. Aishton, president of the American Railway Association, is also to testify on efficiency and economy of operation, J. G. Waller, secretary of the Bureau of Information of the Eastern Railroads, on the wage question, and various executives on the percentage to be prescribed by the commission as constituting a fair return after March 1.

The preliminary testimony consisted of statistical statements from the three districts showing the present financial condition of the railways and the results attained under the advanced rates as well as under the reduction in wages and in other expenses made in recent months. This showed that for the 12 months ended September 30, 1921, the eastern roads had earned a net operating income of 2.75 per cent on the tentative valuation prescribed by the commission (as adjusted to cover only Class 1 roads and to include additions and betterments made during 1920), while the Southern roads had earned 1.8 per cent and the Western roads 3.04 per cent. While it was shown that these percentages had been considerably exceeded since July, and in October had reached an average of 5.4 per cent for the roads as a whole, it was also shown that traffic had fallen off considerably in November and December and it was estimated that the net return for those months would show reductions.

The attitude of the carriers toward further rate reductions was stated by the traffic executives, who all testified that the present rates are yielding the railroads an inadequate return and in the aggregate are not unreasonably high, considering the cost of transportation; that thousands of reductions had already been made, many of considerable extent by way of readjustment and to meet the requests of shippers, and that in general rates should not be further reduced until the roads have had further opportunity to reduce their expenses. They asserted that freight rates have not been the cause of the depression in business and that, in general, further decreases would not stimulate business materially because of the many other factors that tend to retard the restoration of traffic.

### Postponement of Grain Reduction Denied

While the hearing was in progress the commission on December 16 surprised the carriers by denying their petition for a rehearing of the case in which the commission had ordered a general reduction in the rates on grain and grain products and hay in the western district, effective on December 16, which, it is estimated, will reduce the revenues by about \$33,000,000 a year. While the petition of the carriers, in which they had also asked for a general rate investigation and had proposed the 10 per cent general reduction on agricultural products, had been technically for a rehearing

of the case, at the argument on December 14 they had asked that the order be suspended for six months pending the outcome of the investigation. While the 10 per cent reduction on agricultural products for six months had been proposed as a substitute for the larger reduction on grain and products and hay confined to the west, and it had been generally understood that it was contingent upon a postponement of the grain order, Alfred P. Thom, counsel for the Association of Railway Executives had burned the bridges behind him in his argument for a six months' suspension by stating that the 10 per cent reduction was in no way dependent upon the action in the grain case and that the roads had taken "an irretrievable step." The railroads had been very hopeful that their plan would be accepted but a great deal of pressure had been brought to bear on the commission to put its order into effect. Originally the commission had directed the roads to make the reduction on or before November 20, without issuing a formal order, and the order was only issued on November 21, after the roads had failed to file the tariffs, but had proposed the more general 10 per cent reduction as an alternative which would afford a broader relief to the agricultural industry.

### Geo. M. Shriver Presents Comparative Statements for the Roads As a Whole

George M. Shriver, vice-president of the Baltimore & Ohio, presented the general statistical testimony for the roads as a whole and for the eastern district. Mr. Shriver's statement was summarized as follows:

It is shown that the net railway operating income of the Class 1 railroads of the United States for the 12 months to September 30, 1921, was \$542,409,582, or 2.75 per cent on the property investment; that because of decreased operating income and increased charges and taxes, the net corporate income has been so diminished that some carriers have been compelled to suspend, and others to reduce, the customary dividends, while some have maintained customary dividends only by drawing upon surplus earned in previous years, consequently, of course, the surplus and margin to sustain credit has been reduced.

That because of lowered rates, and falling off in traffic, the railroads have failed to earn more than one-half the anticipated 5 1/2 per cent and nothing towards the one-half of one per cent contemplated as a contribution towards additions and betterments and to sustain credit, that the railroads have large accounts pending settlement with the government, and the manner in which these are disposed of will have a material bearing upon their cash position.

The Eastern carriers have shown that their operating income for the 12 months to October 31, 1921, was \$234,594,277, or 2.07 per cent on the property investment, and fell short of meeting the fixed charges of these carriers by \$70,000,000. That when the operating results of this year are restated to reflect the effect of lowered rates and lowered costs to do over again the business of 1921, the estimated net operating income of the Class 1 railroads would be, say, \$473,984,331, affording a return of about 3.40 per cent, but without having made any provision for many important items of maintenance which were deferred in that period.

That it will require extensive work to fully restore the condition of the properties, particularly equipment to meet the requirements under normal traffic, and that large sums must be raised for additions and betterments, of the railroads, the roads prepared to help, and not to hinder, the future commercial and industrial expansion of the country.

### Roads Not in a Position to Experiment

In this situation the railroads are not in a position to experiment (beyond what they have already done) by a decrease of rates at this time, and having in mind the present situation of the country of having a strong and effective transportation system, it does not appear in the interest of the public that they should do so

unless and until the processes now operating towards a pre-war level of costs have been more completely realized.

While the preliminary figures for November show again a sharp falling off in traffic, and the car movement reported so far for December indicates an even more serious decline, this is believed to be only temporary (influenced perhaps by the actual decrease in charges with the cancellation of the transportation tax at January 1, 1922, and no doubt in part pending conclusion of this hearing), as the underlying conditions in the United States and the world at large appear to be improving generally; while currently railroad operating costs are on a basis which affords an inadequate return, the basic elements of cost are declining and will no doubt continue, so that in the not distant future railroad transportation can again be brought to the relative position it had heretofore occupied of being the lowest priced commodity in the country, and continue—as it now is—lower than in any other country.

**1920 Operations Compared with 1916**

Mr. Shriver in his testimony said in part:

It is almost inconceivable to the average person that the railroads, which in 1916 earned a net operating income of \$1,040,085,517, should in 1920, with 71.77 per cent more gross revenues, have earned net of only \$21,661,782. It is true both of these years were exceptional, 1916 in that it was a year of substantial traffic handled under favorable operating conditions, while 1920 was exceptional in that for the first two months the properties were operated under federal control, and these two months no doubt carried some extraordinary expenses incident to the conclusion of such operation; for the months from March to October the railroads were called upon to perform the largest traffic movement in their history under particular pressure, and with their properties, especially cars, in a more or less depleted condition. This period was followed by two months in which there was a sharp falling off in business, so sudden and so general that it was impossible for the carriers to at once adjust their operations accordingly. These and other reasons rendered their operations for 1920 unusually expensive.

The comparison of these two years illustrates in a striking manner how the upward trend in expenses had exceeded the increase in revenues:

Comparing the year ended December 31, 1920, with the year 1916, it will be noted that the passengers one mile increased 35.46 per cent, and the net ton miles increased 12.84 per cent. Notwithstanding the increase in passenger and net ton miles handled, there was an actual decrease in the total train mileage of 2.34 per cent.

The total hours on duty of all employees in 1920 was 7.68 per cent larger than in 1916, while total wages paid in 1920 was 149.39 per cent greater than in 1916.

Taking the business as a whole, revenues increased only 71.77 per cent during the same period, while total expenses increased 147.37 per cent. For 1916 the total operating revenues were..... \$3,596,865,766 And the net railway operating income applicable to interest and other corporate purposes was..... \$1,040,084,517

The increase in revenue 1920 over 1916, due both to increased traffic and increased rates and charges aggregated.....	\$2,581,522,280
Total wages increased.....	\$2,193,867,278
Cost of fuel increased.....	452,229,229
Total increased cost of wages and fuel.....	\$2,646,196,507
(or for these two items alone more than the entire increase in revenues).	
Other expenses increased.....	827,870,197
A total increase in expenses of.....	3,474,066,704
Or an increase in expenses in 1920 over 1916 in excess of increase in revenues of.....	\$892,544,424
And correspondingly reduced the net operating income, which becomes.....	\$147,540,093
From this there is to be further deducted increases in taxes, hire of equipment and rents, etc.....	125,878,311
Leaving the net operating income in 1920 available for interest and other corporate purposes.....	\$21,661,782
As compared with that earned in 1916 of.....	\$1,040,084,517

**Results Following Decision in Ex Parte 74**

The commission authorized increases in rates and charges, designed to meet the expense basis existing at the time of the decision and to produce a net railway operating income equal to 6 per cent upon the value of the properties. For the months of September and October traffic continued to move in a volume so large that it taxed the ability of the railroads to handle it. While the rates were not effective in their entirety, owing to the delays in securing the concurrence of several of the state commissions, etc., and notwithstanding the expense of operation continued to rise, reaching perhaps the peak in this period, the operating income for these two months (September and October, 1920,) was \$75,310,311 and \$86,455,487, respectively, an aggregate of \$161,765,798, or on an annual basis of return of about 4.20 per cent when related to the tentative valuation fixed by the Interstate Commerce Commission.

Many of the increases in freight and passenger rates authorized

by the commission did not become effective until perhaps January 1, and some not until later periods, so that the results for the two months, even if it were proper to use so short a period for projecting, do not fully reflect the returns that might have been expected under the increased basis of rates.

**Calendar Year 1921**

The falling off in traffic noted in November and December, 1920, continued with some seasonal variations, through the months of January to October, 1921.

In comparing the income for 1921 with that of the test period, consideration must be given to the fact that more than \$2,000,000,000 has been added to the property investment since.

Following the establishment of the new rate basis in August, 1920, it became necessary almost immediately to make various adjustments in rates, and up to the present time thousands have been made, most of them involving lower charges; some of them being so substantial as to result in large decreases in the earnings.

Because certain of the expenses are inelastic, however, and because of the impossibility of reducing maintenance expenditures below the limit of safety, the railroads were unable to bring their expenses down in proportion to the falling off in revenue, and consequently there was a narrowing of net railway operating income for the period which fell far short of meeting the anticipations following the rate adjustments authorized in Ex Parte 74.

A number of roads have reduced their rate of dividend and several have been compelled to suspend payments entirely, all of which has of course a very direct bearing upon the credit of the carriers. It is not surprising under such circumstances, to note that practically all new financing has been done by increasing the funded debt of the carriers, and that the ratio of debt to capital has risen from 54.5 in 1919 to 56.1 in 1920.

**Official Classification Territory**

Referring to the situation in Official Classification Territory, Mr. Shriver filed an exhibit showing the result of operations for the years 1911 to 1920, inclusive, and for 12 months to September 30, 1921, the operating ratio during the six years 1911-1916 averaged 71.12 per cent. From a ratio of 67.39 per cent in 1916 the ratio mounted to 74.20 per cent in 1917, 84.82 per cent in 1918, 88.19 per cent in 1919, and reached the highest in history in 1920 when it became 98.68 per cent. To indicate the outstanding facts which operate to bring about the high operating ratio of 1920, as compared with the year 1916, Mr. Shriver said:

The increase in revenues, 1920 over 1916, was 69.4 per cent, or.....	\$1,210,440,168
The increase in expenses for the same period was 148.0 per cent, or.....	\$1,740,379,263
Increase in taxes, rents, etc.....	40,259,794
Total increase in expenses, taxes, etc.....	1,780,639,057
An increase in expenses, taxes and rents in excess of increase in revenues of.....	\$570,198,889
So that the net railway operating income in 1916.....	462,851,984
Actually became in 1920 a deficit of.....	107,346,905
During this period of vanishing income there was actually expended for additions and betterments to road and equipment the sum of.....	1,379,040,928
With consequent increase in fixed charges.	

This is the situation which confronted the carriers in the eastern district in 1920, and placed a severe strain on even those of the strongest financial credit. For the year to September 30, 1921, the operating ratio is 86.46 per cent, a drop compared with the year 1920 of over 12 points, reflecting the advance in rates for transportation granted August 26, 1920; and reduction in wages July 1, 1921, as well as substantial reductions in cost of fuel and materials.

The ratio was also affected by the curtailment in maintenance, but even with all these factors the ratio is 15 points higher than the average for the six years ending with 1916.

**Twelve Months to September 30, 1921**

When we review the returns for the 12 months to September 30, 1921, we find October, 1920, as a month in which a large volume of traffic moved with a fair net operating income. The decrease in volume of traffic became noticeable in the latter part of this month, and quite pronounced in November and December, 1920, and has so continued with only seasonal increases.

Preliminary reports for October, 1921, show a somewhat improved situation (due apparently to temporary causes), but in November there has again been a sharp decline in traffic and is becoming even more pronounced in December. The net railway operating income for the 12 months to September 30, 1921, was \$28,873,760; or 2.72 per cent on the property investment, and fell short of meeting fixed charges of the roads in the eastern district by over \$75,000,000.

Mr. Shriver showed that net railway operating income from January to October, 1921, was \$204,233,484, compared with \$336,890,219 for the same months of the average test period year. This \$204,233,484 is equal to 2.43 per cent on property investment (excluding materials and supplies) as of December 31, 1920. These carriers during the test period, or the three years ended June 30, 1917, earned 8.47 per cent of their annual net railway operating income in the 10 months, January to October, inclusive, and projecting the income for the remaining two months, on this basis, shows a rate of return of 2.87 per cent for the calendar year 1921.

#### Freight Rates in Relation to Commodity Prices

Mr. Shriver in reference to the matter of freight rates in relation to commodity prices said:

The carriers are not unmindful of the fact that, even with the reductions in rates already made and those now under consideration, the charges generally are high; that is, high as compared with what they were formerly. Some statisticians have shown the average rate per ton per mile in relation to the average prices of commodities, and by confining such comparison to the period 1913 to 1917, inclusive, have indicated that the increase in rates has in recent periods exceeded the average increase in commodity prices. A comparison over so short a period, however, cannot be considered as conclusive, particularly when the year 1913, taken as a base, was one during which railroad rates were generally recognized as having been low, and in the case of the eastern district, where substantially 50 per cent of the traffic of the country is handled, the rates were found by the commission in 1914, and again in 1917, to have been lower than they should be in the public interest.

The *Railway Age* has recently published a detail statement and chart covering such statistics over a period of more than 30 years, which indicates, even without taking into consideration the decreases recently made and arranged for, that freight rates were not relatively higher than the average commodity prices. This statement and chart also shows that the railroads for a number of years were compensated on a much lower basis than were the producers of other commodities, and that the railroads did not relatively participate in the high prices prevailing from 1915 to 1920. In other words, the railroads did not realize abnormal prices or profits, and were so less able to respond with lower rates when prices generally declined.

A copy of this statement and chart was filed as an exhibit.

Referring to the request of the commission for data as to the effect upon the carriers' operating income of the reduction in rates so far made, as well as the changes which have come about in the operating costs due to lower rates of pay and lower costs of fuel, material, etc., Mr. Shriver said that detailed questionnaires have been submitted to the various carriers in a form which it is believed will develop some reliable data bearing on this question.

"Under the most favorable circumstances, it is extremely difficult with the best of data available to measure the effect of the changing conditions as applied to the traffic and operations of a given period," he said. "However, in an effort to present this situation in some tangible form, information was secured by telegraph from the various railroads in the Eastern District covering data with respect to the more important items, and using the result of these returns for the purpose of estimating, an adjusted or constructive year has been arrived at."

Continuing, he said:

The adjustment indicates that to do over again the identical business that was done in the 12 months period to October 31, 1921, upon the basis of rates and costs in effect at November 1, 1921, would show a reduction in revenues due to lower rates, etc., of \$60,000,000, and a decrease in expenses due to lower rates of pay, reduction in costs of fuel and material, and miscellaneous expenses of \$24,320,054, a difference of \$264,320,054. Less estimated increased taxes, \$25,000,000, or a net increase in income of \$239,320,054, which, added to the operating income as audited, \$234,594,277, would show a total income for the adjusted year of \$473,914,331, and when related to the property value, as tentatively determined by the commission, afford a return of 5.40 per cent.

In making this estimate we have endeavored to be more than conservative in minimizing the lowering of rates and by using the maximum for lessened expenses, and so it is believed to reflect

the maximum railway operating income which can be earned on the traffic of 1921 under present conditions. In this connection the fact should not be overlooked that a considerable proportion of the net railway operating income for the year 1921 has been realized only through the postponement of many important items of maintenance, which curtailment is, of course, also reflected in the adjusted figures.

#### Benjamin Campbell for New England Lines

Benjamin Campbell, vice-president of the New York, New Haven & Hartford, appeared on behalf of the New England roads. He said that based on the return to the carriers present rates in the aggregate are not unreasonable because they fall far short of a reasonable return and if searching investigation were made, a great many of the rates might be found unreasonably low. As nearly as can be forecast, he said, there is small prospect for a substantial increase in business until spring. Since August, 1920, the New England roads had originated 1390 rate proposals, many of which affected many rates, of which 93 were advances and 1297 were reductions. They have also participated in many joint rate reductions. The reductions that have been made have not resulted in increased traffic, but in some instances they hold some business that otherwise would be lost. Practically no new reductions should be made in New England under present conditions, he said, and when the time arrives for a general reduction of rates, it should only be made after an improved rate structure has been made for the New England territory, including an improved relation between classes and commodities and between trade centers. In future general reductions should be confined to carload traffic and the car load minimums should be increased. The reduction should be on raw materials.

Mr. Campbell also referred to the inadequate mail rates in New England, which, he said, are less than the actual cost of transportation. He read a supplemental statement prepared by Gerrit Fort, vice-president of the Boston & Maine, giving the results of a general canvass of the shippers of New England. This said that there was considerable objection because the proposed 10 per cent reduction on agricultural products is not to apply in New England, but explained that the railroads cannot give adequate service if their revenues are to be further reduced. Mr. Fort expressed the opinion that rail rates are only one of many factors that have resulted in depressed business in New England.

#### T. C. Powell for Eastern Trunk Lines

T. C. Powell, vice-president of the Erie, was the traffic witness for the Eastern trunk lines. He produced detailed statistics as to various crops and industries to show that the depressed conditions in many lines are due to world conditions and have been very slightly affected by freight rates and, therefore, that the assertion that reduced freight rates would restore business is founded on an illusory hope. He said that the prices of many crops are controlled by the demand for the service and while the people of Europe need many of these products they are unable to buy because of the low value of their money in exchange. On the other hand, increased production of grain outside the United States has decreased the demand for our surplus. While he showed that the carriers have made many and extensive reductions in rates during the past year, he said they have been deterred from making some reductions because of the fear that shippers of unrelated products would ask similar reductions.

"The conditions," he said, "at the present time differ from any preceding depression in history. Heretofore business depressions, panics and disturbances have, from the standpoint of international trade, been localized and restricted in their effects.

"These world-wide conditions are the direct result of the world war. If it were not for this fact, and if the United States could stand by itself we would be in a prosperous condition."

In relation to many of the most important basic products, Mr. Powell said that existing conditions showed low relative production which normally would make for high prices, but that prices were low because of the lack of purchasing power and that therefore freight rates had practically no effect in reducing international trade.

Mr. Powell pointed out that the major part of the surplus corn had already been sold and that, as with cotton, it was the lack of purchasing power rather than freight rates which had brought about the low prices. He also showed similar conditions in wheat.

As a contrast to this he gave the data showing a condition of prosperity in fruits and vegetables. He closed this line of testimony in relation to barley, rye, rice, hay, potatoes, apples, peaches, sweet potatoes, flax, seed, tobacco, peanuts and sugar beets by saying, "If we were independent of world conditions the prices on all of these commodities should be on a scale that would ensure a profitable return to the producer."

Mr. Powell then added that appreciating the harmful effect upon business of such uncertainty, the eastern traffic executives had recently announced that no reductions would be made in trunk line or central freight association territory on coal, coke, fluxing stone or dolomite.

#### Readjustments Since Ex Parte 74

Mr. Powell filed exhibits describing the various readjustments and reductions in rates that have been made in eastern territory since Ex Parte 74 and on being pressed for an estimate of the extent of the reductions, he placed it roughly at \$100,000,000 a year on the basis of a normal volume of traffic. After having been led into making this guess, he was pressed by many of the shippers present for a detailed statement as to how he arrived at it and as to how much of this reduction represented a real loss to the carriers in view of the fact that some reductions were made to prevent the loss of business. Mr. Powell denied that most of the reductions had been made for the purpose of retaining business, saying many of them had been made only under pressure and had had no effect on the traffic, while they had reduced the railroad revenues.

Mr. Powell pointed out that substantial reductions had been made in export grain rates to meet Gulf and Canadian competition and that the 28 cent reduction on lake cargo coal had been originally made to meet the increased competition in the Northwest of coal from Illinois territory. The reduction had subsequently been applied to coal moving from all lake ports west of the Detroit river. Some of the reductions had been made to meet motor truck competition but very few, as the railroads were not generally attempting to meet that competition on short haul traffic. He pointed out that the export rates on iron and steel had been reduced 25 per cent at the request of the iron and steel shippers who desired to stimulate their export business, but that no marked increase in shipments had resulted, while on the other hand, the effect had been to cause reductions in the export rates via the Pacific coast. The Panama Canal competition also led to many reductions in transcontinental rates.

It is the belief of traffic officials, Mr. Powell said, that the restoration of business does not depend primarily on railroad purchases, but that the increased consumption must come from the general public. He pointed out that prices for building materials have been high out of all proportion to the rates, and that the depressed condition of the building industry has reduced the demand for iron and steel.

#### W. C. Maxwell for C. F. A. Lines

W. C. Maxwell, vice-president of the Wabash, testified on behalf of the Central Freight Association lines and said that as the present rates in the aggregate in the east do not yield a reasonable return based on the present operating cost, they are not, in his opinion, unreasonably high. No increases

have been made since Ex Parte 74 except slight readjustments and he filed several detailed exhibits to show the extent of the reductions that have been made, in many cases by amounts as great or greater than the increases made in Ex Parte 74. Hardly a commodity has not been touched.

Mr. Maxwell presented estimates that the proposed 10 per cent reduction on farm products would reduce the revenues of the Wabash \$1,233,034 a year on the basis of the 1921 traffic. For the Pennsylvania, the reduction was estimated at \$5,800,000, for the New York Central at \$3,053,353 and for the Erie at \$1,250,000. Mr. Maxwell also pointed out that many reductions have been made since the compilation made by the Interstate Commerce Commission which was published as a Congressional document. He said the 10 per cent reduction would affect the C. F. A. roads more than it would the eastern roads generally and he thought it would prove burdensome. The dockets of the traffic association are now loaded with applications for reductions which the carriers are trying hard to dispose of. John S. Burchmore, attorney for shippers, made a formal objection to the filing of Mr. Maxwell's exhibits which showed reductions made by state commissions in intrastate rates as being outside the scope of the hearing. Commissioner Hall overruled on the ground that while the investigation deals primarily with interstate rates, the commission cannot be asked to ignore the effect of changes in intrastate rates.

#### Passenger Fares

Discussing passenger fares, Mr. Maxwell said the principle of the surcharge is right and it should be continued. "It has been a crime against the common people, who ride 65 to 75 in a day coach, to let a dozen or so plutocrats occupy a magnificent Pullman car at no higher rate of fare," he said.

It is the general opinion of passenger men, he said, that the rate of fare has had no material effect on passenger travel, but that the falling off in traffic has been due to general business conditions. He said the effect of the automobile on passenger traffic has been increasing every year and is getting to be serious but he thought the effect may be offset through the increased freight traffic which comes from the automobile business. Auto trucks have taken a good deal of short haul and l. c. l. traffic, but "they are welcome to it," he said. They have had little effect on carload traffic.

When Mr. Maxwell said he thought the estimate made by Mr. Shriver that the reductions in rates made in eastern territory would amount to \$80,000,000 a year is conservative, Mr. Burchmore asked if many of the reductions had not saved revenue for the roads. Mr. Maxwell said that in some cases they had had that effect.

#### G. W. Lamb Testifies for Southern Lines

George W. Lamb, representing the railroads in the southern district, testified that those carriers during the year ended on September 30, 1921, had a net operating income of \$42,805,000, which was at an annual rate of 1.80 per cent return on their property investment. This, he said, was not sufficient to enable them to pay the interest on their bonds. For the ten months ended on October 31, Mr. Lamb testified that the southern roads had fallen short \$66,135,000 of realizing a return of 6 per cent on their tentative valuation. Since the test period the rates have been increased 50 per cent but expenses have increased so that the return for 1920 was \$58,000,000 less than the average for the test period. For the four months, July to October, since the wage reduction, the southern roads had earned at the rate of 4 per cent. Since last November there has been a steady decline in traffic except in October, when the business was increased by the threat of a strike. In November and December it has fallen off again. Mr. Lamb agreed with the other witnesses that the present rates cannot be considered unreasonably high since they produce less than an adequate return.

### Shippers Ask Definition of Scope of Investigation

At the opening of the Saturday morning session, John S. Burchmore addressed a question to the commission regarding the scope of the investigation. He said it was expected that the principal purpose was an early determination as to the reasonableness of the entire rate structure, the ability of the carriers to reduce rates, the needs of the public, and whether any reduction should be general or limited to basic commodities. However, he said, many of the shippers are uncertain as to how broad the inquiry may be and the character of the showing that will be permitted to be made as to any commodity, so that groups of shippers may determine to what extent they should participate, he asked the commission to make clear the extent to which evidence will be received on particular commodities or groups of commodities or the extent to which shippers should expect to resort to formal complaints. C. E. Elmquist, chairman of the general committee appointed by the shippers at the hearing, said the shippers had selected a steering committee that would endeavor to reach some sort of agreement regarding the division of time but other shippers said they did not understand it would be the province of the steering committee to decide the extent to which questions of particular commodities can be gone into and that they would appreciate a ruling from the commission. Commissioner Hall said Mr. Burchmore's request would be considered, but that the commission had supposed the scope of the investigation had been made clear in the order, and that it was a general survey, but that the order does not preclude the filing of a formal complaint and counsel should judge for themselves whether their interests would be best protected by a formal complaint. He hoped the proceeding would not continue indefinitely, but the commission wanted definite concrete information as to groups of commodities so that it shall better understand the situation and ability of the carriers to respond.

### Southern Lines in No Financial Condition to Make Reductions, Says Capps

Testimony to show that the railroads in the Southern district are in no financial condition to make any general rate reductions and that business prospects in the South are not promising at present was introduced by C. R. Capps, first vice-president of the Seaboard Air Line. Of 80 blast furnaces in the South, Mr. Capps said only 11 are now in operation. He also said the Southern railroads moved 2,250,000 tons less of fertilizer in 1921 than during 1920, while reports indicate no prospects of an improvement in 1922. He said in his opinion a reduction in fertilizer rates would not stimulate movement.

"I do not think conditions in the South are in any way chargeable to the present level of freight rates," said Mr. Capps. "I do not know of any business in that territory that would be stimulated by a reduction in rates."

He estimated that a 10 per cent reduction in the rates on the principal agricultural products would reduce the gross revenues of the carriers in the Southern district from January to June, 1922, by approximately \$6,000,000.

In response to an inquiry by Commissioner Lewis, relative to the cost of watermelons shipped north from Georgia and other southern states, Mr. Capps said that while those melons sell in the South for from 20 to 25 cents each, the retail price last summer in Washington was \$1.75.

"What was the average freight rate per melon," inquired Commissioner Lewis.

"About eight cents apiece," was the reply.

Mr. Capps said that during the 12 months ended September 30 the southern roads had earned \$88,000,000 less than a 6 per cent return. Commissioner Aitchison asked if the real question is not what the prospects are for earning in the future. Mr. Capps replied that it is necessary to give some consideration to the shortage of return in the past.

Commissioner Aitchison asked if it was understood that the commission was expected to make up in the future for any deficiency in the past. Mr. Capps did not reply definitely. He said he did not know of any rate that is now unreasonable, but that it is quite likely that some one would come into his office on Monday and point out one and an effort would be made to correct it if possible. He filed an exhibit of 1,000 pages, showing the changes in rates, practically all reductions, which have been made during the past year, but stated that it was impossible to estimate whether these reductions represented a loss in revenues to the carriers or the extent of the loss.

### L. E. Wettling Shows Condition of Western Lines

L. E. Wettling, of Chicago, manager of the statistical bureau of the western lines, testified as to the financial condition of those roads. For the first 10 months of 1921, he said, the net operating income of the western roads was \$249,383,000, which was at an annual rate of 3.7 per cent on the tentative valuation. That this was realized at the expense of the properties is shown, Mr. Wettling said, by the fact that the western carriers had reduced their expenditures for maintenance of way and structures 30.8 per cent and for maintenance of equipment 16.7 per cent as compared with 1920, while the reduction in operating expenses as a whole was only 18.7 per cent. During the last four months for which returns are available, there was a large increase in traffic as compared with the early part of the year and the net return was at the rate of 5.7 per cent; but the traffic was under that of 1920 and 1919 and reached its peak in October. For the year ending September 30, the net return of the western roads was only 3.4 per cent.

### Traffic Testimony for Western Lines

Given by Edward Chambers

Edward Chambers, vice-president of the Aitchison, Topeka & Santa Fe, presented the traffic testimony for the western roads. He said in part:

The net revenues of carriers in western territory as a whole are not sufficient to meet their financial requirement, and are not up to what the law entitles them to receive. Therefore, we must assume that the rate structure as a whole, both freight and passenger, is not at this time unreasonably high.

As to passenger fares, it is also our judgment that the present level is not unreasonable, and that a reduction would not stimulate traffic to the extent that the possible increase in travel would offset the losses in revenues that would result.

### Surcharges

The surcharge is an extra charge due to the fact that the cost of transporting passengers in sleeping or parlor cars is relatively higher than in coaches. The surcharge figures about one-third of a cent per mile and, for convenience, is made one-half of the charge for sleeping or parlor car accommodations. The surcharge was established after a careful study had developed that sleeping and parlor car passengers were not paying their proper share of transportation costs. The average load carried in sleeping or parlor cars is 15 persons and the average for coaches is 25. The average weight of a coach is about 100,000 lb.; sleeping and parlor cars weigh from 130,000 to 150,000 lb. With an average load of 15 passengers in sleeping or parlor cars, and 25 passengers in coaches—and these are the averages for all cars—the railroads carry about 9,500 lb. of weight per sleeping or parlor car passenger, and 4,000 lb. weight per coach passenger. Based upon the relative capacity and weight of equipment, the average weight per passenger in sleeping or parlor cars approximates two and one-half times the weight per coach passenger, and while the weight is not the sole measure of expense, it is a very large part of it.

### Changes in Individual Rates

There have been a great many changes in specific individual freight rates, and some changes in sets of freight rates. Practically all these changes have been reductions and are the results of every-day considerations by freight traffic officers and some by orders of the Interstate Commerce Commission. Some of the reductions are due to readjustments; some to restoration of farmer relationships, and others to the usual reasons which always have controlled in the making of freight rates.

### Reductions in Passenger Fares

In keeping with the practice that existed when the basic fare was three cents per mile or less, the carriers have continued the policy of making concessions for seasonal excursions. These excursion fares cover practically the entire country, as, for instance, summer excursion fares to Pacific Coast, Colorado, Utah, New Mexico, Texas, Florida, Minnesota, Wisconsin, Michigan, etc., and to Atlantic coast resorts, and national parks. The basis for summer excursion fares has generally been one and one-third fares for the round trip, yielding approximately 2.4 cents per mile.

Another large class of reductions, following the previous practice, has been made for conventions of all kinds, many of them national in scope. Convention fares have been made for a total of some 1,500 of these conventions since September 1, 1920, approximately 1,300 of which were at points in the western district, and two hundred at points outside of the western district. For the Grand Army of the Republic, United Confederate Veterans and the American Legion, a rate of one cent per mile was made, which, in our judgment, is not sufficient to pay the cost of service. The carriers, however, as a matter of public policy, contributed toward the success of the national conventions referred to.

### Decrease in Gross from Reduced Rates

It is very difficult to arrive at the figures even approximately because of changes in the movement of particular commodities in one period as compared with another. To arrive at anything like actual figures would require investigation as to actual tonnage moving in connection with each rate reduction. Our estimate as to the reduction in gross freight revenue resulting from rate changes since August 25, 1920, using tonnage for the year ended September 30, 1921, as a basis for the estimate, is \$537,500,000 in western territory, and our estimate for the reduction per annum in the event the 10 per cent reduction on agricultural products is made effective, is an additional \$45,000,000 per annum, which would make the total reduction, based on a year's tonnage in western territory, \$82,500,000. The order in the grain case will increase this about \$14,000,000.

In arriving at these estimates we addressed an inquiry to each of the 35 important lines in western territory, asking them to make an individual estimate in each instance covering their own line.

### Changes in Volume of Traffic

The traffic increased for several months after August, 1920, then began to go down and has been dropping more or less since, although at times it has shown an increase, but rarely up to the previous year. The prospects for the immediate future are not very encouraging for any considerable increase in traffic. While we hope that the bottom has now been reached, the November and December reports are very discouraging and we anticipate no substantial increase in tonnage before the coming of spring. The volume of traffic has not been materially affected, one way or another, by rate changes since August, 1920. Economic conditions are very largely responsible for the shrinkage in the volume of traffic. For example, building operations at Chicago, where practically all the necessary materials except lumber are produced within the city limits, are no different than in the country generally.

Increased passenger rates have not lessened travel to the extent of lowering net revenue. People paying full tariff rates today are largely those who can afford to do so and those traveling on business. The greater falling off in regular passenger traffic is in the coach travel where comparatively short hauls are involved and where the volume of the increase is in no way burdensome.

### Economic Conditions Most Important Factor

The economic conditions that have obtained in this country and in the world at large since the great war have been the most important factor in retarding the movement of traffic.

### Readjustments

The long established and generally recognized relationships in freight rates which were forced out of line by Ex Parte 74 percentage increase have, with but few exceptions, been readjusted. The unadjusted relationships are having active consequences. We do not consider that a mere difference in cents per 100 lb. in rates, when increased, is a relationship that should necessarily be readjusted. A recognized relationship or differential is such as fixed by agreement between carriers and shippers, or between the carriers themselves, or prescribed by state commissions or the Interstate Commerce Commission.

The carriers are not likely to be in position for some time to consider a general reduction in all rates. When the financial condition of the carriers will permit, it is our judgment that first consideration should be applied to specified commodities, among the great staples which are recognized as most important to the

economic situation of the country and where the reduction would result in the greatest benefit to the public. It is true that the carriers are now proposing to reduce the rates 10 per cent on the most important agricultural products, but this proposition has not been submitted as warranted by our financial situation, but because we realize that the agricultural industry is in dire need and in the interest of all concerned we are proposing to make a contribution toward the anticipated rehabilitation of that industry.

To decide fairly what might be done, it would be necessary that the entire rate structure be analyzed, both class and commodity, to determine what rates, if any, are unreasonably low and should be advanced, and what rates, if any, are unreasonably high and should be reduced.

Commissioner Aitchison asked Mr. Chambers whether the roads expected, if the 10 per cent reduction on agricultural products results in a decrease in revenue below fair return, that it will be recouped to them out of future rates when traffic becomes normal. Mr. Chambers replied that the roads are willing to take their own chances for the six months period and hope within that time to get expenses down.

### Hearing Adjourned Until January 9

At the close of the hearing on Saturday it was decided to adjourn until January 9, when the roads would complete their presentation of statistical testimony. It had been proposed to call Mr. Aishton on Monday, but it was decided that his testimony could be postponed until January 9 so that those who had come to Washington from long distances need not remain over Sunday. Before the adjournment the representatives of shippers asked for a large amount of statistical information to be furnished by the railroads. Some of the information the roads agreed to furnish, but as to some they referred the question to the commission as to whether it should be furnished.

Commissioner Hall said that S. H. Cowan on behalf of Texas cattle shippers had presented a petition for a rehearing and modification of the decision in Ex Parte 74 but that such an application, applying to another proceeding, could not properly be made in this proceeding. Mr. Hall said that the commission had considered before ordering this investigation a proposal to reopen Ex Parte 74 and had decided not to do it, but to order this investigation instead. If, in view of this statement, Mr. Cowan desired to file his petition, it should be filed in Ex Parte 74 in the usual way and copies served on the other parties.

The commission later announced that the further hearing had been postponed from January 9 to January 11, and that the further program will be as follows:

- Jan. 11-14 Direct testimony of carriers.
- Jan. 16-18 Cross examination of carriers' witnesses.
- Jan. 19-20 Coal and coke.
- Jan. 21-23 Ore, furnace materials and iron and steel articles.
- Jan. 24-25 Sand and gravel, brick, lime, cement, gypsum and asphalt.
- Jan. 26-27 Lumber and forest products.
- Jan. 28 Fertilizer and materials, sulphuric acid, phosphate rock.
- Jan. 30-Feb. 4 Testimony of public and shippers as to general aspects of case.
- Feb. 8 Vegetable oil and soap.
- Feb. 9 Grain, flour and agricultural products.
- Feb. 10 Live stock and packing-house products.
- Feb. 11 Petroleum and petroleum products.
- Feb. 15 Canned goods and wholesale groceries.
- Feb. 16-17 Fruits and vegetables.
- Feb. 18 Milk, cream and dairy products.
- Feb. 20 Beverages and beverage containers, waste material.
- Feb. 21-22 Other commodities.

Announcement will be made of dates for carriers' rebuttal evidence and for oral argument during but before the hearing is closed.

# Accounts for Six Months Guaranty to Be Closed

December 31, 1921, Set as Date and Statements to Be Filed on or  
Before March 1, 1922

SIX MONTHS' guaranty in which December 31, 1921, is fixed as the date as of which all accounts pertaining to the guaranty period shall be considered closed for the purpose of computing the guaranty.

All carriers which accepted the provisions of section 209 of the transportation act, 1920, are required to file on or before March 1, 1922, final statements of amounts due to them or to the United States thereunder. Forms for rendition of statements are prescribed.

In the computation of railway operating income or any deficit therein for the guaranty period for the purposes of section 209 of the transportation act, 1920, the order says, the provisions of subdivision (f) of the section are provisions limiting the inclusion in guaranty computation of charges to operating expenses or revenues actually entered on the carrier's books of account under the accounting rules of the commission and do not contemplate any increase of or addition to such charges for the purposes of the guaranty settlement.

For the purpose of the guaranty, charges to operating expenses for maintenance will be limited to those applying to work done between March 1 and August 31, 1920, inclusive, and to charges accrued or equalized in accordance with the commission's accounting rules. No charges for deferred maintenance will be considered. Estimates of the net effect of deferred debit and credit items made by the commission and agreed to by carriers under the authority of paragraph (b) of section 212 will be considered in computing the guaranty.

A general rule is announced for the adjustment of differences in cost of labor and material in establishing the maximum amounts to be included in operating expenses for maintenance of way and structures and for maintenance of equipment for the purposes of the guaranty, and methods of adjustment for differences in amount and use of property are separately indicated for maintenance of way and structures and for maintenance of equipment.

At hearings before the commission counsel for the railroads had asked that the maintenance allowance be made on the basis of the expenditures necessary to keep up to the standard of the test period, although the work may not all have been done in the guaranty period but was postponed to some extent because of shortage of earnings or other reasons. They also contended for an allowance to cover the so-called inefficiency of labor, which was not sustained in a special report on that subject issued by the commission earlier in the year.

The report shows that \$429,808,649 has already been paid on account of the guaranty and in its annual report the commission estimated that a balance of \$105,000,000 is still due.

## Report of Division 4

The report by Division 4 of the commission says in part:

The general rules for computing railway operating income or any deficit therein for the purposes of the guaranty are set forth in section 209 of the act, and, having under consideration the manner in which the railway operating income applicable to the guaranty period is to be determined for such purposes, we issued our order of June 10, 1920. In that order we provided, among other things, for the distribution of items of railway operating income or deficit between the guaranty period and other periods, and with respect to all carriers we required that all items of income classable under any of the accounts comprising the standard return, which under our instructions pertain to the guaranty period, audited during the guaranty period, and similar items

audited in the accounts for the months subsequent to August, 1920, shall be distributed upon the corporate books to the appropriate primary accounts for the months in which audited, but that items pertaining to the guaranty period audited subsequent to August, 1920, shall be so recorded as to readily permit the totals thereof for each month to be separately stated.

We directed attention to the fact that carriers might state their income accounts on the basis of accruals and ordered that in computing railway operating income or any deficit therein for the guaranty period for the purposes of section 209, no charges to income will be permitted which relate to transactions originating prior to March 1, 1920, or subsequent to August 31, 1920, whether such charges represent actual expenditures or credits to reserve accounts created to reflect accruals. The carriers were informed that reserve accounts created to reflect accruals pertaining to guaranty period transactions would be closed out or adjusted on the basis of actual expenditures within such reasonable time after August 31, 1920, as we might determine.

More than a year has elapsed since the close of the guaranty period and there appears no reason why for the purpose of final settlement of the guaranty, reserve accounts created to reflect accruals pertaining to guaranty period transactions should not now be closed out by adjustment to the basis of actual expenditures pertaining to the guaranty period or corrected to reflect such estimates and adjustments as we are authorized to make under section 212 of the transportation act, 1920.

In our order of June 10, 1920, carriers were cautioned that while we are required to eliminate and restate operating expenses and revenues for the guaranty period to the extent necessary to correct and exclude any disproportionate or unreasonable charge to such expenses or revenues for such period, or any charge to such expenses or revenues for such a period, which, under a proper system of accounting, is attributable to another period, we are not authorized to initiate or include any charge applicable to the guaranty period which does not appear on the carrier's books of account at the time of the guaranty settlement. But in the adjustments proposed by carriers in the return to our order of October 18, 1920, as well as in correspondence and conferences concerning formulae or plans for determining maintenance and other allowances under subdivision (f) of section 209, many carriers have disregarded the principles which we then announced.

This error is apparently attributable not only to a lack of appreciation, on the part of some of the carriers, of the fundamental differences between the federal control period and the guaranty period in the method of settlement, but also to the failure to realize the fact that the adjustments of paragraphs (3) and (5) of subdivision (f) are solely provisions of limitation of amounts which may be charged by the carriers in computing railway operating income or any deficit therein for the purposes of the guaranty and do not in any sense contemplate allowances for such purposes in excess of amounts actually entered.

With the exception of showing separately items audited in the guaranty period which pertain to other periods and items audited in other periods which pertain to the guaranty period, for which provision is made in our order of June 10, 1920, the accounts for the guaranty period and for items audited in other periods which pertain to the guaranty period should be kept exactly as they should have been kept if there had been no guaranty in effect. In the computation of railway operating income or any deficit therein for the guaranty period for the purposes of section 209 we shall treat the provisions of subdivision (f) of that section as provisions limiting our consideration to the amounts actually charged on the carrier's books of account under the accounting rules prescribed by us pursuant to section 209 of the interstate commerce act, and we shall not for the purposes of the guaranty make or permit any increase of or addition to charges actually on the books in accordance with our rules.

In the case of deferred debits and credits which cannot as of December 31, 1921, be definitely determined, carriers will be required to submit estimates of the net effect of any and all of such items for our action under paragraph (b) of section 212 of the transportation act, 1920.

Under the provisions of subdivision (h) of section 209 of the transportation act, we have certified to carriers advances amounting to and under the provisions of section 212 of the act we have certified partial payments in the amount of ..... 165,872,775.05 making a total for advances and partial payments combined of ..... \$429,808,649.05

### Final Statements to Be Filed Before March 1, 1922

The sum of advances and partial payments so certified is more than two-thirds of the total amount by us estimated as necessary to make good the guaranty to all carriers. We are required to make a definite ascertainment for partial payment purposes as clearly as we are required to make a definite ascertainment in final settlements. We shall require all carriers which accepted the provisions of section 209 of the transportation act, 1920, to file with us on or before March 1, 1922, final statements of amounts due to them or to the United States, as the case may be, under the provisions of section 209, and as a general rule no further partial payments will be certified until the information necessary for a final settlement is at hand. A complete set of forms for making the final returns required is hereto attached.

Upon consideration of the returns to our orders of October 18, 1920, and January 5, 1921, and as a result of investigations made for the purposes of the definite determinations required for partial payments under section 212 of the act, in addition to the facts considered in Finance Docket No. 1176, *Maintenance Expenses Under Section 209*, we are of the opinion that the allowances for differences that may exist between the cost of labor and material for the test period and for the guaranty period, respectively, cannot practicably be made upon the basis of any rigid rule or formula, but these allowances must be fixed by us in the exercise of a reasonable judgment upon consideration of all the relevant facts and circumstances.

### Differences in Cost of Labor and Material

As we have pointed out in our report in Finance Docket No. 1176, there are some items of maintenance for which no allowance should be made on account of changes in cost of labor and material. We therefore announce the following rule for adjustment of differences in cost of labor and material in establishing the amounts which will be fixed by us as amounts which shall not be exceeded in charges to operating expenses for maintenance of way and structures and for maintenance of equipment, for the purposes of the guaranty:

There shall first be deducted from the maintenance expenses of the test period all amounts included therein for

- (a) Depreciation,
- (b) Retirements,
- (c) Insurance.

The remainder, after being adjusted for differences in amount and use of property maintained, shall be multiplied by a factor representing the increase in the general level of cost of labor and material for the territories in which the lines of railway of the carrier are situated. To the product thus arrived at shall be added back the deductions hereinabove provided for, adjusted for differences in amount and/or use of property maintained. The resulting sum will be the amount to be fixed by us as that which shall not be exceeded in charges to operating expenses for the purposes of the guaranty for the aggregate of maintenance of way and structures and maintenance of equipment. The methods of adjustment for differences in amount and use of property are indicated separately for maintenance of way and structures and for maintenance of equipment in forms annexed.

Carriers in presenting their claims or statements of amounts due to or from the United States under the guaranty will be required to state under oath the increase in cost of labor and material for their respective territories and may support these statements by such statistics and representations as may to them appear proper. In the presentation of such cases it should be borne in mind that the fact that certain prices were actually paid for units of labor or units of material in the test period and the guaranty period, respectively, is not conclusive evidence that those prices indicate or measure increases in cost of labor or material for which "due allowance shall be made." The prices actually paid in either period may be affected by the relative competence of management, by standards of maintenance adopted, or by other causes not attributable to increased costs.

The allowances for increased compensation provided for in section 4 of the federal control act will be computed upon rates definitely approved by the President in each case. The treatment to be accorded such allowances in respect of retirements will be that contemplated by section 4 of the federal control act and not that provided by the "standard contract" if in any case the provisions of the "standard contract" do not agree with the provisions of the act. The additional allowance will be limited to additions and betterments to road, made with the approval of or by order of the President and completed and in operation on or before midnight on February 29, 1920, and to equipment delivered and in operation on or before said date. The benefits of section 4 will be extended to those carriers which were released from federal control prior to March 1, 1920, as well as to those which were under federal control until that date.

The provisions of this report and of the order to be issued

in connection therewith will apply with the necessary changes, to settlement of the guaranty with the American Railway Express Company under subdivision (i) of section 209.

### Some Interlocking Officers and Directors Authorized

THE INTERSTATE COMMERCE COMMISSION has issued a large number of additional orders authorizing railroad officers and directors to hold positions with more than one carrier. One of these orders authorizing common officers and directors among the companies comprising the New York Central System consisted of 42 typewritten pages. In the case of three directors of the New York Central, however, George F. Baker, William Rockefeller and Harold S. Vanderbilt, the commission declined to authorize them to retain at the same time directorships in competing lines and gave them until December 31 to make their elections as to which position or positions they will hold under the authority granted in the alternative and to report to the commission all pertinent facts in connection therewith.

George F. Baker was authorized to hold until further order of the commission the position of director of the New York & Long Branch and chairman and director of the Central of New Jersey and the position of director of either the New York Central and a list of subsidiaries named, or the Delaware, Lackawanna & Western, the Erie, and its subsidiary, the New York, Susquehanna & Western, or the Lehigh Valley.

William Rockefeller was authorized to hold until further order the position of director and member of the executive committee of the Chicago, Milwaukee & St. Paul and the position either of director of the New York Central and its subsidiaries named, or director and member of the executive committee of the Delaware, Lackawanna & Western, and director of its subsidiary, the Greene Railroad.

Harold S. Vanderbilt was authorized to hold until further order the position of director of the Chicago, St. Paul, Minneapolis & Omaha and of the Chicago and North Western and the position of director of either the New York Central and subsidiaries or the Delaware, Lackawanna & Western.

Among the other orders issued by the commission were those authorizing common officers and directors of the lines subsidiary to or affiliated with the Northern Pacific: Authorizing Thomas De Witt Cuyler to hold the position of director with the Pennsylvania, the Long Island, the Atchison, Topeka & Santa Fe, the New York, New Haven & Hartford, the New York, Ontario & Western and the Rutland; authorizing Robert S. Lovett to be director of the New York Central and affiliated lines, the Illinois Central, the Yazoo & Mississippi Valley and the Central of Georgia, and director and chairman of the executive committee of the Chicago & Alton and of the lines comprising the Union Pacific System; authorizing officers and directors of lines in the Southern Pacific System to hold offices with different companies: authorizing James Speyer to be director and member of the finance committee of the Chicago, Rock Island & Pacific and the Baltimore & Ohio; authorizing James A. Peabody to be chairman of the executive committee and director of the Illinois Central, vice-president and director of the Delaware & Hudson and the Pittsburgh, Fort Wayne & Chicago, and director of a large number of non-competing roads, the American Railway Express Company and Wells, Fargo & Co.

George T. Slade was authorized to hold until further order the position of director of the Northern Pacific and of the Southern and the position of director of either the Lehigh Valley and its subsidiary, the Lehigh & New York, or the Erie and its subsidiary, the New York, Susquehanna & Western.

# The Development of the Robinson Connector

Latest Type Incorporates Improvements Suggested by Extensive Service of Earlier Design

**T**HE COUPLING and uncoupling of cars, either passenger or freight, involves two operations; the engaging or disengaging of the couplers and the connecting or disconnecting of the train lines. The former operations are semi-automatic and are controlled by levers conveniently located at the sides of the car; the latter, however, must still be performed by hand, a method which involves some danger to the employees because it is necessary for them to go between the cars. Coupling train lines is one of the duties of the car inspector which consumes a considerable share of his time. Uncoupling the train line, which should be done by hand, is often neglected and the hose are allowed to pull apart when the cars are separated.

The loss of time in connecting hose and the bad effects of pulling them apart have led railroad officers to look to the automatic train line connector as the solution of these and other difficulties. In discussing the automatic connector a leading railway master car builder said: "There appears to be no room for argument about the need of such a device. The greater life of hose, the absence of broken train pipes resulting from uncoupling cars without first disconnecting the hose, the saving of time and labor in making up trains, and the reduction in the cost of pumping air, all of which might be classed as direct or apparent economies, would undoubtedly justify the cost of application alone, but the writer is even more impressed with the benefits that would be secured indirectly. Numerous leaks are found in hose and gaskets at all seasons of the year, almost entirely the

and leakage and breaks are cut down to such an extent that it is possible to run longer trains."

The problem of the automatic connector was considered by the Master Car Builders' Association in 1908. A committee on this subject submitted a report which recommended a butting type connector with pin and funnel gathering device. From the time this report was issued until the present the Master Car Builders' Association and its successor, the Mechanical Division of the American Railway Association, have given little attention to this subject, although a sub-committee was organized in 1919. In this interval, however, there had been a remarkable development in train line connectors. Since 1910 over 1,000 cars have been equipped with the Robinson connector. Its present performance is such as to command careful consideration and as a history of the development of the device is essential to an understanding of the present state of the art, an account of the successive stages through which it passed will accordingly be given.

## History and Extent of Service

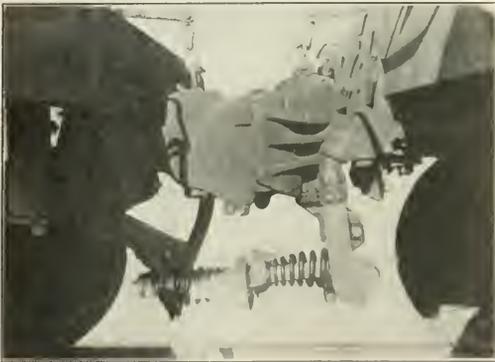
In 1910 the first design of Robinson connector was applied to a passenger work train operating on the lines of the Washington Terminal Company, Washington, D. C. This connector was of the pin and funnel type, in accordance with the recommendations of the M. C. B. committee of 1908. Its service extended over a period of ten months and was satisfactory to the railroad officers in charge. Representatives of the Interstate Commerce Commission watched the installation and were so well pleased with it that the commission arranged for an official test of the connector on the lines of the Great Northern at Grand Forks, B. C.

The test was made on the Marcus division of this road, extending between Grand Forks and Phenix, B. C. The trains hauled were heavily loaded ore trains. Fifty cars were equipped and run interchangeably with 140 unequipped cars. The grade was 3.5 per cent and the curvature in some places excessive, curves of 22 deg. being commonly encountered. Railway officers from various parts of the country were present; the Board of Railway Commissioners at Ottawa delegated representatives, and every conceivable test was made of the connector, each of which it met successfully. These tests definitely established at least one important fact; that this connector made and maintained a perfectly tight joint, thus greatly increasing the effectiveness of the air brake.

In submitting its official report on this test the Interstate Commerce Commission concluded as follows: "From information obtained in this test the conclusion is reached that the Robinson connector is a safe and practical device, which if properly installed and maintained, will meet the need for an automatic connector in general freight service and add to safety in train operation on the railroad using it

"It is mechanically simple in construction and composed of few parts which are easily assembled. It is comparatively light in weight, and of ample strength to withstand all shocks to which it is likely to be subjected in ordinary service. Its gathering range is sufficient to meet all variations between cars in service where car couplers can be made to operate, and it will withstand severe distortion without damage when heads are forced together under conditions where car couplers will not operate.

"It will maintain a tight joint between connector faces, even when gaskets are worn to such an extent that they could



The First Robinson Connector, of the Pin and Funnel Type, Applied in 1910

result of the practice referred to above; viz., pulling the hose apart, thereby injuring the fabric and inner tube. In the cold weather, however, when the hose freezes, the difficulty in preventing air leakage becomes a controlling factor in the operation of long freight trains and they have to be reduced in length to a point where the air pressure can be maintained irrespective of the tonnage rating or the ability of locomotives to haul them. Even at the best, this factor is responsible for a very great amount of terminal detention and labor on the part of car men trying to stop leaks.

"The connector increases the life of hose because it eliminates all mechanical wear. The hose is never jerked or strained. Frozen hose does not interfere with its operation

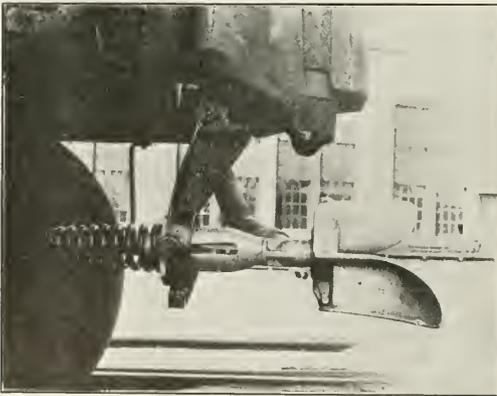
not be used with the standard hose coupling, and its use would materially reduce train pipe leakage."

### Freight Connectors Installed on Canadian Northern

In view of this report by the Interstate Commerce Commission and in view of the favorable opinion of the connector expressed by its representatives, the Canadian Board of Railway Commissioners became interested in the device and requested the Canadian Pacific, Grand Trunk Pacific and the Canadian Northern to look into it.

As a result of this request four all-steel hopper cars on the Canadian Northern were equipped with freight connectors. Experience with the first design indicated that the pin and funnel type was deficient in gathering range and undesirable because the dimensions once fixed could not be altered. Consequently a new design, known as type B, was prepared using a gathering arrangement of the wing type. These connectors were installed by the Canadian Northern at its Winnipeg shops in May, 1914, and put in continuous service handling gypsum rock from Steep Rock to Winnipeg during the summer and in coal service between Port Arthur and Winnipeg during the winter months. These cars ran in this service for three years under the most severe track and weather conditions, especially in winter, the temperature from December to March ranging from 10 deg. to 45 deg. below zero. The test came to an end through a wreck on the Steep Rock line, destroying all four cars. No change of hose or gaskets had been made during the whole period and these parts were in good condition at the completion of the test. Reports issued each trip by the train crews handling these cars show no train leakage whatever and all concerned were greatly pleased with the device.

The second installation in Canada was made by the Canadian Pacific, which equipped one passenger train in service between Montreal and Ottawa in February, 1915, with type



Type B Robinson Connector, with Wing Gathering Arrangement

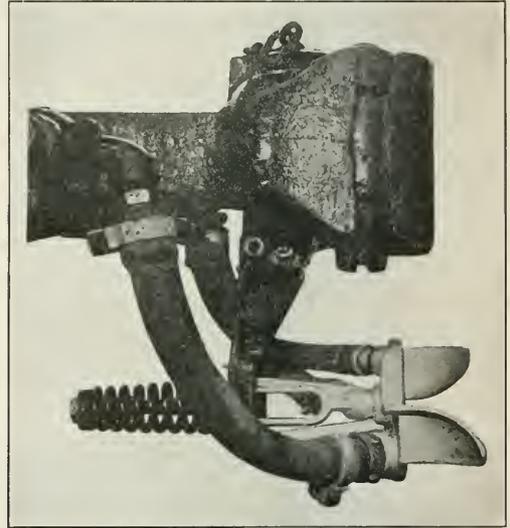
B connectors. This test proved satisfactory and resulted in equipping 125 passenger cars operating out of Place Viger terminal, Montreal, to Quebec, Ottawa, and Eastern Quebec points. These cars were equipped with the type C, an improved type resulting from experience with types A and B.

The Grand Trunk Pacific in April, 1915, equipped one passenger train in service between Winnipeg and Transcona, and three Hart cars in freight service between Fort William, Ont., and Transcona, Man., type B connectors being used. These tests were satisfactory and reports show the high esteem in which the connector was held by Grand Trunk Pacific officers.

### Type C Connector in Passenger and Freight Service

In May, 1915, the Canadian Northern equipped a passenger train running between Winnipeg, Man., and Edmonton, Alta., which continued in service until March, 1917, under the most severe track and weather conditions to be found in America. During the winter of 1915 and 1916 temperature went as low as 55 deg. below zero in parts of Saskatchewan. This test proved so satisfactory that the Canadian Northern ordered equipment for 250 passenger cars and 200 freight cars, the latter to be used on the Duluth, Winnipeg & Pacific out of Virginia, Minn.

The new type C connector was supplied for these installations and the freight cars were equipped in February and



Type C Roberson Connector for Passenger Service

March, 1917. The 200 cars equipped were steel flat cars in log service between lumber camps of the Virginia & Rainy Lake Lumber Company and Virginia Mill. On the lumber company's lines cars were handled over skeleton track, an abnormally severe condition not to be duplicated in railway service, but the connectors operated satisfactorily without any sign of leakage. Between Virginia and Cusson, on the Duluth, Winnipeg & Pacific main line, cars were handled in complete trains of 40 cars and showed such a remarkable decrease in troubles due to train line leakage that all concerned were impressed with the advantages of the connector, especially in winter weather. No leakage whatever was found in the connectors, whereas similar trains operated over the same line and equipped with ordinary hose couplers showed continual delays on account of creeping brakes and poor brake operation due to train line leakage.

In 1920 two New York Central passenger trains and three locomotives on the Valley division at Dunkirk, N. Y., were equipped with type C connectors, where they continue to give satisfactory service. At about the same time 50 steel hopper cars, engaged in copper ore trade, were equipped on the Mineral Range at Calumet, Mich. The installation operated under extreme climatic conditions, such as excessively deep snow and very cold weather, and was discontinued only because the mines were forced to close through bad market conditions. The officers of the road who came in contact with the connector were greatly pleased with its service.

### Extensive Installation in Through Passenger Service

From March, 1917, type C passenger connectors continued to be installed on all Canadian Northern trains operating west from Winnipeg, and further orders were placed by this road during 1919 and 1920, when all passenger equipment west of Montreal to Vancouver, B. C., was equipped. This covered trunk line operation amounting to 12,000 miles of railway and included transcontinental trains of 12 to 14 cars each, operating between Montreal and the Pacific Coast, a distance of 3,000 miles. This large installation was the first real trunk line operation ever attempted with any connector and resulted in experience with regard to the requirements for automatic connectors never before obtained.

As the result of this extensive experience, and the study given to connector design for more than 12 years, the Rob-

fittings and suitably mounted in the head, as in the case of the air brake port. These dimensions will readily accommodate any size of port which future developments in the air or steam line are likely to require. The air and signal ports may be increased to  $1\frac{1}{2}$  in., and the steam port to 2 in. opening without affecting interchange with previous heads.

### Flexibility of Gathering Range

Another important feature of this type of coupling head is the flexibility of its gathering range dimensions. While there is very little about connector design that is not now known to connector manufacturers and to railroad men who have studied the question, it has not yet been determined what gathering range a connector should have to accommodate most efficiently the varied requirements of service. It is known, of course, that the passenger connector requires a greater gathering range than the freight. The passenger car being much longer, with a considerably greater overhang from truck center to end sill of car, the angle at which the connectors approach is more acute, and hence the gathering range must be greater. But since the conditions under which passenger cars operate are practically known factors, it is not a difficult matter to determine what gathering range the passenger connector should have.

With the freight car conditions are different, however. There are a great many different types and many different lengths of freight cars. They operate under the most severe conditions, being commonly hauled over track on which it would be impossible to run a modern passenger car. Moreover, freight cars receive the minimum of maintenance. These factors complicate the problem of determining what



Latest Design of Passenger Connector, Type 2 H

inson Connector Company has developed a standard connector, embodying advanced features and refinements of design which only long and varied experience could make possible. While differing in refinement of details from the old type C connector, the same fundamentals of connector construction are found in it. It is stronger and more rugged; the gaskets are removable from the rear of the coupling head without parting the cars and the head is somewhat larger in anticipation of changes in the steam heating system now being advocated by many railways.

### Objects of the New Design

The objects which the Robinson Connector Company has sought to attain in the new connector are primarily the following: (a) a coupling head of size adequate to permit such needed developments in the head as time may demonstrate to be desirable, without affecting interchange with previous heads; (b) simplicity and speed in the renewal of defective gaskets without parting the cars; (c) a more rugged and powerful bracket and lug foundation for the connector; (d) a spring compression sufficient to compensate for the excessive wear between car coupler knuckles occasionally encountered; (e) increased size in the steam port opening; (f) a reduction in the number of gaskets used; (g) a greater gasket life; (h) to convey the air and steam through the connector head without it contacting with the head, thereby eliminating the necessity of making the head of air-tight material; (i) simplification of interchangeable manufacture.

The first of these objects has been attained by increasing the length and width of the head to  $11\frac{1}{2}$  in. and 5 in. respectively. Within this space the three ports may be arranged in any one of several ways. They may, for instance, be cored in the head or they may be formed of separate



Type 2 H Connectors in Coupled Position

gathering range is most suitable for the freight connector. A dimension has been developed that has so far proved satisfactory, but how it would meet general freight service on hundreds of thousands of cars, only extensive installation can reliably tell.

The magnitude of the field for the freight connector and this inherent element of uncertainty as to one of its most important dimensions, point with emphasis to the necessity for a gathering range which may be varied at will without affecting interchange with previous units of the equipment.

This cannot be done with any type of pin and funnel connector. It is an inherent limitation in all pin and funnel heads that a gathering range once set cannot be changed. The freight and passenger gathering range cannot be dealt with separately with the pin and funnel head. The freight head must be as large as the passenger head, otherwise they will not interchange. A great waste of material and unnecessary bulk to the freight connector arises from this fact.

These are among the reasons which led this company to discard the pin and funnel head.

Flexibility of the gathering range dimensions is an inherent advantage of the wing type of head. The spread of the wings may be increased or decreased at will, with a corresponding change in the gathering range without affecting interchange with previous heads. The freight head, having but a single port, may be made to size and be given a gathering range best suited to freight operations, and yet interchange perfectly with the passenger head. The only dimension common to the two heads is the width of the face and the location of the wings with respect to the ports.

A great economy in first cost and maintenance results from this flexibility of design which avoids the necessity of putting metal that is not required into the freight head simply to get it to interchange with the passenger head.

#### All Gaskets Readily Removable

The second object, simplicity and speed in the renewal of defective gaskets without parting the cars, is attained in the new connector by mounting the signal and steam port gaskets in the face of the head and backing them up by the curved fittings *A* and *B* shown in the illustration. These are removably mounted in the head by a bayonet joint comprising dogs, *a*, on the head behind which the lips, *b*, on the fittings are rotated. The unions, *C* and *D*, for connecting the hose to these fittings are formed in a similar manner.

When it is desired to remove a signal or steam gasket the hose unions are opened and the fittings *A* and *B* are rotated out of the head. This exposes the gaskets which may then be readily removed through the rear of the head. Normally, each of these gaskets is under slight initial compression; in

rear end of the fitting. This produces a simple and efficient air line arrangement.

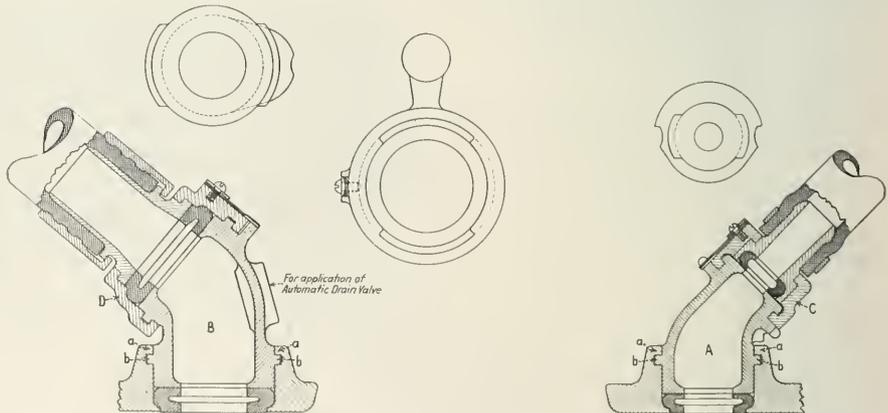
#### Improved Design of Bracket and Lug

The third object, a more rugged and powerful bracket and lug foundation for the connector, is accomplished by lengthening the lug by which the connector bracket is supported



Steam Connection Removed to Change Gasket

from the car coupler. In the previous connector the lug was short and hence required a bracket of considerable length. The bolts attaching the bracket to the lug were spaced approximately 2 in. apart, while the distance from the center



Details of Steam Heat and Air Signal Connections, with Removable Gaskets

design they are of the air-expanded type. Thus, when the air or steam is admitted the gasket swells into absolutely air tight engagement with its seat in the head and against the front face of the fittings *A* and *B*.

The removal of the brake port gasket is accomplished by a somewhat different process. Here the gasket is mounted in the forward end of a curved fitting, *E*, removably held in the connector pipe, *F*, which is pressed with the head, by a pin, *G*. When removal is desired, the pin is lifted and the entire fitting is removed from the connector. To accomplish this it is not necessary to open the union, *H*, by which the brake hose is attached to its fitting. This union is employed solely to facilitate interchange with a car not equipped with the connector. When the interchange period is over the union will be eliminated and the hose mounted directly upon the

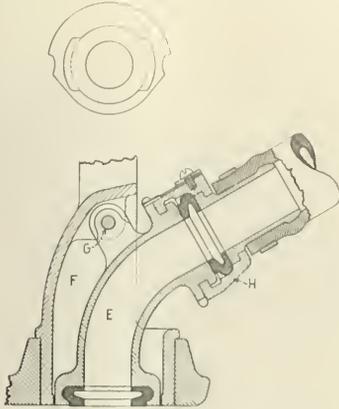
of these bolts to the center of the connector pipe was, for the Sharon coupler, 12 in.

This arrangement imposed rather high stresses upon the bolts in the lug and on the adjacent walls of the bracket, which sometimes loosened the joint between these parts. In the new connector the leverage ratio on the lug bolts has been reduced from 6 to 1 to 2 to 1, and instead of two bolts, four are used. The result is a dependable and powerful foundation for the bracket, a most important consideration.

The fourth object, a spring compression sufficient to compensate for the excessive wear occasionally encountered between car coupler knuckles, is attained by the use of a longer buffer spring and by increasing the length of the connector pipe. In the previous connector this compression was 1½ in., but long experience demonstrated that on account of excessive

wear occurring in some coupler knuckles, this was insufficient. It was therefore increased to  $2\frac{1}{2}$  in., which permits of the maximum wear on the car coupler knuckles without affecting the rigidity and tightness of the joint between the connector heads in the slightest degree.

The fifth object desired was increased size in the steam



Details of Removable Brake Pipe Connection

port opening. In the previous connector this opening was  $1\frac{1}{2}$  in., which is the dimension widely employed for the present hand-hose coupling. The difficulty incident to properly heating long trains in excessively cold weather has brought about considerable discussion looking to a greater steam port opening. Since many railroad men are of the opinion that the steam port opening must ultimately be increased, an opening of  $1\frac{3}{4}$  in. has been adopted in the new

giving greater body to the gaskets. In the previous connector the air gasket had a face width and a depth of  $\frac{1}{4}$  in., while the width of the steam gasket face was  $\frac{3}{8}$  in., and the depth of this gasket was  $\frac{1}{4}$  in. In the new connector, the air gasket has a face of  $\frac{3}{8}$  in. wide and the steam gasket a face  $\frac{1}{2}$  in. wide. The gaskets are also deeper than the previous design, and the general increase in size and resiliency insures a much greater life.

The eighth object, to convey the air and steam through the connector head without bringing it in contact with the metal of the head, is attained by the improvements previously mentioned. It will be observed from the drawings that the contents of each of the train lines is carried through the head without imposing any fluid pressure on the metal in the head and hence the requirement for an air-tight casting in the head is eliminated. In the case of the brake line, always, of course, the most important line, the air is carried through the head by the fitting *E*. Eliminating the necessity for making the head of air-tight material not only greatly facilitates its production and lowers its manufacturing cost, but makes it a much more efficient part.

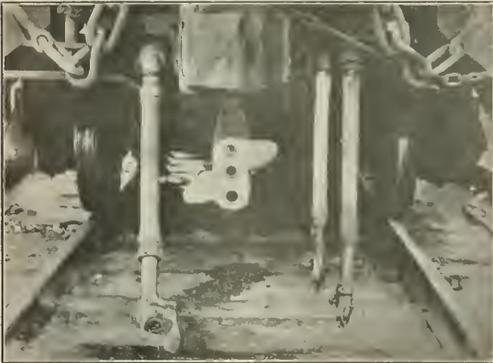
The ninth object, simplification of interchangeable manufacture, is brought about mainly by the dimensions and design of the head of the new connector. Various developments may be made within the head without affecting interchange with previous units of the equipment. Forming the gasket seats in the manner shown and mounting the fittings in the head instead of making them an integral part of the head, not only simplifies foundry procedure, but greatly simplifies and reduces machining costs. From this simplification greater ease in maintaining interchangeable dimensions in the several parts naturally results.

## Railroads May Not Evade Consolidation Provisions of Law

WASHINGTON, D. C.

**I**N DENYING the application of the Pittsburgh & West Virginia to issue its capital stock and assume obligation and liability in respect of certain securities in connection with the purchase of the property and franchises of the West Side Belt, the Interstate Commerce Commission takes occasion to discuss at some length the provision of the law relating to railroad consolidations. The application was denied upon the ground that the issue and assumption are not for a lawful object since the applicant has not obtained authority for the acquisition under Section 5 of the interstate commerce act, which is the section relating to consolidations, directing the commission to prepare a tentative plan of consolidation and providing that a proposed consolidation must be in harmony with this complete plan. The effect of the decision, therefore, is to declare that railroads desiring to effect what amounts to a consolidation in advance of the promulgation of the commission's complete plan may not accomplish their object indirectly by failing to make application under Section 5, but by basing it upon other sections of the act.

The Pittsburgh & West Virginia owns all the stock of the Belt Company and is now operating the road jointly with its own. An agreement between the companies dated September 1 provides that the Pittsburgh & West Virginia shall purchase all the franchises, corporate property, rights and credits of the Belt Company and in payment therefor deliver its own securities and assume the contingent liabilities and remaining indebtedness of the Belt Company. The stock so delivered to the Belt Company was then to be returned by it to the applicant in payment of indebtedness approximating \$6,333,000 and in exchange for the stock



Roberson Connector Fitted for Interchange with Standard Hose Couplings

connector. This dimension, however, permits perfectly satisfactory interchange with a connector head having a steam port opening of  $1\frac{1}{2}$  in.

The sixth object, a reduction in the number of gaskets used, is attained by using in the steam union the same gasket that is used in the steam port, and by using in the signal port, the brake port, and the brake union a common form of gasket. Thus in the freight connector but one type of gasket is used, a convenience of much practical importance.

The seventh object, a greater gasket life, is attained by

of the Belt Company. Thereafter the corporate existence of the latter was to be terminated.

The commission's report points out that the applicant had previously asked for a certificate of public convenience and necessity for the acquisition and operation of the railroad of the Belt Company, but the proceeding was dismissed on the ground that the proposals did not fall within the prohibition of paragraph 18, section 1. The applicant has not sought approval or authority for the acquisition under any other provision of the act. The commission says that under Section 20-a as a pre-requisite to the granting of the authority sought for the issuance of securities, it must find that the proposed issue is for some lawful object and the question, therefore, is whether the purchase and sale may lawfully be made without authority or approval under the provisions of Section 5. Section 5 gives authority to the commission to approve the acquisition by one carrier of the control of another in any manner not involving the consolidation of such carriers into a single system for ownership and operation. It then provides in paragraphs 4 and 5 for the preparation by the commission of a plan of consolidation and paragraph 6 authorizes consolidations which are in harmony with and in furtherance of this plan with the approval of the commission. The report of the commission then continues:

In the instant case it appears that the purchase by applicant and the sale by the Belt Company of the franchises and property of the latter are within the corporate powers of both companies and may lawfully be accomplished under the laws of the commonwealth of Pennsylvania. Nor is the acquisition within the prohibition of the "antitrust laws," for the two carriers do not compete, are connecting lines, and for some time have been under common control and management. The sole question, so far as this phase of the matter is concerned, is whether the purchase and sale may lawfully be made without authority or approval from us under the provisions of Section 5.

Paragraph (6), Section 5, uses the word "consolidate." Technically, a consolidation is sometimes defined as a union of companies where a new corporation is created to take over the powers and property of the consolidating corporations. We are of the opinion, however, that the word "consolidate" is not used in Paragraph (6) in a narrow sense, but that the language of the paragraph is broad enough to cover any form of union under which "properties theretofore in separate ownership, management, and operation" pass into the possession of a single corporation for ownership, management and operation. This matter is not of immediate importance, for if the proposed purchase falls outside the terms of Paragraph (6), it is certainly covered by Paragraph (2) which deals with the acquisition by one carrier of the control of another "either under a lease or by the purchase of stock or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation." The question has a prospective importance, however, if we decide that authorization of the purchase is necessary under Section 5, for no such authority may be granted under Paragraph (6) until we have adopted a plan of consolidation under Paragraphs (4) and (5), while there is no similar limitation upon action under Paragraph (2).

But applicant has not sought authority for the purchase and sale under Section 5, and the immediate question, as aforesaid, is whether the transaction can lawfully be consummated without such authorization. Two constructions of the above-quoted provisions of that section are possible. One interpretation is that they represent an attempt on the part of Congress to place in our hands complete control over the union of carriers engaged in interstate commerce; the other is that they are merely a means of affording relief from the operation of the "antitrust laws" or other restraining state or federal statutes.

Section 5 is a unit, its separately-numbered paragraphs dealing with analogous matters. Paragraph (1), which has to do with the pooling of freights and the division of earnings, begins as follows:

"That, except upon specific approval by order of the Commission as in this section provided, and except as provided in Paragraph (16) of Section 1 of this Act, it shall be unlawful for any common carrier subject to this Act to enter into any contract, etc."

It is thus definitely and unmistakably provided that an agreement for the pooling of freights or the division of earnings shall be unlawful unless and until it receives our specific approval. The corresponding language of Paragraph (2), which deals with union of carriers not involving consolidation into a single system for ownership, management, and operation, is not so easily con-

strued. It contains no specific prohibition, but provides that whenever we are of opinion that it will be in the public interest, we shall have authority by order to approve and authorize such union. The language of Paragraph (6) is similar, for while it specifies the conditions under which consolidations "shall be lawful," it does not in terms state the conditions under which they shall be unlawful.

The provisions in question were made a part of the interstate commerce act by the transportation act, 1920. In case of ambiguity it is permissible, in interpreting a statute, to refer to the reports of Congress.

Aside from this extraneous evidence, the intent of the provisions may, we think, be determined by reference to internal evidence. Paragraphs (4) and (5) provide most elaborately for the preparation and adoption by the Commission of a "plan for the consolidation of the railway properties of the continental United States into a limited number of systems." When we have agreed upon a tentative plan of this character, it must be given "due publicity," including notice to the Governor of each state, and all persons must be heard who may file or present objections. Thereafter, and not until then, the final plan may be adopted and published.

Obviously, the preparation and adoption of a plan of consolidation under such instructions from Congress require deliberate and careful consideration of every railway property of the "Continental United States" from competitive, financial, commercial, and other points of view, so that each such property may with nicety be fitted into its appropriate place in the final scheme. Obviously, also, many consolidations which are not barred by the restraining provisions of the "antitrust laws" or other federal or state statutes may be wholly inconsistent with the plan and destructive of its purpose. Yet, if consolidations of this kind can now be lawfully effected without our approval, the conclusion is inevitable that the carriers may ignore Section 5 with impunity under similar circumstances, after the plan has finally been adopted, and thus bring quick disaster to its entire structure. It is impossible to believe that it was the intent of Congress to prescribe with such care the method by which this elaborate and comprehensive program shall be formulated and the principles by which it shall be governed, and at the same time leave open a door by which at any time it may be wrecked.

Beyond question, in the development of the transportation act, 1920, as a constructive measure for the solution of the railroad problem, great importance was attached by Congress to the ultimate consolidation of the carriers into a limited number of great systems, well balanced financially and of similar earning power but competing with each other and maintaining the existing channels of trade and commerce. In our opinion it was the intent of Congress that complete control over the situation should be in our hands, so that the working out of this constructive policy might be safeguarded in every possible way, and so that consolidations or other union of interests might not be effected without our consent.

Nor is the language of Section 5 inconsistent with this conclusion. In *Lexis' Sutherland on Statutory Construction* it is said, at pages 1149-1150:

A direction contained in a statute, though couched in merely permissive language, will not be construed as leaving compliance optional, when the good sense of the entire enactment requires its provisions to be deemed compulsory.

But it is unnecessary to rely upon this principle of construction, for when, in Paragraph (6), it is provided that "it shall be lawful" to consolidate under certain conditions, this is but another way of saying that consolidations in disregard of those conditions shall be unlawful. And in like manner, when it is provided in Paragraph (2) that we may authorize the acquisition by one carrier of control of another in any manner falling short of consolidation, whenever we are of opinion that such acquisition "will be in the public interest," this is equivalent to saying that authority for the acquisition shall not exist under other conditions.

If it had been intended that these provisions of Section 5 should merely afford a means of escaping from the restraints of the "anti-trust laws" and other state or federal statutes, much simpler machinery would have been devised for accomplishing the purpose. The "plan of consolidation" is incompatible with such an interpretation of the section and embodies a policy of far greater breadth and vision.

We conclude and find, therefore, that the proposed issue of stock and the proposed assumption of obligation and liability are for an object,—namely, the purchase by applicant and the sale by the Belt Company of the property and franchises of the latter,—which can not lawfully be accomplished without our authority under the provisions of Section 5 of the interstate commerce act. Until such authority is secured the application must be denied. This conclusion makes it unnecessary to consider in other respects the propriety of what is proposed.

Commissioner Potter dissented.

# A Plea in Behalf of the Supervisory Officers

## Railroads' Treatment of Supervisory Forces Singularly Out of Line with Their Merits

By J. L. Eldridge

Vice-President, Yardmasters' Association of America

**A**N EVENT occurred shortly after the railways came under government control which should have afforded the railway executives considerable material for thought, and that was the formation of organizations of supervisory officials—yardmasters, train dispatchers, station agents and mechanical supervisors. Organizations of these classes of railway employees came into existence practically over night.

The old stock argument about silver-tongued orators arousing the spirit of discontent and unrest among these men for the purpose of furnishing themselves with jobs will manifestly not apply in this case, for these organizations arose almost spontaneously as soon as coercive pressure was removed.

How are we to explain this singular phenomenon? The explanation is simple, and constitutes a grave indictment against the prescience and foresight of the railway executives as a whole.

During the progress of railway development the interests of these men and their peculiar importance in the railway industry had been lost to sight in the maze of a bureaucratic official organization. The yardmaster who, in the original railway organizations had been the right arm of the division executive now found himself removed to a great distance by the intervention of numerous minor staff officers, who in many instances had no practical knowledge of his problems, but who nevertheless exercised practically untrammelled authority over him.

During all these years he was made the victim of any number of manifestly unjust conditions, unjust differentials in wages, unjust discriminations in hours and petty tyrannies and exaction on the part of his immediate superiors from which there was no escape.

How often have we known of good, competent yardmasters who have thrown up the job and "gone back to the foot-board," as the saying is, because the constant ragging by some minor operating official, who could not if his life depended upon it fill the yardmaster's job, made life miserable, and produced a mental attitude which detracted from the efficient performance of his work.

It was these abuses and acts of injustice arising perhaps from the indifference rather than the intention of the managements and which had been accumulating during a long period that finally resulted in the formation of national organizations of yardmasters, and other supervisory officers.

We have said at the opening of this article that the appearance of these organizations of supervisors should have furnished the railway executives with food for thought. One would imagine that they would at least have made some effort to analyze the factors which had operated to bring about such a situation, and having arrived at the cause of the trouble would have taken some steps to alter or palliate the offending conditions.

One would naturally suppose that they would have been astounded, not to say alarmed, to see the men who were directly responsible for the operation of their railways, suddenly grouping themselves in labor organizations. It is not in the records that they indulged in any such thoughts, at least so far as attempting to change the conditions which led up to this revolt are concerned. On the contrary, they reverted to past practices, only more so, as one might say.

On October 3, 1918, committees of yardmasters from all parts of the country, except the Pacific slope, met with the regional directors in Chicago. They asked for an eight-hour day and \$250 per month.

President A. H. Smith of the New York Central, who acted as chairman, advanced the argument that it would be impossible owing to the shortage of man power to grant an eight-hour day at that time, and the yardmasters finding this unanswerable went back to their twelve-hour day.

Shortly after this meeting, there was issued by the director general a schedule of wages and working conditions for yardmasters. The wages were placed at a maximum of \$250 and minimum of \$200 per month for yardmasters, and a maximum of \$240 and \$175 per month for assistant yardmasters, and the application of the maximum or the minimum was left to the discretion of the executives on the individual properties.

My readers will doubtless say this was the time when the executives grasped their opportunity to challenge by a fair and just application of this award the necessity for the existence of labor organizations of supervisory officials. They did nothing of the sort, or at least in only a few instances.

The following is an example of what they really did. On several railways men who had carried the title of yardmasters for years were suddenly reclassified as assistant yardmasters and paid the minimum rate.

On one large Eastern carrier where the yardmasters had never been granted vacations, a vacation for the year 1918 was refused, although the director general's order granted it, and was not allowed until months afterward and then only after an appeal had been taken to the regional director. From all over the country came complaints to the effect that the award of the director general was being applied without any proper regard for the duties or responsibilities of the men involved. Some of these cases were straightened out on the property, others by the regional directors, but many of them owing to obstructionist tactics on the part of the local officials, and the then imperfect organizations of the yardmasters' association, dragged along until the railways went back to private management, and consequently, there are yardmasters in this country who have just claims arising from the improper application of the director general's award which run into thousands of dollars.

Is it any wonder when all of these things are considered, that the yardmasters and the other supervisory officials' organizations were able to present to the members of the Congress during the winter of 1919-1920, evidence sufficient to convince them of the necessity of including these classes in the labor sections of the Transportation Act?

It was once remarked to the writer that the supervisory officials were the non-commissioned officers in the railway army. With this we do not agree, but resorting to the same analogy we should say that at least two classes of these employees could with more justice be compared to the line officers in military organizations. These classes are the agent and the yardmaster. The general manager and his aides, which designation would cover all classes down to and including the trainmaster, constitute the general staff of the railway army in which the agent and the yardmaster are the

line officers. These are the men who are constantly in command on the firing line, and who are working day and night to execute successfully the orders which are being passed on to them by the various "aide de camps" of the general staff.

Marshal Foch in one of his lectures on the Principles of Modern War delivered many years before the late European conflict, defined a good corps commander "as one who could successfully carry out the instructions of his superiors under circumstances of which he was frequently the sole judge." One would have to search a long while before he could find a better definition of a good yardmaster. And then, to carry the military analogy further, the yardmaster is constantly faced by the two factors which form the basis of all strategy—time and space—and like the strategist, all his work and its results are based upon and conditioned by these factors.

If the railway terminals of the country were of a size proportionate to the maximum traffic, his problems would not only be easier, but he would be able to attain to complete victory, or in other words entirely eliminate congestion, rehandling and delay. But such is not the case, and so the best that he can hope to attain is only a partial victory, or a minimizing of the factors of delay and congestion. In this position he is like some strategist, whose combinations are perfect, but who is, owing to conditions of terrain, insufficient reserves, or other factors beyond his control, always robbed of the complete fruits of victory. He can checkmate his antagonist, and deal him staggering blows, but he is unable to annihilate him. Obviously, such a situation would call for the highest order of military talent, for the slightest error would be fatal.

It is the business of the yardmaster to move cars, and his ability to do this within the smallest possible pace and in the shortest duration of time determines his success or failure. Consequently, it is necessary that he should be first of all a competent switchman, and the business of switching cars, like golf, rifle shooting or horseback riding, cannot be learned by watching some one else perform. One must have the actual experience. And now right here, we wish to say a word for the yardmen employed in the terminals of this country. It has become almost a habit within recent years to assume that the railway workers no longer have a pride in their work, but are interested only in their pay checks. This is untrue of railway workers in general, and is particularly unjust to the men working in our terminals; for if there is one thing eagerly coveted by these men it is the reputation of being a good switchman, that is the ability to perform a given amount of work with the least number of moves, and consequently, in the shortest possible period of time.

In making yardmasters, the managements of some carriers overlook this class of employee entirely; with the thought perhaps that men taken from other branches of the service would be more loyal in case of labor trouble. In this we believe they make a grave error, for while the loyalty they have in mind will be called upon very infrequently, the efficiency which comes only from knowledge and experience is needed every day.

It is a fact well known to all who are conversant with the situation that the terminals constitute the weakest link in our transportation system. It was in these that the breakdown which occurred during the early years of the war was most serious in its results, and we are willing to predict that a resumption of anything like the traffic handled during the years 1915-1920 will result in a similar condition of blockade and delay in the movement of freight.

The reason for this is, of course, very simple and that is that railway traffic has outgrown the capacity and facilities of the terminals many-fold, and this condition cannot be improved at this time without the expenditure of many millions of dollars. The growth of cities and towns has resulted in restricting railway terminals to a size proportionate

to the traffic of 30 or 40 years ago, and it is only by the purchase of much valuable real estate and costly engineering projects that this condition can now be overcome.

Imagine the expense incurred by reason of delay and damage in a terminal when a dozen classifications are made, and only three or four tracks available to make them.

Imagine the expense incurred by reason of trains standing outside terminals for hours because of the lack of available track room. The writer making a trip over one of our largest carriers during the winter of 1919-1920, counted 14 trains standing outside one of their biggest terminals.

And now we would ask the candid reader if he does not believe that the men who are entrusted with the duty of getting the best results under such conditions should be considered in the light of something more than a corporal in the railway army? Or whether he is not entitled to something more than five cents per hour more than a yard foreman, which is the basic rate recently offered the yardmasters by one of the largest carriers in the country?

## Amendment to Transportation Act Opposed

WASHINGTON, D. C.

ALBA B. JOHNSON, president of the Railway Business Association, and Professor Emory R. Johnson of the University of Pennsylvania, representing the railroad committee of the Chamber of Commerce of the United States, testified before the Senate committee on interstate commerce on December 15 in opposition to an amendment of the transportation act to repeal the rate-making section as proposed in the Capper and Nicholson bills. Mr. Johnson opposed the Capper bill as a direct attack upon the earning capacity of the railroads, both in the proposed repeal of Section 15a and in that part of the bill which would restore to the states complete control over intrastate rates. Repeal of Section 15a, he said, would leave the commission without instructions as to rates that would yield an adequate income. The Railway Business Association, he said, believes that anything tending to destroy the full authority of the commission as conferred by the Transportation Act is contrary to public opinion. Inadequacy of revenue, he said, would inevitably in time bring about government operation and ownership of the railroads, which, in his opinion, would be the greatest calamity that could happen to the United States. The railroads must have adequate revenues, not only to maintain the railroad properties, but also to attract new capital, and the inability of the railroads to get new capital will continue so long as the return from railroad investment does not rise to the level of the return from competing securities. Moreover, he said, prosperity will not be restored until the purchasing power of the railroads has been restored. When the railroads are in prosperous condition, the entire business of the country is stimulated.

Professor Johnson asked a fair trial of the act. Repeal of sections which give the Interstate Commerce Commission authority to correct state rates when they discriminate unduly against interstate commerce, would limit the commission's ability to maintain rates permitting a free flow of interstate commerce, he said.

"The Chamber of Commerce of the United States holds," said Dr. Johnson, "that none of the provisions of the act should be repealed or amended at the present time. The Capper bill would cut the rule of rate-making out of the act, and would take away from the Interstate Commerce Commission the power it has been given to correct state rates that unreasonably discriminate against interstate commerce and interstate railroad rates.

"The rule of rate-making was put into the law because

of the belief that it was necessary for the maintenance of efficient railroad service and for the restoration of railroad credit. Manufacturers, shippers, and producers of all kinds had reached the conviction before the act was passed that the Interstate Commerce Commission should so regulate rates as to enable the carriers to earn enough each year upon the value of their properties to enable them to maintain them and to develop their facilities along with the growth of the business of the country.

"The Chamber of Commerce of the United States through its railroad committee and by a vote taken among the 1,400 business organizations within the chamber, formulated a rule of rate-making in 1919 which was similar to the one incorporated in the Transportation Act of 1920. These business organizations voted six to one for the rule.

"As early as 1917 the national chamber declared by referendum in favor of giving the Interstate Commerce Commission authority to regulate rates when these rates affect interstate commerce. This action of the chamber was reaffirmed in 1919. The chamber recommended that this principle be incorporated in the Transportation Act of 1920.

"The exercise of power by the Interstate Commerce Commission to correct unjustly discriminatory state rates is in the public interest. The statute does not take away from the state commissions their power to initiate rates, nor are the states prevented from adjusting railroad charges within the reasonable limits established by the federal act. The chamber believes that the Transportation Act should be given full and fair trial, and that when the act is changed it should be supplemented and rounded out."

## Contract Work Under Fire Before Labor Board

### Roads Defend Practice of "Farming Out" Maintenance Requirements as Legal and Economical

THE RIGHT OF RAILROADS to contract car and locomotive repair and maintenance work has been the subject of vigorous and at times bitter attack and defense during the past week in hearings before the Railroad Labor Board. Twelve cases, involving nine carriers which have contracted for either part or all of their repair or maintenance work and the labor organizations representing the classes of employees affected by the changes in management, were consolidated by the Board and hearings on the complaints of the organizations that these contracts were made solely to evade the rulings of the Board and the provisions of the Transportation Act began on December 19.

The first complaint to be heard by the Board, considered by both carriers and employees as more or less of a "test case," was that brought by the Railway Employees Department of the American Federation of Labor against the Indiana Harbor Belt, because that carrier had contracted with the Burnham Car Repair Company for the operation of all of its repair tracks and shop facilities. The Board's synopsis of the case, as presented to the Board by representatives of the Federated Shop Crafts, outlines the salient points in the complaint. It says:

It appears that in January, 1921, the carrier contracted with the Burnham Car Company to take over and operate the repair tracks of the Indiana Harbor Belt, the railroad company retaining the car inspectors under their supervision. Immediately upon the assumption of supervision by the car company a reduction in wages was made and some of the work placed on a piece work basis. Seventeen men were laid off. The employees contend that the carrier's action was for the purpose of enabling them to avoid the payment of the rates established by the Board and that their action was in violation of the provisions of the National Agreement.

#### Frank P. Walsh Calls Contracts "Legal Frauds"

Frank P. Walsh, who will be remembered as the cross-examiner in the national agreements case, opened the employee's presentation by terming the contract made between the Indiana Harbor Belt and the Burnham Car Repair Company as a "legal fraud." The presentation of specific charges against both the carrier and the repair company was made by C. J. McGowan, vice-president of the Brotherhood of Railway Carmen, who alleged that the Indiana Harbor Belt had violated the national agreement with shopmen by: (1) declining to discuss grievances with the men or their representatives; (2) refusing to negotiate a new agreement with the representatives of the shopmen; (3) refusing to continue

the national agreement until a new agreement could be negotiated; (4) forcing an individual agreement with the car inspectors; (5) changing the hours and wages of car inspectors without proper authority and without negotiation with the union's representatives or reference to the Labor Board; and (6) discharging men without proper cause and investigation.

At the same time he charged the Burnham Car Repair Company with: (1) refusing to deal with the local officers of the men's union; (2) relieving men without reference to their seniority; (3) discharging men without investigation; (4) changing the work day from eight hours to nine; (5) reducing the hourly rates of carmen to 66 2/3 cents; and, (6) installing piecework without an agreement with the men or their representatives.

#### George Hannauer Cross Examined

Mr. Walsh then commenced the cross-examination of George Hannauer, vice-president and general manager of the Indiana Harbor Belt, continuing for the greater portion of the Board's sessions on December 19 and 20 in an effort to prove that the contractors in this case were "dummy" contractors and that the only motive for "farming out" the work was the desire of the carrier to evade the orders of the Board and the provisions of the Transportation Act. Mr. Hannauer pointed out that the contractors had performed many jobs for the carrier in the past and were financially responsible, that they had solicited the repair work without word from him, that there was no connection whatever between the carrier or any of its officers and the contracting company, that he had conceived the idea of contracting this work and had not talked with anyone except the chief mechanical officer of the road before signing the contract, that the repair work at different points was contracted for at different times, culminating in a period of three months in the contracting of all of the road's car repair work, and that the carrier exercised no unusual or illegal control over the contractor's employees, the carrier's representatives in the contract shops being present merely to lay out the work desired by the carrier and inspect the work turned out. The move was made, he said, entirely in the interests of economy and efficiency, citing that the labor costs of the contractors on certain work averaged \$17,497 a month, whereas the same work, estimated on the basis of the Master Car Builders' charges, would have cost the railroad \$24,937 a month. The yearly

savings under the contract arrangement would amount to about \$75,000, he added.

### I. H. B. Contends Board Has No Jurisdiction in Case

The carrier's presentation in the case was directed by Mr. Murray who, in opening his remarks, filed a brief with the Board setting forth that it was the contention of the carrier that the Board had no jurisdiction in this case. In support of this position the brief pointed out that the labor provisions of the Transportation Act apply to disputes between the carriers and employees or subordinate officials *directly interested in these disputes*. The organization bringing this case before the Board is not directly interested in the dispute, it asserted, and therefore the Board had no jurisdiction in the case.

"While not admitting the jurisdiction of the Board," the brief continued in substance, "the Indiana Harbor Belt denies that the agreement with the Burnham Car Repair Company for the contracting out of the repairing of its car equipment was done to avoid payment of the rates of pay established by the Board, and denies that the contracting out of its repair work is in violation of any rule or working condition legally in effect between the Indiana Harbor Belt and its employees; but asserts that this agreement was made to accomplish economies and improvements in the operation of the carrier and is accomplishing and will accomplish these results. The Indiana Harbor Belt asserts that the Board has no jurisdiction over the Burnham Car Repair Company or the employees of that company, their wages or conditions of employment. The employees of the Burnham Car Repair Company under this agreement are not the employees of the carrier and there is no dispute likely substantially to interrupt commerce between the Federated Shop Crafts and the Indiana Harbor Belt arising out of the contracting of equipment repair.

"It is the position of the Indiana Harbor Belt that:

"(1) No jurisdiction has been vested in the Board to determine when and under what circumstances and upon what conditions the carrier may employ independent contractors to do work for it;

"(2) even if the men employed by the contractors under this agreement were construed by the Board to be the employees of the carrier, the employing of these men by the carrier on terms satisfactory to them would not create and could not constitute any dispute between the carrier and its former employees in whose behalf the complaint in this case has been filed;

"(3) the Board, by the terms of the act of Congress creating it, can only entertain jurisdiction upon the complaint of employees, organized or unorganized, where there exists an unadjusted dispute which can substantially interrupt the operation of the carrier; and such dispute must be one between the complaining employees and the carrier in which the complaining employees are directly interested.

### Board May Become "Welfare

#### Agency of the Employees"

"The phrase 'directly interested in the dispute,' occurring and recurring as a controlling condition wherever the jurisdiction of adjustment boards or of the Labor Board is defined in the Transportation Act, is manifestly placed in the Act with deliberate and mature intent. By the express terms of these sections, no employees or organization of employees can act or interfere or require action by the carrier or set in motion action by the Labor Board in respect to grievances, rules or working conditions, or wages or salaries, which do not directly interest such employees or organization of employees—it is not sufficient to create a right of such employees or organization of employees to act or interfere or complain to the Labor Board that they are indirectly or sympathetically interested in the grievances, rules

or working conditions or in the wages or salaries of *other* employees or organizations of employees. The jurisdiction of the Board is confined to disputes between the carrier and its own existing employees in respect to the rules, working conditions, wages or salaries of their *own* employment—it does not cover the relations or obligations of the carrier to ex-employees. It does not affect the free will of the carrier to discharge an employee, nor the free will of the carrier to engage an employee. It does not confer upon the Board power to dictate whom the carrier shall discharge or retain or whom the carrier shall employ. It does not affect the right of the carrier, in any department of work, to accomplish that work through an agreement with a contractor who furnishes the labor therefor—in fact, where the carrier can achieve economies by so doing, it is its clear duty to follow that policy. That the carrier has discharged a particular employee or has engaged a particular employee, or accomplishes the performance of work through a contractor of labor rather than by direct employment of labor, may sentimentally or sympathetically or from the standpoint of the maintenance or advancement of labor unions or labor welfare, *interest* the employees of the carriers, but it does not *directly interest* the employees of the carrier in respect to the rules, working conditions, wages or salaries of their *own* employment.

"There is danger that the Board may assert, or may by the employees be asked to assert, in exercising its jurisdiction, a too broad interpretation of this word 'interest' as used in this Act.

"If the mere existence of a concern or desire to accomplish a class advantage in the conflict between capital and labor is sufficient to justify a complaint to the Board by employees, then the functions of the Board in respect to the relations between the carrier and its employees are practically unlimited, and the Board becomes a welfare agency of the employees.

"It is respectfully suggested that this Act does not design to give the Board jurisdiction to adjust any disputes which may arise between the carrier and its employees in respect to any grievances which the employees may arbitrarily set up in their desire to promote their class welfare—and that the grievances referred to in this Act are grievances in direct respect to the employees' *own* working conditions, or in direct respect to the rules affecting the employees' *own* employment, or in respect to the employees' *own* wages or salaries—and that the word 'interest,' as it occurs in this Act, is used in a legal sense and not in a layman sense. If grievance under this Act is to be construed as embracing any strategic demands, which the employees as a matter of class interest may make and fortify by threat of a strike, as to whom the carrier discharges or employs, or as to whether the carrier procures its labor through a contractor or by direct employment, then the Board becomes in reality the supreme supervisor of the carriers in all matters pertaining to employment—and practically, through the weapon of a threatened strike, the employees of the carrier may confer or thrust upon the Labor Board jurisdiction of any issue whatsoever."

### Former and Present I. H. B. Employees

#### Satisfied With New Conditions

Under the subsequent direct examination of Mr. Hannauer by Mr. Murray, the history of contract work on the Indiana Harbor Belt was outlined and emphasises placed on the fact that the carrier has been since 1915 contracting part of its operation, notably its icing facilities, and always without criticism on the part of the employees. In reply to one question, Mr. Hannauer said that he believed that it was his duty under Section 404 of the Transportation Act to contract work wherever savings could be made by so doing.

In closing the carrier's case, Mr. Murray presented a petition of the car inspectors now on the Indiana Harbor Belt to the Board and stating that they were satisfied with their wages and working conditions, that they desired no change and that they were not opposed to the company's contracting its repair work. Another petition signed by all of the carmen employed by the contractors and stating practically the same facts, plus the statement that they desired no one to protest their situation, was also presented by Mr. Murray.

After vainly trying to establish the possibility of future collusion between the contractors and Mr. Hannauer to bring the costs of repair work up, Mr. Walsh presented numerous affidavits of former employees of the carrier to prove that the petition presented on behalf of the carrier's car inspectors was obtained from the men under threat of losing their position. It developed, however, that the affidavits were dated in April whereas the petition of the men was dated in August, six months later.

#### Mr. Walsh Summarizes Employees' Case

The salient points in the carriers' and the employees' positions in all of these controversies were brought out in the closing arguments of Mr. Walsh and Mr. Murray in Indiana Harbor Belt case.

Mr. Walsh in an impassioned plea for a decision declaring the employees of the contractor to be still the employees of the carrier and therefore subject to the rulings of the Board and the provisions of the Transportation Act and terming the contracts already made as illegal, said that this case deals with the fundamentals for which the Board was created, the insuring of justice to railway employees. The form of the contract, he added, indicated that it follows "a form of contract used by the railroads throughout the country as part of a general plan to evade the rulings of the Board and the provisions of the Transportation Act." Should this contract be adjudged legal by the Board there will be nothing to prevent the carriers from contracting all of their operations, thus nullifying the labor provisions of the Transportation Act, he pointed out.

#### S. C. Murray Presents Carriers' Case

Mr. Murray, in closing the carrier's case, pointed out that the labor organizations represented by Mr. Walsh could have no standing before the Board in this case inasmuch as the employees of the contractor had specifically stated that they did not want their case brought before the Board and the men who were formerly in the employ of the company and who had gone on a strike when the change was announced had no right to representation before the Board according to its previous rulings. The contract itself was defended by Mr. Murray under the "independent contractor" laws of the country. He cited many decisions of the Supreme Court and rulings made under the Federal Employers Liability Act in support of this defense. These decisions showed that railroad foremen could direct the work of the contractor's employees without changing the relations between the contractor and his employees and the railroad and its employees. Furthermore, he added, the contract does not violate the national agreement for there is nothing in the national agreement holding that the railroads have no right to contract work. Mr. Walsh's "fraud" charge was refuted by reference to the contract made in 1919 by the road for the operation of its icing plant. Then, Mr. Murray said, there was no reason for evading either the rulings of the Board or the provisions of the Transportation Act for neither were in existence at the time.

#### Whole Controversy, Based on I. H. B. Presentations

With the close of arguments in the Indiana Harbor Belt case, on which both employees and carriers had concentrated their respective arguments on the principles involved, the

presentation of evidence in similar cases between other carriers and the organizations representing the men affected by the changes, was given rapidly. In every case the testimony closely followed the attack of the employees and the defense of the carriers in the Indiana Harbor Belt controversy.

The complaints of the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers against the Chicago Great Western, the St. Louis-San Francisco, the Colorado & Southern, the Indiana Harbor Belt, the Chicago, Milwaukee and St. Paul, the Chicago & North Western and the Great Northern and the complaint of the Federated Shop Crafts against the Gulf Coast Lines were quickly disposed of in this manner.

E. F. Grable, president of the maintenance of way organization, in stating his contentions, brought forth the additional charge that the carriers in contracting their maintenance of way work were not only violating the Board's orders and the provisions of the Transportation Act, but were also evading the supervision of the I. C. C. over expenditures.

In defense of the Indiana Harbor Belt's contract for maintenance of way work, Mr. Hannauer presented statistics to show that although more actual work has been done on its right of way in the period from April 1 to September 30, 1921, under the contract arrangement than in the corresponding period of 1920, when the work was done by railroad forces, the man hours expended decreased from 691,080 to 374,068, and the cost to the carrier decreased from \$359,015 to \$133,104.

L. K. Silcox, general superintendent of motive power of the Chicago, Milwaukee & St. Paul, testifying in defense of that carrier's contract for unskilled laborers' work at four engine terminals, stated that under the terms of the contract the carrier saved \$47,714 per year. Under cross examination, Mr. Silcox stated that largely because of the restrictive rules of the national agreement and the wage rates fixed by the Board it was impossible to do the necessary work for less than \$11.20 per engine whereas the contractor arbitrarily offered to do the work for \$9 per engine. The contract was made, he added, to effect this saving and under the requirement of the Transportation Act for economical operation.

#### The Erie's Contract Shop Work

Hearings on complaints of shopmen on Erie against that carrier's contracting of its shop work at Hornell, N. Y., to the Hornell Construction and Repair Company and at Marion, O., to the Railway Service Company were before the Board on December 20. The testimony in this case was comparatively brief and followed in general the testimony given by both carriers and employees in the previous case. Ben B. Hooper, vice-chairman of the Board, asked H. A. Taylor, general solicitor of the Erie, if it was the carrier's position that legally it could contract all of its operations. Mr. Taylor, however, refused to express an opinion on points which were not before the Board, but called attention to the fact that there might be a dividing line based on the character of the work which would make impossible theoretical or practical contracting of all railway operations.

#### Walsh Closes Hearings for Employees

In closing this series of hearings for employees Mr. Walsh cited two reasons why he believes the railroads cannot successfully contract work: First, because stockholders of railways would not stand for allowing property to get out of their legal grasp; second, the alleged admission of efficiency on the part of the railway executives through giving work to outside companies would bring the railroads before the government and they would lose their charters.

Hearing on the temporary injunction granted to the Pennsylvania against the Labor Board, described in the *Railway Age* of December 17, page 1210, scheduled for

December 21, has been postponed until January 3 by mutual agreement.

### Missouri & North Arkansas Before Board

J. C. Murray, receiver for the Missouri & North Arkansas, filed a petition with the Labor Board on December 21 asking for authority to cut the wages of employees 25 per cent in order to resume operation of that road. The road ceased operations on July 31 after a long controversy with its employees and between the courts and the Labor Board. In filing this petition Mr. Murray outlined a special wage reduction plan which he had submitted to the employees in October and which they turned down. This proposal was to resume operations immediately with a 25 per cent wage cut with the understanding that if at the end of the year there was any surplus left, after paying expenses, taxes and interest this surplus will be divided among the employees up to the point where their wages are comparable with the wages paid on other carriers.

## The Seriousness of the Egg Claim Situation

By Albert L. Green

Special Representative, Freight Claim Prevention,  
American Railway Association

FOR THE FIRST SIX MONTHS of this year the amount paid out in egg claims by the railroad companies averaged \$90,000 a month, and by the American Railway Express Company, \$50,000 a month. Approximately 80 per cent of these amounts represent damage which could easily have been avoided by the more careful handling of egg crates on the part of the transportation employees, and by closer attention to the packing and loading of the crates in cars by the shippers. Only a fraction of the damage was due to wrecks and derailments, the exact amount reported by the railroads for this six months' period being \$9,049 or less than 2 per cent of the total. The remainder may, therefore, be said to be wholly within the control of the shippers and the carriers.

Comparing this year's figures with those of 1920, when extraordinary conditions, such as peak prices and the switchmen's strike, contributed to the record figure of \$2,500,000 in egg claims, the lower prices and more favorable transportation conditions now prevailing would seem to point to a greater reduction than is now in sight. Much encouragement, however, is to be drawn from the decided improvement noted in the preparation of shipments for movement by express and, in certain localities, by freight. In Tennessee, for instance, a particularly serious egg claim situation has been almost entirely adjusted, and eggs from that territory are now reaching the market in first-class condition.

By no means do the carriers claim that all of the trouble is due to the lack of care on the part of the shipper. They recognize that the majority of claims arise from causes for which the carriers alone are responsible, and we think it is safe to say that there is not a freight or express carrier in the country that is not putting forth its best efforts to render safe and satisfactory service.

It is clear, however, that the shippers do share some responsibility in the matter. To insure safe transportation, eggs must be packed right. What constitutes "right" packing is open to discussion. Heretofore it has been considered that the honeycomb filler, when new and of standard quality and packed with excelsior pads of the proper weight, should protect the eggs with the minimum of damage under ordinary conditions. But a study of the reports of inspections made by the railroads and express companies at the market

points, develops a serious question whether the point of maximum safety has actually been reached.

The egg case pad was first introduced to the trade in 1903, and shortly thereafter its use was officially recognized by the Consolidated Freight Classification. The pad at that time weighed 145 lb. to the thousand. It was then thought merely necessary to use a quantity of loose excelsior which had ordinarily been used in the packing of eggs, and no particular thought was given to the necessity of compressing or tying the fillers within the case so as to prevent the shifting of the contents. From time to time suggestions came to the manufacturers from the trade that thicker pads would offer greater resistance to breakage, and accordingly the weight of the pad was increased, first to 160 lb., then to 180 lb., and finally to 235 lb. per thousand, which is the weight now in general use. Two years ago it was found that the introduction of a third pad, usually inserted beneath the top filler, was effective in reducing damage and it was not long before the majority of shippers adopted the 6-pad pack in preference to the 4-pad pack previously used.

On October 12 and 13, at the research laboratory of the Chicago Mill & Lumber Company, Chicago, a series of tests were made under the observation of representatives of the National Railway & Express Committee on Egg Breakage; the Freight Container Bureau; the U. S. Department of Agriculture; the Live Poultry and Dairy Shippers' Traffic Association; the National Association of Egg Case and Egg Case Filler Manufacturers; and the National Poultry, Butter and Egg Association. The objects of the test were, (1) to determine whether the present honeycomb filler should be strengthened; (2) to measure the comparative protection afforded by the excelsior pad now in use as against a thicker and heavier pad; and (3) to compare the 4-pad pack versus the 6-pad pack. Egg cases of standard construction and of standard fillers, flats and pads taken from the regular stock, and only sound eggs were used. All cases, with a single exception, were subjected to a 20-min. test on a shaker machine.

At the conclusion of the tests the newly organized National Railway and Express Committee on Egg Breakage held its first meeting and discussed all phases of the egg claim problem. This committee recommended that a pad weighing not less than 250 lb. per thousand should be prescribed by the Freight and Express Classifications; that the trade marking of fillers would help prevent the use of under-standard fillers, since it would enable the carriers' inspectors to identify the manufacturer of fillers below grade, which would lead to the product being condemned for transportation purposes; that the present standard honeycomb filler, when used with six pads, affords all the necessary protection, and until the heavier pad has been thoroughly tried out in practice, consideration should not be given to increasing the weight of the filler; also that much better results would be secured if all shippers now using the 4-pad pack would follow the practice of the majority and use 6 pads to the case.

The extensive use of second-hand fillers presented the most complicated problem which came before the conference. Many schemes for eliminating their use were discussed and the subject has been left open for consideration at a future meeting.

THE CANADIAN PACIFIC, for the first time, is planning to use New York as a port of departure for its passenger steamers. During the war twelve of the company's steamers carried troops and supplies from New York. The "Empress of Scotland," 25,000 tons, leaves on February 4, and the "Empress of France," 18,500 tons, on February 11, both on Mediterranean cruises. The "Empress of Britain," 15,850 tons, which brought home the 27th Division of the American Expeditionary Forces, will go on two West Indian cruises, one on January 21 and the other on Feb. 21.

# Loading Guides Solve Difficulties of L. C. L. Freight

## Pennsylvania Aids Shippers by Introducing Improved Method for This Service

**T**O EXPEDITE the forwarding of less-than-carload freight in so-called trap or ferry car service from points in the central region to all points on the system and connecting railroads loading guides have been prepared by the Pennsylvania Railroad, which show in a simplified manner the correct loading to be followed. These guides have been distributed to all ferry or trap-car shippers in the central region and after six months' trial the majority of shippers served by the road have permanently adopted them. Efforts are now being made to secure the co-operation of all others using the trap or ferry car service.

The results already accomplished have exceeded expectations. The railroad men and the shippers who have adopted

loaded to secure the best possible service. With this information they are able to assemble their shipments and so regulate their loading that the car can be forwarded to the transfer which will accord the best service. This direct loading greatly reduces the handling of the shipments at intermediate points and eliminates the delay previously experienced with the indiscriminate loading.

A feature of prime importance is that shippers have found that the simplicity of the guide renders its use general throughout their loading departments. Moreover, shippers find that it is advantageous to them to hold their shipments several days and assemble a load for a proper transfer, because of the improved service that accrues by such arrange-



Markers Indicating Routes Simplifies the Sorting of Freight

the plan feel assured that it provides an efficient and expeditious method for the handling of miscellaneous freight in less-than-carload quantities which, unless loaded in a systematic way as regards destination and intermediate transfer points, is necessarily subject to frequent handling and delay en route.

### The Plan

Freight cars which are loaded by shippers at their plants with miscellaneous less-than-carload shipments are known as ferry or trap cars. Prior to the preparation of the loading guides this freight was loaded indiscriminately; shipments destined to eastern points, for instance, were loaded in the same car with miscellaneous shipments destined to western points or southern points. This indiscriminate loading made it necessary to move cars to adjacent freight stations or nearby transfers where they had to be unloaded, the shipments sorted and then reloaded either to more distant transfer points or destinations.

By using the loading guide the shippers can readily ascertain the proper transfer to which their shipments should be

ment in that the shipments reach their destinations more promptly when compared with the old plan.

### Advantages of the Plan

Industrial plants which have adopted the new plan report from the viewpoint of the shipper, the following advantages.

Shipments reach customers in much less time as delays at local stations and transfers are eliminated.

Owing to reduced handling at transfer points goods not only arrive at destination more quickly but also with the package in better condition.

There is less opportunity for incorrect loading and freight going astray.

The improved service and reduction of errors in loading have virtually eliminated the necessity for tracing.

It affords the shipper an intelligent system for supervising his own loading.

The plan is so flexible that the individual shipper can set up a ferry-car program to meet his own peculiar needs.

From the point of view of the railroad the new loading plan offers the following advantages:

The indiscriminate loading of miscellaneous freight is in a large measure eliminated.

Important economies are made possible because of reduced handling of freight at origin freight stations and intermediate transfers.

Less handling of freight has resulted in a marked decrease in claims for loss and damage.

By reducing the number of days ferry cars are detained while awaiting unloading the car supply situation is improved. This is a very important factor particularly during times of car shortage.

Congestion is relieved at many local stations which, as a rule, are without facilities for reclassification of less-than-carload freight.

### Actual Results Shown

There are 24 guides covering 180 ferry car shipping points in the central region. Each guide contains some 40 pages of loading instructions.

A report shows that of the 16,498 ferry cars forwarded from the stations of the central region during the first six months of this year more than one-half—8,425 cars to be exact—were hauled to the proper transfer, direct to the connecting lines, or direct to destination without the former intermediate rehandling. The remaining 8,093 cars were loaded to preferred intermediate transfers, in many instances, in conformity with the ferry car guides.

Some details of the practical advantages for the shipper under the new method of loading and routing freight are summarized in the following statement:

"This ferry car loading arrangement has resulted in a 100-per cent improvement in the prompt delivery of goods to our

packages, stow them securely in the cars and give his outgoing freight much more careful attention than one could expect from a congested railroad transfer point where many consignments of freight have to be sorted and re-shipped every 24 hours.

"Prior to the installation of the present system a delay of a week or more in getting freight reclassified and forwarded to the transfer was not uncommon. All such delays are eliminated by using the new ferry car guide. Frequently a delay of a few days on our shipping platform is more than offset by the saving of from 10 days to two weeks in time of arrival of the consignment at the ultimate destination."

The following summarizes a report on the handling of ferry cars from central region stations between January 1 and June 30, 1921:

Direct to destination	Direct to connecting lines	To proper transfer	To first preferred transfer	To second preferred transfer	To third preferred transfer	Total cars handled
3,304	1,487	3,634	5,286	1,156	1,651	16,518



Loading Ferry Cars at a Manufacturing Plant After Freight Has Been Sorted on the Loading Platform

From Pittsburgh district stations—i. e., those within a 50-mile radius from the city—the following results were shown for the month of June, 1921:

Direct to destination	Direct to connecting lines	To proper transfer	To first preferred transfer	To second preferred transfer	To third preferred transfer	Total cars handled
324	133	329	495	113	164	1,558

### How the Guides Are Used

Copies of the guides have been distributed to more than 500 shippers. Each guide contains an alphabetical list of agency stations on the Pennsylvania System, together with assigned station numbers and loading directions showing the proper transfer to which freight from that territory should be loaded. Column 1 names the proper transfers serving destination direct. Shipments so loaded will be transferred only once en route to destination. Columns 2, 3 and 4 name, respectively, the intermediate transfers in order of their preference in case industries are unable to assemble sufficient tonnage to justify loading to the proper transfer named in column 1.

To promote the widest possible use of the ferry car guides, each division freight agent in the central region has been instructed to give personal attention to the following program:

"*First*—See that every ferry car shipper in his territory has a copy of the guide.

"*Second*—Be certain that every shipper clearly understands the purpose of the guide, how to use it, and the advantages to be derived.

"*Third*—Make careful observation of ferry car operations in his territory to determine whether or not the guide is being used properly.



Loading a Ferry Car at Jacob Dold Packing Company's Plant, Buffalo, N. Y.

customers. Furthermore, since we rearranged our shipping platforms in accordance with the ferry car guide for this district the requests for tracers from our customers have been practically eliminated.

"The fact that our tracers will decrease, this year, from 2,000 to less than 500 indicates that the new arrangement works to prevent incorrect loading and freight going astray. Because the goods are transported with much-reduced handlings at transfer points the shipments not only arrive at destination more quickly but they also arrive with the packages in better condition.

"Another advantage of the plan is that it offers the shipper an intelligent system for supervising his own loading. Through his own shipping department he can classify his

"Fourth—When reports indicate that shippers are not loading their shipments to best advantage, an analysis of their tonnage will be made to develop in what way an improvement can be made, and a personal interview arranged with shippers."

With practically all ferry car shippers in the central region loading their freight in accordance with the guides it is confidently expected that all ferry car freight can be handled without delays at transfer points even during times when the movement of freight is very heavy. This expeditious movement of less-than-carload freight will bring about greatly improved service to consignees.

The loading guide contains an alphabetical list of agency stations on the Pennsylvania System. Opposite the name of each station is an assigned station number. Loading directions are then given for the various station numbers which show the proper transfers to which less-than-carload freight should be loaded to insure the most expeditious and efficient handling.

The following extract from loading guide No. 1 illustrates



The Larkin Company, Buffalo, N. Y., Uses Colored Shipping Orders and Tags to Identify Freight to Be Shipped in Ferry Cars

the alphabetical arrangement of the stations and their assigned numbers:

ALPHABETICAL LIST OF STATIONS		Division
Station Number	Station	
639	Merchantville	N. J. Trenton
6109	Merrill	Pa. C. & P.
6843	Merritt	Mich. Mackinaw
8228	Merritt	Ohio Wheeling
6561	Metham	Ohio Akron
248	Metuchen	N. J. New York
247	Metuchen Interchange	N. J. Fort Wayne
6512	Metz	Ohio Akron
7858	Mexico	Ind. Fort Wayne
1115	Mexico	Pa. Middle
8055	Miami City	Ohio Cincinnati
8020	Miamsville	Ohio Cincinnati
6846	Michelson	Mich. Cincinnati
5087	Mickleton	N. J. W. J. & S.
3177	Middleburg	Pa. Sunbury
262	Middlebush	N. J. New York
7689	Middle Fork	Ind. Louisville
6000	Middletown	Ohio Mansfield
2755	Middletown	Del. Delaware
7424	Middletown	Ind. Richmond
8125	Middletown	Ohio C. L. & N.
1057	Middletown	Pa. Philadelphia

How the proper loading directions for any given point on the Pennsylvania may be ascertained by means of its assigned number is indicated in the following extract from the loading instructions of Guide No. 1:

Stations	Proper transfer	First preferred	Second preferred	Third preferred
50 to 264	Harrisburg	Pittsburgh		
268 to 547	Philadelphia	Harrisburg	Pittsburgh	
550 to 746	Camden	Philadelphia	Harrisburg	Pittsburgh
758 to 810	Philadelphia	Harrisburg	Pittsburgh	
826 to 1074	Harrisburg	Pittsburgh		
1081	Altoona	Pittsburgh		
1084 to 1091	Harrisburg	Pittsburgh		

Column 1 names the proper transfers serving destination direct. Shipments so loaded will be transferred only once en route to destination.

Columns 2, 3 and 4 name the intermediate transfers in order of their preference. If industries are unable to assemble sufficient tonnage to justify loading to the proper transfer named in column 1, freight should be loaded to the transfer named in column 2. If insufficient to load to transfer named in column 2, then load to point named in column 3, and so on.

If an industry is unable to assemble sufficient freight to warrant loading a car direct to a connecting line via the proper junction, freight should then be loaded the same as provided for the station at which the Pennsylvania System delivers the shipment to such connecting line.

### Instructions for Shippers

Directions for use of the loading guides include the following:

"When an industry has sufficient freight to forward a car daily, tri-weekly, semi-weekly or weekly to one destination station or for loading in station order to one division, freight should be loaded and forwarded direct. This arrangement will avoid rehandling at a transfer station, thus resulting in improved service and eliminating to a great extent liability of loss and damage to freight.

"An industry should load direct to destination station freight in quantities as follows:

10,000 lb. or more for one destination within a radius of 150 miles;

15,000 lb. or more for one destination within a radius of 250 miles;

20,000 lb. or more for any destination.

"Heavy or bulky shipments should be loaded in such a manner that rehandling at transfer station is not required."

## Economic Speeds for Freight Operation

By H. Ashton

CONSIDERATION of the effects of different train speeds upon locomotive drawbar pull and normal train resistance brings out an interesting problem in the development of an economic speed for slow freight. M. L. Byers in "Economics of Railway Operation," gives a table of percentage changes in engine tractive power and train resistance for different speeds. From the relation of these two factors to each other he deduces the allowable weight of train for each speed. The relations are developed on a percentage basis with the values of the various factors at a speed of 15 miles an hour assumed as 100 per cent. H. S. Haines in "Efficient Railway Operation" (Appendix VII) gives a similar compilation on this subject. The percentage changes in effective drawbar pull for various speeds, however, are copied from Byers; and in computing the corresponding train loads no account is taken of variations in train resistances. Prof. C. E. Crandall considers the variations in train resistance as negligible also between the speeds of 15 and 30 miles an hour. This, of course, increases the economic speed as the allowable weight of train would vary directly with the locomotive drawbar pull.

If the problem is extended to the consideration of the most economical method of hauling a given amount of freight between two given terminals (leaving out of consideration the cost of fuel) the controlling factors are time and tonnage; in other words, at what average speed will the greatest number of tons be hauled in a given time, or what speed will give the greatest number of ton-miles an hour?

Using Byers' figures referred to above for a Consolidation locomotive weighing 113,000 lb. on the drivers, with 20 in

by 28 in. cylinders, 50 in. drivers, and 150 lb. boiler pressure, the greatest number of ton-miles an hour was produced at a speed of approximately 12½ miles an hour. The writer made a similar tabulation of effective drawbar pulls for varying speeds from actual tests for three superheater locomotives of the following dimensions:

	Type A	Type B	Type C
Weight on drivers.....	175,700 lb.	223,300 lb.	240,200 lb.
Cylinders .....	23 in. by 28 in.	25 in. by 28 in.	27 in. by 30 in.
Drivers, diameter.....	50 in.	62 in.	62 in.
Boiler pressure.....	200 lb.	200 lb.	200 lb.

Types A and B were Consolidation locomotives, and type C a Mikado. Using the same variations in train resistance as Byers, which are based on a 40-ton car with a resistance of 3.2 lb. per ton at a speed of 15 miles an hour (assumed as 100 per cent), calculations were made to determine the allowable weight of train; the curves in Fig. 1 were plotted to show the percentage of ton-miles moved an hour for train velocities ranging from 5 miles an hour to 30 miles an hour. Each of these locomotives attained a maximum efficiency at a speed of approximately 17 miles an hour.

Assuming a unit cost (per train-hour on the road), including locomotive expenses and wages for a full crew, the relative costs per ton-mile was plotted for each type of locomotive. The curves in Fig. 2 show a very sharp reduction in the cost per ton-mile as the speed is increased from 5 miles an hour to 9 or 10 miles an hour, after which the curve flattens as it approaches the minimum point. On the ascending side of the curve, as the speed is increased beyond 17 miles an hour, the increase in the operating cost is much more

TABULATION FOR MIKADO, TYPE C

Speed	Tractive Effort, Per cent	Train Resistance, Per cent	Allowable Wt. of Train		Ton-Miles per Hour	Cost per Ton-mile, Mills
			Per cent	Tons		
5	116.9	90.0	129.9	9,093	45,465	.0319
6	116.7	90.0	129.8	9,086	54,516	.0266
7	116.4	90.5	128.6	9,002	63,014	.0230
8	115.7	91.0	127.1	8,897	71,176	.0200
9	114.2	92.0	124.1	8,687	78,183	.0185
10	112.1	93.0	120.5	8,435	84,350	.0172
11	109.9	94.0	116.9	8,183	90,013	.0161
12	107.4	95.0	113.1	7,917	95,004	.0153
13	104.9	97.0	108.1	7,567	98,371	.0148
14	102.5	99.0	103.5	7,245	101,430	.0142
15	100.0	100.0	100.0	7,000	105,000	.0138
16	97.4	101.0	96.4	6,748	107,968	.0134
17	94.8	102.0	92.9	6,503	110,551	.0131
18	92.1	105.0	87.7	6,139	110,502	.0131
20	86.4	110.0	78.5	5,495	109,900	.0132
25	73.5	120.0	61.3	4,291	107,275	.0135
29	64.3	130.0	49.5	3,465	100,485	.0145

Notes: Col. 4 equals Col. 2 divided by Col. 3.  
Col. 6 equals Col. 1 multiplied by Col. 5.  
Col. 7 is based on an assumed cost of \$14.50 per train-hour.

The controlling factors in the development of an economic speed are not, however, merely a matter of variation in ef-

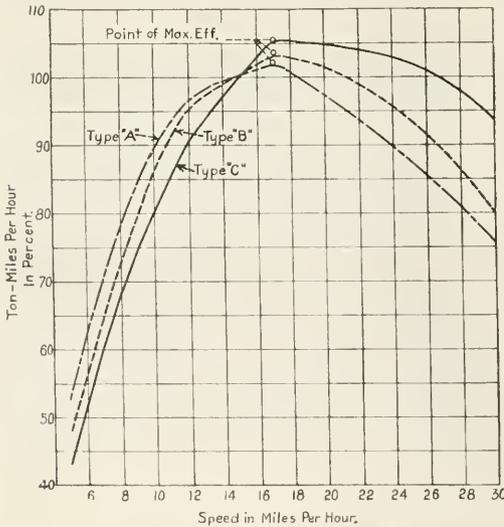


Fig. 1. Relative Ton-Miles Per Hour at Different Speeds

gradual for all three types of locomotive, and particularly so for the heavy Mikado.

As stated above, the variations in train resistance as taken from Byers are on a 40-ton car basis. As the size of equipment is increased the variations would become less pronounced, the normal resistance being greater at the start and increasing less rapidly as the train speed is increased. This would result in a higher economic speed.

The accompanying tabulation, giving the data for the Mikado locomotive, type C, shows how the information was prepared for the plotting of the curves. Similar tables were also made up for the two Consolidation locomotives.

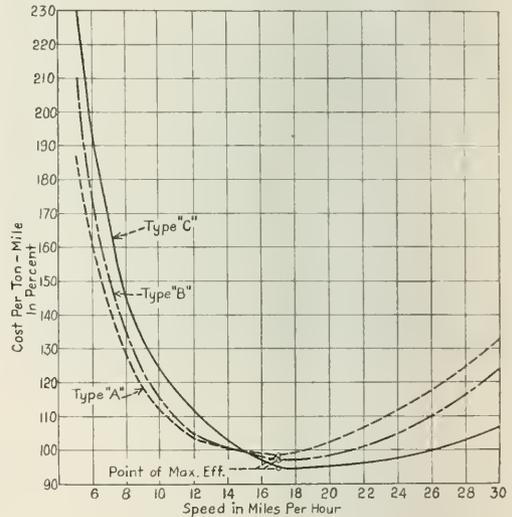


Fig. 2. Relative Operating Costs at Different Speeds

fective drawbar pull and train resistance, but also of the physical characteristics to be encountered in any given case, and the density and kind of traffic. In many instances, however, the train performance is permitted to fall below 10 miles an hour, either through attempts to crowd the engine ratings, congestion, or other causes.

It is quite plainly evident from the curves that operating costs mount very rapidly as the speed of trains is reduced below this figure, and the necessity of keeping the motive power in first class condition is plain if economy is to be attained.

A GREAT NORTHERN mail train plunged through a bridge, which had been weakened by floods, near Index, Wash., on December 11, killing two men—fireman and mail clerk—and injuring several others.

THE PANAMA RAILROAD employed 1,898 persons in October, 1921, as compared with 2,077 in September, 1921, and 3,564 in October, 1920. Of the 1,898 employees in October this year, 301 were paid in gold and 1,597 in silver.

## Railroad Administration Accounts

WASHINGTON, D. C.

A TOTAL of \$344,379,238 definitive or permanent obligations of carriers was held by the Railroad Administration on December 1, according to the report of the director general to the Senate, which was abstracted in last week's issue. This included \$26,389,900 of bonds, \$102,475,038 of notes (secured by \$138,998,000 of collateral), \$1,400,000 of receivers' certificates and \$214,114,300 of equipment trust obligations. In addition, \$95,848,124 of temporary obligations of carriers and securities deposited by carriers was held. These were taken while the government was in control of the railroads and when the accounts between the administration and the carriers could not be determined, these obligations being taken to insure the government against any possible loss by overpayment. They will be disposed of in final settlement and therefore are not to be considered as fixed assets of the Railroad Administration. The notes included are secured by \$182,012,120 of collateral.

One of the exhibits gave the following statement of the receipts and disbursements of the Railroad Administration, not including those of the individual railroads, as shown in the following:

### Statement of receipts and disbursements Jan. 1, 1918, to Nov. 30, 1921

Appropriations by Congress:	
Sixty-fifth Congress, S. 3752, Federal control act, approved March 21, 1918.....	\$500,000,000
Sixty-sixth Congress—	
H. R. 5312, deficiency appropriation act, approved June 30, 1919.....	750,000,000
H. R. 10453, transportation act, 1920 (sec. 202), approved March 28, 1920.....	200,000,000
H. R. 13677, deficiency appropriation act, approved May 8, 1920.....	300,000,000
	\$1,750,000,000
Loans repaid by carrier corporation, securities sold, and interest collections.....	315,931,019
Indebtedness of non-federally controlled railroads.....	1,147,520
Funds transferred from federal managers and carrier corporations as trustees for the director general.....	800,738,859
Loan from War Finance Corporation.....	50,000,000
Transportation collected:	
War Department.....	\$221,705,986
Navy Department.....	11,359,796
Post Office Department.....	65,575,832
	298,641,614
American Railway Express Co.....	184,392,117
Adams Express Co.....	2,800,300
Express Co.....	3,000,000
Wells, Fargo & Co.....	1,759,000
Cash payments by carrier corporations for additions and betterments.....	14,462,522
Cash payments by carrier corporations for allocated equipment.....	8,216,077
Interest on bank balances.....	2,381,973
Liberty loan bonds transferred to War Finance Corporation.....	37,592,254
Miscellaneous.....	7,809,571
	\$3,478,872,520
Payments to carrier corporations and receivers:	
Loans, including funding.....	\$285,122,347
Advances on compensation.....	1,482,679,809
Open accounts and miscellaneous.....	141,749,210
Final settlements with carriers under federal control.....	-130,908,412
Final settlements with other carriers.....	1,170,845
	2,041,630,619
Funds transferred to federal managers and to carrier corporations as trustees for the director general, for payment of his obligations.....	802,714,797
Acquisition of equipment.....	381,834,524
Inland waterways.....	18,511,130
Repayment of loan from War Finance Corporation and interest thereon.....	50,929,452
Interline balances, Canadian railroads.....	2,139,388
Car hire, bureau.....	2,405,100
Administration pay rates.....	15,816,510
Rents, traveling expenses, stationery, supplies and miscellaneous.....	10,510,300
Balances:	
In Treasury and banks to credit of director general.....	\$43,664,022
Unexpended balance of appropriations.....	108,716,858
	152,380,880
Grand total.....	\$3,478,872,520

\* Does not include the disbursements in settlement of the judgments, decrees and awards for which provision was made in sections 206 (c) and 217 (c) of the transportation act, 1920 (H. R. 10453). Such disbursements, to Nov. 30, 1921, aggregated \$5,746,859.23.

† Does not include final settlements agreed upon but not yet paid, amounting to \$1,313,428.09. Total settlements agreed upon to Nov. 30, 1921, \$132,221,839.89.

The estimated amounts due to carriers in final settlement as of December 1 were stated as follows:

Unpaid compensation.....	\$2,376,777
Cash taken over from the working capital of the carriers at the commencement of federal control.....	183,907,781
Depreciation.....	185,801,888
Equipment retirements.....	15,188,108
Materials and supplies.....	19,226,691
Net liability on account of maintenance and construction claims.....	1,476,320
Gross amount due.....	708,977,365
Less additions and betterments to be accounted for and settlements.....	364,608,127
Balance due to carriers.....	344,379,238

## New Wall Unit Simplifies Standardized Buildings

THE TRUSCON STEEL COMPANY recently incorporated a new development in its line of standardized buildings that permits of greater flexibility in the application of this type of structure to various uses. The change also permits of a considerable reduction in the number of stock parts



A Shop Building for the Santa Fe at Chicago

required, thereby accomplishing a saving which naturally accrues to the advantage of the user. These buildings are of the steel frame, sheet-steel-sheathed, ready-to-erect type with unit wall sections which frame into structural steel mul-



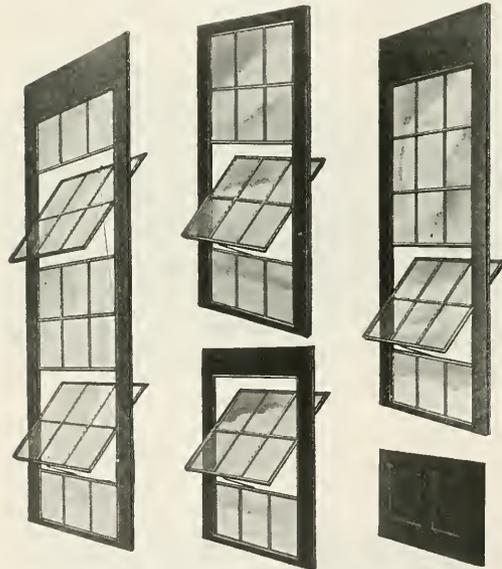
Express Building and Platform Sheds for the Chicago & North Western at Chicago

lions of a special section rolled especially for this purpose. The roof is also of a special unit steel construction with a unique form of assembly that assures a thoroughly watertight cover.

The new feature which has been incorporated in this form

of construction is the adoption of a wall unit 4 ft. wide by 2 ft. 8 in. high with provision that all special units shall be multiples of this height. The number of special units, however, is limited to five sash units which are one, two, three, four and five times the height of the standard wall unit respectively. These five sash units are sufficient to provide almost any arrangement of windows that could be desired. There are no special wall units since solid wall areas are made up entirely by using enough 2-ft. 8-in. units to make up the desired height of wall.

One object of this change in the wall unit standard has been to permit a greater flexibility in the height of the walls, thereby making this form of construction definitely applicable to car repair sheds which require greater side wall heights than has been necessary for most buildings previously built according to this form of construction. The height of 2 ft. 8 in. has been adopted because it is exactly two-thirds of the



The Wall Unit and Four of the Standard Sash Units

standard width of 4 ft. and because all gable or inclined roof truss buildings are designed with a one-third pitch roof. Thus a single incline or gable wall unit is all that is required in conjunction with the standard unit to fill in the end wall under the roof. This applies also to saw-tooth roofs and to the roofs of monitors.

Another new feature of the standard building is the use of 18-gage copper-bearing steel in the side wall units, thereby adding appreciably to the corrosion resistance of these structures. The roof trusses of the smaller buildings are of pressed steel while buildings of over 40-ft. span have structural steel trusses. The sash units in these buildings are of the regular Truscon standard.

While buildings of this type are designed for maximum convenience or speed of erection and facility for knocking down and reconstructing on another site, the manufacturer takes the position that they should not be considered simply as portable buildings. The manner of assembly is such that they form a thoroughly stable and permanent form of construction adaptable to the usual industrial requirements. The photographs illustrate examples of railway installations of the Truscon buildings of the older type. A contract for one of the new type structures for use as a shop building was recently awarded by the Sewell Valley Railway.

## Recent Improvements in Adjustable Crosshead

EXTENDED use on several classes of large freight and passenger locomotives has demonstrated the value of the adjustable crosshead, made by the Rogatchoff Company, Baltimore, Md., and described on page 1619 of the June 9, 1920, *Railway Age*. Since the publication of that article the crosshead has been altered in two respects.

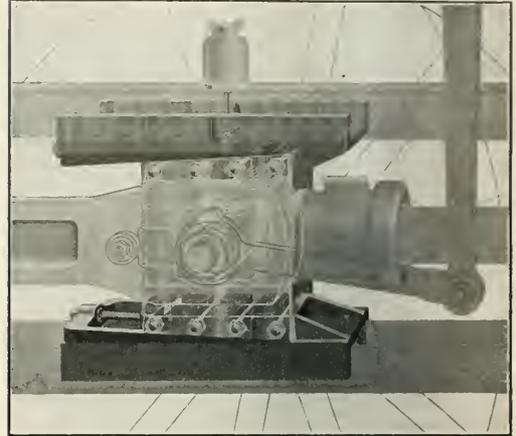


Fig. 1. General View of Rogatchoff Adjustable Crosshead

Reference to the original description of the Rogatchoff crosshead shows that only one adjustable taper wedge was used, this being provided on the bottom shoe. To increase the possible range of adjustment and compensate for a greater wear of both guide and crosshead shoe, a second case-hard-

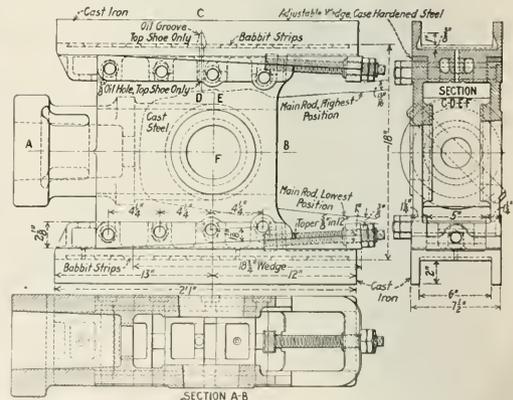


Fig. 2. Drawing Showing Alterations in Adjustable Crosshead

ened wedge has been applied to the upper crosshead shoe as shown in Fig. 1. An adjustment of approximately 7/16 in. can be obtained by these two taper wedges.

Reference to the end view in Fig. 2 shows that the part of the shoe extending between the crosshead sides has been machined with straight parallel sides, whereas the original shoe was provided with taper sides at this point. The elimination of the taper is a considerable advantage in reducing the machining cost and in the greater ease in applying the shoes.

# General News Department

One man was killed, another severely injured and a score of other persons slightly hurt, when an Illinois Central suburban coach was derailed because of the failure of a drawbar and then was struck in the side by another suburban train, at Chicago on December 14.

## Daring Hold-Up of B. & O. Train at Chicago

A lone bandit swung over the rear railing of the observation car of Baltimore & Ohio train No. 6 for Washington, as it left 63rd street station, Chicago, on the night of December 20. A dozen persons in the observation car were held up and the loot amounted to approximately \$1,000. The bandit pulled the bell cord and when the conductor appeared dropped from train, and escaped.

## Philadelphia Meeting Place of

### Next Foreign Trade Convention

The Ninth Annual Foreign Trade Convention of the National Foreign Trade Council will be held in Philadelphia on May 10, 11 and 12, 1922. In making this announcement, O. K. Davis, secretary of the Council, called attention to the fact that, despite the great decline in our foreign trade, nevertheless our exports during the last six months have been 63 per cent more in value and 15 per cent more in quantity than during the similar period of 1913.

## Freight Claim Payments Reduced in August

The freight claim division of the American Railway Association has recently issued a summarized statement classifying by the principal causes and commodities the expenditures made by member railroads for freight loss and damage for August, 1921. The statement shows a decrease of \$280,737, from the \$8,004,007 total loss and damage account of the previous month. Rough handling (coupled with unlocated damage), robbery (coupled with loss of entire packages and unlocated loss), delay and defective equipment represent 82 per cent of the total payments.

## Pennsylvania to Safeguard Mails

The Pennsylvania Railroad, to better co-operate with the Post Office Department in the prevention of mail depredations, has issued instructions through the vice presidents in charge of each of the four operating regions of the Pennsylvania System looking to renewed safeguards for the protection of the mails while in the custody of railroad employees. These employees, when not in uniform, must identify themselves at the mail car door before entering. Railroad employees, especially at larger points, while engaged in handling mail will be required to wear the established cap, badge or other means of identification, so that supervisory officers and mail guards can readily determine whether authorized employees only are handling the mails.

## Middle Tennessee to Resume Operation

The Middle Tennessee Railroad, on which no trains have been run for several months, is to be put in operation within a few weeks, according to news items in local papers. The line extends from Mt. Pleasant, Tenn., on the Louisville & Nashville, northward 41 miles to Franklin. At Franklin connection is to be made with the Nashville Interurban, for Nashville, 19 miles farther north. It is proposed to run a combination gasoline car two round trips daily between Mt. Pleasant and Franklin, carrying both freight and passengers. There will be no agents or ticket sellers at the way stations. Freight will be carried, within the limits of the capacity of the car, or train, but the charges must be prepaid.

## Delegates to the International Railway Congress

To attend the sessions of the International Railway Congress at Rome, Italy, next April, the Interstate Commerce Commission has appointed C. C. McChord (chairman of the commission), and Winthrop M. Daniels; and the American Railway Association has chosen the following: Daniel Willard, chairman of the board of directors (president of the Baltimore & Ohio); R. H. Aishton, president of the association; W. G. Besler, first vice president (president of the Central of New Jersey), and J. E. Fairbanks, general secretary of the association.

Individual railroad companies, members of the International Association, are expected soon to announce names of delegates appointed by them.

## Coroner's Jury Holds Conductor and

### Engineman for Bryn Athyn Collision

The coroner's jury, meeting at Norristown, Pa., on December 20, in the case of the Philadelphia & Reading collision at Bryn Athyn, Pa., on December 5 (*Railway Age*, December 10, page 1163), returned a verdict of criminal negligence against the conductor and engineman of No. 151, the northbound train involved. These two men have been apprehended and released on \$5,000 bail. The engineman is still in the hospital suffering from injuries sustained in the collision. The conductor attended the inquest, although he did not testify. The cause of the collision was the failure of No. 151 to obey a meet order and to heed a manual block signal set at stop.

## St. Paul Makes Drastic Cut in Pay Roll

In order to keep within its allotment, all employees of the Chicago, Milwaukee & St. Paul, other than those engaged in actual operation, were placed on half time for the last two weeks of the present year. Officers of the road are not excepted in the economy order and, from the president down, will sacrifice one week's salary. In some of the departments the employees are working half time, while in other departments the plan is to work a week and then lay off a week. It is expected that the forces will be put back on a full time basis the first of the year but the order will not be revoked until business makes the full force necessary. Other cuts in forces or working hours have been made by the Louisville & Nashville, which has placed its shopmen on a five-day week basis, the Mobile & Ohio, the Southern, the Nashville, Chattanooga & St. Louis and the Baltimore & Ohio.

## Air Brake Association to Hold

### Convention in Washington

At a meeting of the Executive Committee of the Air Brake Association held at the Hotel Sherman, Chicago, on December 13, it was unanimously voted to hold the regular annual convention of the association at Washington, D. C., May 9, 10, 11 and 12, 1922. Overflow accommodations will be provided in the new Ebbitt Hotel in the adjacent block. All sessions will be held in the convention hall on the top floor of the Hotel Washington and all exhibits will be erected on the mezzanine floor of that hotel.

The officers of the association hope for a large attendance at the convention because of the necessity for educational work on matters pertaining to the air brake at this time. Many new men have been taken into railroad service during the war years and since who need air brake instruction and numerous air brake devices have been developed which remain to be explained to the older men and to those more recently employed.

Operating Statistics of Large Steam Roads—Selected Items for the Month of October, 1921.

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles			Car-miles		Ton-miles (thousands)		Average number of locomotives on line daily			
			Principal helper	Light	Loaded (thous. sands)	Per cent loaded	Gross Excluding locomotive and tender	Net. Revenue	Serv-ice-able	Un-der-ice-able	Per cent under-ice-able	Stored	
													Revenue
<b>New England Region:</b>													
Boston & Albany.....	1921	394	248,213	270,090	33,718	5,001	70.3	251,250	102,469	115	29	19.9	.....
.....	1920	351	329,482	349,804	35,375	6,010	67.0	316,772	142,032	128	26	18.4	.....
Boston & Maine.....	1921	2,469	1,261,011	1,365,637	59,011	13,871	74.0	686,186	291,106	342	117	25.3	48
.....	1920	2,461	774,121	865,663	82,698	15,514	66.6	889,193	392,776	366	103	21.1	.....
N. Y., N. H. & H.....	1921	1,960	451,309	493,433	31,729	12,104	71.1	603,566	261,582	300	88	22.7	41
.....	1920	1,959	600,622	624,140	48,744	13,137	72.7	694,197	329,416	356	94	20.9	.....
<b>Great Lakes Region:</b>													
Delaware & Hudson.....	1921	880	362,917	483,942	37,270	9,971	66.3	633,178	323,669	277	37	11.9	115
.....	1920	881	442,687	635,317	40,326	11,281	64.5	771,944	404,633	271	44	14.1	24
Del., Lack. & Western.....	1921	995	583,323	723,502	133,266	17,772	68.4	979,579	454,304	301	55	15.5	33
.....	1920	997	624,410	756,035	142,033	18,346	65.5	1,104,374	532,892	311	71	18.7	.....
Erie (Inc. Chic. & Erie).....	1921	2,359	1,194,302	1,332,813	56,365	16,604	64.7	2,415,566	1,076,502	561	179	24.2	10
.....	1920	2,259	1,250,830	1,402,606	42,634	10,402	63.5	2,454,681	1,149,398	577	109	15.9	4
Lehigh Valley.....	1921	1,340	654,605	721,706	71,576	18,774	64.2	1,152,323	349,185	428	115	21.2	99
.....	1920	1,429	696,647	778,401	69,374	20,142	66.4	1,282,236	661,048	383	192	33.4	69
Michigan Central.....	1921	1,829	888,043	497,301	21,976	15,995	72.0	804,750	335,101	328	84	20.4	92
.....	1920	1,826	573,679	603,074	17,122	18,097	68.5	678,713	433,657	328	8	20.0	24
New York Central.....	1921	5,655	1,872,858	2,085,274	156,696	70,201	68.7	3,859,899	1,722,943	1,070	593	36.4	216
.....	1920	5,646	2,210,185	2,523,900	193,801	79,178	64.5	4,793,559	2,284,570	(3)	.....	.....	(4)
N. Y., Chic. & St. L.....	1921	572	348,931	368,631	765	11,529	71.1	557,224	224,557	115	40	25.7	43
.....	1920	573	369,345	372,195	974	11,008	69.3	580,082	254,685	111	54	32.7	25
Pere Marquette.....	1921	2,196	378,377	389,805	7,872	9,828	73.4	521,250	240,797	164	47	22.2	7
.....	1920	2,208*	392,596	406,427	6,079	9,790	74.7	516,336	255,346	160	36	18.3	.....
Pitts. & Lake Erie.....	1921	2,225	914,228	974,383	38,833	6,830	63.0	1,234,693	374,693	372	87	23.8	.....
.....	1920	2,225	174,116	178,124	3,114	6,819	68.3	476,010	286,775	66	10	13.3	.....
Wabash.....	1921	2,418	633,635	662,598	8,552	18,394	75.2	948,597	434,627	279	64	18.6	31
.....	1920	2,418	652,973	669,655	7,809	18,444	75.2	985,440	473,520	263	71	21.2	2
<b>Ohio-Indiana-Allegheny Region:</b>													
Baltimore & Ohio.....	1921	5,185	1,842,781	1,996,076	152,975	48,440	65.0	3,053,283	1,533,669	1,030	362	26.0	174
.....	1920	5,154	2,183,948	2,445,366	123,118	57,280	65.1	3,894,100	2,086,816	1,135	187	14.1	.....
Central of N. J.....	1921	679	295,995	334,412	44,940	6,740	60.9	444,701	219,326	209	51	19.5	11
.....	1920	679	353,389	382,452	37,875	6,745	60.5	488,990	257,453	201	48	16.6	.....
Chicago & Eastern Ill.....	1921	1,137	274,317	276,009	4,046	6,887	62.4	340,569	218,126	128	47	29.9	37
.....	1920	1,131	339,351	352,457	4,700	8,042	63.0	521,855	273,845	141	48	25.6	.....
C. C., C. & St. L.....	1921	2,387	679,476	710,665	2,905	20,474	64.9	1,220,648	577,571	331	120	26.7	42
.....	1920	2,394	726,927	754,009	171	21,068	62.5	1,328,646	621,612	302	8	21.2	.....
Elgin, Joliet & Eastern.....	1921	836	103,892	104,637	6,998	8,667	68.9	130,266	99,966	93	13	12.4	.....
.....	1920	836	163,761	168,448	13,575	5,127	69.7	375,653	199,661	93	13	12.4	.....
Long Island.....	1921	395	48,890	54,832	9,544	625	60.0	35,333	13,830	37	9	20.2	1
.....	1920	395	47,604	58,440	13,097	640	65.2	33,266	13,748	40	14	14.1	.....
Pennsylvania System.....	1921	10,872	4,603,643	5,061,744	380,768	124,151	61.1	8,897,715	4,270,575	2,404	932	26.1	495
.....	1920	10,838	5,332,560	5,943,842	461,064	141,530	65.3	9,456,714	5,104,129	2,268	804	26.2	25
Phila. & Reading.....	1921	1,119	577,160	654,573	83,027	15,096	64.5	1,010,602	439,633	361	78	17.7	144
.....	1920	1,119	733,513	860,367	119,520	18,498	65.8	1,265,734	716,536	274	96	26.0	.....
<b>Pocahontas Region:</b>													
Chesapeake & Ohio.....	1921	2,548	759,300	829,763	24,065	23,127	58.8	1,757,408	958,638	468	90	16.1	88
.....	1920	2,520	911,670	1,005,201	29,740	27,191	59.3	2,104,952	1,162,574	402	127	23.9	.....
Norfolk & Western.....	1921	2,222	796,648	979,489	36,351	22,911	61.0	1,704,232	936,383	602	106	15.0	178
.....	1920	2,189	948,720	1,214,534	40,186	26,023	62.6	2,023,321	1,129,796	505	166	24.8	53
<b>Southern Region:</b>													
Atlantic Coast Line.....	1921	4,899	564,675	566,630	8,647	12,873	66.6	652,649	256,434	289	126	20.4	62
.....	1920	4,887	603,136	605,854	9,894	13,189	68.8	685,679	294,180	299	135	31.1	.....
Central of Georgia.....	1921	1,908	323,985	224,804	8,559	5,146	74.5	249,495	112,463	107	23	16.3	8
.....	1920	1,913	261,747	263,013	6,857	4,389	68.9	276,883	131,296	116	26	18.6	.....
I. C. (Inc. Y. & M. V.).....	1921	615	1,813,742	1,820,960	38,883	51,042	64.6	3,146,105	1,442,999	728	88	10.7	16
.....	1920	615	2,068,757	2,076,482	40,867	51,128	62.5	3,387,160	1,603,148	715	88	10.9	11
Louisville & Nashville.....	1921	5,020	1,662,242	1,782,965	37,983	29,659	62.5	1,896,413	916,114	511	83	12.5	12
.....	1920	5,024	1,631,520	1,752,648	60,871	31,444	62.0	1,870,651	961,381	481	120	13.0	.....
Seaboard Air Line.....	1921	3,537	433,891	434,505	5,005	9,507	74.0	465,459	195,408	167	89	34.7	.....
.....	1920	3,537	433,780	441,991	10,208	9,577	72.2	497,335	225,838	175	91	34.2	.....
Southern Ry.....	1921	6,942	1,372,170	1,401,764	36,125	31,083	70.4	1,585,680	672,590	884	234	20.9	36
.....	1920	6,942	1,528,664	1,566,721	45,265	31,944	69.2	1,744,853	790,939	899	204	18.5	2
<b>Northwestern Region:</b>													
C. & N. W.....	1921	8,378	1,788,642	1,858,385	29,285	39,161	63.0	2,266,132	985,430	786	282	26.4	9
.....	1920	8,323	1,979,432	2,023,337	26,567	43,605	65.8	2,542,746	1,071,057	708	232	24.7	.....
C. M. & St. P.....	1921	10,992	1,758,207	1,812,212	69,115	44,795	65.0	2,501,508	1,127,830	864	218	20.2	111
.....	1920	10,660	1,887,760	1,942,839	60,023	46,303	62.3	2,644,150	1,233,433	695	287	23.3	1
C. St. P., M. & O.....	1921	7,26	356,383	374,830	16,028	7,408	72.6	380,561	167,774	152	61	28.7	14
.....	1920	7,26	361,287	376,210	16,674	7,316	74.7	384,907	178,614	159	50	24.1	14
Great Northern.....	1921	8,162	1,287,869	1,324,973	43,484	37,181	63.1	2,138,184	960,361	633	153	19.5	121
.....	1920	8,172	1,241,107	1,285,954	51,743	45,816	63.0	2,098,631	1,025,196	540	189	25.9	24
M., St. P. & S. Ste. M.....	1921	4,359	597,037	618,536	9,018	14,251	74.9	708,614	340,026	349	56	13.9	6
.....	1920	4,227	658,463	665,145	9,272	15,171	68.9	787,395	373,912	333	78	18.9	19
Northern Pacific.....	1921	6,420	1,096,526	1,144,694	68,232	31,900	69.1	1,804,429	812,038	585	144	19.8	65
.....	1920	6,405	1,097,990	1,154,176	74,301	31,718	69.1	1,699,899	841,141	577	132	18.7	6
Ore.-Wash. R. R. & Nav.....	1921	2,146	268,891	270,029	7,000	6,405	67.5	378,356	173,962	137	30	18.0	.....
.....	1920	2,146	249,460	276,294	32,659	5,898	73.4	327,895	164,458	121	42	25.6	.....
<b>Central Western Region:</b>													
Atch., Top. & Santa Fe.....	1921	9,763	2,022,714	2,167,743	104,497	57,296	65.0	3,235,278	1,154,739	7			

Compared with October, 1920, for Roads with Annual Operating Revenues above \$25,000,000

Region, road and year	Average number of freight cars on line daily			Per cent service-able	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per car-day	Net ton-miles per car-day	Car-miles per car-day	Net tons per mile of road per day	Pounds of coal per ton-mile, including locomotives, passenger train and tender miles	Passenger train-car-miles			
	Home	Foreign	Total												
<b>New England Region:</b>															
Boston & Albany.....	1921	3,022	4,751	7,773	7.8	364	1,012	413	20.5	425	29.5	8,391	209	301,951	1,960,439
1920	865	7,204	8,099	5.0	364	961	431	25.3	566	33.8	11,631	211	321,242	2,004,124	
Boston & Maine.....	1921	16,989	16,207	33,196	18.8	739	1,157	491	21.0	283	18.2	3,803	142	803,782	4,403,021
1920	8,244	28,816	37,060	9.5	1,149	507	253	34.2	203	51.32	873,754	401	873,754	4,901,799	
N. V., N. H. & N. E.....	1921	22,805	17,435	40,237	22.9	561	1,337	513	21.6	230	14.3	1,044,398	161	1,044,398	6,839,666
1920	11,474	35,793	47,267	9.3	1,156	548	253	22.5	123.3	5-425	192	1,149,027	7	7,118,434	
<b>Great Lakes Region:</b>															
Delaware & Hudson.....	1921	9,518	7,084	16,602	10.5	95	1,475	891	32.4	629	29.2	11,852	182	189,965	961,429
1920	5,222	12,729	17,951	7.5	114	714	359	27	31.4	148.22	188	192,697	6	968,855	
Del., Lack. & West.....	1921	16,485	14,176	30,664	14.3	1,679	2,964	1,286	25.6	717	32.7	14,735	174	497,147	3,597,132
1920	9,565	18,011	27,576	4.9	1,774	856	28.7	717	38.1	17,246	185	495,909	3	3,624,144	
Eric (Inc. Chic. & Erie).....	1921	34,941	21,065	56,006	19.7	1,222	2,022	901	26.5	620	35.2	15,374	141	681,595	5,009,465
1920	10,987	44,466	55,453	6.6	1,962	919	28.7	670	35.6	16,415	152	712,614	152	7,126,614	
Lehigh Valley.....	1921	28,594	9,649	38,243	16.9	1,135	1,701	839	29.3	463	24.6	12,385	165	356,513	2,685,495
1920	10,807	22,863	33,670	9.3	1,841	949	32.8	633	29.1	14,291	169	377,278	169	2,950,395	
Melhuigan Central.....	1921	16,882	16,059	32,941	21.7	1,656	689	210	32.8	21.8	5,909	129	585,346	5,577,343	
1920	4,848	22,489	27,337	7.4	1,706	756	24.0	512	31.2	7,663	163	626,896	163	5,628,420	
New York Central.....	1921	7,532	51,138	58,670	22.4	2,371	2,061	920	44.3	440	26.1	2,828	121	2,828,703	19,498,474
1920	32,912	119,241	152,153	8.3	2,169	1,034	28.9	484	36.0	13,052	12	2,458,363	10	19,577,704	
N. V., Chic. & St. L.....	1921	3,117	4,999	8,116	10.6	337	1,597	643	20.1	891	62.4	12,643	107	89,660	536,880
1920	1,664	9,409	11,073	7.5	1,571	690	23.1	742	46.3	13,445	107	87,833	107	561,809	
Peru Marquette.....	1921	10,267	12,389	22,656	17.4	1,135	1,478	613	27.8	313	31.6	12,617	137	7,670,317	39,497,417
1920	4,271	17,267	22,038	7.8	1,315	645	25.9	371	19.2	3,701	169	308,068	169	1,531,610	
Pitts. & Lake Erie.....	1921	18,839	7,964	26,803	41.9	1,635	2,514	1,420	40.8	160	6.2	18,780	92	107,718	563,317
1920	4,416	23,332	27,748	10.9	2,759	1,653	42.0	334	11.6	41,995	7.2	118,725	2	594,645	
Wabash.....	1921	11,505	11,435	22,940	16.2	538	1,207	680	37.6	400	31.8	5,378	163	2,852,372	13,707,014
1920	5,436	19,445	24,881	8.2	1,509	725	35.7	614	31.9	6,318	163	379,853	163	3,996,436	
<b>Ohio-Indiana-Allegheny Region:</b>															
Baltimore & Ohio.....	1921	63,559	36,752	100,311	13.1	1,390	1,658	832	31.7	493	24.0	9,542	184	1,419,843	9,168,390
1920	29,886	67,988	97,874	6.1	1,783	956	36.6	615	35.9	17,062	184	1,319,847	184	8,944,309	
Central of N. J.....	1921	17,671	8,988	26,659	15.0	4,253	1,023	741	34.3	367	13.5	10,167	171	336,196	1,626,423
1920	7,481	17,641	24,942	14.7	1,382	727	34.4	333	15.5	12,236	131	339,187	141	1,411,229	
Chicago & Eastern Ill.....	1921	11,972	3,612	15,584	16.6	78	1,570	795	31.7	452	22.9	6,221	158	223,481	1,477,383
1920	5,038	8,382	13,420	15.6	1,538	802	34.1	658	30.7	7,811	131	239,848	131	1,534,783	
C., C., C. & St. L.....	1921	14,883	18,677	33,560	12.9	1,396	1,396	620	26.5	365	26.6	10,828	158	1,082,828	6,839,666
1920	5,807	28,767	34,574	7.2	1,828	855	29.5	580	31.4	8,376	158	767,344	158	4,803,698	
Elgin, Joliet & Eastern.....	1921	10,311	3,546	13,857	8.8	362	2,337	1,254	39.7	303	11.5	5,022	130	61,497	3,141,292
1920	8,780	6,794	15,574	7.1	2,294	1,221	39.0	414	18.2	7,712	130	61,497	130	3,141,292	
Long Island.....	1921	1,971	1,389	3,360	5.1	169	699	289	21.5	72	5.1	1,124	304	20,762	1,133,805
1920	528	4,631	6,159	3.4	699	289	21.5	72	5.1	1,124	304	20,762	1,133,805		
Pennsylvania System.....	1921	205,908	79,358	285,266	15.4	23,411	1,824	928	34.4	483	21.6	12,667	141	5,079,674	34,511,292
1920	114,952	185,961	300,913	3.3	1,775	958	36.1	547	33.2	15,192	141	5,360,687	141	36,610,519	
Phil. & Reading.....	1921	23,583	18,677	42,260	12.9	2,068	1,751	810	31.6	378	22.7	10,828	169	1,082,828	6,839,666
1920	8,272	31,734	40,006	4.8	1,726	927	38.7	578	22.7	20,652	169	527,373	169	2,463,532	
<b>Pocahontas Region:</b>															
Chesapeake & Ohio.....	1921	36,264	13,185	49,449	11.0	2,315	1,263	415	625	25.7	12,136	131	445,453	2,508,873	
1920	19,886	29,774	49,660	10.4	1,735	1,023	41.5	825	34.9	14,882	131	445,453	131	2,508,873	
Norfolk & Western.....	1921	29,955	6,807	36,762	9.0	611	2,139	1,175	40.9	367	32.9	13,594	171	41,888	2,663,415
1920	16,690	20,287	36,977	6.0	2,133	1,191	43.4	386	36.3	16,651	171	40,728	171	2,727,059	
<b>Southern Region:</b>															
Atlantic Coast Line.....	1921	20,882	9,369	30,251	19.3	1,156	454	19.9	278	70.8	1,688	144	703,575	4,499,438	
1920	8,697	16,845	25,542	11.2	1,137	488	22.3	372	24.2	1,942	144	758,038	144	4,924,130	
Central of Georgia.....	1921	3,930	3,714	7,644	14.1	1,114	502	21.9	475	29.1	1,901	149	308,462	1,507,993	
1920	1,525	6,210	7,735	5.5	1,058	502	26.2	348	30.4	2,214	149	300,941	149	1,518,575	
I. C. (Inc. V. & M. V.).....	1921	37,570	25,541	63,111	8.6	1,986	1,735	796	28.3	738	40.4	7,567	140	1,439,476	8,321,313
1920	14,268	48,900	63,168	4.5	1,637	784	31.4	474	36.6	8,497	140	1,439,476	140	8,321,313	
Louisville & Nashville.....	1921	37,535	16,823	54,358	24.7	87	1,441	551	30.9	544	28.2	5,887	165	935,740	5,463,105
1920	16,999	29,104	45,203	13.4	68	1,085	534	31.3	621	31.3	5,590	165	928,694	5,526,784	
Seaboard Air Line.....	1921	11,610	8,900	20,510	27.6	1,078	453	20.6	307	20.1	7,782	191	557,343	3,344,635	
1920	5,471	13,671	19,142	11.3	1,047	437	23.6	424	24.3	7,448	191	557,343	191	3,344,635	
Southern Ry.....	1921	35,848	24,128	59,976	11.6	840	1,156	490	21.6	362	23.8	3,125	204	1,385,878	7,014,612
1920	16,515	43,501	60,016	3.6	1,147	517	24.8	425	24.8	3,676	204	1,490,504	204	9,420,062	
<b>Northwestern Region:</b>															
C. & N. W.....	1921	43,477	29,550	73,027	7.9	1,297	551	25.2	435	27.5	3,794	170	1,641,238	10,020,373	
1920	30,602	50,980	81,582	7.6	1,285	341	24.6	424	26.2	4,151	170	1,712,587	170	10,582,975	
C. M. & St. P.....	1921	46,499	29,411	75,910	16.9	1,423	641	25.7	479	99.3	3,310	153	1,520,943	9,475,908	
1920	23,068	43,841	66,909	7.2	1,398	653	26.2	594	34.2	3,747	153	1,422,420	153	9,466,765	
C. St. P., M. & O.....	1921	3,630	1,644	5,274	11.4	1,068	412	21.6	344	31.5	1,819	159	307,518	1,963,913	
1920	2,857	10,408	13,265	11.0	1,065	394	24.4	344	23.8	3,338	159	322,210	159	1,977,311	
Great Northern.....	1921	42,066	11,185	53,251	10.0	1,72	746	25.8	582	35.7	3,796	154	990,699	5,924,685	
1920	27,002	22,652	49,654	8.4	1,691	826	29.0	666	35.3	4,04					

## Railway Returns for October

The Interstate Commerce Commission's monthly summary of railway revenues and expenses for October and 10 months of 1921 is as follows:

fees the employees are entitled to receive all necessary medical and surgical attention at their residences, at surgeons' offices or at the hospital, together with hospital care, nursing and maintenance, medicine, surgical dressings, artificial limbs and appliances, in fact everything in the way of attention or care that enters

Item No.	Item	October		Ten Months	
		1921	1920	1921	1920
1	Average number of miles operated .....	234,960.48	234,666.79	234,833.35	234,269.58
<b>Revenues:</b>					
2	Freight .....	\$400,709,558	\$480,375,264	\$3,287,836,029	\$3,500,209,916
3	Passenger .....	88,844,414	113,902,023	982,436,863	1,065,809,801
4	Mail .....	7,558,369	8,220,583	78,557,350	133,766,495
5	Express .....	12,182,364	7,605,951	82,693,231	123,459,503
6	All other transportation .....	15,833,055	16,975,198	136,656,441	129,320,273
7	Incidental .....	9,975,097	14,285,179	99,573,801	125,811,889
8	Joint facility—Cr. ....	592,304	695,566	6,351,460	6,419,120
9	Joint facility—Dr. ....	195,149	233,056	1,453,811	1,977,310
10	Railway operating revenues .....	535,296,042	641,827,108	4,672,651,364	5,082,819,687
<b>Expenses:</b>					
11	Maintenance of way and structures .....	72,276,148	90,642,115	651,551,597	878,074,290
12	Maintenance of equipment .....	112,230,543	140,340,662	1,057,398,639	1,304,145,101
13	Traffic .....	6,896,372	6,794,179	70,412,827	59,443,500
14	Transportation .....	189,095,352	268,541,043	1,923,833,896	2,371,492,383
15	Miscellaneous operations .....	3,935,657	5,589,727	41,537,382	51,781,142
16	General .....	13,255,014	15,193,051	140,508,217	142,530,890
17	Transportation for investment—Cr. ....	486,030	557,173	4,914,306	4,040,348
18	Railway operating expenses .....	397,203,056	526,543,604	3,880,328,252	4,803,426,958
19	Net revenue from railway operations .....	138,092,986	115,283,504	792,323,112	279,392,729
20	Railway tax accruals .....	25,775,267	22,991,572	235,353,454	229,641,294
21	Uncollectible railway revenues .....	186,657	57,727	1,087,629	891,127
22	Railway operating income .....	112,131,062	92,234,205	555,882,029	48,860,308
23	Equipment rents—Dr. balance .....	5,631,811	3,827,951	45,004,353	27,197,580
24	Joint facility rent Dr. balance .....	1,045,891	1,765,231	14,022,153	15,657,766
25	Net railway operating income .....	105,453,360	86,641,023	496,855,523	6,004,962
26	Ratio of expenses to revenues (per cent) .....	74.20	82.04	83.04	94.58

<sup>1</sup> Does not include Boston & Albany, the revenues and expenses of which are included in New York Central report.

<sup>2</sup> Includes \$2,662,719, sleeping and parlor car surcharge.

<sup>3</sup> Includes \$2,338,548, sleeping and parlor car surcharge.

<sup>4</sup> Includes \$27,357,169, sleeping and parlor car surcharge.

<sup>5</sup> Includes \$5,021,812, sleeping and parlor car surcharge.

Note.—Excludes Detroit, Toledo & Ironton, report not having been filed at date of compilation.

## Markham Asks Employees to

### Repudiate Labor Propagandists

C. H. Markham, president of the Illinois Central, in an open letter, addressed to the employees of that road, asks for a show-down on charges made against the railroads by representatives of railroad employees.

He asks that either the employees back these accusations or repudiate them, and adds that if they know of any irregularities or mismanagement on the Illinois Central it is their duty to bring them to his attention.

The letter contains the names, dates and a resume of charges made by labor representatives such as Frank J. Warne, W. Jett Lauck and Glen E. Flumb. Mr. Markham says: "I cannot believe that these men, calling themselves your spokesmen, reflect the true sentiment of the men of the Illinois Central System, who have worked with the management so faithfully and wholeheartedly in building up a railway system which we pride ourselves in believing is one of the greatest railway systems in the world.

But, frankly, I have been disappointed that these men have been permitted to continue to pour out unchecked torrents of false accusations without even a word of public protest from the men whom they claim to represent and whose money makes their activities possible."

## The Southern Pacific's Hospitals

The first hospital building exclusively devoted to the care of railroad employees was built on the Central Pacific in 1867 and this road, now the Southern Pacific, operates through its hospital department today, a general hospital in San Francisco, Cal., and 14 emergency hospitals located in six cities. The work of the department is in a large measure sustained through the collection of hospital dues from officers and employees of the company. Employees receiving \$85 a month pay 50 cents monthly; those receiving over \$85 and under \$125 pay 65 cents monthly and those receiving \$125 or over pay 75 cents a month. For these

into the bill of expense when misfortune in the way of sickness or accident befalls them.

THREE MEN WERE KILLED and one injured by the explosion of the boiler of a freight locomotive on the Atchison, Topeka & Santa Fe at Carrolton, Mo., on December 16.

THE ON-TIME ARRIVAL record of all passenger trains on the Illinois Central for the first 10 months in 1921, averaged 98.6 per cent, as against 95.5 for the 12 months of 1920.

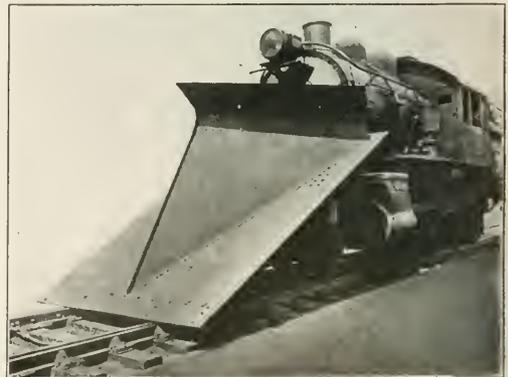


Photo from Kadel & Herbert

Getting Ready for Winter on the Philadelphia & Reading

### Gasolene Motor Car of the Northern Pacific

A specially designed gasolene rail car has recently made several trips on the Northern Pacific. This car consists of the International Motor Company's Mack truck chassis mounted on steel flanged wheels so that it can be operated on standard railroad track. The body of the car has accommodations for 17 passengers and a baggage compartment. The trial trips were made between St. Paul and White Bear, a distance of about 12 miles, over a line which includes a steep and winding grade almost two miles long. Twenty-three passengers were carried on the first trip and the car quickly climbed the steep grade. On a second trip a few days later



Group of Railroad Officers at Trial of Gasolene Driven Passenger Car

the distance was covered in 29½ minutes, whereas the schedule time of fast passenger trains between these points is 25 minutes.

The Northern Pacific is now operating the Mack rail car in regular service on a branch line and expects soon to install more equipment of the same kind, as it has been found that the costs are much lower than those for steam operated equipment. It is reported that the Great Northern is also planning to install the gas-propelled rail cars on various branch lines.

### New Interchange Rules, Loading Rules and Tank Car Specifications

The reports of the Arbitration Committee and the Committee on Prices for Labor and Materials, as printed in Circulars Nos. D, V, 210 and 205, have been approved by the General Committee of the Mechanical Division and by the board of directors of the American Railway Association, with the exception of recommended changes in Rules 32, 43 and 70. The revised Rules of Interchange, effective January 1, 1922, are now ready for distribution. Particular attention is called to the abrogation of Section D of Interchange Rule 112, which is retroactive to cover all unsettled cases under the 1920 Code of Rules.

The committee has also rendered decisions in Arbitration Cases 1184 and 1214, inclusive, which decisions have been ordered to be printed and issued to the members as Circular No. D, V, 221.

The recommendations contained in the report of the Committee on Loading Rules, issued in Circular No. D, V, 209, have been approved by letter ballot of the members and by the American Railway Association and have been prepared in the form of a supplement to the rules governing the loading of lumber, logs, stone, etc., and loading and carrying structural materials, plates, rails, girders, etc., effective January 1, 1922.

The recommendations contained in the report of the Committee on Tank Cars, issued in Circular No. D, V, 207, have been approved by letter ballot of the members and by the American Railway Association and have been prepared in the form of a supplement to the tank car specifications, effective January 1, 1922.

## Traffic News

The Traffic Club of Akron, Ohio, held its first annual banquet on December 12. S. J. Witt, general freight and passenger agent of the Akron, Canton & Youngstown, was the principal speaker.

The Traffic Study Club of Akron, Ohio, held its first annual dinner on Monday evening, December 12 with 50 members and guests present and John Thnot, president, presiding. S. J. Witt, general freight and passenger agent of the Akron, Canton & Youngstown, spoke on the procedure of handling rate adjustments before various committees of the railroads.

R. C. Fullbright, of Houston, Tex., was the principal speaker at the first annual dinner of the Dallas Traffic Club on December 10. His subject was "Shippers' Interest in Railroad Problems." Other speakers were George T. Atkins; I. S. McConnell, president of the Fort Worth Traffic Club; W. E. Edgar, president of the Waco Traffic Club; and Tom Finty, Jr. Officers were elected as follows: President, Paul Junkin; vice-presidents, A. C. Valentine, Julian Nance and Elbert Blair; secretary-treasurer, H. C. Eargle; board of governors, J. B. Jones, Frank Osborne, Grant S. Maxwell, P. A. Richardson, Seth Tate and Don Allen.

At the annual meeting of the Transportation Club of Tulsa, Okla., on December 12, the following officers were elected: President, A. C. Holmes, traffic manager, Empire Refineries, Inc.; first vice-president, A. C. Wilson, city freight agent, St. Louis-San Francisco; second vice-president, E. C. Kitching, division freight agent, Atchison, Topeka & Santa Fe; secretary, J. W. Klein, general freight agent, Midland Valley; treasurer, J. M. C. Usher, treasurer, Price Sand Company; directors, H. M. Moon, traffic manager, Pure Oil Company; L. M. Klein and I. G. Fidler, division freight agent, St. Louis-San Francisco.

"Industrial Opportunities in New Jersey" is a booklet which has been issued by the Department of Conservation and Development of that State. New Jersey's yearly output of manufactured products is valued at one billion four hundred million. Outside the highly developed industrial areas, centering in Jersey City, Newark, Camden and Trenton, there are many towns which offer cheap land, reasonable taxes and agreeable living conditions. A list of cities and towns of over 500 inhabitants shows that there are 357 such communities in the State. Copies of the booklet may be had from L. G. Gillam, chief of land registry, State House, Trenton.

### Coal Production

The total output of bituminous coal during the week of December 10 is estimated by the Geological Survey at 7,235,000 net tons as against 7,104,000 tons in the week preceding. The bulletin says that although soft coal production is normally at a maximum at this season, it has in fact dropped back to the level of last April, normally the lowest month of the year. A year ago production was 12,813,000 tons. The bulletin calls attention to the fact that the movement of coal up the lakes has now virtually ceased and also that during October with a railroad strike in prospect consumers hastened to increase their stocks.

### Commission Issues Special Permission for 10 Per Cent Reduction in Agricultural Rates

The Inter-State Commerce Commission has issued a special permission order, No. 56,150, cancelling the previous order issued on the same subject, revising the authority it had issued to the railroads to put into effect on short notice and by simplified tariffs the proposed 10 per cent reduction in freight rates on agricultural products for six months. The primary purpose of the new order is to include the greatly enlarged list of commodities proposed by the railroads. The commission on Decem-

ber 16 denied the petition of the railroads for a rehearing of the case in which it ordered general reductions of rates on grain, grain products and hay in the western district.

The Senate on December 15 adopted a resolution offered by Senator Pittman of Nevada, directing the Interstate Commerce Commission to inquire into the organization, management and control of the Transcontinental Freight Bureau and report for what purpose it was organized, its duties and activities, the carriers it represents and the influence it exercises in the publication of rates, and whether its operation in any manner stifles competition.

### Conference With Shippers at Washington

An improvement in the relations between the railroads and certain large organizations or groups of shippers is expected to result from a meeting held in Washington on December 9, attended by a number of railway executives and representatives of various industries at which numerous questions pertaining to pending issues in the transportation field were thoroughly discussed. Following this meeting a transportation committee for agriculture and industry was appointed, an executive committee of seven to represent the larger committee, to deal with the roads in seeking to bring about better economic conditions in the field of transportation. The executive committee consists of J. R. Howard, president of the American Farm Bureau Federation; S. J. Lowell, master of the National Grange; J. A. Campbell, president of the Youngstown Sheet & Tube Company; Ernest T. Trigg, president of the National Federation of Construction Industries; Charles Hill, of the Southern Fine Sales Corporation; J. D. A. Morrow, vice-president of the National Coal Association; and F. R. Todd, vice-president of Deere & Co., James A. Emery, counsel for the National Association of Manufacturers, was appointed counsel for the committee. In a statement regarding the conference Mr. Emery said:

"The railroad representatives evidenced their intention to give the benefit of further reduction in operating expenses concurrent with cost adjustments. The committee hopes to reach sound economic conclusions not only upon the rate question, but upon pending issues relating to the control of our national system of transportation."

### Joint Commission on Agricultural Inquiry

The work of the Transportation Division of the Congressional Joint Commission of Agricultural Inquiry has developed to a degree that an advisory committee, representative of the three great economic branches of commerce has been appointed, and Chairman Anderson has announced the following personnel of this advisory committee, which is to meet in Washington when the Transportation Division has compiled the facts:

*Representing Agriculture.*—J. R. Howard, president, American Farm Bureau Federation; Gray Silver, Washington representative, American Farm Bureau Federation; S. J. Lowell, master, National Grange; Milo D. Campbell, president, National Milk Producers' Association, and A. U. Chaney, general manager, American Cranberry Exchange.

*Representing Industry.*—F. R. Todd, vice-president, Deere & Co.; J. A. Emery, general counsel, National Association of Manufacturers; Thomas A. McCann, vice-president-general manager, Shevlin, Carpenter, Clarke & Co.; A. J. Campbell, president, Youngstown Sheet & Tube Company.

*Representing Transportation.*—Daniel Willard, president, Baltimore & Ohio; Howard Elliott, chairman, Northern Pacific; L. F. Loree, president, Delaware & Hudson; C. H. Markham, president, Illinois Central; H. M. Adams, vice-president, Union Pacific, and T. C. Powell, vice-president, Erie.

It is proposed that the transportation question shall be considered under six main divisions, as follows: (1) physical property; (2) transportation service; (3) economic relationship to agriculture and industry; (4) finance; (5) administration, and (6) governmental regulation. The work of the committees representing the railroads and producers carried on during the last six months will be reviewed.

The joint commission has submitted a preliminary report to Congress saying it believes an immediate reduction in freight rates on agricultural products is absolutely necessary to a renewal of normal agricultural operations and pros-

perity; and it recommends prompt action by the railroads and constituted public authorities to that end. It is added, however, that since this recommendation was agreed to, certain reductions in freight rates upon agricultural products have been made.

### Railroads Asked to Reduce Export Coal Rates

Railroads were requested to make a reduction of \$1 a ton in the freight rates on coal to Atlantic ports for export in order to allow American producers to meet increased competition from English coal, at a conference held at the office of the Interstate Commerce Commission on December 14 for the purpose of discussing ways to meet the British competition. The conference was held under the auspices of Chairman McChord of the Interstate Commerce Commission, Secretary Hoover of the Department of Commerce and Commissioner Thompson of the Shipping Board. It was stated at the conference that British coal is coming into American harbors and being sold at prices below those which American operators can meet under present freight rates and also that British coal is depriving American coal of a market in the Mediterranean and in the West Indies islands. The request for a rate reduction was made by W. L. Andrews, vice-president of the Consolidation Coal Company, speaking on behalf of the mine operators. The railroad traffic executives present had previously declined to make such a reduction on the ground it was too heavy a sacrifice to ask the railroads to make and they said they were not in a position to make definite answers at the conference on the ground that they had recommended against it to their superior officers. Secretary Hoover said the question to be solved was what Americans can do to preserve the markets they had before the war. He said the British had made offers in the West Indies which were lower than can be made by the Americans even with a reduction of \$1 in the freight rates. He suggested that if the railroads, the shippers and the mine operators all join in making the sacrifice, it would be possible to retain some of the business. Commissioner Thompson said the Shipping Board would make charters to the mine operators barely high enough to meet the cost of operation as soon as they showed they were ready to go into the business of competing with the British. A committee to consider the whole matter was arranged, consisting of W. V. Hardie, director of traffic of the Interstate Commerce Commission; J. B. Small, vice-president of the Emergency Fleet Corporation; F. R. Wadleigh, of the Department of Commerce; F. M. Whitaker, vice-president of the Chesapeake & Ohio, and T. F. Farrell, representing coal operators. A report was to be made at a meeting of the committee on Thursday.

G. J. CHURCHWARD, chief mechanical engineer of the Great Western Railway (England), will retire at the end of the present year, and C. B. Collett, the deputy chief mechanical engineer, will succeed him.



Copyright by Kadel & Herbert

Railway Station in Leipsig, Germany, Destroyed by Fire

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until April 17 the operation of certain schedules contained in W. P. Emerson's and J. H. Glenn's tariffs which propose reduced rates on sugar from Southeastern and Gulf Ports to St. Louis, Mo., and related points.

### State Commissions

The Public Service Commission of West Virginia has notified the railroads of the state to appear on January 17 to show cause why there should not be a reduction in the freight rates on building materials, road making materials, fertilizers and certain other articles.

The Railroad Commission of the State of California on December 14, authorized a reduction of 10 per cent in the freight rates on the principal farm products of the State. The authorization follows the order of the Interstate Commerce Commission requiring the carriers to make a reduction of 12½ per cent in interstate rates on hay and grain products only. In making the general 10 per cent reduction the California Commission held that that would be more beneficial to the farmers of that State as a whole than a slightly greater reduction on grain and hay alone.

The Louisiana Public Service Commission, holding that the present through train service on the Kansas City Southern's line between Shreveport, La., and Lake Charles, is inadequate for the accommodation of local travel, has ordered the railroad to operate an additional daily passenger train making all local stops between the above mentioned points. This commission has denied the application of the St. Louis Southwestern to discontinue its motor car service between Shreveport, La., and Lewisville, Ark., believing that its discontinuance would cause grave inconvenience and hardship on the communities served by this line.

### Personnel of Commissions

Hugh White, heretofore assistant district attorney-general of the state, has been appointed secretary of the Alabama Public Service Commission, in place of Atticus Mullin, resigned.

Orville F. Berry, former chairman of the Illinois Railroad & Warehouse Commission, died suddenly of heart disease in a private hospital at Jacksonville, Ill., on December 19. Mr. Berry was sixty-nine years of age and was a well-known political leader. He was appointed chairman of the Commission in 1909, which position he held for four years.

### Interstate Commerce Commissioners Reappointed

The President on December 19 sent to the Senate the nominations of Henry C. Hall and Clyde B. Aitchison for re-appointment as members of the Interstate Commerce Commission for terms of seven years. President Harding has now appointed seven of the eleven members of the commission.

## Court News

### Consignee's Receipt Conclusive Evidence of Delivery

A carload of goods was unloaded by the railroad at destination and the goods were placed in its warehouse. Next day another car to the same consignee was placed for unloading and a portion of the shipment removed by the consignee, who signed receipts for both cars. The following day the warehouse and the freight car and their contents were destroyed by fire. The Colorado Supreme Court holds that the signing of the receipts was a delivery of the goods, re-

lieving the railroad from liability for the loss.—D. & K. G. v. Johnson (Colo.), 193 Pac. 729.

### Tariff Provisions As to Diversion Cannot Be Waived

The New York Appellate Division, Fourth Department, holds that the ordering of a car by a shipper, the sealing of it by the railroad's agent, the issuing of a waybill and shipping directions, the fixing of freight at a lower rate, and its payment by the shipper, brings a shipment within (interstate) tariffs and classifications, whether an actual bill of lading was made out by the railroad's agent or not. The shipping contract is closed, and if the shipper desires to divert the shipment he must do it according to the tariff regulations, which provided that a reconsignment or diversion could only be made if requested in writing.—Porter v. Lehigh Valley, 184 N. Y. Supp. 870.

### Rental of Materials for Spur Recoverable

#### After Removal of Connection Track

A railroad company contracted to lease rail and materials to a mining company for its spur track at an agreed rental of a percentage of the market value, with right to terminate the rental by acquiring the materials within a certain time. The railroad also agreed in the same contract to furnish the use of a connection track at the cost of maintenance. The Virginia Supreme Court of Appeals holds that the railroad's removal of the connection track on lessee's discontinuance of the spur did not defeat recovery for the rails and materials, the covenants in the contract being independent.—Miller v. Southern (Va.), 108 S. E. 838.

### Burden of Proof in Derailment Cases

In a passenger's action for injuries in a derailment, the Virginia Supreme Court of Appeals holds that an instruction that the passenger need not point out any specific act of negligence, and that there was a presumption the accident was caused by the railroad's negligence, which presumption might be rebutted by evidence that the railroad exercised the highest degree of care to prevent the accident, and inspected the cars by competent persons to see that they were in good order, was erroneous, where the uncontradicted testimony was that immediately after the derailment a careful examination was made of the wheels and every part of the running gear which could have contributed to the derailment, and they were found in excellent condition. A prior inspection, therefore, would have disclosed nothing for the railroad to remedy, and it was error to tell the jury that if it was not made, they must find for the plaintiff.

The court holds the proper application of the maxim *res ipsa loquitur* to derailment cases to be that if it is just as probable that the derailment is due to some other cause as to the defendant's negligence, there can be no recovery.—Hines v. Beard (Va.), 107 S. E. 717.



On the D. L. & W. West of Scranton, Pa.

## Foreign Railway News

### New Mechanical Chief on the Great Western of England

LONDON.

G. J. Churchward, chief mechanical engineer of the Great Western Railway (England), will retire at the end of the present year and C. B. Collett, the deputy chief mechanical engineer, will succeed him.

### English Road Uses "Shopping Tickets" to Foster Suburban Business

LONDON.

The Great Eastern, the South Eastern & Chatham and the London Brighton & South Coast have introduced "shopping tickets," to be issued from certain stations to London on any day of the week except Saturday and Sunday between 10.30 a. m. and 4.30 p. m., and available to return the same day before 5 p. m. or after 6 p. m., to encourage travel on suburban trains in non-rush hours.

### Railway Standard for China

LONDON.

The Bulletin of the Federation of British Industries states that the Chinese Standardization Commission, which was appointed to agree and fix permanent standards for rolling stock and materials throughout the whole government railway system of China, has now agreed to the standards to be adopted for rails and fastenings; sleepers or ties, both ordinary and for bridges; cuts and fills; formation and ballasting; tunnels; clearance and minimum structure gages. Specifications for bridge steel were also accepted.

As regards rolling stock, standard designs were adopted for heavy locomotives the Pacific type for passenger and the "Mikado" for freight service—with certain alterations to conform to the views of the locomotive superintendents of the various Chinese government railways. Agreement was also reached on standard designs for wheels, axles, trucks, bodies, frames, couplers and so forth for passenger and freight cars, the latter of a capacity of 40-ton, 30-ton and 20-ton and of both steel and wood construction.

### Argentine and Chilean Transandine to Combine

The Chilean and Argentine sections of the Transandine Railway, from Los Andes on the western slope of the Cordilleras, by way of Caracoles on the Chilean frontier, to Mendoza on the eastern or Argentine side, will be consolidated under a single management, according to Commerce Reports. This project, presented to the Argentine government by a delegation from Chile in 1919, was approved on the part of Argentina and has recently been sanctioned by the Chilean government.

The Chilean Transandine Railway has never been considered a paying investment, and its financial condition has been such as to discourage the investment of further capital. Prior to the passage of the new law by the Chilean government in September, 1921, bonds were outstanding to the amount of some \$7,000,000, of which the principal was guaranteed by a mortgage on the railroad property, and interest at the rate of 5 per cent was guaranteed by the Chilean government for a period of 20 years. The new law provides for replacing these bonds with Chilean government bonds to the value of some \$4,000,000, with guaranteed interest at the rate of 8 per cent. The state will receive 70 per cent of the stock of the company and will take an active part in the administration of the road. The Chilean Transandine proposes to issue new bonds to the extent of about \$2,500,000, to be used in making the necessary improvements in connection with the consolidation.

A marked improvement in traffic conditions and facilities

may be looked for as a result of this important step. In passing over the Andes the railway crosses a rough and rugged country. In the winter months the heavy snow and avalanches make continuous traffic impossible, notwithstanding the protection offered by numerous avalanche sheds along the line. The right of way is blockaded for months at a time by snows; in 1914 traffic was interrupted for 190 days, in 1915 for 131 days, and in 1919 for 156 days.

The financial arrangements made by the two governments will permit of needed improvements which it is hoped will result in a steady and uninterrupted service. Tunnels are to be lengthened and more adequate protection against avalanches constructed; new and modern rolling stock and equipment will be purchased, the railway shops will be modernized, and electrification of the line will be undertaken section by section.

The free interchange of traffic between the two nations, heretofore impeded by protective tariffs, will be encouraged and fostered by the establishment of new and liberal tariff regulations which will permit the natural flow of international trade between the territories served by the lines. All material used for construction, as well as rolling stock and equipment imported into Chile, will be exempt from custom duties. The rates on traffic will be fixed by agreement between the Chilean and Argentine governments.

### British Railwaymen and the Eight-Hour Day

LONDON.

The locomotive branches of the National Union of Railwaymen have been raising the question of the eight-hour day in connection with enginemen and firemen and resolutions have been passed by branches of the Associated Society of Locomotive Engineers and Firemen refusing to work systematic overtime. The character of the work of enginemen, it seems to be agreed, may make it necessary to work occasionally for a longer period than eight hours, and there is apparently no objection to overtime arising from the difficulty of arranging duties so that the eight-hour day shall not be exceeded. The object of the action which is now being taken by the unions is to abolish systematic overtime.

C. T. Cramp, industrial secretary of the National Union of Railwaymen, speaking at a meeting, said that there was one thing on which they would not give way—the principle of the eight-hour day. He would also say candidly and fearlessly that the eight-hour day meant eight hours of honest work per day. Let them, as railwaymen, endeavor by co-operation to make the railways so remunerative that the companies could afford to give the best of working conditions.

THE CANADIAN PACIFIC, for the first time, is planning to use New York as a port of departure for its passenger steamers. During the war twelve of the company's steamers carried troops and supplies from New York. The "Empress of Scotland," 25,000 tons, leaves on February 4, and the "Empress of France," 18,500 tons, on February 11, both on Mediterranean cruises.



Photo by Underwood & Underwood

Train Crew—All Veterans of the War—of Marshal Foch's  
Special Train on the C. M. & St. P.

## Equipment and Supplies

### Locomotives

THE UNION PACIFIC has ordered 1 Mountain type locomotive from the American Locomotive Company.

THE CENTRAL OF NEW JERSEY, reported in the *Railway Age* of December 17, as asking for prices on 25 Mikado type locomotives, has ordered these locomotives from the American Locomotive Company.

### Freight Cars

THE RUTLAND is inquiring for 100 steel underframes or center constructions for flat cars.

THE STANDARD OIL COMPANY, New York, is inquiring for 2 low side gondola or flat cars of 50-ton capacity.

THE LAKE CHAMPLAIN & MORIAH is inquiring for from 6 to 10 center dump, hopper cars, of 50-ton capacity.

THE UNION PACIFIC has awarded a contract for the repairs on 500 freight cars to the Pacific Car & Foundry Company, Seattle, Wash.

THE GRAND TRUNK, reported in the *Railway Age* of December 17, as inquiring for 250 refrigerator cars, is also inquiring for 400 refrigerator cars additional.

THE NEW YORK STEEL EXCHANGE, 233 Broadway, New York City, is inquiring for a number of tank cars for export, to include cars of 1 meter, 1.35 meter and 1.676 meter gage.

### Passenger Cars

THE CHICAGO GREAT WESTERN is inquiring for one combination observation, parlor and buffet car.

THE UNION PACIFIC, inquiry for cars for passenger service noted in the *Railway Age* of December 10, includes twenty-five 69-ft. baggage cars, 20 all-steel coaches and 18 all-steel observation cars.

THE SPOKANE, PORTLAND & SEATTLE has purchased one Mack A C. rail car, a combination gasoline passenger and baggage coach, from the International Motor Company, 25 Broadway, New York.

### Iron and Steel

THE KANSAS CITY TERMINAL is in the market for 1,000 tons of 90-lb. rails and 3,000 angle bars.

THE ERIE will let contracts in the near future for 37,500 tons of rail for its 1922 requirements.

THE GRAND TRUNK ordered recently 15,000 tons of rail from the Dominion Iron & Steel Company, and 14,000 tons from the Algoma Steel Corporation.

THE KANSAS, OKLAHOMA & GULF has awarded a contract for 473 tons of steel to be used for a bridge in Muskogee County, Oklahoma, to the Pan-American Bridge Company, Newcastle, Indiana.

THE CHICAGO, BURLINGTON & QUINCY is negotiating with the Illinois Steel company and the Colorado Fuel & Iron Company for approximately 25,000 tons of rails for delivery during the year 1922.

THE ST. LOUIS SOUTHWESTERN, reported in the *Railway Age* of October 22, as inquiring for 10,000 tons of rails for 1922 delivery, has ordered this tonnage from the Illinois Steel Company.

## Machinery and Tools

THE ERIE has bought a 25-ton gantry crane from the Niles-Bement-Pond Company.

THE NEW YORK CENTRAL has bought a 53-in. boring mill from the Niles-Bement-Pond Company.

THE DELAWARE & HUDSON is inquiring for a 22 in. engine lathe, also a 30-in. engine lathe, 1, 16-in. portable lathe, 1 00-in. planer and 1, 8-spindle automatic valve grinder.

THE SEABOARD AIR LINE is inquiring for machine shop tools as follows: 2, 30-in. engine lathes, also a 20-in. engine lathe; 1, portable crank pin truing machine; 1, 36-in. draw-cut shaper; 1, 3,000-lb. steam hammer; 1, 42-in. car wheel borer; 1, 48-in., 400-ton double end wheel press; 1, 2 in. by 26 in. turret lathe; 1, 36-in. vertical turret lathe; 1, 28-48 in. gap lathe, and 1 turret lathe arranged for bar stock.

THE KANSAS CITY SOUTHERN will make extensions to the power plant at its Pittsburg, Kan., shops, including the installation of a 500 k. w. generator unit, 3,000 cu. ft. air compressor, 350 h. p. boiler and the equipping of new and existing boilers with superheaters, soot blowers and powdered coal preparing, handling and burning equipment, all of which work is being done under the supervision of the company's consulting engineer, John E. Muhlfield, New York City.

### Miscellaneous

THE CHICAGO, ROCK ISLAND & PACIFIC has closed bids on 2,500,000 ft. of lumber for various purposes.

THE JAPANESE GOVERNMENT RAILWAYS are inquiring through a New York Japanese export house for 6,500 axles, for railway freight cars.

THE SOUTH MANCHURIAN RAILWAY, Korean Lines, is inquiring through New York export houses for various types of fittings for passenger cars.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, December 28, for its requirements until April 1, 1922, of gasoline, kerosene and all grades of oil.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for approximately 8,000 gal. of kerosene, 9,000 gal. of gasoline and 2,000 gal. of distillate, bids to be submitted on or before December 26, 1921.

THE ATCHISON, TOPEKA & SANTA FE, reported in the *Railway Age* of December 3, as receiving bids for three oil storage tanks, including pipe connection and unloading facilities at Argentine, Kansas, has awarded this contract to the Federal Engineering Company, Chicago.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, January 4, at Roanoke, Va., for 500 gross tons steel rail, 120 rods wire fencing, parts for electrical apparatus, 100 steel zees and its requirements from January 1 to June 30, 1922, of steel locomotive driving, truck and tender tires, and also steel springs.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for bolts and nuts of different sizes; also iron bars, billets, plates, shapes, steel sheets, locomotive tires, nails, wire and fencing wire for the period from January 1, 1922, to April 1, 1922, bids to be closed at noon January 3, 1922. This company is also inquiring for requirements of ship machinery oils for the period from January 1, 1922, to April 1, 1922, bids to be in before 12 o'clock noon of December 27, 1921.

### Signaling

THE GRAND TRUNK has awarded a contract for one 24-lever Saxby & Farmer mechanical interlocking machine and other materials for installation at Mack avenue, Detroit, Mich., to the General Railway Signal Company. The machine will have 18 working levers and 6 spare spaces and the installation will be made by railroad forces.

## Supply Trade News

The **Combustion Engineering Corporation**, New York, has opened a new branch office at 806 First National Bank building, Pittsburgh, Pa., in charge of W. C. Stripe, formerly manager of the Philadelphia office.

**Arthur P. Bowen** has been elected assistant to the vice-president of the **Ryan Car Company**, Chicago, and not to the office of vice-president, as was incorrectly reported in the *Railway Age* of December 3 (page 1120) and December 17 (page 1231).

**H. O. Garman**, who was for a period of 14 years chief engineer of the Public Service Commission and the Railroad Commission of the State of Indiana, has entered private practice in consulting engineering and the management and operation of public utilities, with headquarters at Indianapolis, Indiana.

The merger of the **Haskell & Barker Car Company, Inc.**, with the **Pullman Company**, was approved by the stockholders of the Pullman Company at Chicago, on December 20. The directors have been increased from nine to twelve by the election of Edward F. Carry, president of the Haskell & Barker Car Company; John R. Morrow, and Arthur O. Choate. The plan which has been approved appeared in the *Railway Age* of November 26, page 1068.

The **Richardson-Phenix Company**, Milwaukee, Wis., and the **S. F. Bowser & Co., Inc.**, Fort Wayne, Ind., have consolidated and will henceforth be known as the **S. F. Bowser & Co., Inc.**, with headquarters at Fort Wayne. The filtration and lubrication appliance business of both companies will be conducted by the Richardson-Phenix division, S. F. Bowser & Co., Inc. **J. William Peterson**, president of the Richardson-Phenix Company, will assume the office of vice-president of the S. F. Bowser & Co., Inc., and will be in charge of the Richardson-Phenix division.

**John W. Duntley**, one of the founders of the **Chicago Pneumatic Tool Company** and from 1895 to 1909 president of that concern, was killed by an automobile truck at Chicago on December 15. Mr. Duntley was born at Wyandotte, Mich., on August 16, 1863, and entered business as a foundryman in 1878. From 1884 to 1895 he was engaged in the railway supply business and upon the latter date he organized the Chicago Pneumatic Tool Company. From this date to 1909 he was engaged in expanding this organization, enlarging the scope of the business at the same time by absorption and amalgamation both in this country and abroad. In 1909 he organized and became president of the Duntley Manufacturing Company, manufacturers of the pneumatic cleaners. Of late years he devoted his energy to the Duntley Automobile Accessory Company, Chicago, of which he was president. He was also president of the Libertad Mining & Smelting Company. In 1900, he was decorated with the cross of the Legion of Honor by the president of France.

## Obituary

**Clarence E. Rood**, sales manager of the Gould Coupler Company, New York, died on December 11 after a brief illness, at his home at the Algonquin Hotel, New York City. Mr. Rood was born in Erie, Pa., and early in his career was general manager of the American Express Company in St. Louis, Mo. Later he went to Buffalo where for a time he was a member of Rood & Brown, car wheel builders. He subsequently owned and operated the Rood Malleable Iron Company, Lancaster, N. Y. About 12 years ago he entered the service of the Gould Coupler Company as a representative at New York and at the time of his death was sales manager of that company.

## Railway Construction

**CHICAGO, BURLINGTON & QUINCY.**—This company contemplates the construction of the first unit of a locomotive shop at Denver.

**CHICAGO, MILWAUKEE & GARY.**—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension between Aurora and Joliet, Ill., where the company now operates over the tracks of the Elgin, Joliet & Eastern.

**GREAT NORTHERN.**—This company contemplates the construction of a second main track between Lamona, Wash., and Bluestem, a distance of 22 miles.

**ILLINOIS CENTRAL.**—This company is receiving bids for the construction of a car shed at McComb, Miss. The same company is also receiving bids for the construction of a frame viaduct over its tracks at Fulton, Ky.

**LOUISVILLE & NASHVILLE.**—This company contemplates the construction of a reinforced concrete viaduct over its tracks on Lebanon avenue, Belleville, Ill. Plans for this work have been submitted to the city for approval.

**MISSOURI PACIFIC.**—This company contemplates the construction of a station at Harrisburg, Ark., and one at Hoxie. Plans for the work have been submitted to the Arkansas Railroad Commission.

**MISSOURI PACIFIC.**—This company has awarded a contract to Gillespie & Daly for the construction of a two-story interlocking and signal tower at Hiawatha, Kansas.

**MORGAN'S LOUISIANA & TEXAS.**—This company has been ordered by the Louisiana Public Service Commission to construct a station at Franklin, La. Plans are to be submitted to the commission for its approval within one year and the work must be commenced within sixty days thereafter.

**NASHVILLE, CHATTANOOGA & ST. LOUIS.**—This company contemplates the construction of an underpass at the intersection of the state highway and the company's tracks at White Bluff, Tenn.

**NEW ORLEANS, TEXAS & MEXICO.**—This company has been authorized by the Louisiana Public Service Commission to continue the construction of a station at Krotz Springs, La. Work had just been started on this station the latter part of November when citizens at Krotz Springs petitioned the commission to have the location of the station changed.

**TEXAS & PACIFIC.**—This company has been ordered by the Louisiana Public Service Commission to construct a station at Inna, La., plans of which must be submitted to the commission for its approval by February 11, 1922.

**UNION STATION, LOS ANGELES, CAL.**—The Atchison, Topeka & Santa Fe, the Southern Pacific, and the Los Angeles & Salt Lake, have been ordered by the Railroad Commission of California to erect a union station on the Plaza site, Los Angeles, Cal. This order is contained in a decision on the rehearing of the Los Angeles terminal case which, with certain modifications, reaffirmed the former ruling by that body. The commission also upheld its former ruling requiring the separation of grades by the construction of viaducts over crossings adjacent to the Los Angeles river at Aliso, Macy and East Seventh streets. In connection with the latter order, the city of Los Angeles will bear a share in the expense of the grade crossing elimination.

**WENATCHEE SOUTHERN.**—This company, which has been organized recently to construct a railroad from Wenatchee, Wash., to Kennewick, a distance of about 132 miles, has completed a survey and has purchased almost all the right of way necessary for the construction of the line. The road will follow the Columbia river connecting at Pasco, Wash., with the Northern Pacific and the Spokane, Portland & Seattle, and at Kennewick with the same roads, and the Oregon-Washington Railroad & Navigation. At Wenatchee it will connect with the Great Northern,

# Railway Financial News

**ATLANTA & ST. ANDREWS BAY.**—*Order to Abandon.*—After reaching the case in which this company was authorized to abandon a part of its line, the Interstate Commerce Commission has extended until further order the experimental period of abandonment provided for in the original order.

**BOSTON & MAINE.**—*Stock offer.*—An offer by a minority group of Boston & Maine stockholders to buy the shares of that company now held by the New York, New Haven & Hartford, was made at a hearing held by Attorney General Daugherty in Boston, Mass., on December 13. See New York, New Haven & Hartford below.

**BUFFALO, ROCHESTER & PITTSBURGH.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the sale of \$3,949,000 of consolidated mortgage 4½ per cent bonds at not less than 82½ per cent of par and accrued interest.

**CANADIAN PACIFIC.**—*Sells \$25,000,000 Stock.*—A banking syndicate, headed by the National City Company, New York, has purchased \$25,000,000 Canadian Pacific Railway Company 4 per cent coupon consolidated debenture stock, and is offering the new issue at 78, to yield 5.13 per cent. All previous issues of debenture stock have been placed in London.

See editorial comment in this issue.

**CAROLINA, CINCINNATI & OHIO.**—*Asks Authority to Pledge Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge with the Secretary of the Treasury as collateral security for a loan of \$6,000,000, which it had applied for, \$1,000,000 of its first mortgage 5 per cent 30-year gold bonds and \$6,000,000 of 5 per cent Elkhorn first mortgage gold notes. The company some time ago applied for authority to issue bonds for refunding purposes but later withdrew the application and substituted the application for a loan.

**CENTRAL OF GEORGIA.**—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

**CHESAPEAKE & OHIO.**—*Authorized to Lease Subsidiary.*—The Interstate Commerce Commission has issued an order approving the acquisition of control of the railroad of the Chesapeake & Ohio of Indiana by lease. The Chesapeake & Ohio was also authorized to assume obligation and liability as lessee in respect of \$7,711,000 of first mortgage gold bonds of the Chesapeake & Ohio of Indiana.

**CHICAGO & EASTERN ILLINOIS.**—*New Securities Ready.*—Kuhn, Loeb & Co., reorganization managers, have announced to holders of certificates of deposit, representing bonds of the various companies deposited under or subject to the plan and agreement of reorganization, that the general mortgage, 5 per cent gold bonds in denominations of \$1,000, \$500 and \$100, and preferred and common stock certificates of the new company, together with cash payments specified in the plan, will be ready for distribution on and after December 27, 1921.

The details of the reorganization plan were given in the *Railway Age* of April 8, 1921, page 913.

*To Pay Off Receiver's Certificates.* W. J. Jackson, receiver, has announced that he will pay in full at the Equitable Trust Company, New York, on and after December 23, the \$6,000,000 receiver's certificates issued under date of July 1, 1916.

**CISCO & NORTHEASTERN.**—*Asks a Loan.*—This company has applied to the Interstate Commerce Commission for a loan of \$300,000 for five years to retire existing obligations.

**CHICAGO & NORTH WESTERN.**—*Authorized to Procure Authentication of Bonds.*—The Interstate Commerce Commission has granted authority to this company to procure the authentication and delivery of \$375,000 of general mortgage gold bonds to be held in the Treasury until the further order of the commission. Action on a request for authority to issue bonds in 1922 and subsequent years was deferred, the commission saying that it

does not appear to be necessary at this time to grant the authority requested. The company was also authorized to procure the authentication and delivery of \$1,000,000 of general mortgage gold bonds of 1917 and \$3,000,000 of first and refunding mortgage gold bonds to be held in the Treasury until the further order of the commission.

**CHICAGO, BURLINGTON & QUINCY.**—*Asks Authority to Issue Bonds.*—This company has filed an application with the Interstate Commerce Commission for approval of a mortgage to the First National Bank and Frazier L. Ford, of New York and the issue of \$30,000,000 first and refunding mortgage bonds with interest not to exceed 5 per cent to be dated August 1, 1921, maturing August 1, 1971, for the purpose of providing funds for the company's estimated requirements for additions and betterments in 1922. This application was filed as a supplement to the company's application filed a year or so ago, on which the commission refused to authorize an issue of \$80,000,000 of bonds for dividend purposes, but granted the right to have considered on the same record an application to issue bonds for other purposes.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.**—*Asks Authority to Exchange Bonds.*—This company has applied to the Interstate Commerce Commission for authority to exchange \$3,493,000 of first and general mortgage 5 per cent gold bonds, series A, for an equal amount of series B bonds at 6 per cent, dated January 2, 1922, and maturing May 1, 1966.

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.**—*Verdict of Central Officers to Buy Stock.*—See New York Central.

**CUBA RAILROAD.**—*Bonds Sold.*—The National City Company, New York, has sold at 99½, to yield over 7½ per cent, \$4,000,000 first lien and refunding mortgage gold bonds, Series A, non-callable, dated December 1, 1921, due December 1, 1936.

**DELTA SOUTHERN.**—*Sold.*—This road, formerly operated as a branch of the Southern Railway, was sold in three sections at Greenville, Miss., on December 6. Bids were offered for the entire road. G. B. Kellogg bought the section between Richey and Percy for \$20,000; W. A. Swift and associates bid in the section between Itabena and Belzoni for \$50,000, and V. A. Denslow bought the Napanee branch for \$10,000.

**DETROIT, TOLEDO & IRONTON.**—*Earnings in September and October.*—The figures follow:

	September 1921	October 1921
Operating revenues	1921	1921
Freight	\$232,783	\$627,072
Passenger	113,172	114,412
Total (inc. misc.)	759,757	652,438
Operating expenses		
Maintenance of way and structures	161,425	145,314
Maintenance of equipment	142,897	61,889
Traffic	8,089	7,079
Transportation	237,336	277,970
General	22,537	22,349
Total	\$622,284	514,601
Operating ratio	75.3	78.9
Net from railway operations	187,472	137,934
Operating income	170,268	120,733
Net after rentals	46,749	15,133
Net after rentals, 10 months, 1921		\$87,596
Net after rentals, 10 months, 1920		det. 1,097,265

See also editorial in this issue entitled "Net Income of Ford's Railroad Steadily Declines."

**DULUTH, MISSAUBIE & NORTHERN.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of \$1,174,000 of general mortgage 5 per cent gold bonds for the purpose of refunding a like amount of first division mortgage bonds which mature January 1.

**ERIC & PITTSBURGH.**—*Plans Stock Increase.* The stockholders will vote February 10 on increasing the special guaranteed preferred stock from \$2,500,000 to \$7,500,000. A portion of the funds to be derived from the new stock will be paid to the lessee of the road, the Pennsylvania Railroad Company, for improvements on and additions to the leased property made by the lessee and approved by the Directors of the Eric & Pittsburgh.

**KANAWHA & MICHIGAN.**—*Lease to New York Central.*—See New York Central.

**KANAWHA & WEST VIRGINIA.**—*Lease to New York Central.*—See New York Central.

**LOUISVILLE & NASHVILLE.**—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the issue by selling at not less than 96 and accrued interest of \$12,753,000 of first and refunding mortgage 5½ per cent gold bonds and has also granted authority to procure the authentication and delivery by the trustee of \$15,862,000 of the bonds. The company's application also asked authority to issue \$53,000,000 of capital stock as a stock dividend. Consideration of this has been held in abeyance by the commission.

**LUFKIN, HEMPHILL & GULF.**—*Acquisition.*—This road, extending from Bronson, Texas, to Hemphill, 11 miles, has been acquired by T. L. L. Temple and associates, who own the controlling interest in the Texas South-Eastern Railroad. The Lufkin, Hemphill & Gulf connects with the Gulf, Colorado & Santa Fe at Bronson, Tex.

**NEW YORK CENTRAL.**—*Asks Authority to Acquire Big Four Stock.*—This company has filed an application with the Interstate Commerce Commission asking authority to acquire the remaining outstanding capital stock of the Cleveland, Cincinnati, Chicago & St. Louis, which it does not already own, and also to issue its own capital stock to the amount of \$23,478,880, to be exchanged from time to time in payment for the stock of the Big Four, on the following basis: \$13,478,880 for the common stock on the basis of 80 for 100, and \$10,000,000, par for par, for the 5 per cent preferred stock of the Big Four. Of the common stock of the Big Four the New York Central owns \$30,207,700 and \$16,456,821 is outstanding in the hands of the public. Of the preferred stock \$9,588,600 is outstanding and none is owned by the New York Central. The application states that the purchase "will bind the two carriers, which are component parts of a single system, more closely together and tend toward a unification of their properties." The Big Four has also asked authority to guarantee \$2,118,000 of the 4½ per cent 50-year first mortgage gold bonds of the Evansville, Mt. Carmel & Northern, now held in its treasury, with which it proposes to acquire stocks and bonds of the Peoria & Eastern.

*To Lease Toledo & Ohio Central.*—Authorization of a lease of the Toledo & Ohio Central, including with it the Zanesville & Western, the Kanawha & Michigan and the Kanawha & West Virginia, to the New York Central, for a rental of fixed charges and taxes and in addition thereto an amount equal to the net earnings of the Toledo & Ohio Central for the year 1921, and in the case of the Kanawha & Michigan of 6 per cent on its stock, was also announced.

The making of the leases is subject to the approval of the Interstate Commerce Commission, for which application is about to be made.

The New York Central controls all of the stock of the lesser companies except a few shares of the stock of the Kanawha & Michigan.

**NEW YORK, NEW HAVEN & HARTFORD.**—*Attorney General's Hearing.*—Attorney General Harry M. Daugherty has taken under advisement the results of his investigation at Hartford, Conn., and at Boston, Mass., on December 12 and 13, respectively, preliminary to enforcement or modification of the federal decree of dissolution of 1914, which directed the road to sell various trolley lines and the Boston & Maine Railroad holdings.

**PITTSBURGH & WEST VIRGINIA.**—*Application Denied.*—The Interstate Commerce Commission has denied the application of this company to issue capital stock and to assume obligation and liability in respect of certain securities in connection with the purchase of the property and franchise of the West Side Belt upon the ground that the issue and assumption is not for a lawful object since the applicant has not obtained authority for the acquisition under section 5 of the Interstate Commerce Act, which applies to consolidations. Applicant owns all the stock of the Belt Company and is operating the road jointly with its own. Section 5 authorizes the commission to approve the acquisition by one carrier of the control of another in any manner not involving the consolidation of such carriers into a single system for ownership and operation. The opinion contains a lengthy discussion of the interpretation of the section. Commissioner Potter dissented.

**SOUTHERN.**—*Asks Authority to Issue Bonds.*—Application has been filed with the Interstate Commerce Commission for authority

to issue \$30,000,000 development and general mortgage 6½ per cent gold bonds, series A, payable April 1, 1956, including \$5,225,000 of bonds already nominally issued, the proceeds to be used for the payment of \$22,588,000 of three-year 6 per cent secured gold notes maturing March 1, a demand loan of \$2,355,270 from the War Finance Corporation and to reimburse the treasury for capital expenditures.

**SOUTHERN.**—*Authorized to Procure Authentication of Bonds.*—This company has been authorized by the Interstate Commerce Commission to procure the authentication and delivery of \$5,225,000 of development and general mortgage 4 per cent gold bonds to be held in the Treasury until the further order of the commission.

**TENNESSEE MIDLAND.**—*Asks Authority to Issue Securities.*—Caldwell & Co., of Nashville, Tenn., reorganization managers, have filed an application with the Interstate Commerce Commission on behalf of the Tennessee Midland Railroad, which is proposed to be organized to acquire the property of the Tennessee Central, to issue bonds and stocks for that purpose, for the purpose of acquiring the property.

**TEXAS SOUTH-EASTERN.**—*Acquisition.*—See Lufkin, Hemphill & Gulf.

**TOLEDO & OHIO CENTRAL.**—*Lease to New York Central.*—See New York Central.

**WISCONSIN CENTRAL.**—*Asks Authority to Issue Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue promissory notes to the Minneapolis, St. Paul & Sault Ste. Marie in the amount of \$2,305,822 for ten years at 6 per cent for money advanced by the Soo. It also asks permission to assign and deliver to the Soo \$3,547,000 of its first and refunding mortgage bonds as security for the notes.

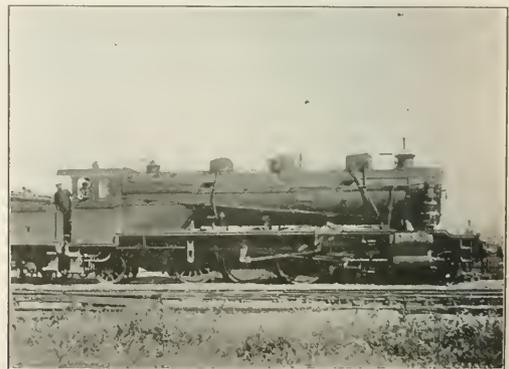
### Tentative Valuations

The Inter-state Commerce Commission has issued tentative valuation reports in which it states the final value as follows:

Southern Illinois & Missouri Bridge Company, 1915...	\$3,182,660
Waukegan-Green Bay, 1916.....	114,201

### Dividends Declared

Albany & Susquehanna.—Special, 2 per cent, payable January 7 to holders of record December 24.
Allergheny & Western.—3 per cent, semi-annually, payable January 3 to holders of record December 22.
Atlantic Coast Line.—Common, 3½ per cent, semi-annually, payable January 10 to holders of record December 23.
Canada Southern.—1½ per cent, semi-annually, payable February 1 to holders of record December 30.
Cleveland, Cincinnati, Chicago & St. Louis.—Preferred, 1¼ per cent, quarterly, payable January 30 to holders of record December 30.
Louisville & Nashville.—3½ per cent, semi-annually, payable February 10 to holders of record January 15.
New York Central.—1¼ per cent, quarterly, payable February 1 to holders of record December 30.



A Mikado on the Paris-Orleans (France)

# Annual Report

## Central of Georgia Railway Company—Twenty-sixth Annual Report

SAVANNAH, GA., April 7, 1921.

### To the Stockholders

The Board of Directors submits its report for the year ended December 31, 1920.

### RELEASE FROM FEDERAL CONTROL

Federal control continued to midnight of February 29, 1920, when your company resumed possession and operation of its transportation properties for its own account. The income account herein shown does not include operating revenues, operating expenses and taxes of the United States Railroad Administration for the months of January and February, but to facilitate comparison we submit tables of operating revenues, operating expenses and taxes, and show comparison with previous years, which include operations for the two months of Federal control.

### ACCOUNTS WITH DIRECTOR GENERAL

Settlement with United States Railroad Administration of accounts growing out of Federal control is in progress but not completed. The amounts shown on the balance sheet as due to and from your company are subject to this final settlement.

### TRANSPORTATION ACT, 1920

The Transportation Act, 1920, was approved by the President on February 28, 1920. It contains much new legislation and many material changes in laws previously enacted.

### GOVERNMENT GUARANTEE

The amount accrued to your company by the Government under the six month guaranty given by the Transportation Act, has not yet been ascertained and certified by the Interstate Commerce Commission; but, pending final audit and approval of the accounts submitted, substantial advances and partial payments have been collected. Income account as submitted includes an estimated credit of the amount payable under the terms of the guaranty.

### MILES OF ROAD OPERATED

The miles operated as of December 31, 1920, were 1,913.62.  
The miles operated as of December 31, 1919, were 1,918.29.

### INCOME

The income for year 1920, compared with the previous year was as follows:

	1920	1919	Increase or Decrease
Railway operating revenues	\$20,676,551.05	\$20,676,551.05	
Railway operating expenses	21,102,368.50	\$52,858.97	21,049,509.53
Net revenue railway operations	(R) \$425,817.45	(R) \$52,858.97	—\$372,958.48
Railway tax accruals	\$795,151.18	\$126,929.88	\$668,221.30
Uncollectible railway revenues	5,584.69		5,584.69
Total	\$800,735.87	\$126,929.88	\$673,805.99
Railway operating income (R)	\$1,226,553.32	(R) \$179,788.85	—\$1,046,764.47
Net revenue—Miscellaneous operations	8,768.46	13,118.24	1,349.78
Total operating income (R)	\$1,217,784.86	(R) \$166,670.61	—\$1,051,114.25
Compensation from U. S.			
Railway	\$732,892.77	\$3,468,808.94	—\$2,735,916.17
Non-operating income	5,116,916.37	8,094,012.	\$4,385,976.25
Total	\$5,849,809.14	\$4,239,749.06	\$1,610,060.08
Gross income	\$4,632,024.28	\$4,073,078.45	\$558,945.83
Deductions from gross income	3,115,316.83	2,790,417.98	374,888.85
Net corporate income	\$1,516,707.45	\$1,282,650.47	\$234,056.98

(R)—Red.

### OPERATING REVENUES (12 Months)

There was an increase of \$2,349,183.54 or 17.88 percent in freight revenue; \$304,343.95 or 4.69 percent in passenger revenue; \$732,249.97 or 38.25 percent in other operating revenues; or \$4,885,777.35 or 15.61 percent in railway operating revenues.

### OPERATING EXPENSES (12 Months)

The operating ratio was 102.60, an increase of 13.70 points or 15.49 percent.

### Maintenance of Way and Structures

Expenditures for maintenance of way and structures were \$4,942,898.33, an increase of \$574,571.19, or 13.14 percent.

### Maintenance of Equipment

Expenditures for maintenance of equipment were \$6,163,735.93, an increase of \$1,691,062.49, or 37.84 percent.

Charges for depreciation of equipment were \$606,068.42, a decrease of \$27,648.82, or 3.69 percent.

The average miles per serviceable locomotive were 35,729, an increase of 1,925 miles, or 5.69 percent. The average use of locomotives was 17.3 years, compared with 16.7 years for the preceding year.

Transportation expenses were \$12,008,739.14, an increase of \$3,666,619.02, or 39.67 percent.

### TAXES

(12 Months)

Accrued taxes were \$925,198.85, a decrease of \$17,453.36, or 1.85 percent.

### FINANCIAL

The General Balance Sheet, Table 4, shows the financial condition of your company at December 31, 1920.

### Capital Stock

There has been no change in capital stock.

### Fixed Debt

Since December 31, 1919, equipment trust obligations aggregating \$100,000 and Greenville and Newnan Main Line Bonds and Upper Cahaba Branch Bonds aggregating \$60,000 matured and were paid.

### Bonds and Liabilities

Pending calls for the Government under the six months guaranty, and from the United States Railroad Administration, your company borrowed from banks in December, 1920, \$75,000 for a year period. The notes have been paid since December 31, 1920.

Non-Non-Debt Held by Affiliated Companies  
The increase of \$553,100.33 in this item is due in part to the same as last year and in part to the purchase of \$75,000 of Fourth Liberty Loan Bonds to use as collateral security in a transaction with an advance made by the United States on account of the six months' guaranty.

Securities Owed  
The increase in Other Investments—Bonds reflects the advance noted for the purchase of Liberty Bonds.

Dividends  
During the year preferred dividends, Nos. 14 and 15 (\$90,000) and a stipulated rate of six percent, per annum, and common dividends Nos. 9 and 10 (\$250,000.00) at a rate of five percent per annum were declared and paid.

### Dividends Receivable

During the year Ocean Steamship Company of Savannah paid from accumulated surplus an extra dividend of \$40.00 per share, of which your company received \$79,644.00.

### Guaranty of Ocean Steamship Company Bonds

On July 1, 1920, the First Mortgage Twenty-Year Five Percent Bonds of Ocean Steamship Company of Savannah aggregating \$1,000,000 matured and were, by arrangement with the holders and after being unconditionally guaranteed as to principal and interest by this company, extended at seven per cent. for five years until July 1, 1925.

### ROAD AND EQUIPMENT

The expenditures for road and equipment, including additions and betterments on leased railway property during the twelve months ended December 31, 1920, were as follows:

	Corporate	Federal	Total
Engineering	\$9,547.79	\$3,570.11	\$13,117.90
Land for transportation purposes	15,408.25	22.00	15,430.25
Grading	6,167.14	(R)17,262.46	49,436.68
Bridges, trestles and culverts	43,873.89	(R)11,824.19	32,049.70
Ties	24,068.30	(R)29,327.65	(R)4,259.35
Rails	64,514.10	(R)50.46	64,463.64
Other track material	147,58.71	(R)9,149.24	138,439.47
Ballast	25,667.90	(R)1,246.35	43,141.45
Track and engineering	39,250.38	(R)11,106.52	28,143.86
Right of way fences	1,344.02	15.84	1,359.86
Crossings and signs	19,388.67	1,314.63	70,336.67
Station and office buildings	42,849.52	3,285.79	24,855.31
Roadway buildings	8,276.64	(R)4,856.26	5,420.38
Water stations	4,687.94	592.58	1,488.05
Fuel stations	16,995.87	(R)2,045.53	(R)1,411.53
Shops and enginehouses	69,831.05	(R)1,727.00	68,104.05
Telegraph and telephone lines	783.24	(R)457.97	725.27
Signals and interlockers	4,968.75	2,425.94	8,394.69
Power line poles and fixtures			50.48
Miscellaneous structures	246.44	(R)157.37	83.07
Paving	1,449.92		1,449.92
Roadway machines	4,507.75	(R)495.39	14,757.51
Assessments for public improvements	9,678.65	916.65	9,595.30
Shop machinery	28,838.02	(R)973.47	7,155.51
Power sub-station apparatus			(R)211.67
Total way and street res. (less property retired)	\$837,555.21	(R)\$318,227.89	\$619,327.32
Steam locomotives	2,306.43	(R)517.25	2,783.68
Freight train cars	17,772.92	5,714.68	23,487.60
Passenger cars	37,431.10	(R)1,088.33	36,342.77
Work equipment	9,335.38	(R)744.70	88,416.68
Miscellaneous	583.14		782.14
Total equipment	(R)\$63,322.04	(R)\$26,605.42	(R)\$89,927.46
Total net road and equipment	\$773,733.19	(R)\$244,833.31	\$528,900.88

(R)—Red.

### PHYSICAL CHANGES

#### Railway and Structures

There were 58,370 miles of track relaid with 90 pound new steel rail, .0094 miles with 80 pound new steel rail, and .0281 miles with 70 pound new steel rail, making a total of 58,405 miles of track relaid with new steel rail; which includes 10,029 miles of 1 inch relaid with new steel rail of the same weight. 26,558 miles of track were relaid with second hand steel rail, replacing rail of lighter pattern. 4,606 miles of track were relaid with second hand steel rail, replacing rail of same pattern. Total mileage of track relaid with new and second hand steel rail was 89,887.77. In addition 5,666 miles of track between East Point and Atlanta were laid with 90 pound new steel rail, replacing 80 pound steel rail, for account of the Atlanta and West Point Railroad Company, which track is operated as a second main line by our company under trackage rights.

\$117,367.41 were expended for tie plates, etc., April 1 to track.

69 new industrial tracks were added, aggregating 2.2 miles in length while 19 tracks were removed, aggregating 1.67 miles, making net increase of .53 miles.

35 new company sidings were added, aggregating 6.12 miles in length while 26 sidings were removed, aggregating 2.63 miles, making net increase of 3.49 miles.

There were 14.69 miles of track ballasted with gravel laid to a depth of 4 inches.

\$123,000.00 were expended in the purchase of 2.12 acres of land at Columbus, Georgia.

\$165,357.76 were expended in the construction of a new reinforced concrete on-board freight house, transfer platforms and driveways at Macon, Georgia.

\$4,045.73 were expended in moving to Dennis, Georgia, and erecting depot formerly located at East Newnan, Georgia.

Standard passenger shed was erected at East Newnan, Georgia.  
 \$2,837.12 were expended in installing train order signals at Bolingbroke, Forsyth, Goggins, Milner, and Barnesville, Georgia.  
 1,014 lineal ft. of frame and pile trestles were replaced by embankments and suitable waterways provided.  
 \$25,909.92 were expended in constructing a double 8x10 reinforced concrete box to replace the stone arch near Birmingham, Alabama.  
 \$7,051.14 were expended in widening Elm street bridge, Macon, Georgia.  
 \$2,394.56 were expended in constructing wagon bridge, Eatonsville, Alabama.  
 \$1,172.08 were expended for paving at Andalusia, Alabama.  
 \$1,948.92 were expended for paving East Main street, Statesboro, Ga.  
 \$916.05 were expended for paving Broad street, Griffin, Georgia.  
 \$4,175.29 were expended for paving North street, Albany, Georgia.  
 \$936.75 were expended for paving at Troy, Alabama.  
 \$14,291.06 were expended in the purchase of 51 motor cars for use of supervisors, section foremen, and bridge gang foremen.  
 \$48,674.14 were expended in the purchase of 16 electric trucks for handling cotton on Savannah terminals.  
 \$12,744.85 were expended in the purchase of one American Railroad Ditching Machine.  
 \$4,222.06 were expended in the purchase of two rail loading machines.  
 Contract was let and work commenced on the construction of a reinforced concrete roundhouse and shop at Columbus, Georgia; total expenditure to date of \$98,375.40.  
 \$2,317.94 were expended in equipping Macon shops with additional water connections to wash basins.  
 \$2,756.01 were expended in the purchase of one pneumatic flanging machine for Macon shops.  
 \$1,018.60 were expended in the purchase of one electric arc-welding machine for Savannah shops.  
 \$3,955.87 were expended for an electric turntable tractor on turntable at Savannah roundhouse.

**Equipment.**  
 Seven new Mountain Type locomotives, built by American Locomotive Company, were used under temporary lease during a portion of the year, and arrangements made for their eventual acquirement by your company under Equipment Trust No. 1. No locomotives were sold or retired. There is under Equipment Trust No. 1, \$14,938 pounds of tractive power, in total locomotives.  
 Arrangements were made for acquiring under Equipment Trust No. 17 all-steel passenger train cars to be built by The Pullman Company.  
 \$15,917.35 were expended in the application of superheaters, valve gear, piston valves and other improvements to locomotives.  
 \$4,974.07 were expended in additions and betterments to passenger train cars.  
 There were no freight train cars acquired. 434 freight and work cars were sold, destroyed or retired, and 145 freight train cars were converted to work equipment.  
 The average capacity of freight cars at the close of the year was 38.0 tons and the total capacity was 336,260 tons.  
 \$19,630.53 were expended in reinforcement of draft gear, application of safety appliances, and other additions and betterments to freight cars.  
 \$39,709.53 were expended in the purchase and converting of Illinois Central sun parlor car into office car.

8. **Equipment.** **OPERATIONS**  
 To maintain the continuity of historical and statistical data there are included in an appendix the result of operations of your property for the two months under Federal control; six months guaranty period; the four months solely for corporate account operations; and the twelve months' operation.

**GENERAL REMARKS**

The Board takes pleasure in acknowledging the fidelity, efficiency and untired efforts displayed by your officers and employes in the discharge of their duties.

By order of the Board of Directors. **CHARLES H. MARKHAM,**  
 Chairman of the Board.

**CENTRAL OF GEORGIA RAILWAY COMPANY**  
**Income Statement**

	Years ended December 31		Per cent of total operating revenues	1919	+ Increase - Decrease
	1920	1919			
Average miles operated	1,913.63	1,918.29			-4.66
Railway operating revenues—					
I. Transportation—					
Railline:					
101. Freight	\$12,930,928.57	62.54			+\$12,930,928.57
102. Passenger	5,728,246.36	27.70			+\$5,728,246.36
103. Excess baggage	32,090.73	.16			+32,090.73
104. Sleeping car	172,853.08	.84			+172,853.08
105. Parlor and chair car	22,998.23	.11			+22,998.23
106. Mail	476,410.32	2.38			+476,410.32
107. Express	489,207.26	2.37			+489,207.26
108. Other passenger train	7,305.23	.03			+7,305.23
109. Milk	15,813.97	.07			+15,813.97
110. Switching	221,957.02	1.07			+221,957.02
111. Special service train	28,648.75	.14			+28,648.75
Total	\$20,120,559.52	97.31			+\$20,120,559.52
II. Incidental:					
131. Dining and buffet	\$37,136.81	.18			+\$37,136.81
132. Hotel and restaurant	2,893.39	.01			+2,893.39
133. Station, train and boat privileges	38,753.64	.19			+38,753.64
134. Parcel service	716.52				+716.52
135. Storage—freight	151,505.89	.73			+151,505.89
136. Storage—baggage	1,380.82	.01			+1,380.82
137. Demurrage	110,342.29	.53			+110,342.29
141. Power	2,562.69	.01			+2,562.69

142. Rents of buildings and other property	1,305.88	.01			+1,305.88
143. Miscellaneous	173,050.88	.84			+173,050.88
Total	\$519,648.81	2.51			+\$519,648.81

IV. Joint Facility:					
151. Joint facility—Cr.	\$36,266.24	.18			+\$36,266.24
152. Joint facility—Dr.	76.48				-76.48
Total	\$36,342.72	.18			+\$36,342.72

Total railway operating revenues	\$20,675,551.05	100.00			+\$20,675,551.05
----------------------------------	-----------------	--------	--	--	------------------

Railway operating expenses—					
201-279. Maintenance of way and structures	\$4,105,356.85	19.86			+\$4,105,356.85
301-337. Maintenance of equipment	5,047,749.43	24.41			+5,047,749.43
351-359. Traffic	570,925.44	2.67			+570,925.44
371-426. Transportation—rail line	10,512,060.77	50.84			+10,512,060.77
441-446. Miscellaneous operations	43,877.59	.21			+43,877.59
451-467. General	85,654.69	4.12			+85,654.69
451. Transportation for investment—Cr.	R10,256.27	R.05			-10,256.27
Total railway operating expenses	\$21,102,368.50	102.06	\$52,858.97		+\$21,049,509.53

Net revenue from railway operations	\$8,425,817.45	R2.06	\$52,858.97		-\$372,958.48
-------------------------------------	----------------	-------	-------------	--	---------------

532. Railway tax accruals	\$795,151.18	3.85	\$126,929.88		+\$668,221.30
534. Unallocated railway revenues	5,584.69	.02			+5,584.69

Railway operating income	\$8,126,553.32	R5.93	\$8179,788.85		-1,046,764.47
--------------------------	----------------	-------	---------------	--	---------------

502. Revenues from miscellaneous operations	\$51,914.33	.25	\$72,465.05		-\$20,550.72
---	-------------	-----	-------------	--	--------------

534. Expenses of miscellaneous operations	43,145.87	.21	59,346.81		-16,200.94
---	-----------	-----	-----------	--	------------

Net revenue from miscellaneous operations	\$8,768.46	.04	\$13,118.24		-\$4,349.78
---	------------	-----	-------------	--	-------------

Total operating income	\$8,117,784.86	R5.89	\$8,166,670.61		-\$1,051,114.25
------------------------	----------------	-------	----------------	--	-----------------

	1920	1919	+ Increase - Decrease
Nonoperating income:			

503. Lite of freight cars—credit balance	\$184,620.85		+\$184,620.85
--	--------------	--	---------------

504. Rent from locomotives	30,028.44		+30,028.44
----------------------------	-----------	--	------------

505. Rent from passenger train cars	21,684.33		+21,684.33
-------------------------------------	-----------	--	------------

507. Rent from work equipment	6,972.04		+6,972.04
-------------------------------	----------	--	-----------

508. Joint facility rent income	36,250.26		+36,250.26
---------------------------------	-----------	--	------------

509. Income from lease of road	778,192.41	\$3,454,108.58	-2,675,916.17
--------------------------------	------------	----------------	---------------

510. Miscellaneous rent income	104,066.65	88,227.10	+15,776.55
--------------------------------	------------	-----------	------------

511. Miscellaneous non-operating physical property	18,850.22	18,665.92	+184.30
--	-----------	-----------	---------

513. Dividend income	1,477,825.50	446,171.16	+1,031,654.34
----------------------	--------------	------------	---------------

514. Income from funded securities	114,239.76	102,505.87	+11,733.89
------------------------------------	------------	------------	------------

515. Income from unfunded securities and accounts	R35,226.73	126,763.08	-161,989.81
---	------------	------------	-------------

519. Miscellaneous income	3,113,268.41	3,307.35	+3,109,961.06
---------------------------	--------------	----------	---------------

Total nonoperating income	\$5,849,809.14	\$4,239,749.06	+\$1,610,060.08
---------------------------	----------------	----------------	-----------------

Gross income	\$4,632,024.28	\$4,073,078.45	+\$558,945.83
--------------	----------------	----------------	---------------

Deductions from gross income:			
537. Rent for locomotives	\$24,017.32		+\$24,017.32

538. Rent for passenger train cars	50,274.93		+50,274.93
------------------------------------	-----------	--	------------

540. Rent for work equipment	1,676.41		+1,676.41
------------------------------	----------	--	-----------

541. Joint facility rents	119,831.63		+119,831.63
---------------------------	------------	--	-------------

542. Rent for leased roads	370,283.66	\$370,085.82	+4,197.84
543. Miscellaneous rents	135,827.81	146,337.83	-10,530.02
546. Interest on funded debt	2,286,333.75	2,094,953.75	+191,380.00
547. Interest on unfunded debt	108,410.01	147,096.61	-66,677.60
548. Amortization of discount on funded debt	31,570.39	19,194.03	+12,376.36
551. Miscellaneous and debt charge	15,087.92	12,745.94	+2,341.98
Total deductions from gross income	\$3,115,316.83	\$2,790,427.98	+\$324,888.85
Net income (transferred to credit of profit and loss)	\$1,516,707.45	\$1,282,650.47	+\$234,056.98

## Railway Officers

### Executive

**George T. Reid**, whose appointment as vice-president and western counsel of the Northern Pacific, with headquarters at Tacoma, Wash., was announced in the *Railway Age* of December 10 (page 1177), was born at Etna Green, Indiana, April 2, 1871. He began railroad work on January 6, 1906, in the service of the Portland & Seattle (now the Spokane, Portland & Seattle). He resigned from that position on November 1, 1908, to become a division counsel for the Northern Pacific and on May 23, 1912, he was appointed assistant to the president and western counsel with headquarters at Tacoma, Washington, which position he



G. T. Reid

was holding at the time of his recent promotion.

### Financial, Legal and Accounting

**Albert J. Raynes** has been appointed comptroller of the Maine Central, effective December 14, succeeding Arthur P. Foss, assigned to other duties.

### Operating

**C. B. Ragon** has been appointed assistant to the vice-president and general manager of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Texas, effective December 15.

**C. C. Barnard**, assistant superintendent of the Western division of the Union Pacific with headquarters at Green River, Wyoming, has been appointed acting superintendent with the same headquarters. **H. A. Connett** has been appointed acting assistant superintendent to succeed Mr. Barnard.

### Traffic

**F. M. Millson** has been appointed traffic manager of the Omaha, Lincoln & Beatrice, with headquarters at Lincoln, Neb.

**E. H. Golden** has been appointed general agent of the Cisco & Northeastern, with headquarters at Breckenridge, Texas.

**C. E. Jefferson** has been appointed general freight agent of the Canadian Pacific, Western Lines, succeeding W. C. Bowles, promoted.

**C. B. Curlee** has been appointed general freight agent of the Alabama Northern, with headquarters at Birmingham, Ala., succeeding Roy Pope, resigned.

**A. E. Crocker** will on January 1 become general agent, freight department, of the New York Central at New Haven, Conn., succeeding **D. A. Gerlach**, granted a leave of absence on account of ill health.

**L. H. Trimble**, general agent of the El Paso & Southwestern and the Morenci Southern at Phoenix, Ariz., has been

transferred in a similar capacity to Los Angeles, Cal., effective January 1. **R. P. Kyle** will succeed Mr. Trimble at Phoenix.

**C. E. Stailey**, commercial agent of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Kansas City, Mo., has been appointed assistant general freight agent with headquarters at Memphis, Tenn. **Hugh Hardin**, traveling freight and passenger agent at Kansas City will succeed Mr. Stailey.

**LeRoy Morris**, general agent of the Mississippi Central, with headquarters at Mobile, Ala., has been promoted to the newly created position of assistant general freight agent,



LeRoy Morris

with headquarters at Hattiesburg, Miss. Mr. Morris entered railroad service in 1911 as a rate clerk in the local freight office of the Southern Railway, at Selma, Ala., and was later promoted to chief clerk to the division freight agent in the same office. In 1915, he left to become rate clerk in the freight traffic manager's office of the Alabama Great Southern, at Birmingham, Ala. He entered the service of the Mississippi Central on February 1, 1916, as chief clerk to the general freight agent at

Hattiesburg, and since that time he has been successively, traveling freight and passenger agent, with headquarters at Hattiesburg, and general agent, with headquarters at Mobile, Ala., which latter position he was holding at the time of his recent promotion.

**C. G. Pennington** has been appointed assistant general passenger agent of the Long Island, with headquarters at New York City, effective January 1. Mr. Pennington was



C. G. Pennington

born at Hollis, Queensboro, New York City, and was educated in the public and business schools of Long Island. He entered the service of the Long Island in 1900 as a clerk in the office of the traffic manager. When this office was abolished in 1902 and separated into the freight and passenger departments, Mr. Pennington went with the latter under the general passenger agent. In 1907 Mr. Pennington took charge of the road's advertising, supervising the preparation of newspaper and magazine advertising,

booklets and other literature. During the war and until the demobilization and abandonment of the camps on Long Island, Mr. Pennington's time was devoted almost entirely as representative of the passenger department in connection with the movement of troops.

**B. H. Dally**, assistant general freight agent of the Pennsylvania, with headquarters at St. Louis, Mo., has been promoted to general freight agent, with the same headquarters, succeeding **P. C. Sprague**, resigned. Mr. Dally will

be succeeded by F. W. Nash. These appointments become effective January 1, 1922.

**Stanton Curtis**, whose appointment as general passenger agent of the Mobile & Ohio, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of December 17 (page 1235), began railroad work in January, 1895, as a clerk to the ticket accountant of the Michigan Central at Detroit, Mich. He held various clerical positions with railroads until January, 1903, when he entered the service of the Southern as a clerk in the general passenger office at Washington, D. C. He was promoted successively to passenger agent at Norfolk, Va., in September, 1905; chief clerk to the assistant general passenger agent at Chicago, in March, 1907; northwestern passenger agent at Chicago, in December, 1909, and assistant general passenger agent, with headquarters at Chicago, in September, 1913. He was transferred to St. Louis in January, 1917, his title being changed to division passenger agent on March 1, 1920, which position he was holding at the time of his recent appointment.

**Robert E. Greene**, whose appointment as traffic manager of the Salina Northern, with headquarters at Salina, Kan., was announced in the *Railway Age* of November 12 (page 964), was born at Longford, Kan., on February 23, 1872. He entered railroad service in March, 1891, in the maintenance of way department of the Chicago, Rock Island & Pacific. He became a station clerk in 1895, serving in that capacity at various stations on the Kansas and Nebraska divisions until 1896 when he was made agent and operator at Valencia, Kan. He was transferred to Morganville, Kan., in 1899, and promoted to local freight agent at Clay Center, Kan., 1901, which position he held until 1907, when he was promoted to agent in the freight department at Wichita, Kan. He left in 1917 to enter the service of the Salina Northern as agent and dispatcher, with headquarters at Salina. He was promoted to car accountant in 1918 and to general freight and passenger agent in 1919, which position he was holding at the time of his recent promotion.



R. E. Greene

### Mechanical

**J. D. Young** has been appointed acting master mechanic of the Central of New Jersey, with headquarters at Ashley, Pa., succeeding A. B. Embody, who has been granted a leave of absence on account of ill health.

### Engineering, Maintenance of Way and Signaling

**J. Telford** has been appointed roadmaster of the Canadian Pacific, with headquarters at McAdam, New Brunswick, succeeding W. H. Noyes, transferred.

**A. C. Harvey**, engineer of grade elimination of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been promoted to assistant chief engineer, with the same headquarters and the position of engineer of grade elimination has been abolished.

### Purchasing and Stores

**G. W. Hanegan**, storekeeper of the central and western divisions of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been promoted to general storekeeper, with the same headquarters.

**B. W. Griffith**, district storekeeper of the New York Central, lines west, with headquarters at Collinwood, Ohio, has been promoted to assistant general storekeeper, with the same headquarters, and will be succeeded by **F. J. McMahon**. **A. L. Prentice**, division storekeeper, with headquarters at Elkhart, Ind., has been promoted to assistant general storekeeper, with headquarters at Collinwood, and he will be succeeded by **C. F. Heidenreich**.

**J. F. McAuley** has been appointed division storekeeper of the Portland division of the Southern Pacific, with headquarters at Portland, Ore., succeeding H. J. Smith, who has become chief clerk to the general storekeeper at San Francisco, Cal., succeeding **G. M. Betterton**, promoted. **J. Neph** storekeeper of the San Joaquin division, with headquarters at Bakersfield, Cal., has been transferred to the Los Angeles division, with headquarters at Los Angeles, succeeding **J. H. Collins**, deceased. He will be succeeded by **J. F. Brown**, storekeeper of the Shasta division, with headquarters at Dunsmuir, Cal., who will be succeeded by **F. L. Doss**.

## Obituary

**Matthais Manly**, since 1905 treasurer of the Norfolk Southern and its predecessors, died on November 28.

**John S. Love**, general agent of the Chicago, Milwaukee & St. Paul at Milwaukee, Wisconsin, died there on December 20, after a brief illness.

**John D. Besler**, of the vice-president's staff of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., died suddenly on the evening of December 19 at his home at Galesburg. Mr.

Besler was born on April 10, 1833. He entered railroad service in November, 1855, as a track laborer on the Chicago, Burlington & Quincy at Galva, Ill. He was promoted successively to section foreman, conductor of a construction train, roadmaster, assistant division superintendent, division superintendent, and, in 1882, superintendent of the Illinois lines. Three years later (1885) he was promoted to general superintendent, which position he held until August 1, 1902, when he was assigned to special duties on the staff of the vice-president in charge of operation. He was engaged in the latter work at the time of his death. Mr. Besler was the father of W. G. Besler, president and general manager of the Central of New Jersey.



J. D. Besler

THE BULLETIN of the Federation of British Industries states that the Chinese Standardization Commission, which was appointed to agree and fix permanent standards for rolling stock and materials throughout the whole government railway system of China, has now agreed to the standards to be adopted for rails and fastenings; sleepers or ties, both ordinary and for bridges; cuts and fills; formation and ballasting; tunnels; clearance and minimum structure gages. Specifications for bridge steel were also accepted.

As regards rolling stock, standard designs were adopted for heavy locomotives—the Pacific type for passenger and the "Mikado" for freight service—with certain alterations to conform to the views of the locomotive superintendents of the various Chinese government railways. Agreement was also reached on standard designs for wheels, axles, trucks, bodies, frames, etc.

# **MINER**

## **BALANCED**

### **SIDE BEARING**



**STRONG AND DURABLE**  
**IN USE ON THOUSANDS OF CARS**

**W. H. MINER, CHICAGO**

# POLLAK

## Steel Products

### AXLES and FORGINGS

Hollow Bored, Heat Treated,  
Machined, Locomotive, Car  
Truck and Trailer Axles.  
Side Rods, Main Rods, Crank  
Pins, Piston Rods, Etc.

### ROLLED STEEL BARS AND SHAPES

Angles, Channels, Tees,  
Flats, Bands, Rounds,  
Squares, U Bars, Ovals, Etc.

### DROP FORGINGS

Clean Cut, True to Size, Uni-  
formity of Material, M. C. B.  
Journal Wedges, Knuckle  
Pins, Brake Levers, Crank  
Shafts, Connecting Rods.

### CONCRETE REINFORCEMENT

Plain Rounds and Squares,  
Hot Twisted and Square,  
Deformed.

## THE POLLAK STEEL COMPANY

General Offices  
66th & B. & O. R.R.  
Cincinnati, Ohio

Works, Cinti, Marion,  
Ohio; Chicago, Ill.

Gen. Sales & For. Offs.  
3115-16-17 Equitable  
Bldg., New York City

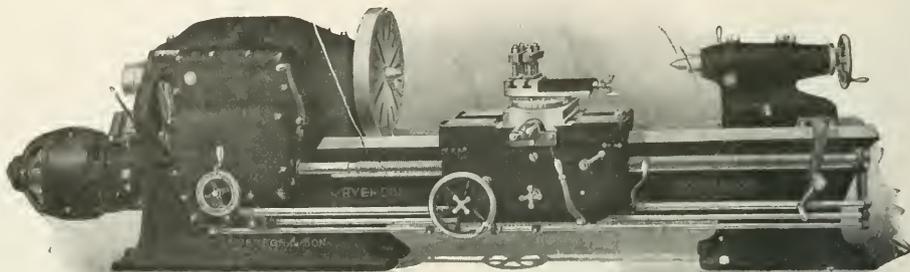
#### AMERICAN SALES OFFICES

Boston, Mass.  
Chicago, Ill.  
Denver, Colo.  
Detroit, Mich.  
Houston, Texas

Knoxville, Tenn.  
Los Angeles, Cal.  
Marquette, Mich.  
Portland, Ore.  
Philadelphia, Pa.  
Pittsburgh, Pa.

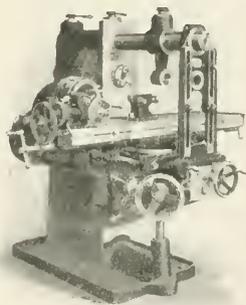
Richmond, Va.  
Salt Lake City, Utah  
St. Louis, Mo.  
St. Paul, Minn.  
San Francisco, Cal.



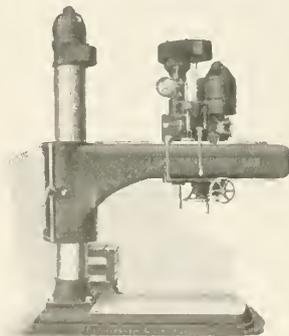


Centralized controls speed production on the Ryerson-Conradson Railroad Lathe

## Protect Locomotive Investments



No. 2 Universal Milling Machine



Twin Motor Driven Radial Drill

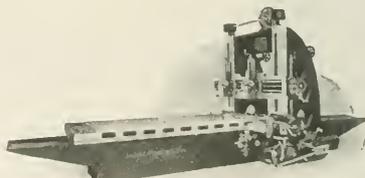
Successful manufacturing plants protect their investment in manufacturing equipment by facilities for quick, accurate repairs to keep the direct money earning machines in service and in good condition.

Does any establishment need this protection more than a railroad needs it?

By putting locomotives back into service in less time Ryerson-Conradson Machine Tools increase the earnings of the entire railroad investment.

Have them in your shops when the repair load comes on again.

*Every tool has surprising features. Ask about them.*



Multispeed Planing Machine

### JOSEPH T. RYERSON & SON

Established 1842

Incorporated 1888

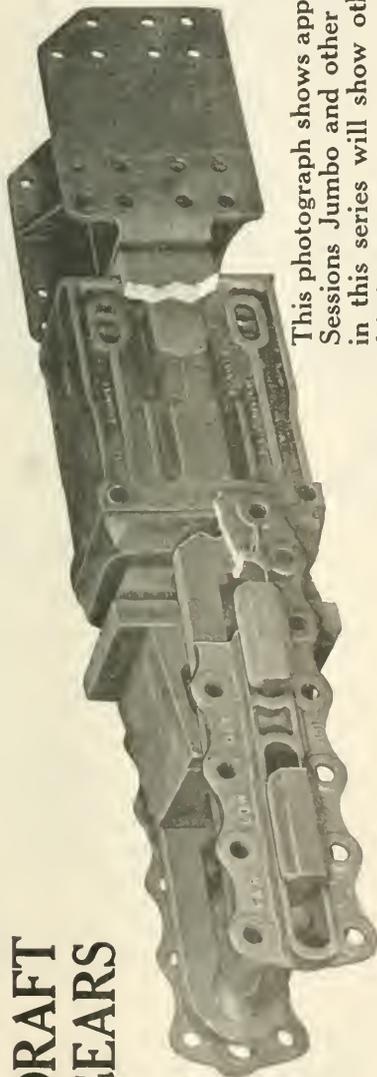
CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

# RYERSON MACHINERY

# FARLOW

## HORIZONTAL FORGED YOKE ATTACHMENTS

FOR FRICTION  
DRAFT  
GEARS



This photograph shows application with Sessions Jumbo and other photographs in this series will show other types of friction gears.

# THE T. H. SYMINGTON COMPANY

Manufacturers of Journal Boxes & Draft Attachments

NEW YORK

CHICAGO

BALTIMORE

ST. PAUL

ROCHESTER

Canadian Representative: Canadian Appliance Co., Ltd., New Birks Bldg., Montreal



## Ten years of melting snow and heavy rains

—rushing with a violence that only a mountainous district can produce, have caused no damage to this sturdy 48-inch Armco Culvert. Year after year, in all parts of the country, hundreds of Armco Culverts, subjected to the deteriorating action of all kinds of soil and climate, are duplicating this record of service.

If only one Armco Culvert had given so many years of service, their enduring qualities might be questioned, but when thousands of them show not the slightest sign of deterioration after ten or more years of service, the rust-resisting and enduring qualities of Armco Ingot Iron are proven beyond the shadow of a doubt.

The increasing use of Armco Culverts by experienced engineers and Highway Commissioners is authentic approval of their ease of installation and enduring qualities.



There is a manufacturer in nearly every state, and in Canada, making genuine rust-resisting ARMCO CULVERTS and other products of Armco Ingot Iron such as flumes, siphons, tanks, road signs, roofing, etc. Write for full information and nearest shipping point on products in which you are interested.

**ARMCO CULVERT & FLUME MFRS. ASSN.**  
**215 NORTH MICHIGAN AVE.  CHICAGO**



## Insurance and Protection

Insurance is one thing—protection another. A man may be insured for ten thousand dollars but he is not protected without a body-guard.

The best travel insurance available does not protect a man when he is in one train that happens to be hit by another. It may protect his family but money gives little satisfaction when it is received as payment for human life.

### The Miller Train Control

does more than insure

**It protects!**

STAUNTON, VA.

**Miller Train Control**

DANVILLE, ILL.



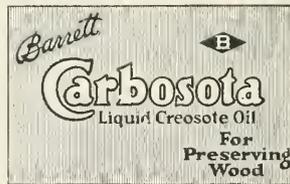
Some shops brush-treat contact points of sills with products ranging from glue and asphalt to ordinary paint. This is bad as it creates a false sense of security. A wood preservative must be sufficiently toxic (poisonous) to kill wood-destroying organisms (fungus growths) and inhibit their development.

## Carbosota Will Not Taint Lading

The first step in applying wood preservation to car construction is the protection against decay of the points of contact.

Surface treatment with Carbosota Liquid Creosote Oil, applied by brushing or spraying, is the one method that can immediately be employed in every car shop and repair yard. The objection is sometimes made that the surface treatment of sills may taint the lading. However, this is unfounded. Wherever preservative treatments have been properly applied, results have been universally satisfactory, and in no case have contents of cars or lading been damaged. Evidence in support of this statement is readily available.

Carbosota Liquid Creosote Oil, because of its superior physical characteristics, is undoubtedly most suitable for this sort of work. When requisitioned by its trade-mark—"Carbosota"—absolute uniformity



is assured, no matter from where obtained. Carbosota is liquid at 41 deg. F. (5 deg. C)—a most important feature particularly when applied in Surface treatments.

Further information about Carbosota may be obtained by addressing our nearest office.

*(Green wood cannot be effectively creosoted by non-pressure processes. It should be seasoned. All framing, drilling of bolt holes, etc., should be done before treatment. If this is impossible, two brush coats of Carbosota should be applied to all untreated surfaces exposed by subsequent cutting or drilling.)*

### The Barrett Company

New York	Chicago	Philadelphia	Boston	St. Louis
Cleveland	Cincinnati	Pittsburgh	Detroit	New Orleans
Birmingham	Kansas City	Minneapolis	Dallas	Nashville
Salt Lake City	Seattle	Peoria	Atlanta	Duluth
Milwaukee	Bangor	Washington	Johnstown	Syracuse
Lebanon	Youngstown	Toledo	Columbus	Richmond
Lafayette	Bethlehem	Elizabeth	Buffalo	Baltimore
Omaha	Houston	Denver	Jacksonville	
THE BARRETT COMPANY, Limited:			Montreal	Winnipeg
Vancouver	St. John, N. B.		Toronto	Halifax, N. S.



Carbosoting (creosoting) car sills by the Open Tank process (hot and cooling treatment).



Brush treating mortise of timber which was framed after creosoting



Decayed intermediate sills and flooring

At left of illustration—Clipping from Providence, R.I. Journal, August 11, 1921. The Judge did not issue a Restraining Order. Evidently the Riveting Foreman told him that with Boyers the noise would cease in less time than with any other riveting hammer built. Illustration at right—Biltmore Hotel, Providence, R. I., built by The Thompson-Starrett Company, with the aid of Boyer Riveting Hammers.



At left—  
Boyer No. 80 Riveting Hammer.

**BILTMORE RIVETERS QUIET.  
COURT BACK IN OLD ROOM**

Noise of "clous" and "hockers-up" forced Judge to Move.

Although to disturb a session of the Municipal Court is generally a serious offense, the disturbance that forced Judge Stone to quit the convenient courtroom on the top floor of the City Hall a while ago and hold sessions in the council chamber on the second floor, was not considered contempt of court, and the offenders were not haled before His Honor to be reprimanded.

Anyway, it's all over now, and the daily of the Hotel Biltmore in the lower part with the punctuating of pneumatic guns, and the plaintiff's plain of the "buck-rup" but rivets is heard no more. That is, not so much as it was.

Then, again, laying a new cement floor in the courtroom was not a help to the proceedings; hence the temporary change of quarters.

Now that the enterprising riveter isn't rising quite so much and the eminent lawyer pursuing his splashy occupation in quarters, Justice Stone says he never could get used to the soot in the council chamber.



# All Plant Managers } Greetings— Contractors and Engineers }

**N**OTICE is hereby given that the Boyer Riveting Hammers used in erecting this hotel did more than merely make a noise—they drove perfect rivets in record time, as do all Boyers. Boyers drive from seven to ten rivets per minute—depending upon rivet size.

perfect rivets, air and maintenance economy are essential—Boyers are usually standard.

Good tools + contented workmen = efficient work at a minimum cost per rivet driven. A Boyer pays for itself every twenty to thirty days. Then why figure or experiment further? Your final choice will be: Boyers + more Boyers. Ask for Bulletin 810.

Not only on this important job, but on all exacting riveting operations—where speed,

Chicago Pneumatic Tool Company

Chicago Pneumatic Building · 6 East 44th Street · New York

Sales and Service Branches all over the World

P. 140

**BOYER PNEUMATIC HAMMERS · LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS  
CHICAGO PNEUMATIC AIR COMPRESSORS · VACUUM PUMPS · PNEUMATIC HOISTS,  
GIANT OIL AND GAS ENGINES · ROCK DRILLS · COAL DRILLS**

**BOYER**  
The world's standard



**HAMMERS**  
wherever rivets are driven

**Your Urgent Need is**  
**To Eliminate Waste**

**Material Handling Cyclopedia**

**Ready for Timely Service**

LACK of adequate facilities in your terminals, warehouses and at transfer points as the present and future cause of congestion on your lines can be largely overcome by the right selection of efficient mechanical handling devices and methods. It is a case of knowing what machines are available, how they operate and where to buy them. This information and a knowledge of the application of the various machines themselves is now and will be the premier need. Exactly these things comprise the contents of 1921 Material Handling Cyclopedia.

Success in these times depends upon eliminating waste, cutting costs, multiplying man-power and conserving time and labor by the use of modern mechanical handling machinery. There's no comparison between antiquated tools and later inventions. *Be certain.* Consult the Cyclopedia and make sure that you are using the latest equipment and applied knowledge.

Cranes, hoists, winches, derricks, excavators, buckets, steam shovels, scoops, magnets, car load and unloading machinery, tiering machines, industrial trucks, tractors and trailers—these are but a few of the devices described and illustrated in the 1921 MATERIAL HANDLING CYCLOPEDIA. It is the first book of its kind published.

**A Single Purpose**

A single purpose has guided us—to produce in one volume a book that gives the user the material handling information he needs most in an easily accessible form.

**Simmons-Boardman Publishing Co.**

BOOK SERVICE DEPT.

Woolworth Building, New York, N. Y.

*"The House of Transportation"*

CROSS OFF BINDING YOU DO NOT DESIRE

Simmons-Boardman Publishing Co.,  
 Book Service Department,  
 Woolworth Bldg., New York, N. Y.:

Enclosed is { check } for \$.....  
 order }

Please send prepaid a copy of the *Material Handling Cyclopedia*  
 Buckram binding, \$10.00. Leather binding, \$15.00.

Name .....

Address .....

City..... State.....

Position..... R. R. or Co.....

(Sent prepaid in the United States, Canada and Mexico only.)



**Definition Section—150 Pages**

Terse, clear-cut definitions of the principal terms used in connection with material handling methods and equipment and unusually full and complete descriptions of the mechanisms of the various devices are given.

**Technical Section—550 Pages**

Principal types of material handling machines are taken up under classified headings. Transference principles are discussed at length showing the advantages of the various types of machines for specific lines of work. Carefully chosen photographs, together with line drawings, charts, curves, etc. render the text easily understood.

**Catalog Section—150 Pages**

Enlarges and completes the other two sections. Leading manufacturers illustrate and describe their own products pointing out the particular advantages of their devices for certain branches of industrial service. These pages are grouped according to the nature of service the devices perform. All three sections are cross referenced so that you can find any information you need in a moment.

**Important Features**

A *Directory of Products*, a *Trade Name Index* and an *Alphabetical Index of Manufacturers* are included for ready reference.

You can have this cyclopedia on your desk, ready to serve you, promptly. Just make out your check for \$10.00, if you like a durable Buckram binding or \$15.00 if you prefer Full Leather. Hand it with the coupon to your secretary.



# CAMBRIA STEEL CARS

for freight service

ALL of the rolled and forged parts entering into the construction of steel gondola, tank, hopper and other types of cars in the Cambria Car Shops are made by us.

These include:—

- |                     |          |
|---------------------|----------|
| Structural Shapes   | Plates   |
| Axles               | Forgings |
| Rolled Steel Wheels |          |

## MIDVALE STEEL AND ORDNANCE COMPANY CAMBRIA STEEL COMPANY

Atlanta  
Boston  
Chicago  
Cincinnati  
Cleveland  
Detroit  
New York

General Offices:

Widener Building Philadelphia, Pa.

Philadelphia  
Pittsburgh  
San Francisco  
Salt Lake City  
Seattle  
St. Louis  
Washington, D.C.

SOLE EXPORTER OF **CONSTEEL** CONSOLIDATED STEEL CORPORATION  
QUIP COMMERCIAL PRODUCTS NEW YORK, U.S.A.

# Better Southern Pine

*was never cut than  
we are cutting now*

PHOTOS  
AMERICAN  
LUMBERMAN



**I**N construction that puts unusual strain and wear upon the materials used, Southern Pine lumber and timbers have been *standard* among careful builders for a century.

The nine great mills, which supply the products marketed by Exchange Sawmills Sales Company, never milled better Southern Pine than they are cutting now. To splendid virgin timber, these mills add a thoroughly modern manufacturing process and insist above all upon adhering to the strictest grading rules. This accounts for the outstanding uniformity of lumber and timbers from our sales offices.

*LONG and SHORT LEAF SOUTHERN PINE*

*Yard and Shed Stock and Heavy Structural Materials*



**For Railroads—**

Bridge and Trestle Timbers, Flooring, Roofing, Siding, Lining, Sills, Framing, Sawn Ties. We make a specialty of bridge stringers.

**For Factory Builders—**  
Close Grained, Virgin long leaf timbers and heavy lumber for slow combustion construction.

## **EXCHANGE SAWMILLS SALES CO.**

**LONG BUILDING**

Formerly: Missouri Lumber  
& Land Exchange Co.

**KANSAS CITY, MO.**

**SALES DEPARTMENT FOR**

Louisiana Long Leaf Lumber Co., Fisher and  
Victoria, La.  
Louisiana Central Lumber Company, Clarks,  
and Standard, La.

Forest Lumber Company, Oakdale, La.  
Louisiana Sawmill Co., Inc., Glenmora, La.  
White-Grandin Lumber Co., Inc., Slagle, La.



## Everyday performance is the guarantor of Galena Oil economy.

On hundreds of railroads—east, west, north and south, under their widely varying conditions of climate, grade and equipment—Galena Oils are delivering a lubrication service never equalled in efficiency or economy.

Characterized by quality and uniformity, these justly celebrated products have become the standard for railroad lubrication the world over.

The trite saying "Figures don't lie" is nevertheless a true one when applied to railroad cost records, and they are the kind of figures that testify with indisputable authority to the ability of Galena Oils to give greatest mileage, and reduce repairs and replacements of bearing parts to a minimum.

These economic advantages are supplemented by a feeling of security and satisfaction in the operation of Galena Service that is beyond price.

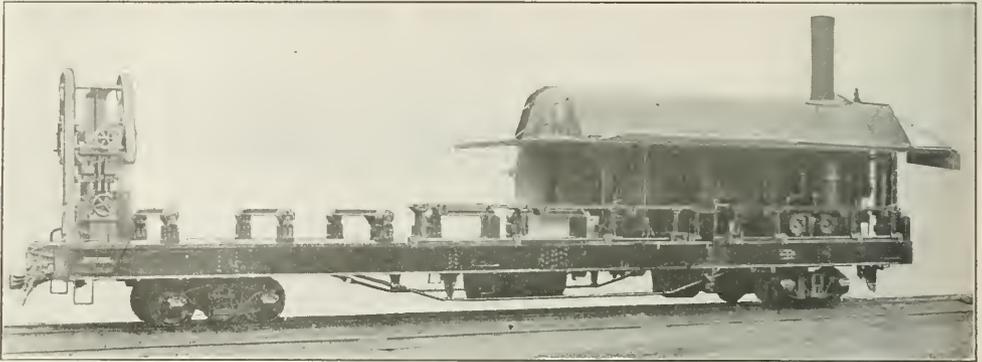
*"When Galena Service Goes In—  
Lubrication Troubles Go Out!"*



# Galena-Signal Oil Company

New York    ◊    Franklin, Pa.    ◊    Chicago  
 ◊    and offices in principal cities    ◊





## PORTABLE RAIL SAW

If handicapped by the slowness of adequate appropriations, the success and economy of rail sawing experienced by the many roads using "INDUSTRIAL" Portable Rail Saws presents a solution to the present day needs of placing the roadways in good condition.

An "INDUSTRIAL" Portable Rail Saw is a big factor in reducing the cost of railway extension and maintenance. It eliminates the long hauls of rails required by the stationary plant.

The "INDUSTRIAL" Portable Rail Saw comprises a complete and very efficient plant for sawing off the worn ends of rails and redrilling them preparatory to relaying. The plant develops a capacity of 500 rails or more per day and rails up to and including 100 pounds per yard may be handled with the standard machine.

After calipering and matching the ends of re-sawed rails engineers state that the re-sawed rails make as smooth a track as new rails from the rolling mills.

*We will gladly supply you with further information regarding "Industrial" Portable Rail Saws.*

**WRITE TODAY!**



# INDUSTRIAL WORKS

BAY CITY, MICHIGAN.



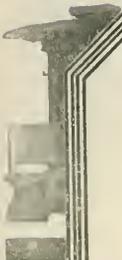
NEW YORK      PHILADELPHIA      DETROIT      CHICAGO  
 50 Church Street      Widener Bldg.      Book Building      McCormick Bldg.  
 C. B. Davis Engineering Co., Birmingham, Ala.; J. G. Miller, St. Louis, Mo.;  
 F. H. Hopkins & Co., Montreal, Que.; N. B. Livermore & Co., San Francisco, Cal.;  
 Northwestern Equipment Co., Portland, Ore., and Seattle, Wash.

Locomotive, Erection and Wrecking Cranes, 5 to 160 tons capacity. Pile Drivers, Pillar Cranes, Transfer Cranes, Rail Saws, Grab Buckets, Crawling Tractor Cranes

# ECONOMY CAST STEEL DRAFT ARMS



A typical application of Economy Cast Steel  
Draft Arms



Economy Cast  
Steel Draft Arm  
is an economical and  
efficient device for strengthening  
wooden and light steel underframe  
cars so that they are fit for service  
in heavy trains. Economy Arms  
can be designed to accommodate  
any style of draft gear.

**AMERICAN STEEL  
FOUNDRIES**  
CHICAGO  
New York St. Louis



# ~ GENERAL AMERICAN ~



## The Only Big Refrigerator Inquiry of the Year 1921

Five hundred of these forty-ton, forty-foot, refrigerators are now being delivered on schedule to the Great Northern by The General American Car Company.

The thousands of "GA" cars of standard type in service today—refrigerator, gondola, stock, box, flat, grain, automobile, furniture and hopper-bottom, as well as specialty constructions for industrial and inter-plant uses, bearing the names and trade-marks of big railroads and manufacturing concerns, testify to the pre-eminence of "GA" equipment.

### GENERAL AMERICAN CAR COMPANY

*Subsidiary of the General American Tank Car Corporation*

General Offices: Harris Trust Building, Chicago

Plants at: East Chicago, Ind.; Saad Springs, Okla.; Warren, Ohio

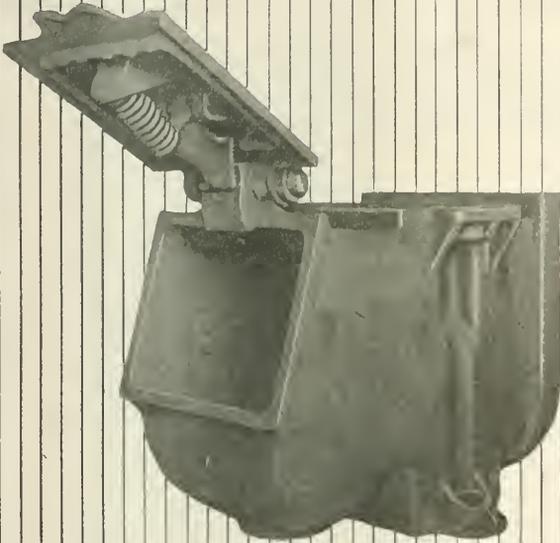
Sales Offices: 17 Battery Place, New York; 24 California St., San Francisco

Cable Address: "Gentankar, Chicago." All Codes.

*Pressed Steel Shapes    Forgings    Gray Iron Castings    Brass Castings*

# RAILWAY CARS ~ EVERY TYPE

# The NATIONAL Coiled Spring JOURNAL BOX



Keeps the dust outside  
Keeps the oil inside

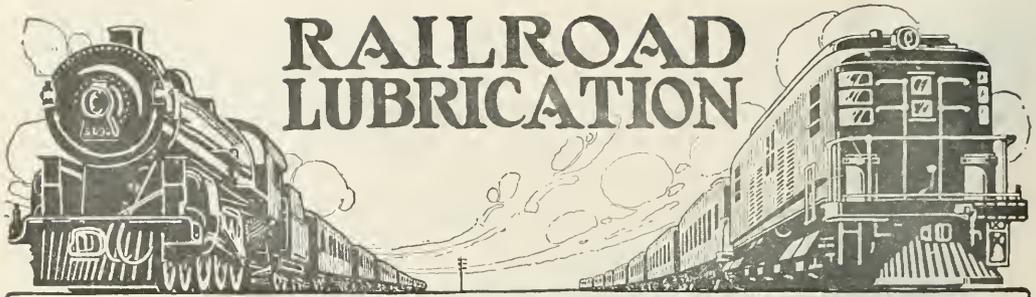
## THE NATIONAL MALLEABLE CASTINGS COMPANY

CLEVELAND  
SHARON, PA.

CHICAGO  
MELROSE PARK, ILL.

INDIANAPOLIS

TOLEDO  
EAST ST. LOUIS, ILL.



## Bulletin No. 188

### Engineers:

As information, will advise that *the \*oil issued engines NOW* for lubrication purposes will be oil of better quality and higher flash.

The valve oil issued to all engines is a high grade superheat oil instead of the valve oil *FORMERLY* used. This oil has a very heavy body and only runs about one-half as many drops to the pint as the former oil. The engine oil also is of a heavy body and will cling to the surface better than the old oil.

By careful handling of the new oils you should be able to note a marked improvement, and the necessity of excess oil tickets is removed.

We want the cooperation of all in our efforts to give you a good oil that will answer every purpose and hold our lubricating costs within reasonable bounds.

MASTER MECHANIC

### \*TEXACO RAILROAD LUBRICANTS

NOTE: This is a bulletin issued by Master Mechanic after Texaco Equipment Lubricants were installed on his road.



**THE TEXAS**  
**RAILWAY SALES**  
 NEW YORK: Whitehall Building  
 CHICAGO: McCormick Building

**COMPANY**  
**DEPARTMENT**  
 HOUSTON: The Texas Company Building  
 ATLANTA: Healy Building



*There is a Texaco Lubricant for Every Purpose*

# SERVICEABLE



The MURPHY **SOLIDSTEEL** ROOF resists distortion of the superstructure. This reduces the number of broken side posts and cracked gussets on steel frame or all steel box cars, and keeps them fit for service.

STANDARD RAILWAY EQUIPMENT CO.

MURPHY **SOLIDSTEEL** ROOFS

NEW YORK  
CHICAGO  
WASHINGTON  
RICHMOND  
PHILADELPHIA

ST. LOUIS  
HOUSTON  
KANSAS CITY  
SAN FRANCISCO  
MONTREAL

WORKS - NEW KENSINGTON, PA.

## For Use With All A. R. A. JOURNAL BOXES



### Special Features of the Universal Pedestal Truck Side Frame

It is arranged for use with any standard make of A. R. A. journal boxes.

It is interchangeable with any truck frame using A. R. A. boxes.

Its design gives maximum strength with minimum weight.

Its metal is carefully tested.

No rivets, bolts or tie bars are used in its construction.

It is easily and quickly assembled and few parts need be carried in stock for repairs.

*Detail prints and information gladly furnished.*

## SCULLIN STEEL Co.

STEEL PRODUCTS.

ST. LOUIS  
Main Office & Works

NEW YORK  
2056 Grand Central Terminal

CHICAGO  
1022 McCormick Bldg.

ST. PAUL  
Merchants Bank Bldg.

In its Rolling Mill Department the Scullin Steel Co. rolls standard sizes Merchant Bars—squares and rounds also flats 7½ in. and under; Structural Shapes—channels and beams 8 in. and under, angles up to 6 in., light rails up to 50 lb., and special sections on request.

# "STANDARD" PARTS

on this Locomotive Consist of  
Steel and Malleable Iron Castings  
Driving Tires  
Forgings  
Springs



**T**HE Jacksonville Terminal Company specified "Standard" Parts on this switch engine to insure continuous dependable service under the most exacting conditions of modern railroad yard operation.

No matter for what purpose your motive power is designed—whether it be for yard, road or industrial service, you should specify "Standard" Parts because of their durability, strength and wearing qualities.

"Standard" Parts on your locomotives are a positive guarantee of better service and greater economies.



*"The 'Standard' Brand  
on your material  
is an assurance of  
essential economy."*

## Standard Steel Works Co.

GENERAL OFFICES:

500 N. Broad St.

Philadelphia, Pa.

NEW YORK, N. Y.  
RICHMOND, VA.  
ST. LOUIS, MO.  
BOSTON, MASS.

CHICAGO, ILL.  
PORTLAND, ORE.  
CITY OF MEXICO, MEX.

HOUSTON, TEX.  
ST. PAUL, MINN.  
SAN FRANCISCO, CAL.  
PITTSBURGH, PA.

Steel Tires, Steel Tired Wheels, Solid Forged and Rolled Steel Wheels, Rolled Steel Gear Blanks, Steel Axles, Steel Springs Steel and Iron Forgings, Steel and Malleable Iron Castings, Rolled Steel Rings, Steel Crusher-Rolls and Shells, Steel Pipe Flanges



**"Railway" Products  
SPRINGS**

—of all types, shapes and capacity for locomotive, passenger coach and freight car equipment.

**TIRES**

—Locomotive driving wheel, engine truck and tender wheel, also car wheel tires.

**WHEELS**

—all classes of steel tired wheels in general use under locomotive and car equipment.

**"RAILWAY" SERVICE**

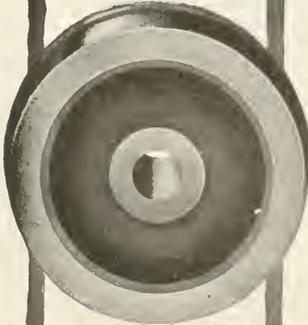
"Railway" extends a service which accepts definite responsibility. Whatever your requirements, presenting special problems, whether on old or new equipment, our engineers will furnish dependable counsel, plans and estimates.

**RAILWAY  
STEEL-SPRING  
COMPANY**

GENERAL OFFICES  
30 Church St., New York

**BRANCHES**

Chicago Denver Detroit  
Louisville Mexico City  
St. Louis St. Paul Norfolk  
New Orleans



*Health, housing and happiness—these three factors in the modern industrial life are dependent upon rapid transportation to counteract the evils of congestion.*



### The World's Greatest Suburban Electrification

As long ago as 1896 the General Electric Company suggested the electrification of the many-miled steam rapid-transit systems of "Melbourne the Magnificent." But it was March, 1913 before the contracts were placed by the State of Victoria, Australia.

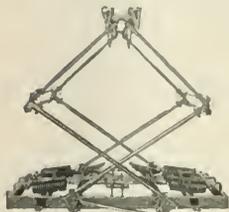
tension direct current was the lowest in both first and continuing costs.

Electrification at Melbourne is making possible a great increase over the old steam schedule range of 13 to 18 miles per hour, thus helping to sustain the reputation of this metropolis as a city without congestion.

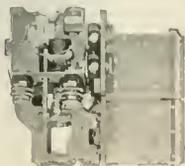
With the experience of the world to draw from, Merz and McLellan, the engineers, recommended 1500 volts direct current and the use of G-E motor and control equipment for the 400 motor cars and 400 trailers to operate over 335 miles of single track. They found the high-



Controller



Pantograph Sliding Trolley.



Line Breaker

# General Electric Company

General Office  
Schenectady, NY

Sales Offices in  
all large cities



# 1922

## FROM NOW TILL THEN

Michigan Central car No. 43155 is equipped with a

**Hutchins All-Steel Flexible Roof**  
*(The Dry Lading Roof)*

which was applied in April, 1907. It has run over 14 years without roof maintenance expense.

The life of a roof new in 1907 and still running can be duplicated by roofs applied in 1922. Thousands of these roofs have run over 10 years without roof repairs.



**HUTCHINS CAR ROOFING COMPANY**  
 DETROIT MICHIGAN



# 1936

# EDITORIAL

## Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

### “Welcome the Coming, Speed the Parting Guest”

**W**ELL, ANYWAY, a lot of railroads as well as a lot of people are still alive on the last day of the year 1921, which is the date of publication of this issue of the *Railway Age*.

Our Annual Review Number, giving in detail the railway history of this year, will be published next week. It will be a statement of facts, which, if carefully read, will convince any reader that the railways are justified in being glad to see the tail light of the year 1921 disappearing in the darkness.

It's been a hard old year—a year of turmoil, controversies, struggles, deficits, unemployment, apprehension and gloom. It runs true to form right to the close of its race. It ends with a slump in traffic and earnings. Nobody can be very sorry to see it go.

We have been told through all the ages, though, in both prose and poetry, that adversity is a very good teacher—in fact, one of the best. “Prosperity,” said Lord Bacon, “is not without many fears and distastes; and adversity is not without comforts and hopes.” He was a wise man, who had known both great prosperity and adversity. The railways have got about as well acquainted with adversity in 1921 as they, or any other industry, ever did.

But, like Lord Bacon's, their adversity has not been without its comforts and hopes. Real progress has been made toward restoring efficiency and economy in operation. The public mind seems to be more understanding and friendly right at the end of the year than it was some weeks ago.

Many men have had physical and mental breakdowns. Some of them fully recovered from the effects and greatly profited by the lesson. We know some men who went bankrupt two or three times, and thereby learned lessons from which they subsequently coined millions.

The true test of the will and ability of every man, of the management of every industry, of every nation, comes not when everything goes well, but when “everything goes dead wrong.” Most things have gone dead wrong in the railroad business in 1921. The experience was replete with lessons, as such experience always is. We don't pretend to know just what all the lessons were, but experience is the best teacher, and in a year when experience is so unprecedentedly busy in teaching, a lot of lessons must have been taught.

How many of them were both taught and learned, we shall be able to judge better perhaps several years hence. One thing is certain. Never did the railways at the end of any year “welcome the coming, speed the parting guest” with more sincerity and fervor

### Important to Subscribers

The *Railway Age* will print at the end of the present volume only a sufficient number of indexes to meet direct requests from its subscribers. Those desiring indexes should, therefore, advise the New York office, 2201 Woolworth Building, New York.

“Poor Richard's Almanac” is out of print and “Poor Richard” himself is dead. But his “If wishes were horses all

#### “If Wishes Were Horses”

begs might ride,” like the soul of John Brown's body continues “marching on.” There has been a week or more of wishing,—by each and everybody for somebody else; a new year being almost here. Men everywhere, catching the spirit of the season, have postponed routine for the moment to extend goodwill and to receive it, and having done so, feel the better for it. Like rest and food after a laborious march it has revived us. But there it stops. Concerning the future there is work to be done which wishes will not perform, marches to be made which greetings will not accomplish, problems to be overcome which goodwill will not solve. To know this is not to enjoy the spirit of the occasion any the less, but to realize our position concerning the new year all the more. In reviving us the season has done its part and it now remains for us to do ours. Remembering this, and that a new year is again upon us, and that time waits for no man, why should not all of us, revived in spirit “fall in.” “right dress,” “call off” and “forward” to the march!

It is a disputed question and one now pending before the courts as to whether the United States Railroad Labor Board

#### Public Invited to Inspect Engine Terminal

has or has not the power to enforce its decisions. However that case may be decided, the real power which lies behind the successful enforcement of any law is public opinion and this fact is coming to be more fully realized not only by politicians and industrial leaders but railroad men as well. The real reason, for example, for the recent decision of the railroad brotherhoods not to strike undoubtedly was their feeling that a very large proportion of the American public would strongly oppose any such action. The railroad managements also realize the importance of favorable public opinion. It is probable that a desire to show the difficulties of engine terminal operation and the facilities for meeting those difficulties caused the Lehigh Valley recently to arrange for a public inspection of its terminal at Ashmore, Pa. This

terminal is a comparatively new development, having been taken over for operation by the railroad in July, 1920. Recently the Lehigh Valley invited the Chamber of Commerce and Rotary Club of Hazleton, Pa., to visit the Ashmore terminal, transportation to and from Hazleton being provided, and every effort was made for the comfort of guests and for the ready inspection of the plant. The idea was to enable business men of Hazleton to become better acquainted with the railroad officers and understand something of the work involved in maintaining locomotive running repairs, cleaning fires, handling ashes and supplying coal, water and sand. The Lehigh Valley has taken a step in the right direction in this case and one which can probably be followed by other roads.

Commerce Reports, the official publication of the Bureau of Foreign and Domestic Commerce, has in a recent issue an interesting compilation of the various trade associations and individual companies which are co-operating with its newly-created commodity divisions in the effort to make more effective the Bureau's work in fostering America's foreign trade. No less than eight associations of manufacturers of textiles are working with the Bureau's Textile Division. Manufacturers of many other commodities also are included in the list as being in close touch with the various divisions which have to do with collecting information regarding the foreign sales of their products. In the whole list, however, there is no mention whatever of any individual manufacturer or association of manufacturers who are working with the Bureau's Industrial Machinery Division. This is the division which is working in the interest of our foreign trade in railway equipment and supplies. Unless there has been some omission from the published list, then, it would seem that manufacturers of industrial machinery have been somewhat slower in realizing the value of the free service offered them by the Bureau than have the producers of other commodities. All the Bureau seeks from the manufacturer is the opportunity to serve and it should be accorded this opportunity wherever possible.

One of the most important advantages of the steam locomotive is its reliability. It is inherently a very flexible machine; the load can be varied over a wide range and the power output adjusted to take care of it. The steam locomotive can stand a tremendous amount of abuse. It may have numerous mechanical defects and yet will pull its load where a less sturdy machine would fail. Railroad men are so familiar with this fact that they are apt to regard the ability of the locomotive to produce results under unfavorable conditions as a matter of course and to take advantage of it by operating power that is not in the best condition. This may be permissible in an emergency, but the practice of persistently running locomotives with minor defects to keep down maintenance charges cannot be too strongly condemned. No machine can be expected to operate economically unless it is maintained in first-class condition and laxity of inspection or maintenance practices which permits defective locomotives to continue to operate without repairs is false economy. Yet this condition probably exists to a considerable extent. In some cases maintenance standards are very high, but inspection inadequate. For example, a locomotive was taken from regular service to be tested and a thorough examination showed the superheater joints had been leaking badly for some time. On another road, indicator tests showed locomotives were

performing without complaints from the crews that had valves improperly set; after the defect was corrected they burned 25 per cent less fuel. When such conditions exist would it not be advisable to develop methods for preventing these losses by the use of superheat pyrometers and steam engine indicators and by thorough, consistent inspection?

The railways of France are to be brought into much closer union under a recent enactment of both houses of the French Parliament. During the war and since, the private companies have sustained heavy deficits which have been met in large part by the government. Under the new legislation the railways will be permitted to pay only their pre-war guaranteed dividends and all additional earnings will go into a common fund to be used in meeting the expenses of the railways showing deficits. Rates under the new plan are to be fixed at a level sufficiently high to meet expenses, including dividends. These rates, however, are subject to approval by Parliament which must take into consideration the general economic situation. Consequently if rates high enough to meet expenses are not allowed the government will have to make good the deficit. Such advances from the government are, however, to be repaid from the common fund upon the return of normal business conditions. In any event a surplus in the common fund will revert to the government. The existing railway companies are to remain intact, but their actions are to be largely circumscribed by two administrative bodies, the Higher Railway Council and the Executive Committee. The Council is to be made up of some sixty members, representing management employees and public. Its function is mainly to act as an advisor to the Minister of Public Works. The Executive Committee is made up entirely of representatives of the managements and its duty is to put into effect the decisions of the minister and the Council on all the railways. Relations with labor are to be taken care of by an arbitration tribunal, half of the membership of which is to be composed of representatives of the railways and half of representatives of the employees, all of whom must be members of the Council. This tribunal will be presided over by a member nominated by the public group on the Council. Some incentive to efficient operation is provided for by a provision allowing a management premium and an employees' premium on any road showing substantial increases in operating efficiency. This is practically the only feature of the legislation which makes the new plan essentially different from out-and-out government operation. The railways, however, were apparently not opposed to the plan.

A gentleman has written to the New York Tribune suggesting that the price of upper berths is too high and that it should be not 20 per cent below the price of lower berths but 50 per cent less. His argument is based on the fact that few persons like to take an upper berth with the result that sleeping cars run too frequently with many of the upper berths unoccupied. He might have added that if the car is fully occupied the majority of the passengers in the upper berths, are disgruntled and dissatisfied at the service they get. This is an old problem which thus far has found no solution. An attempt was made to solve it some time ago by the use of the aisle light. The latter did make the uppers less undesirable but came far from making them entirely desirable, as the actual results have shown. It is rudimentary economics that if a concern is manufacturing, let us say, two commodities—one its main product and the other a by-product—

### Reorganizing the Railways of France

### Free Service to Exporters

### Abusing the Steam Locomotive

### Are Upper Berths Too High?

the respective prices should be such that both can be sold. This is not the practice with sleeping car berths. The lower berths are in most demand, but only in exceptional cases are a good share of the uppers sold. If our New York Tribune friend is right, the price of the uppers must be wrong. In other words, the contention is that it is the price of the upper berth and not the berth that is too high. This is not a simple matter to decide. We have attempted above to suggest a solution on the basis of the law of supply and demand. The trouble even with that is that some people have proposed an agitation to repeal that law and we understand from some of the more brilliant embryo writers on economic subjects that the law, like the eighteenth amendment, has fallen into disrepute. However, the fact remains that even with all that has been done and said, upper berths are not particularly desired by railroad travelers.

When winter comes the railroads are by no means the last to know it. Lubrication everywhere becomes less effective.

**When  
Winter  
Comes**

Wheels slip. Track equipment, becoming clogged with snow, requires immediate and constant attention, and ice forming on surface water makes it less suitable for boiler use. Outside work

becomes exceedingly disagreeable and snow drifts in the path of traffic add the more to the multitude of forces and effects which conspire to delay traffic, antagonize a fastidious public and increase the already heavy expense of transportation. Thus, it has always been and to some extent always will be. For winter will not cease to come. And yet, do railroads, encountering winter, apply themselves creditably in all respects to become less affected by it? A drain which must be kept open freezes and like water tanks or locomotive tenders which are permitted to overflow in their filling, occasions large expenditures for removing ice which never should have formed. A shipment of coal, gravel, earth or cinders, loaded into cars wet and delayed in disposition, or left unprotected from the thawing and subsequent freezing of a snow to which it was exposed, necessitates expenditures in its removal toward which dumping facilities of cars offer little assistance. A pumping station or water treating plant succumbing to the cold becomes temporarily inoperative at a time when perhaps it is needed most, and expenses are thereupon involved in effecting its repair; or open cracks in these or other buildings make themselves apparent at an inopportune time and make additional demands on overtime and coal. A passenger train, its passengers already nettled by irregular temperatures attributable to the susceptibility of unprotected heating pipes to cold, or aggravated by previous delays however unavoidable, is again delayed until a hose line is sufficiently thawed out to permit of supplying the necessary water to the several cars. It is in incidents like these that the question advanced has a natural origin for when such incidents occur they are suggestive more of neglect than of "providential visitation." The fact that incidents of this kind do occur and arise from forces which often permit of complete control, constitutes an aspect of railroading which not only merits but challenges attention.

When the Delaware, Lackawanna & Western spent over \$14,000,000 on the revision of 40 miles of its line west of

**Spending  
Money  
Wisely**

Scranton, Pa., a few years ago, it was said by some that only a wealthy road could afford to undertake improvements of this character. However, in

1920 the operating economies effected by this improvement yielded a return of over 12 per cent on this expenditure of more than \$300,000 per mile, whereas the money itself was secured at a rate of less than 4 per

cent. This is another example of the returns which are awaiting the expenditure of large sums for the improvement of railway properties in all parts of the country. The old saying that nothing succeeds like success applies with special directness to the railways. It is frequently the case that the roads which are confronted with the highest operating costs and are in the greatest need of those improvements which will enable them to reduce those costs, do not have the credit which will enable them to make these expenditures. The result is that their costs continue to rise and their credit to fall. On the other hand, the road which can raise sufficient money to finance a major improvement can use the returns from this improvement to finance still other work. A glance at the operating returns of the railways of this country will show that those roads which have added most liberally to their facilities in recent years are today making the best showings. E. H. Harriman's well-known foresight in this direction brought the Union Pacific from bankruptcy to its present high position. E. P. Ripley accomplished the same transformation with the Santa Fe by pouring large quantities of money into the property. The Burlington, and, in recent years the Illinois Central, are examples of the results which come from the continued improvement of a property to enable it to keep pace with or in advance of the demands of traffic and to handle this traffic with the maximum economy. The growth of our country has been and still is such that the demands for transportation are increasing constantly. Therefore, instead of waiting until the present facilities are overgrown to rebuild or enlarge under the burden of an overload, it is more economical to prepare reasonably in advance and then to reap the reward of economical operation as business increases. It is the history of transportation in this country that traffic comes to the road which is prepared to handle it. It is the management which is just a little more courageous than the rest that sees this opportunity and does its best to grasp it.

**Abolition of Transportation Taxes**

THE ABOLITION of federal taxes on transportation on January 1 will result in reducing the amount of money the public pays to the railways—between \$200,000,000 and \$300,000,000 annually, the amount of the reduction depending on the amount of traffic handled. While the railways have collected this tax they have not, of course, received any of the money derived from it, having turned it all over to the federal government. The tax on freight revenues is 3 per cent, and on passenger revenues 8 per cent. The freight tax of the Class I railways in 1921 has amounted to about \$108,500,000, and the passenger tax to about \$92,500,000, a total of about \$201,000,000. The total in 1920, when a much larger traffic was handled, was about \$233,000,000. While these taxes have gone to the government, and not to the railways, their abolition will of course have exactly the same effect as would the reduction of freight and passenger rates by corresponding amounts.

In addition to having collected these transportation taxes for the federal government, the Class I railways this year have paid taxes levied upon them by the federal, state and other governments of about \$290,000,000. The amount paid in dividends to all their stockholders in 1920 was only \$271,500,000, and will be substantially less this year. In other words, the governments are now taking more of the earnings of the railways in taxes each year than the stockholders are receiving in dividends.

The transportation taxes collected by the Class I railways for the federal government, and the taxes paid by them to federal, state and other governments, will together amount this year to over \$490,000,000. The total net operating in-

come earned by them in the first 10 months of the year was less than \$497,000,000, which shows that, directly and indirectly, the taxes levied by the government upon transportation during the year will fall not far behind the total net return earned by the railways with which to pay the interest on all their bonds and other evidences of indebtedness, as well as dividends on all their stock.

From 1912 to 1921 the taxes paid by the railways from their earnings have increased from \$109,500,000 to about \$290,000,000, or 164 per cent. On the other hand, between 1912 and 1920 the total dividends declared declined from \$340,000,000 to \$271,500,000, and, as already indicated, those paid in 1921 have been still smaller, although the exact amount is not known. While, as a result of government regulation and control, the railways have been a source of declining income to their owners, they have been a source of very rapidly increasing income to the governments that regulate them.

Including both the taxes levied on the railways themselves and taken from their earnings, and those levied by the government on the traffic handled by them, the total taxes derived by the various governments from railway transportation increased by \$380,500,000, or 348 per cent, between 1912 and 1921. Meantime, freight rates have been increased only about 75 per cent, and passenger rates less than 60 per cent. Plainly, it was the government's turn to move toward reducing the "burden of transportation costs."

## The American Roads Are More Progressive

THE DEVELOPMENT of reinforced concrete construction practice in North America is admittedly an outgrowth of prior scientific studies on the continent of Europe, notably in France. Therefore, it is a matter of no little satisfaction to American structural engineers, particularly those engaged in railroad work, to know that the use of reinforced concrete by the railroads of this country and Canada has been carried far beyond anything accomplished in Europe.

Bulletins of the International Railway Association issued during the past year present some interesting data on this subject. The report by the late C. A. Cartledge, formerly bridge engineer of the Chicago, Burlington & Quincy, prepared in 1914 and a 1920 supplement by his successor, G. A. Haggander, summarize American practice, the latter showing that 26 out of 29 railroads report making use of reinforced concrete slab spans to carry railroad traffic. This is in sharp contrast to European custom. While concrete has been applied extensively abroad for the construction of piers, overhead bridges, buildings, fences, platforms, etc., its use in beams, slabs and arches, to carry railway traffic, has been extremely limited.

Thus the report by Marcel Castieau on Belgian, French, Italian, Spanish and Russian railways, states that "It is practically only in Italy that subways having spans of more than 15 ft. 5 in. or 19 ft. 8 in. have been built wholly (floors and girders) of reinforced concrete." Similar comments are made by the reporters for the English and Dutch railways.

It is true that European practice, as reported, represents the status as of 1914 because of the virtual suspension of permanent construction during the war period. It is also a fact, as reported in articles by Major O. F. Allen appearing in the *Railway Age* during the past year, that more extended use is being made of concrete in the restoring of the French railroads in the devastated areas. But even there the concrete work is largely in the nature of arch spans rather than of the slab construction which has had such extended development in America.

Such wide disparity between American and European practice must have a logical explanation. One reason is apparent in the text of the International Railway Association bulletins, namely, a lack of confidence abroad in concrete for carrying the heavy and rapidly moving loads of railway trains. Another objection to concrete is based on aesthetics—a feeling that better appearance may be obtained with cut stone masonry and brickwork. Another is perhaps the greater adaptability of the American workman to employment in a new craft. Whatever the prejudices and objections in Europe, it is clear to all who are thoroughly conversant with American experience that they do not apply on this continent. There have been failures here in great numbers, but they can all be explained by improper design, workmanship or material, and there is now no hesitancy on the part of American railroads to spend great sums for bridges built of concrete.

## Why Repair Foreign Cars?

THAT THE HABITUAL neglect of the foreign freight car is a source of dissatisfaction to officers of the transportation department as well as those of the car department was clearly brought out by N. D. Ballantine, superintendent of transportation of the Union Pacific, in his paper before the last meeting of the Western Railway Club. Mr. Ballantine, whose paper will be found elsewhere in this issue, has performed an invaluable service in drawing attention to and analyzing the effect of a number of transportation factors influencing the decision as to the advisability of making foreign car repairs which have not generally been considered in discussions of this subject. Two of these factors—the per diem rate and the cost of switching to and from the repair tracks—have a direct influence on car repair costs. Mr. Ballantine's conclusion with respect to these two items is that they constitute fixed charges—in the one case against the amount of direct expenditure per day and in the other against the total amount of direct expenditure for shopping and hence, whenever a car is placed on the repair track it is desirable that the maximum practicable amount of work be done and done expeditiously, in order that the amount of these two fixed charges to be carried by each dollar of direct expenditure may be reduced to a minimum.

Here, then, is a conclusion which would seem to justify a material increase in the extent of the repairs made to foreign cars. Unfortunately, however, one other condition must be taken into consideration before this conclusion can be fully accepted. That condition is the adequacy of the surcharge included in the billing price for labor as well as the adequacy of the billing prices of materials to completely cover both their direct and indirect cost. The present labor allowance of \$1.20 an hour was established to include a surcharge of about 15 per cent for direct supervision, 35 per cent for shop expense, switching and superintendence and 6 per cent for fixed charges, a total of about 55 per cent on the basis of 77 cents an hour direct labor charge. At the present time, with a labor rate of 72 cents an hour, the total surcharge has been increased to 66.6 per cent, but with shop overhead in many cases conceded to be over 70 per cent and probably, if all legitimate items of overhead were known, coming nearer to 100 per cent. An increase in the extent of foreign car repairs necessarily involves an increase in the loss to the repairing line, although the rate at which that loss increases may be less than the rate of increase in the direct labor charges. Furthermore, any extensive increase in the amount of repairs made to the foreign car must tend to increase the proportion of fixed charges which must be covered by the total surcharge, because of the fact that more shop work will be required, thus taking up the time of shop

facilities when otherwise only the repair track facilities would be involved.

It would seem, therefore, that the costs of labor and materials are still the key to the situation and that until a road is satisfied that the prices for materials involve no direct loss on that item and that the labor surcharge includes a margin above its average overhead cost which may be applied to absorb some part of the transportation switching costs and the per diem accruing while the car is out of service, there is little incentive for that road to make more than the necessary minimum repairs to foreign cars.

## Unified Railroad

### Electrical Engineering

MANY OF THE smaller railroads can effect economies by the proper unified supervision of the installation and operation of electrical devices. The telegraph was the first application of electricity on the railroads. As electrically-operated highway crossing alarms were introduced the telegraph department naturally took charge of these devices on many roads. However, as the installation of interlockers and automatic signals became extensive, the larger roads established separate signal departments to handle these facilities and also the highway crossing bells. Another department grew up soon after to take charge of the electric lighting of buildings, and the installation of motors in shops, pumping plants, etc.

These three applications of electricity are distinctly separate and the larger railroads can well afford to employ experts for each of them. However, the smaller roads require only a comparatively small part of a highly specialized man's time for each of these separate lines. The problem was solved by one such road by the consolidation of all work of this character in one office. Such a position might carry the title of "superintendent of communication and signals" or "signal and electrical engineer." If the majority of the telegraph plant is operated by the Western Union under contract, his problem in railroad communication is mainly to provide adequate telephone train dispatching and conversational circuits. The maintenance of such equipment has, in several important cases, already been combined economically with the maintenance of automatic signal apparatus. The installation of the wiring and fixtures for the electrical illumination of buildings is to a great extent fixed by standard rules of the insurance underwriters and, whether installed by contractors or railroad forces, is largely an inspection problem. The selection of the motors for shop machinery, pumping plants or coal chutes is limited in most cases to a few types recommended by the manufacturers of the machinery.

One may question how one man can become efficient in all of these several departments. The first requisite is that he confine his energies principally to the engineering of these installations. By participating in the activities of the different sections of the American Railroad Association, the Association of Railroad Electrical Engineers and kindred organizations, and by studying various installations on other railroads, it has been demonstrated that one man *can* master these kindred subjects.

With the installation of any equipment properly engineered, the maintenance resolves itself into a routine, the efficiency of which can be checked readily by men trained in the department. As stated above, a few roads have already seen this opportunity. It would seem advisable for other roads which require only a limited amount of such equipment to investigate their future needs with the idea of educating one man to handle these allied electrical problems.

## Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

### An Undergraduate

#### Defends College Training

CAMBRIDGE, MASS.

TO THE EDITOR:

As an undergraduate I cannot allow to go unanswered the letter by "One Who Has Seen," published in the *Railway Age* of December 12. If one were to accept this writer's judgment as final, it would be to conclude that a college education, for its benefits in post-graduation days, is worthless; that "call boys" make better railroaders than college men; that a modern technical education is merely the learning of a trade, and that college graduates are only a conceited bunch of good-for-nothings.

It would be pitiful if it were true, but it is not. As I pointed out in a previous letter (*Railway Age*, September 17) college graduates are in increasing demand in every important industry—except the railroads. Such being the case, it proves that either these industries are all wrong in their misplaced confidence in the college trained man, or else they are asleep.

It might be conceded that the "call boy" makes a better railroader under the present system of the subordination of the individualism of a man, but to claim that this is due to the wider experience of a "Call Boy" seems unreasonable. It means there is something wrong with the individual, if a man can go through any large educational institution and not have a more diversified knowledge and a more open mind than the man who has grown up in the atmosphere of specialization, which railroading professedly demands. It is the men with this ability to view the situation from more than one angle that the railroads now feel the lack of, and it is this ability the college man should be able to bring them.

A modern college education is not learning a trade. The individual may make it such if he wishes, if he confines himself solely to his books. But if he enters into the life of the institution, puts in something besides his tuition fee by virtue of his entry into college activities, and takes away something besides his degree in the form of friendships with his classmates and a knowledge of human nature, he has learned something far more than a trade. And as for any undergraduate course of study limiting the individual's field after graduation, this is ridiculous in face of the facts. Graduate records of the Massachusetts Institute of Technology show less than 60 per cent of its graduates follow the kind of work they specialized in as undergraduates.

Is the college man really a conceited prig? It is a fallacy of the newspaper public to judge the rank and file of college men by the *faux pas* of a few. The average college man who is in search of a job upon graduation has invested from \$3,000 to \$5,000 in an education, and he feels justified in his investment. He is as much entitled to pride in his investment as the man who has bought a \$5,000 automobile, rather more so, as the college education gives the man the advantage over his fellows in increasing the wealth of the community, an advantage the automobile cannot give. But the education cannot benefit the community to its full advantage if spotted behind a clerk's desk any more than one can the automobile if left out-of-doors in a blizzard.

To be sure, the college man must learn the game from the

ground up, but why make him wait till the end of his career to do it? Let the railroads encourage men to spend their summer vacations learning the rudiments. In this way, both parties can choose their paths without undue expense or either hand. The old-time fascination still exists, and I believe it is increasing among college men. Let the railroads show their share of interest, and we shall see if "One Who Has Seen" has seen it all.

LEANDER H. POOR.  
"Boston Tech" '23.

## Some of Mr. Ford's Ideas May Be Sound

NORTH-WEST REGION

TO THE EDITOR:

The articles in recent issues of the *Railway Age* concerning Mr. Ford's railroad are of interest to all railroad men. There are many claims of important changes that have been brought about on the T. D. & L., among which are the eight-hour day for everybody, no Sunday work, the speeding up of the movement of both loaded and empty cars, and getting a full day's work for a day's pay, etc.

I know there are many old-time railroad men who will not agree with me that it is practical to operate a railroad on an eight-hour basis and without Sunday work, but I claim that such a thing is possible and that the railroads of this country would save millions each year if they would come to an eight-hour day, six days a week, from the president to the section laborer. During federal control many lines tried in a half-hearted manner to cut out Sunday work. At that time I was a general yardmaster on one of the lines in the Western region, which practically tied up from seven o'clock Sunday morning until midnight. The result was that by Monday night we were just about as far ahead as if we had worked every engine in the terminal on Sunday and had run a race with ourselves to see how many drags we could operate. Have you ever noticed how light business is on Monday, regardless of how many engines you may have taken off Sunday? During the past summer the line that I am now with ran only live stock and perishable trains on Sunday. The result was that in this terminal, instead of working 42 switch engines, only 12 were operated, thus saving 30 switch engine days, and Monday night found us in excellent shape as far as the general condition of the terminals was concerned.

The prompt movement of freight and the speeding up of the car movement is another thing that every railroad should give more consideration to. The amount of time it takes to get cars through district terminals on several lines upon which I have worked is excessive, especially in times of car shortage. The terminal superintendent or trainmaster who demands of his organization that every car which has completed loading on industries in his own yard must move in the night, and who demands that his yard shall at all times be properly classified, with the rough box, grain box, auto cars, coal cars, stock cars and other classes of cars kept separated and always ready for movement, has the key to successful and speedy car movement. The general superintendent or general manager who does not demand these things is weak when he lets his terminal organization tell him that such operation is impossible.

Another point brought out in article is that Mr. Ford is demanding a full day's work for a day's pay. Is there any reason why every railroad should not demand as much or why they should not get it? The only reason that I can see for not getting a full day's work from every man is that we are not insisting upon it. The minute a yardmaster or trainmaster commences to get after his men, to get more out of them, he, of course, gets in wrong with the drones, and the result is that it isn't long until the general chairman is told

all about how so-and-so is trying to make a record for himself and is spoiling all the good jobs. The general chairman talks to the general superintendent or general manager and the result is that you are put down as a disturber, called antagonistic and told that you do not have the good-will of your men. The first thing you know the general superintendent, who has lost his nerve, tells you not to crowd things too far and the result is that the yardmaster, trainmaster or superintendent lets things drift. As a matter of fact, if the general officers had the nerve they need to let you alone for a short time until some of the drones or loafers have either been started to work or cleaned out, they would find that things would quiet down, the men would get into the game and give good service, and instead of knockers, everyone would be proud of the record made on the division.

When the order comes to reduce expenses, you can't speed up the work to do it, but must pull off a few section men and let your track go to the bad, or lay off a few clerks and let the check of the yard and your demurrage records get behind, or pull off an engine or a yardmaster and let the service suffer. If we had 100 per cent efficient operation and were getting a full day's work from every employee instead of having to reduce expenses spasmodically as is done at present, we would find that our expenses would be reduced automatically with the falling off of business. These are the conditions I have found on some of the railroads on which I have been employed.

ASSISTANT SUPERINTENDENT.

## Keep Trains Moving

CHICAGO.

TO THE EDITOR:

Considerable thought is being given today to the better movement of trains. The modern advertising of signal apparatus is, "Signals Keep Trains Moving." "Why stop a moving train to tell it to proceed?" One writer has humorously and aptly given the definition of a siding as, "The kiddy in which most of the dividends are dropped." It is obvious that the economical operation of railroads prohibits the unnecessary stopping and standing of trains, and the thinking signal engineer is bending his efforts toward keeping trains moving.

Some splendid results have been accomplished in the elimination of standing trains by signaling tracks in both directions and changing the current of traffic during certain hours. Unnecessary stops are being considered and the chief offender (the stop-and-proceed automatic signal indication) is being weighed in the balance. Can this stop at an automatic signal be eliminated? Lack of confidence in the engineman's proper observance of signals seems to be the only question of doubt.

Observation of the actual speed at which many enginemen run their trains, after passing signals in the caution position, does not make one particularly optimistic about what would happen if they were allowed to pass the next signal without a stop when it indicates "block occupied"; and in most cases the engineman is observing signals as he understands them. He is approaching the next signal prepared to stop, expecting all the time to find a stop unnecessary, and applies the brakes only when he must do so to avoid overrunning a stop signal.

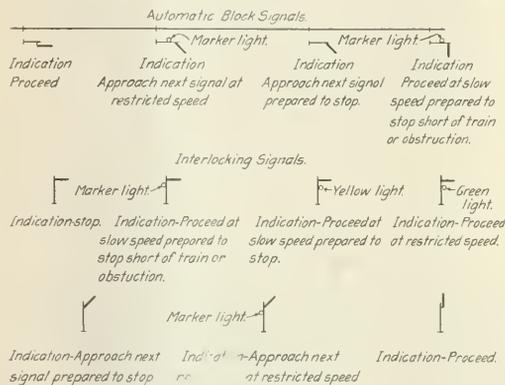
It is true that many enginemen do reduce speed immediately after passing a caution signal, and some of them are very skillful about giving the block ahead time to clear, thus avoiding a stop; but we have with us always the engineman, whose chief thought is to make a good run and who is willing to take the chance to continue at a high rate of speed, feeling that he can make a stop if forced to do so. He is often pulling a high class train which he knows the dis-

patcher is anxious to get over the road, and his main thought is speed.

It was to take care of this fellow that a stop was insisted on before allowing a train to proceed into an occupied block, and if we remove the stop we must be sure that we have some other check on our man. We have been trying to educate him and have been more or less successful, but the fact that the majority of us are still insisting on the stop is proof that we are not sure of him yet.

Now suppose that we make the meaning of our caution signal more specific and insist on a definite speed restriction which cannot be exceeded after passing a signal in the caution position. It may be necessary to consider a three-block indication system to be sure of our man and to be able to check him up properly. This system has proved successful on busy lines and in congested terminal territory, and has made it possible to use short blocks safely. It has a great advantage in providing a distant indication for every caution signal and definitely indicating the speed at which a caution signal must be passed.

The modern light signal may make it possible to obtain



simpler aspects for this system as we are able to make the semaphore arm equivalent vanish at will. We could accomplish the purpose with a marker light if a unit of a light signal were used, displaying the marker light only when better speeds were permitted. For instance, a signal displaying a yellow light or in the 45-deg. position in combination with a marker light, could be used as a distant for a caution signal and would indicate to the engineman—pass the next signal at restricted speed. The caution signal would then display a yellow light or the 45-deg. position without a marker light, and would indicate to the engineman proceed at restricted speed prepared to stop at next signal. The next signal, if displaying a red light or a horizontal position without a marker light, would indicate stop, but if a marker light were displayed, would indicate proceed at slow speed prepared to stop short of a train or obstruction. The clear position would display a green light or a vertical position only. The interlocking signal would then normally display but one light or one horizontal position; if clear, one green light or one vertical position; if at approach restricting, a yellow light or a 45-deg. position in combination with a marker light; if a caution, a yellow light or a 45-deg. position only; if at restricted speed, a green light under a red or a vertical position under a horizontal one; if at slow speed, a yellow light under a red or a 45-deg. position under a horizontal one; if set for a call-on move, a red light or a horizontal position in combination with a marker light.

These are just a few of the possibilities and could, no doubt, be improved upon, but they give a mark to shoot at.

We are headed more and more toward speed control, so why not begin to make all our signals talk speeds to the engineman. A great many accidents would have been prevented if the meaning of a caution signal had carried with it a definite speed restriction. Let's make our signal systems such that, if obeyed, all enginemen will keep their trains running smoothly and efficiently, reducing speed by shutting off steam rather than by applying brakes, and stopping only when the route is not set or when they reach a train or obstruction. Let's keep our trains moving. T. H.

## Extend the Budget System

CHICAGO.

TO THE EDITOR:

The use of the budget system is becoming more widespread among executives who control and direct the systematic conduct of business affairs; even the United States government has become interested in the subject. It is not new to the carriers who estimate their future expenditures for varying periods, and towards the end of the year prepare estimates for the costs of additions and betterments for road and equipment proposed by the various departments as part of the program for the ensuing year, and authorize such work as may be deemed necessary or expedient.

It would be well to go a step further at this time when the ablest minds are striving to solve the question of the best way to further the return to normalcy. I would suggest that budgets be prepared covering materials and supplies that may be needed for maintenance and repairs during the year 1922, or at least for the first six-months' period, said schedules to show estimated quantities or tonnage of such articles or materials that may be used regularly, provided they are standard or the quality or grade is satisfactory; and it would be advantageous to purchase under contract instead of in the open market when needed or sufficiently in advance to permit of manufacture and delivery; and that formal contracts be made or letter agreements be drawn up to cover the purchase of the items in question.

By thus making commitments covering either a definite quantity or tonnage—or naming an estimated figure or the range between a maximum and minimum of requirements—the manufacturer could go ahead and arrange for the purchase and assembly of necessary raw materials and manufacture to meet required deliveries. This will set the wheels of commerce in motion, and with many orders placed the effect would be far-reaching and the railroads would be benefited thereby; unemployment would be lessened, and market conditions would be stabilized.

I am not unmindful of the conditions under which the railroads are working, and that as traffic falls off expenditures are gaged accordingly; also that certain maintenance as well as new work is seasonal, and that the various roads have and follow certain well-defined policies with respect to making contracts for materials and supplies. But in view of the unusual conditions prevailing at this time, I believe that it is an opportune moment to invite consideration of the extension of the contract program.

The question may be raised as to the wisdom of making extensive purchases at this time when the market is unsettled and, generally speaking, on a higher level than it should be normally, but I believe that it will be conceded that prices have gradually receded from wartime levels and will not likely be any higher. Such commitments as are made could provide for price protection to the buyer in the event of decline in cost on unshipped material due on contract.

Under present conditions the price named in a contract

should be considered as a maximum figure in view of the business given the seller at this time instead of deferring the placing of the order until prices may be lower; and in justice to the buyer who may not need the articles or materials at this time, price protection should be afforded him as above suggested.

There is another advantage worthy of consideration with respect to making contracts in advance of immediate requirements, and that is the fellow who takes time by the forelock will be assured of delivery of a definite supply when he needs it.

These are personal views only, and I hope at least a discussion of the suggestions will follow.

I. N. T. ROBERTS,  
Special Assistant, Purchasing Department, Illinois Central.

## A Mature Student on College Men and the Railroads

COLLEGE STATION, TEXAS.

TO THE EDITOR:

I have followed with much interest the discussions in your columns of the college man and his chances on the railroads. I agree with both sides in this discussion. I agree with "One Who Has Seen" in the December 10 issue, when he says, in substance, that the college man, as a rule, is egotistic.

I happen to be a student of civil engineering in the Texas Agricultural and Mechanical College, and, being a close student of human nature, I can see a large amount of ego in my classmates. I say this in all candor and back it up with the statement that there cannot be a finer bunch of young men in any college. It is just a superior air that one will adopt, if one is not careful, when one attends college. I am twenty-eight years old, and having worked in the engineering profession before coming to college, I have seen this trait in many young engineers. This same superior feeling prevents the college man from rubbing elbows with what he terms "rough necks." This has the disadvantage of preventing him from learning little tricks here and there, because the working man has no patience with a "dude" and will therefore refuse to help him. It is this same know-it-all spirit that keeps the college man from taking advice from the experienced non-college man.

There is another phase of why the college man fails in railroading. When he goes, or is sent, to college, the average boy has not the remotest idea of what course to take. Perhaps he has a friend who enrolls in the civil engineering course. So he takes the same course to be with his friend. There are nine chances to one that, should he go into railroading after graduation, he does it in the same haphazard way that he chose civil engineering in his freshman year at college. Now, even though such a man may have ranked high in his studies at school, he cannot make as efficient a workman as the man who merely passed all subjects but chose railroading because he liked it and because the call of the rail was in his blood. No man can hope to succeed if he takes just a passing interest in his work and does not put the drive and "pep" into it that he used to see in the old football team back at college. And, if he does not like the game of railroading, he cannot put that fight into it.

Now may I ask a question? Why did the Southern Pacific do away with their training course for college graduates? James J. Hill had his "kindergarten" for college men on the Great Northern. Were not these courses a success? Surely there are being graduated nowadays college men who have the inborn desire to railroad, and who would only be too glad of such an opportunity.

A TEXAS "AGGIE."

## Another Viewpoint on the Chief Clerk Question

DOWN-SOUTH.

TO THE EDITOR:

I have read with interest the articles which have recently appeared in the *Railway Age*, pertaining to the chief clerk and the relation, feeling or attitude existent between him and his superior officer. On divisions or in departments where both the officer and the chief clerk are really able men, I venture to say that any feeling of antagonism is almost entirely absent, each appreciating the value and importance of the other, with a reciprocation of confidence and esteem.

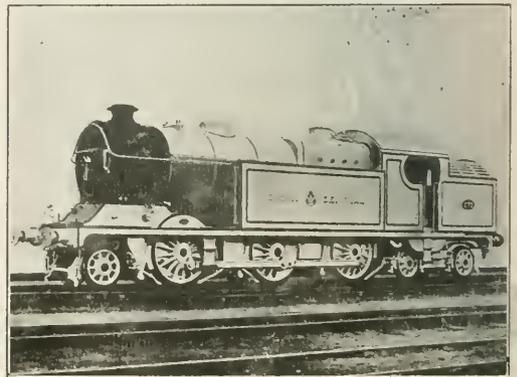
In the different letters the word "recognition" is used frequently, which I infer means that the chief clerk should be regarded as an officer, rather than one whose existence is brought into the limelight only in cases of embarrassment.

A few days since we were on the verge of an eruption of organized labor, and more than ever we heard business men discussing the problem and freely expressing their views on the subject, which were briefly, "that all railroad men are overpaid." It is admitted, in fact generally known, that certain classes or crafts are over-rated, but let's be fair and not say *all*, for a little investigation would be necessary to prove that it is not the chief clerk.

For the sake of comparison, take a car foreman and a chief clerk. In 1915 the former received \$60 per month and the latter \$100. Today the foreman receives \$260 and the chief clerk \$185. Further, the office manager in almost any commercial concern receives at least one-and-one-half times as much as a chief clerk whose duties certainly carry more responsibilities, his activity and accountability not being confined to the operation of the office alone, but on the contrary involving his passing upon matters of importance in the shop, on the division, or on the system.

Call him what you will, confine his name to the counter-signature on passes, if it is felt that in this way he can best serve, but when his name is placed on the pay rolls, take into consideration that the education which he must necessarily have cost time and money, and unlike other occupations he cannot expect to be a master car builder, etc., but must continue "to serve" faithfully in his position of trust and confidence until his superior passes to broader fields, and his successor brings along "his man" as chief clerk; or perchance, opportunity knocks upon his door and takes him to some commercial firm or corporation that recognizes ability, even in office men, and compensates them accordingly.

ICH DIEN.



A 2-6-4 on the Great Eastern, England



One of the New Sleepers Leaving Angus Car Shop

## New Sleeping Cars for the Canadian Pacific

Composite Cars of 12-Section and Compartment Types  
Have Special Facilities for Comfort of Passengers

**I**N HANDLING its through passenger business the Canadian Pacific is confronted with some interesting problems. The road has the advantage of a fine scenic route and with a line extending from coast to coast, is well situated to secure transcontinental passengers. On the other hand, the competition for Pacific Coast traffic is very keen. Furthermore, the

facility for the comfort of travelers. These conditions were carefully considered by the railroad in drawing up the designs of the latest order of 12-section and compartment sleeping cars. As a result the cars have been fitted with numerous conveniences not found in the ordinary sleeping car.

One of the notable features of the 12-section type sleeping cars is the provision made for the comfort of women passengers. This is particularly desirable in the transcontinental service on account of the length of the runs and because the proportion of women in tourist traffic is greater than where the cars are used principally for business trips. The ladies' dressing room is unusually commodious. It is fitted with three wash stands, each of which has a light above it, and is provided with a three panel, adjustable mirror. A long mirror is also fitted in the saloon door. One of the innovations which should contribute materially to the comfort of women passengers is a couch which has been installed in the dressing rooms on some of these cars. This provides an opportunity for relaxation that would seem highly desirable in view of the somewhat uncomfortable form of the usual sleeping car seat.

The new equipment consists of 69 sleeping cars, 56 of the 12-section type and 13 of the 10-com-

partment type. All the cars are constructed with steel frames and wood interior finish. The frames and trucks were built by the Canadian Car & Foundry Company at Montreal and the interior fittings were applied at the Angus shops of the Canadian Pacific.

On account of the special features of the design, the 12-section sleeping cars are extremely long, the length over the



Interior of the Twelve-Section Sleeper

prospect of the journey of 2,886 miles between Vancouver and Montreal, requiring four and one half days to complete, might seem unpleasant to inexperienced travelers. The hotels conducted by the company at intervals along the route afford an opportunity for breaking up the journey, but even so the character of the traffic demands that the passenger equipment be of the highest grade, provided with every

body and sills being 75 ft. 6 in., and the coupled length 83 ft. 10½ in. The truck centers are spaced 59 ft. 6 in. apart and the wheel base is 70 ft. 6 in. The height from the rail to the top of the roof at the center is 14 ft. ¾ in. and the extreme height, from the rail to the top of the heater jack, 14 ft. 6½ in. The width at the eaves is 10 ft. 1½ in. and over the side sheets 9 ft. 10 in. The average weight of the cars is 173,400 lb.

The underframe is built with a deep fish belly center sill and Z-bar side sills. The center sill has a maximum depth of 30 in. between crossbearers for a distance of 28 feet and is 15 in. deep at centerplate. The web plates are 5/16 in. thick and are spaced 16 in. apart. At the bottom they are reinforced by two 3 in. by 3 in. by ¾ in. angles on each plate, while the stiffening at the top consists of one 6 in. by 4 in. by ¾ in. angle placed outside each plate with the short flange horizontal. A top cover plate 30 in. wide by 9/16 in. thick extends continuously for practically the full length of the sill, the ends reaching just beyond the door posts.

The body bolsters are of the double type commonly used with six wheel trucks, of built up construction, the two arms being 4 ft. 8 in. apart. The cross bearers, which are spaced 15 ft. 9 in. from the center plate, are also built up of pressings reinforced with angles and top and bottom cover plates,

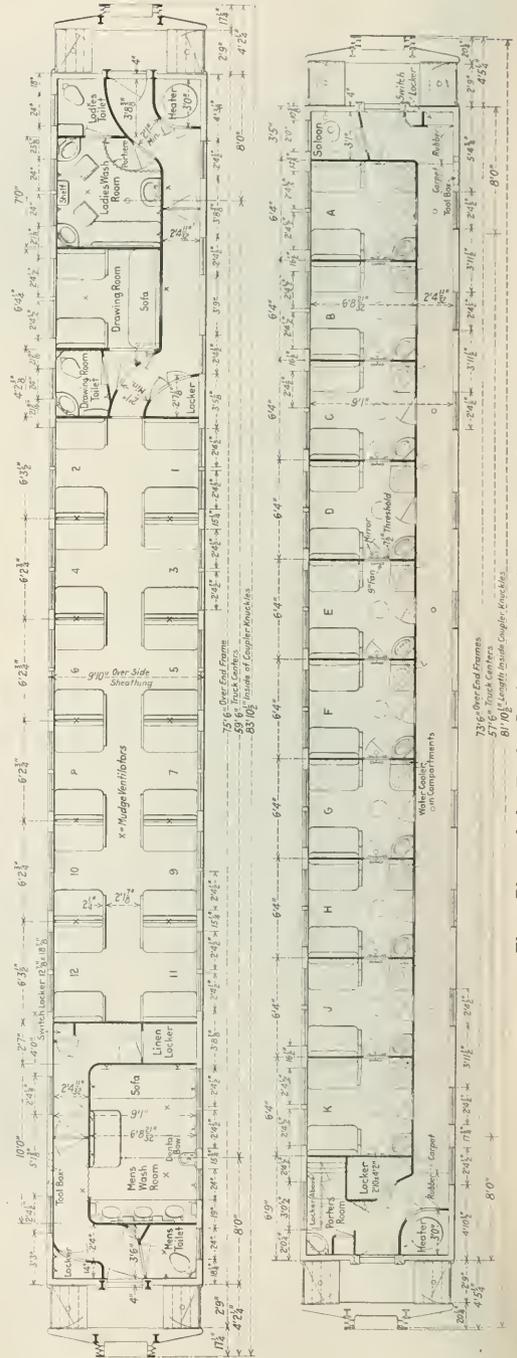


The Dressing Room Is Designed to Insure Comfort for Women Travelers

the construction being shown in the cross sectional drawing. The floor beams are pressed from 5/16 in. plate, the spacing varying from 16 in. to 3 ft. 1½ in. The side sills are each made up of a 5 in. 11.6 lb. Z-bar and a 3 in. by 2½ in. by ¼ in. angle. The body end sill is a 5/16 in. pressing. An end cover plate, 5/16 in. thick and 22 in. wide, extends across the underframe at each end. At the bolsters there are also ¼ in. by 5 ft. 6 in. by 8 ft. 11 in. cover plates. The remainder of the floor is covered with 1/16 in. floor plates, which overlap the centersill cover plate on each side and fit over the floor beams and side sill.

Side Frame

The side posts are of two types, those at the piers being of U-sections made right and left, the sheets being riveted to the flanges. The center pier posts are of a deeper U-section, the web being turned toward the outside of the car. The side plate is a Z-bar, 2 in. by 2½ in. by 4½ in. by 3/16 in. and is made continuous from end to end. The carlines are pressed of ½ in. steel. The lower carlines, which are continuous across the lower deck and up the side of the clerestory, are of ½ in. steel plate of U section, irregularly spaced at intervals of about two feet. A Z-shaped deck plate ½ in. thick is



Floor Plans of the Twelve-Section and Ten-Compartment Cars



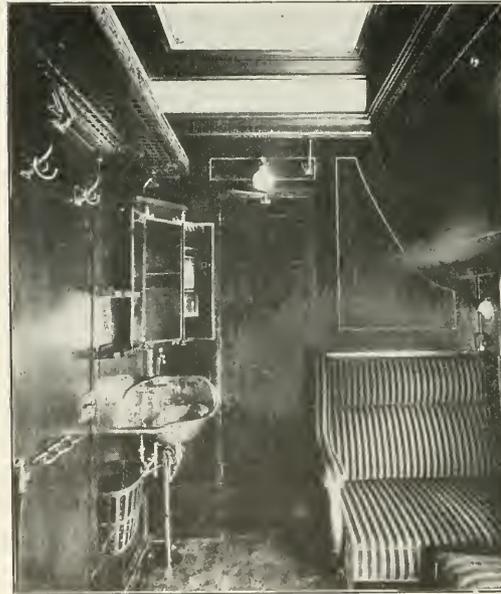
the smoking and dressing rooms. Additional heating pipes are provided which have individual regulation for each section. Twenty-one Mudge ventilators are applied to insure adequate air circulation.

The lighting systems are of the Safety and Stone-Franklin types. The batteries have a capacity of 600 ampere hours. The main lighting fixtures have semi-opaque bowls, five of this type being used over the berths and one in the stateroom. The usual arrangement of small lamps in the berths and aisle night lights is followed. The smoking room is fitted with a two-light ceiling cluster and individual lamps over the mirrors, while in the ladies' dressing room wall fixtures only are used. The conduits for the piping are set inside the walls and the roof.

The cars are carried on Commonwealth six-wheel trucks, with 5 in. by 9 in. journals, having a wheel base of 11 ft. They are equipped with steel tired wheels and clasp brakes. The brake equipment is the schedule LN1812 designed for 90 per cent braking power. Miner hand brakes are used with a sheave wheel between the drum and the brake rigging to increase the force.

### Compartment Cars

In general design the compartment cars are quite similar to the 12-section sleeping cars. The body is two feet shorter



Interior of One of the Compartments

and changes have been made in the spacing of posts to fit the altered floor plan. The interior woodwork is mahogany and the upholstery is Biltmore plush. Care has been taken in fitting the compartments to afford the maximum of comfort and convenience for the passengers. Individual regulation of heat and ventilation is provided. A long baggage rack, an umbrella rack, trays and numerous hooks are facilities that will appeal to the traveler with a large amount of luggage. Space at one end of the car has been utilized for a saloon while the other end carries the heater, linen locker and porter's room.

Both types of cars are equipped with safety appliances to meet the United States and Canadian standards. The handholds are attached so that they can be removed without dis-

turbing the car framing, flooring or lining. Other appliances include bottom operating lower couplers, Miner A5P draft gear, Acme single web type diaphragms with rubber hoods, JM expander rings, Miner buffer and Woods single roller side bearings.

## Freight Car Loading

WASHINGTON, D. C.

**L**OADING of revenue freight during the week ended on December 17 totaled 727,003 cars, as compared with 742,926 the previous week, or a reduction of 15,923 cars, according to reports compiled by the Car Service Division of the American Railway Association. This was a reduction of 75,268 cars compared with the corresponding week last year and 79,731 cars, compared with the corresponding week in 1919.

Livestock and coke were the only commodities to show increases over the week before, the former totaling 33,861 cars, which was an increase of 1,702 cars over the week of December 10 and 3,389 cars more than were loaded during the corresponding week in 1920. Coke increased 507 cars within a week, bringing the total to 7,145.

The decrease in the total loading was due principally to a falling off compared with the week before of 12,194 in the number of cars loaded with merchandise and miscellaneous freight, the total being 449,547 cars. This was, however, 11,615 cars more than were loaded during the same week in 1920 but 18,300 less than during the same week in 1919.

Coal loadings totaled 134,842 cars, 2,994 less than the week before and more than 90,000 cars below the corresponding week last year. Grain and grain products amounted to 47,383 cars, 1,297 cars less than the week before but 12,152 cars more than during the same week one year ago and 9,839 cars more than during the corresponding week in 1919.

Shipments of forest products, compared with the week before, also fell off 1,054 cars, the total being 48,690 cars. This was, however, 1,942 more than were loaded one year ago but 3,058 less than during that week in 1919. Ore loadings amounted to 5,535 cars, a decrease of 593 cars compared with the week before.

Compared by districts, the Southern and Southwestern districts reported increases in the loading of all commodities over the week before, but all showed decreases compared with the corresponding week in 1920.

For the period ending December 15 the freight car surplus increased to 371,221, as compared with 339,532 on December 8. Surplus box cars totaled 138,214, an increase of 8,219 compared with the total on December 8, while surplus coal cars numbered 186,508, an increase of 20,445 within the same period. An increase of 1,384, which brought the total to 17,814, was reported for stock cars while there was an increase of 405 within a week in the number of surplus coke cars.

T. H. DAVIS, general chairman of the Association of Shop Craft Employees, Eastern Region, Pennsylvania Railroad, in a letter sent to all shop craft employees in his territory, says: "The railroad officials have many troublesome questions confronting them, but they have shown every disposition to try to strain a point in our favor when we were able to show them the justice of our claims; and, as co-operation is a two-sided thing, we feel that we ought to show our appreciation by helping them in every way we can. . . . What we need now is good business, to enable us to improve our conditions, and if every employee would just speak a good word for the old P. R. R., it would mean more business, and more business means more money to all of us. . . . It would be a very short time until the Pennsylvania could pay better wages and have better conditions than any other railroad in America."

# The Railway Situation and General Business\*

Why Premature Reductions of Rates Will in the Long Run Cost Shippers Far More Than They Will Benefit Them

By Samuel O. Dunn

Editor of the *Railway Age*

I HAVE COME to talk to you about a condition of affairs which should be known and given grave consideration by every farmer, business man and public man. This condition is a serious maladjustment in the relations between the railroad system of the country and its industrial, commercial and financial systems. For over ten years, and especially within recent years, the capacity of our industries for producing commodities, the capacity of our commercial concerns for marketing them and the capacity of our financial institutions for financing their production and marketing, have been rapidly outgrowing the capacity of our railways for transporting them. If we follow that road much longer we shall all participate in a disaster which the exercise of ordinary intelligence and foresight would avoid.

The pessimist is always unpopular. He is never less popular than in a period of business depression and losses, of widespread unemployment and suffering, such as the present. In such times the man who is heard gladly is he who essays to tell how we may escape from the conditions immediately oppressing us, and who speaks cheerfully about the early future. No man can hope to ingratiate himself with busy people whose time he takes to paint gloomy pictures of evil developments which seem sure not to occur for some time, and which most of those who hear him may believe will never occur at all.

But every successful man in his own business looks farther ahead than the next few months, otherwise he would not succeed. Likewise, if our people as a whole are to be successful in their business as a whole and after the present depression are to enjoy a period of prolonged prosperity, they must look farther ahead than a few months. Now at present the railways could handle much more business. But you know why that is. The amount of traffic offered to them depends on how much production and commerce are being carried on by other concerns; and the production and commerce being carried on now are abnormally small.

The conditions to which this is due will soon pass—in fact, are passing. On that point I can speak as optimistically as anyone. Just when a substantial revival of general business will occur few would venture to predict. That it will come comparatively soon almost everybody who speaks with any authority does predict.

## Great Shortage of Transportation Probable

The question I urge business men to consider now is the effect the railroad situation probably is going to have when this improvement in general business does come. We have always had a great revival of business after every period of profound depression in the past. We never had such a revival of business which did not result in the railways being offered a much larger traffic than they had ever handled before. In almost every such period we have had traffic congestions and large "shortages of cars," as we have called them, because the railways met difficulty in handling the increased business. If we judge by what has been done and not done in the railroad and other businesses within recent years, and by what is being done and not done now, we must conclude that the losses caused by transportation condi-

tions in the next period of active business will exceed all the losses that ever were caused by such conditions in our past history.

If you are sceptical, as I suspect many of you are, as to whether this prognostication of evil is based on facts, let me recall some recent history. Have you forgotten what occurred in 1917 and 1918? We entered the Great War in 1917. Under its stern stimulus the productive activity of the country was raised to the highest pitch, and it was speedily found that although they handled more traffic than ever before the railways could not handle all that was offered them. In 1918, under government control, the amount of business taken by the railways was constantly restricted by the policies of the Fuel Administration in limiting the amount of coal that "non-essential" industries could have, and of the Railroad Administration in making use of embargoes to prevent freight from coming too fast. Again, in the latter part of 1919 and almost throughout 1920 there was constant complaint from shippers that the railways were unequal to the demands, although then also they were handling more traffic than ever before. You can hardly have forgotten that in 1920 there was great alarm lest the amount of coal produced and transported would be insufficient for the country's needs. To prevent a coal famine the Interstate Commerce Commission issued an order giving priority in the use of open top cars to coal over all other commodities. The result was that construction work of all kinds was seriously interfered with.

These and other facts that could be mentioned show that during most of the four years from 1917 to 1920 the capacity of the railways proved unequal to the demands of commerce. Why was this? It was because for some years their development had been slowing down, while that of other industries had been going forward with unprecedented rapidity. In the seven years ending with 1913 the total freight handled by the railways increased 39 per cent. In those years they increased the number of their freight cars by 315,000, and the number of their freight locomotives by 8,100. In the seven years ending with 1920 the freight handled increased 38 per cent, while the number of freight cars increased only 143,000, and the number of freight locomotives only 4,200.

Why did the development of the railways slow down while that of other industries was accelerating? It was because the amount of new capital invested in the railways greatly declined, while the amount invested in other industries greatly increased. This, in turn, was due to the fact that different classes of our business concerns were dealt with so differently by our state and national governments that while the profits of the railways increased very little those of other classes of concerns increased enormously. In the three years ending with 1911 the net income of the railways, after paying interest and taxes, averaged \$430,000,000 a year. In the next three years it declined. In the three years ending with 1917 it averaged \$558,000,000, or 30 per cent more than in the three years ending with 1911. The government guarantees while they were under government control were based on their net return in the three years ending with 1917. Therefore, for purposes of comparison it is fair to say that their net income in the five years ending with 1919 averaged 30 per cent more than in the three years ending with 1911.

\*An address delivered on December 16, before the Lions' Club, and Chamber of Commerce at Dallas, Tex.

Since the value of the dollar had greatly depreciated, this increase in net income, measured by what it would buy, really was a decline.

### Vast Profits in Other Businesses

What was occurring, meantime, in other lines of business? The returns of all the corporations of the United States to the Bureau of Internal Revenue show that in the three years ending with 1911 their net income, after paying interest and taxes, averaged a little over three billion dollars a year. In the three years ending with 1914, while railway net income declined, the net income of other corporations increased. In the five years ending with 1919 the net income of all corporations averaged seven billion dollars a year, an increase of 120 per cent, or four billion dollars a year.\* This increase in net income for that five years aggregated twenty billion dollars—an amount exceeding the valuation placed by the Interstate Commerce Commission upon all the railways of the United States in the great rate case last year.

I do not criticise these vast profits of general business. I cite them in contrast to those of the railways merely to show there was such a large difference in profits in the railway and in other industries during these years as made it inevitable that the development of other industries should far outstrip that of the railways. Some indication of how much greater the development of other industries was than that of the railways is given by statistics regarding the amounts of securities issued. In the three years ending with 1914 the total amounts of securities issued by railroad and industrial corporations were about the same, being for each about two and a quarter billion dollars. On the other hand, in the three years ending with 1920 the total securities issued by the railways were less than a billion dollars, while the total issued by industrial corporations exceeded six billion dollars.

### Can Other Industries Produce to Their Capacity?

Can anybody reflect upon such facts without being apprehensive as to what will occur when business revives again and the industries of the country begin to try to produce to their capacity? We shall be confronted with a situation the like of which never existed. We shall have a system of railways the capacity of which has been within the last ten years, and especially within the last five years, increased relatively less than at any time since the first rail was laid. We shall have productive industries whose capacity probably has been increased relatively more within those same years than ever before. How can we draw any conclusion other than that when that time comes the traffic offered to the railways will far exceed what they can handle? But the amount of production and commerce that can be done depends on the amount of farm products, of fuel, raw materials and finished products that can be transported; and for transportation we are chiefly dependent on the railroads. Therefore, instead of being able to operate and produce to their capacity, the industries of the country will have to limit their production to the basis of the amount of traffic the railways can handle. But the vastly increased investment which has been made in these productive industries has been made on the assumption that they will be able to produce to their capacity. If they are not able to do so they will not be able to earn a return upon all the great investment which has been made in them. Prolonged inability of our productive industries to utilize a large part of their productive capacity would cause disaster to many of them and to many of our commercial and financial institutions.

Is it not plain there is a real danger in this situation for all of us? If there is a real danger in it, what should be done to avoid it? It would seem the only effective thing that can be done is to give the development of the railways

\*These statistics regarding net income of all corporations are based on data given by Prof. David Friday in his recent very illuminating and valuable book, entitled "Profits, Wages and Prices," page 15.

a chance to catch up with the development of other industries. That, in turn, cannot be done in any way under private ownership except by allowing them to earn a net return sufficient to attract more investors. You know as well as I do that no large new investments are now being made in the railways. In the interest of the public welfare they should be strenuously engaged in increasing their facilities. They are doing nothing of the kind because since they were returned to private operation the percentage of net return they have earned has been the smallest in over 30 years, and they have had to retrench in every way to earn that.

Perhaps you will agree that the railway situation menaces the future prosperity and welfare of the country, but you will add that it is the fault of the railways themselves that within recent years they have not earned larger profits and got into better condition, physically and financially. You may say they would be all right if they had been as efficiently managed as other concerns. There are, however, certain facts which demonstrate that the difference between the profits made by the railways and by other concerns within recent years have not been due to differences in management. These facts have a very direct bearing upon the high rates of the railways which are now the objects of so much attack.

### Great Increases of Prices Explain Profits

The statistics of the Interstate Commerce Commission show that the average freight rate in this country steadily declined until it reached the lowest point in history in the years 1916 and 1917. On the other hand, the statistics of the Bureau of Labor show that in the years 1916 and 1917, before there had been any advance in freight rates throughout the country, the average wholesale price of all commodities was 70 per cent higher than in the years 1900 to 1910. There were large general advances of freight rates in 1918 and again in 1920. But even the advances granted in 1920 made the average railway rate only 70 per cent more than it was in the years from 1900 to 1910, while in 1920 the average price of all commodities was 175 per cent more than in the years 1900 to 1910. There can be no disguising the fact that the enormous increase in the profits of other industries from 1915 until the present severe depression began was due mainly to great increases in prices; or the further fact that the failure of the railways to participate in these large increases in profits was due to rigid systems of government regulation and government control which made it impossible for them to increase their rates and profits when other concerns were so greatly increasing theirs.

After this long period of years when the railways were restricted to net returns which were positively beggarly compared with those made in other lines of business, and when in consequence the development of the railways fell far behind that of other industries, we might not unreasonably expect to find the farmers and business men of the country unitedly demanding a government policy in dealing with the railways in future which would insure rapid and adequate increases in their capacity. And what do we find? We find ourselves in the midst of a great agitation for general reductions of freight rates which is supported by the argument that the present rates are so high that they are insupportably burdensome to business. We see numerous bills being introduced in Congress to repeal all the provisions of the Transportation Act which were adopted to reform the restrictive and destructive system of railway regulation we had before the war. We have had even the spectacle presented of large business interests threatening to ask Congress to pass legislation to compel the railways to reduce their rates, if they did not voluntarily reduce them, without the reasonableness of reductions being first passed on by the Interstate Commerce Commission.

A stranger to the facts would infer from what is being widely said and published that the present rates of the rail-

ways are relatively very much higher than the present prices of most commodities. And what are the facts? In July, 1921, the latest month for which we have complete statistics, the average freight rate per ton per mile in the entire United States was 65½ per cent higher than the average rate from 1900 to 1910, while the average wholesale price of all commodities was 66.7 per cent higher than the average wholesale price of commodities in the ten years from 1900 to 1910. Are the present rates unreasonably high in proportion to prices in general? Are they so high that they are really preventing the movement of traffic? The present average freight rate is almost exactly as high in proportion to the present average wholesale price of commodities as it was in the years 1900 to 1910; and in those years the industrial activity and the prosperity of the country were so great that the total freight handled by the railways increased 80 per cent. Since the traffic of the railways increased 80 per cent when the relations between the average railway rate and the average wholesale price of commodities was almost exactly the same as now, how can it be rationally contended that the present relationship between rates and prices is so burdensome that it is preventing a revival of business?

### Most Commodity Prices Still Higher Than Rates

As a matter of fact, however, the present relationships between railway rates and the prices of individual commodities are not the same as from 1900 to 1910. There are some commodities, such as farm products and metals and implements, the present prices of which are relatively much lower compared with freight rates than they were then. On the other hand, the average prices of those things which the Bureau of Labor classifies as cloths and clothing are 93 per cent higher than then, of fuel and lighting 98 per cent higher, of drugs and chemicals 82 per cent higher, of lumber and building materials 130 per cent higher, of house furnishings 147 per cent higher, and of miscellaneous commodities 72 per cent higher. Is it fair to say it is high railway rates that are imposing an insupportable burden on business when the average prices of most important groups of commodities are still higher in proportion than the railway rates charged for transporting those same commodities?

I do not attack the present prices of any commodities. Perhaps there is justification for all of them. I am not defending all the present railway rates. Many of them are too high and should be reduced, and since the last general advance in 1920 many rates have been reduced, some under irresistible political pressure from Washington, and some to enable the railways to move traffic which they otherwise would not have had a chance to move. When it is said, as it frequently is said, that the railways ought to reduce all their rates in their own interest, because if they would reduce them they would get to handle more traffic and make more money, there is attributed to railway officers too little knowledge of and interest in their own business. They are more anxious than anybody else to increase net earnings; and they are quite as able as anybody else to decide what changes in rates will increase net earnings. They can be relied on to reduce as rapidly as possible every rate whose reduction will increase net earnings.

### Our Most Important Railroad Problem

But from the standpoint of the farmer, the manufacturer, the merchant, the banker, the working man and every other class of our people the most important question regarding the railroads at present is not whether, by how much, or when, their rates should or will be reduced. Our most important problem affecting the railroads is that of devising and carrying out of a policy which at the earliest possible time will cause a renewal on a large scale of increases in their capacity. An immediate general reduction of rates might confer temporary benefits by temporarily stimulating

general business. But it would inevitably make the net operating income of the railways less than it otherwise would be. That would postpone the time when the railways could begin rehabilitating and enlarging their facilities.

Because the capacity of the railways was inadequate in 1920 many farmers could not get their grain to market when grain prices were high. The coal operators complained they could not operate their mines to capacity because they could not get enough cars. Construction concerns complained bitterly because the giving of priority in the use of open top cars to the coal operators made it impossible to do all the construction work they wanted to do. The manufacturers had to send hundreds of thousands of automobiles over the country under their own power because the railways could not haul them. The railways already are increasing their purchases of equipment; and rates which will enable them to maintain and increase their net returns will enable them to increase their capacity so that when a revival of business comes they will at least be less unequal to the demands than they would be if premature reductions of rates were made. On the other hand, if premature general reductions of rates are made the railways will be unable even to start to reduce the great disparity between their capacity and the productive capacity of the country's other industries. Therefore, premature general reductions of rates seem as certain, by preventing increases in the capacity of the railways, to prepare the way for a very serious crisis in the relations between our transportation system and our industrial, commercial and financial systems when general business revives as anything that could be done. What will it profit the farmers and business interests to secure comparatively small reductions in their rates and comparatively small increases in the business done by them now, if these transient benefits are obtained at the cost of far greater losses extending over much longer periods?

The other business interests of the country are far better able to stand the present rates than the railways are to stand general reductions of them. The other business interests have suffered heavy losses during the present depression, but so have the railways. And while other business interests entered this period after having earned for over five years a net income more than twice as great as before the war, the railways entered it after having during those same years received a net income which, by comparison, was very little greater than before the war. When you are disposed to say that railway rates should go down along with prices, do not forget that prices were increased long before rates were, and that when rates had been advanced a maximum average of 70 per cent the average wholesale prices of all commodities had been advanced 175 per cent.

### How to Get Rates Down

While premature general reductions of rates would be immediately disastrous to many railways and in the long run would be harmful to business of all kinds, it cannot be questioned that in future the general tendency of rates should be downward, although this is equally true of the prices of many commodities. But these reductions of rates, in the interest not only of the railways but of the entire nation, should be preceded, or at least accompanied, by corresponding reductions in railway operating costs. Much the largest part of railway operating expenses consists of the cost of labor. Compared with the present costs of living and the wages now being paid in other industries, the wages of most railway employees are too high. The railways are preparing to ask the Railroad Labor Board for a further reduction of wages. But the Labor Board is a government body. As such it represents the public. Therefore, indirectly, the labor costs imposed by it are imposed by the public. Farmers and business men are a majority of the public. Therefore, indirectly, the farmers and business men determine the largest part of

the operating expenses of the railways. Have they any right to complain against the managements of the railways if, through the Railroad Labor Board, they themselves impose labor costs on the railways which make it necessary to maintain relatively high rates? The public's recourse, if high labor costs compel high rates, is not to the railway managers, but to the Railroad Labor Board and to the Congress under whose legislation the Railroad Labor Board acts.

Another of the very largest items of railway expenses is the cost of fuel. This item is, and for many months has been, excessive because of the high prices of coal. The high prices of coal have been mainly due to the high wages of the miners. The present wages of union miners were fixed by a government commission to remain in effect until March 1, 1922. The railways are not responsible for high freight rates in so far as they are due to high prices of coal.

Since the present rates were made necessary, and since their continuance has been made necessary chiefly by high labor costs and high prices of coal, the railway managements have a right, and it is their duty, to say to the farmers and business interests that they must help to secure reasonable reductions of railway operating costs if general reductions in rates are to be made under conditions which will not in the long run injure more than they will benefit the farmers and business interests themselves. And in this connection it is relevant to point out that the Railroad Labor Board, in fixing wages, is required by law to consider the cost of living; that the cost of living is mainly determined by the general level of prices; and that the present high prices of some classes of commodities and the high rentals in our cities are the principal obstacles to securing a really large further reduction of railway wages.

#### Government Regulation Centers Attacks on Railroads

We are in the midst of a period of severe and even violent readjustment of business and economic conditions. This readjustment has been made necessary by the war. The war caused enormous increases of prices and wages and temporarily created new relationships between different classes of industrial, commercial and financial enterprises. It was inevitably followed by a period of worldwide depression which has caused great reductions of prices and wages, and is establishing still other new relationships not only between the industries and commerce of different nations, but also between different classes of industrial, commercial and financial concerns in our own country. Today those in all lines of enterprise are struggling fiercely not only to minimize immediate losses, but also to put their various houses in order so that after the present period of stress and distress they may again do a large business and make large profits. In this period of struggling back to "normalcy" the railways have peculiar difficulties to contend with. They have to work through it without being able to draw upon large surplus profits made during the war years. They have to work through it with every rate they can charge subject to regulation by government bodies, and with the wages and working conditions of every one of their employees controlled by a government body. The managers of other business concerns are comparatively free to use such means as they see fit for getting out of their difficulties. The railways must use such means as government authorities will permit. Unfortunately, also, the very circumstance that their rates and wages are regulated by the government concentrates upon them pressure and attacks of a kind from which most other business concerns are exempt.

The policies that the government bodies which regulate the railways will adopt and follow will depend mainly upon public sentiment. If public sentiment demands that railway rates and wages shall be regulated largely regardless of both the immediate and later effects upon the net return the railways are able to earn, the capital they can raise and the

extent to which they can prepare for rendering adequate service, then rates and wages will be so regulated. On the other hand, if public sentiment demands that both railway rates and wages shall be regulated with due regard to the net returns that the railways can earn, and to the effects that will be produced in the long run upon the service they can render to the public, rates and wages doubtless will be so regulated. Public sentiment in this country is omnipotent, and in the long run, regardless of statutes and courts, dictates the policies followed by the government in reference to any industry over which the government extends its regulating authority. Therefore, the farmers and business men of the country can call the tune to be played by government regulation. They can call a tune which will prevent or one which will cause revival of the development of the railways. In reaching a decision as to what tune they shall call, however, they should not overlook one fact of very great importance to themselves. This is, that those who call the tune will finally have to pay the piper, and that upon what tune they call will depend how large the piper's bill will be.

It is hard to believe a people who have used so much sagacity and foresight as the American people have in respect to many other great matters should persist in using so little sagacity and foresight in dealing with the railroad problem as they have used thus far. Surely we have learned too well the costly lessons taught by our experience with government regulation and government control to renew the policy of railway restriction, and even confiscation, which we systematically pursued for years, and which we so gladly and even enthusiastically abandoned when we passed the Transportation Act. If we return to the old pre-war policy of constantly restricting the railways to the lowest rates and least earnings which the courts will not declare confiscatory, we had just as well reconcile ourselves to the expectation that sooner or later private ownership and management of railroads will fail and the public will adopt government ownership and management or Mr. Plumb's famous plan; it will do so from sheer desperation and disgust at the natural and unavoidable results of its own mistaken and short-sighted regulation.

This railroad problem is not merely the railroads' problem. In a much more real sense it is the public's problem. Government regulation makes it necessary for the public to participate in solving it, and the public will be injured or benefited much more by the way it is solved than the owners and managers of the railways. It will never be solved right until business men direct their influence upon government regulation by the same intelligence and foresight that they use in managing their own affairs. If business men ever do apply to the railroad problem the same intelligence and foresight that they use in solving the problems of their own businesses. Then, and not until then, will the railroad problem be solved and solved right.

---

MISS A. I. DEWAR, operator for the Canadian Pacific at Heron Bay, Ont., finds her name in the general superintendent's "educational" (discipline) record for November, with 25 merit marks for special efficiency on a very cold night. She received a telegram at 11:15 p. m., addressed to a man who was hunting four miles out in the bush, advising him of the death of his brother, in Port Arthur. She, when relieved at midnight, took the message and, accompanied by her sister, braved the dangers of a lonely tramp through the bush, in which wolves could be heard, and walked the four miles, the mercury at the time standing at 5 degrees below zero. By her prompt action the recipient of the telegram was enabled to take train No. 1 to Port Arthur before morning. Whether or not the Ottawa government, like that at Washington, has men out hunting for chances to impose penalties (on the railroad, not on the operator) when telegraphers work overtime, is a point on which no information is given.

# Western Maryland 1921 Net in Sharp Contrast

Almost Back at Pre-War Level—Turn-Around Operation Saves  
50 Per Cent in Time of Tonnage Trains

THE ANNUAL REPORT of the Western Maryland for 1920 was issued to the public on Monday, December 5.

The meat of the report is largely contained in the concluding remarks of Lawrence Greer, chairman of the board. The statement says:

The plans of the company, interrupted during the period of federal control, for the establishment and maintenance of its railroads as an efficient transportation system of modern type, were resumed upon the restoration of private operation, and have been followed during the present fiscal year and since its close. To this end, particular attention has been directed toward the enlargement of the terminal facilities at Baltimore through the acquisition of additional contiguous property, the completion of a new steel coal pier with modern mechanical unloading apparatus, the substantial expansion of storage and handling facilities at the grain elevator at Port Covington, and the acquisition of steel carfloats of large capacity for service in Baltimore harbor. The transportation capacity of the property has also been increased by the addition of 40 Consolidation freight locomotives, and attention has been given to the maintenance of track and structures so that, with the return of normal business conditions, every de-

an item of \$1,000,000 partial payment on account of the guaranty, but not the full amount accrued. This compared with the net corporate income in 1919 of \$231,665; in 1918, of \$342,527. There is a wealth of interesting detail in the annual report and a perusal of it will give a complete story of what the road has been doing month by month since the beginning of 1917. The comparative tables showing the cost of locomotive performance per 100 miles run, etc., for the years 1917 to 1920 and the detailed figures relative to maintenance for the years 1912 to 1920 will be found especially interesting.

## Present Monthly Net About \$250,000

Immediate interest in the railroad lies naturally in what the carrier is doing at present. The figures for operations in 1921, so far as they are available, afford an interesting study in contrasts as compared with 1920. At present the road's net railway operating income is running at the rate of



One of the Heavy Consolidation Locomotives Which the Western Maryland Is Using in the Turn Around Service Between Hagerstown and Cumberland

These locomotives are among the heaviest of their type ever built. They have 27 by 32 in. cylinders, a total weight of engine of 294,000 lb. and of 565,000 lb. including the tender. The weight on drivers is 268,200 lb. and the tractive effort 63,200 lb. The tender, which has six-wheel trucks, carries 15,000 gallons of water and 16 tons of coal. Built by the Baldwin Locomotive Works.

partment of the transportation system may be properly equipped to provide efficient service for the handling with economical results of the business which may be offered.

## Results of Operations in 1920

The annual report of the Western Maryland is issued so late and the changes have been so great in the period which has intervened since the close of the year with which it deals, that interest lies less in the details given in the report than in the operating results which are being secured at present. In 1920, nevertheless, the road handled a record business. It moved 18,335,345 revenue tons of freight and its revenue ton-miles totaled 2,289,370,222. The best previous year was 1918 when 17,156,884 tons were moved and the ton-milage totaled 2,185,961,077. The average haul in 1920 was 125 miles; in 1918, 127.

The property in 1920 had a net railway operating income of \$675,975, which figure was as large as it was because of a large credit per diem balance. The 1920 net compared with deficits in 1918 and 1919, during the federal control period. For purposes of comparison also it may be noted that the standard return based on the results for the three years ended June 30, 1917, was \$3,079,593. The corporate income account for 1920, including government rental for January and February and the guaranty for the following six months, showed a net for the year of \$57,735, including

over \$250,000 monthly and has been running at that rate all the year. The net railway operating income for the first ten months of 1921 has been \$2,512,328 as compared with a deficit of \$235,085 in the first ten months of 1920. The traffic handled this year has been considerably below that of last year. The latest figures available as this is written are those for September. The net ton-miles in the first nine months of 1921, including both revenue and non-revenue freight, totaled 1,355,688,000. The figure for the first nine months of 1920 was 1,703,157,000. In October the road's operating ratio was 73.6, for the ten months it was 79.5. An even more interesting figure is the transportation ratio; the figure for the first ten months of 1921 was 37.4. The few roads that have been able to better that figure are the ones that are inclined to feel most optimistic about present railway conditions.

## Coal Traffic 60 to 65 Per Cent

The Western Maryland operates 804 miles of line of which 114 is trackage rights. The main line extends from Baltimore to Connellsville, Pa., where connection is made with the Pittsburgh & Lake Erie, thereby supplying a route to Pittsburgh. Another important line extends from Cumberland to Elkins, W. Va., and a third from Hagerstown to Shippensburg, Pa., where traffic is turned over to the Phila-

delphia & Reading. The road's most important traffic is bituminous coal, the percentage of that commodity to the total traffic averaging about 60 to 65 per cent. This coal is obtained from the Somerset, Georges Creek, Gauley and Fairmont fields. The Somerset and Fairmont fields are served by lines operated but not owned by the Western Maryland; connection with them is secured through trackage rights over the Baltimore & Ohio. The larger part of the coal is moved eastward, principally to Baltimore. A considerable tonnage moves via Shippensburg, Pa., and thence over the P. & R. including the sizeable quantity received from the B. & O. at Cherry Run. So important is the movement via Shippensburg that the Western Maryland and P. & R. have worked out a method whereby locomotives of either road are used between Hagerstown and Harrisburg.

**Capacity of Grain Elevator to Be Doubled**

The Western Maryland has extensive tide-water facilities at Port Covington, Baltimore. These include a new coal pier, a large grain elevator, etc. The road handles a considerable quantity of grain, received principally from the Pittsburgh & Lake Erie at Connellsville. The present elevator has a capacity of about 1,500,000 bushels. So fast has the grain traffic grown in recent years that the road has had to expand its grain handling facilities. Contracts have just been let for additions which will about double the capacity of the present elevator at Port Covington.

**Making Human Nature Work for the Railroad**

The Western Maryland in 1920 had a revenue train load of 1,064 tons, this comparing with 909 in 1917, 956 in 1918 and 985 in 1919. The road is required to use helper engines on every operating division in one direction and on all but two divisions in both directions. One of the busiest divisions is that from Cumberland to Hagerstown. It is on this division that the road has worked out what the officers describe as a method of "Making human nature work for the railroad." The district in question is 80 miles in length. Trains are handled to Williamsport, 73 miles

The following details concerning the operation of this division have been supplied by an officer of the road: Prior to the calendar year 1919, tonnage freight trains were handled between Hagerstown and Cumberland by dispatching the crews from their home terminal at Hagerstown to Cumberland and tying up for rest at Cumberland. When the crews' rest was up and they were available for service, they were called for the first tonnage train leaving Cumberland for Hagerstown.

This plan was objectionable due to the fact that the men were required to take their rest away from their home terminal and frequently there resulted considerable terminal delay to the Hagerstown crews, after their eight hours' rest was up at Cumberland, before an eastbound tonnage train was ready to start the return movement to Hagerstown. Naturally the men would prefer spending their spare time at home rather than at a distant terminal, and their expenses would also be less if the service could be arranged so that they could return promptly upon arrival at Cumberland.

**Operation Before Adoption of Turn-Around Service**

The following statement shows by months the average time on duty for all tonnage trains operated from Hagerstown to Cumberland, and Cumberland to Hagerstown for the calendar year 1918, which indicates the results before the turn-around service was made effective:

Calendar year 1918	Average time on duty west-bound to Cumberland		Average time on duty east-bound to Hagerstown		Average total time on duty for round trip between Hagerstown and Cumberland	
	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.
February	14	30	14	30	29	05
March	14	12	12	06	26	18
April	12	37	11	36	24	13
May	12	17	10	56	23	13
June	11	56	12	07	24	03
July	12	25	11	44	24	09
August	12	33	13	08	26	01
September	12	57	13	46	26	43
October	12	55	13	04	25	59
November	12	59	12	17	25	16
December	14	00	14	23	28	23

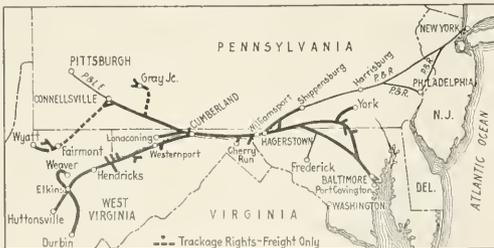
When the turn-around service was started, it was found that by close co-operation between the Hagerstown and Elkins division trains would not be started westbound from Hagerstown until such eastbound tonnage was available at Cumberland to permit of a quick turn-around upon arrival of the crew at Cumberland.

After the train reached Cumberland on the westbound movement the engine was sent to the engine terminal and relieved for 1 hr. 30 min. for the purpose of cleaning the fire, ash pan, and also furnishing the necessary fuel, water, sand, and supplies. The crew was relieved for this period and used the opportunity to rest and eat.

**Time Reduced One-Half**

The turn-around plan has been in operation since 1918, and by months to date, since January, 1921, the following statement shows the average time on duty, eastbound and westbound, in handling the same character of traffic by turn-around service that was formerly moved by tying the crews up at Cumberland for rest:

Calendar year 1921	Average time on duty west-bound to Cumberland		Average time on duty east-bound to Hagerstown		Average total time on duty for turn-around trip between Hagerstown and Cumberland	
	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.
January	7	57	10	06	18	03
February	7	30	9	12	16	42
March	6	54	8	31	15	25
April	6	48	7	44	14	32
May	6	36	7	36	14	12
June	6	13	7	09	13	22
July	6	10	7	14	13	24
August	6	13	7	33	13	46
September	6	22	7	42	14	10
October	6	47	7	47	14	34



The Western Maryland

up a grade of 0.3 per cent with a single Consolidation locomotive—one of the heaviest of its type in use. From Williamsport to Hagerstown, 7 miles, a helper is required to assist the train up a 1.1 per cent grade. The line is single track and equipped with automatic block signals operated on the absolute permissive principle, under which the block sections for opposing movements extend from siding to siding, and for following movements the block extends from signal to signal. All train dispatching is by telephone. In the automatic block section territory Form 19 train orders are used to restrict the rights of trains where formerly 31 orders were used exclusively for this purpose. The difficulty in stopping and starting 100-car trains without damaging draw bars was very great. By delivering train orders without stopping the train a great deal of damage and delay was eliminated with a marked improvement in the facility of operation.

In all of the figures given above the total time on duty includes the initial and terminal delay as well as road time. In cases where the trains do not turn, on account of engine failures or for other reasons, the total time on duty is included so that the figures represent the actual facts. The reduction of approximately one-half as between the old method and the new will indicate the manner in which the crews work to get their trains over the division in both directions. It shows the result of "Making human nature work for the railroad."

**A Record Performance**

The best performance of record was made during June,

1921, when the following results were obtained for the month:

Average time on duty westbound.....	6 hr. 13 min.
Average time on duty eastbound.....	7 hr. 09 min.
Total average time on duty.....	13 hr. 22 min.
Average eastbound loads handled per train.....	94
Average actual gross tons handled per train.....	6,186

An arbitrary limit of 100 cars or 7,000 actual gross tons eastbound is in effect.

The best performance for the month of June was by Western Maryland Consolidation engine 803 as follows:

Train consisted of.....	100 loads
Actual gross tons handled.....	7,312
Actual time on duty eastbound.....	6 hr. 19 min.
Distance run.....	80 miles

# Agreement on Reorganization of French Railways

## Private Companies to Work Under Joint Financial Arrangements with Dividends Guaranteed

By M. Peschaud

Secretary, Paris-Orleans Railway

THE REORGANIZATION of the French railways has at last been accomplished by the passage of the Railway Act by the French Parliament. The promulgation of the act was a difficult proposition in view of the complexity of the situation in which the railways found themselves after the war. The problem has been solved by retaining the operating concessions of the private companies with certain revisions to meet the new conditions. All surpluses, after payment of guaranteed dividends, are to pass into a general fund for the benefit of all roads and increases in dividends are only possible by a "management premium" based upon efficiency of operation.

The present mileage of these principal lines is as follows:

	Miles
Paris, Lyons & Mediterranean.....	6,078
State.....	5,599
Paris-Orleans.....	4,844
Est.....	3,071
Midi.....	2,546
Nord.....	2,358

Since the war France has also acquired the Alsace-Lorraine railway system, in the north, which is being run, as a second government railway.

### Present Organization

All of the above railways, except of course the State, are operated as incorporated joint stock companies under certain concessions which will expire between 1950 and 1960. At the end of that time they will be turned over to the government on payment by the government of an indemnity covering rolling stock, stores and other movable property. At the same time the government has the right to take over the companies at any time on payment of an indemnity equal to the average yield of the five best years during a period of seven years prior to the time of purchase.

The five private companies' freedom of administration has only been limited, up to the present time, by the terms of their concessions and the powers reposed in the Minister of Public Works, the latter being fixed by law and founded on the right of the government to regulate railway traffic in the interests of public safety. The companies have been allowed to fix rates, within the limits of fixed maximums, subject to the approval of the Minister.

As regards finance, each of the five companies had its own budget. In accordance with the existing agreement, the government guaranteed in case of a deficit the interest

and principal of their capital, both bonds and shares, and the payment to the share capital of a minimum dividend. These amounts, which were advanced by the government in the form of a loan, paid 4 per cent interest and were to be repaid out of future profits first of all, then out of the sums payable for the recovery of equipment when the concession should come to an end, or in case of repurchase. When the profits reached a certain limit the government received a share. The revenue between the guaranteed minimum and the dividend which gave the government a right to a share was reserved to the stockholders.

In the case of three of these companies this government guaranty was only temporary—and for two of them, the Nord and the Paris, Lyons & Mediterranean, it had expired on December 31, 1914,—just the time, in fact, when it was most required. The guaranty in the case of the Est was due to expire in 1934. For the other companies (Orleans and Midi), it held good until their concession should come to an end.

To enable the Nord and the P. L. M. to carry on during the war an act was passed authorizing the companies to charge the deficiencies previously guaranteed to the original account—in other words to have recourse to a loan to meet their liabilities.

In 1914 one company, the Nord, had never applied for the government guaranty. Two other companies, the P. L. M. and the Est, had repaid their debts and the former had even been in a position to share its profits with the government. The debt of the two other companies was about 615 million francs (\$123,000,000 at par exchange).

### The Weak and Strong Roads

The organization, both administrative and financial, of the State railway is entirely different. It is under the direct authority of the Minister of Public Works and has at its head a manager appointed by the Minister, who is assisted by a Railway Board (Conseil de Réseau), which is merely a consulting body. The budget of this railway is attached, as a supplementary budget, to the ordinary government budget. Parliament approves the accounts and votes the credits. The public treasury has to meet the deficits and would have benefited from the profits if there had been any, but as a matter of fact this railway has always had a large deficit.

The various railways are very differently situated. They

all have a large agricultural traffic, for the reason that agriculture is well developed in every district of France, but while the Nord, the Est and the P. L. M. had also, before the war, a large industrial traffic, the Orleans, the Midi and the State were at a great disadvantage in this respect. This explains why the returns for these lines were so much lower than the returns for the first three. The figures of the gross and net returns show this clearly. For 1913 they are as follows:

Railway	Gross income per mile	Net income per mile
P. L. M.	\$19,823	\$8,528
State	11,467	1,628
Paris-Orleans	12,805	5,220
Est	19,767	7,607
Midi	11,936	5,288
Nord	28,187	10,908

At the beginning of the war, the financial position of the French railways, was as follows: In 1913 three companies had shown a surplus—the P. L. M., \$1,600,000 and the Est and Nord about \$1,400,000 each. Two companies had a deficit—the Paris-Orleans \$3,400,000 and the Midi about \$200,000. The State railway alone showed a deficit of \$13,400,000.

### Inferior Management of State Railway

The management of the State railway has always been much inferior to that of the other companies. When in 1913 the operating ratio of the companies rose from 55 per cent to 61 per cent, that of the State railway reached 85 per cent. Although the traffic conditions of the Orleans railway and the State railway were very similar, the first, as we have seen, obtained a net yield per mile of \$5,220 and the second \$1,628 only.

### Conditions During and After the War

With the declaration of war all the railways of France, in accordance with the law, passed into the control of the Minister of Public Works, who operated them as a single railway without altering their financial system, except as mentioned in the case of the Nord and P. L. M. When the railways were returned to their owners in 1919 prevailing conditions did not permit of reverting to the pre-war organization and a temporary system was established until a new scheme could be devised.

The management was restored to the railways but part of the war organization was retained, inasmuch as liaison committees were formed with the object of adjusting the traffic conditions on the different lines.

The railways also suffered financially from the after effects of the war. The restriction of commercial traffic and the continued rise of prices diminished the receipts and greatly increased the operating expenses. This resulted in a deficit which two successive increases of rates (70 to 80 per cent for passenger, 140 per cent for freight) were unable to cover. At the end of the year 1920, the deficit on the whole of the principal French lines since 1914 had risen to \$1,114,600,000. It attained \$1,327,000,000 if the bonuses granted by the government to employees on account of increased cost of living are taken into account.

### The Problem

In 1918 the government entered into negotiations with the companies with a view to deciding upon the basis of a reorganization. The problem was a double one. It was necessary on the one hand to remedy the situation created by the war and on the other hand to establish a new organization for the future. Owing to the conciliatory spirit shown on both sides during these negotiations, they were successful and on May 18, 1920, the government submitted for parliamentary approval the agreement that the Minister of Public Works had drawn up with the approval of the companies.

After minute investigation and long debates in the Chamber of Deputies and the Senate, this agreement has just re-

ceived the approval of both houses, after being subjected to numerous modifications in detail.

The following are the principal provisions of the new railway law:

### Payment of Past Deficits

The provisions of the agreement are as follows: Owing to the fact that during the war the railways were to some extent managed as state railways the agreement provides that the government shall be responsible for the deficits of the companies since the beginning of the war up to January 11, 1921. Therefore the amounts paid by the government to the companies as guaranties of interest will not be repayable. As regards the Nord and P. L. M. whose guaranty of interest came to an end in 1914 and who were authorized to have recourse to a loan to cover their deficits, the government will ensure to them repayment of the sums thus borrowed by payment of annuities.

Moreover, the guaranteed debt in the case of the two railways which still had one was stopped on December 31, 1913, and ceased to bear interest on that date. It cannot be demanded until the end of the concession or in case of repurchase by the government.

Apart from this, the companies renounce all claims on the government both as regards losses caused by the war and events previous to the war. The government acts for them in regard to all reparations from the enemy.

### The Reorganization of the Railways

Two principles were kept in view in drawing up the new scheme:—First, the maintenance of the existing companies, and second, the assurance that they should work in unison, and that there should be a closer association between the railways and the main interests of the nation; also, as a result the attainment of their financial solidarity subject to the rule that their receipts should balance their expenses.

The companies have strictly speaking, been maintained without any alteration in their statutes, their interconnection organization, the powers of the boards of directors or their relations with their shareholders and employees. But new organizations have been formed, which are placed above them. These are the Higher Railway Council (Conseil Supérieur des Chemin de Fer) and the Executive Committee.

### The Higher Railway Council

The Higher Railway Council, which is a consulting body, was formed with the object of ensuring better co-operation between the management of the railways and the general interests of the country. Its duty is to give advice and to keep the public bodies and the managements of the railways informed regarding the requirements of the users of the railways. But this Council has no real powers beyond those that the ministry delegates to it. The Ministry of Public Works retains all the powers which it previously possessed, with two additions. It obtains the right to reduce the rates when they seem contrary to the public interest, and also, in case of refusal or unwillingness on the part of the companies, it can officially carry out the measures which it already had the right of enacting.

It will have to consider all questions of a general character referring to the constitution of the railways, the method of running them, the plant, supplementary works, electrification, rates, etc. The Minister of Public Works cannot make any decision in these matters without being obliged to lay the matter before the Higher Railway Council, and if he does not wish to accept its opinion he must first call a second meeting of the latter.

The Higher Railway Council will include, besides the chairman, 60 members as follows: Eighteen members of the railway executive committee, 12 representatives of the employees (these representatives will be elected by the staff

itself, two for each railway, one to represent the higher grade employees and the other the lower grade employees), 30 representatives of the general interests of the country, nominated by the Minister.

### The Executive Committee

The purpose and powers of the Executive Committee are entirely different. While the Higher Council, by reason of the powers assigned to it, includes, besides the representative of the railways, representatives of the employees and the shipping public, the Executive Committee includes representatives of the railways only.

It is composed of 18 members, namely:—For each company, two directors and the manager, and for the state railways, the president and vice-president of the board of directors and the manager. It will be noticed that it does not include any representatives of the employees. A request was made that they should be included, but the companies did not give their consent to the proposal, as this committee has to make decisions which are binding on the railways, and must not, therefore, include members having no responsibility.

Whereas the duty of the Higher Council is to define the main lines of railway policy, and fix the general rules, the Executive Committee is the managing body of the railways in everything which affects their mutual interests. It was formed to propose and make all resolutions regarding questions which affect the railways as a whole, to put into force the decisions of the Minister of Public Works and the Higher Railway Council and apply them on all the railways.

### Labor Provisions

With the object of putting an end to the disputes between the companies and their employees on questions of wages, pensions and working conditions a tribunal for arbitration purposes has been provided for. Half of this body will be composed of the representatives on the Higher Council of the railway or railways affected, and half of the representatives of the employees of the Council presided over by an arbitrator appointed by the members of the Council representing the public.

Finally we would mention that the agreement makes provision for the eventual incorporation of the Alsace-Lorraine railways into the organization. Judging from recent statements made by the government, this incorporation will shortly take place.

### Financial Organization

The financial co-ordination of the railways leads, as a natural consequence, to their financial solidarity. Under the old system each railway had its own budget and accounts. In 1913 the statements of the railways showed a favorable balance for three of them and a deficit in the case of the other three. It happened thus that the first were able to distribute higher dividends to their shareholders, whereas the deficiencies of the second were a burden on the government, either directly as in the case of the State railway, or indirectly by reason of the guaranty of interest.

The principle of financial solidarity inscribed in the new convention consists, on the contrary, of making the railways as a whole bear the expenses of running them all. From the moment that it was decided to run the various railways as a single railway and the Executive Committee obtained the right to make decisions binding on all the railways, it became necessary for each one of them to feel that they were guaranteed against any injurious consequence of these decisions. Without this guaranty the railways would probably never have consented to accept the new administrative organization nor to bear the expenses of working in unison with the State railway.

Financial solidarity is achieved by the creation of com-

mon funds in which the profits of each railway will be placed, and from which the railways having a deficit will draw in order to make up their deficiencies.

Each railway will draw on its receipts according to its expenses and its financial burdens (interest and dividend payments and retirement of indebtedness). The surplus remaining will be paid into the common fund.

### The Government's Responsibility

Rates must be so fixed as to bring the receipts up to the level of the expenses—subject to parliamentary approval. Every five years Parliament will revise the maximum rates on the advice of the Higher Railway Council. The agreement expressly states that this cannot be done, however, without taking into account the economic situation. It was, therefore, necessary to devise other means of making the common funds balance, and they are as follows: either the treasury will advance directly to the common fund the amount which is lacking, which amount must be repaid from the fund within the space of two years, or else the government will have to fall back upon the credit of the companies, which will each issue on behalf of the government bonds for the amount necessary to cover their deficiencies. Parliament will determine every year the maximum advances which the treasury can make to the common fund and the maximum bonds which can be issued by each railway.

These measures, which are of course temporary, are specially intended to be applied during the first few years when the financial position of the railways will probably still be difficult. When normal conditions arrive, the adjustment of the rates will, very likely, be sufficient to enable the railways to balance their accounts.

When the common fund shows a surplus, this surplus will be applied in the first place to repaying any advances which may have been made to it. They will then be used to form a reserve fund, the maximum amount of which will be fixed by the Minister of Public Works. The surplus, if there is one, will go to the government. In this event the Minister can lower the rates so as to make the receipts and expenditures balance again.

The dividend on the shares of the companies is guaranteed at the minimum fixed by the former agreements, namely, 54 francs for the Nord, 35.50 francs for the Est, 55 francs for the P. L. M., 50 francs for the Midi and 56 francs for the P. O. A nominal dividend has been fixed for the State railway which will be collected by the treasury.

As has been shown, this dividend does not rise or fall on account of the constitution of the common fund, except by means of the management premium.

### The Management Premium

The management of its railways by the companies would have been apt to become entirely disinterested if the amount of the dividend has been uninfluenced by operating results. It was necessary, therefore, to find some means of interesting the companies in the efficient running of the railways. The agreement attains this end by creating a management premium.

It was difficult to find a formula, and the bill was altered several times when it was being drawn up and in its passage through Parliament. To form a basis for the calculation, it was necessary to define as exactly as possible the factors which were supposed to show most definitely the results of good or bad management. Then each of these factors had to be given a relative value, according to existing circumstances.

The two factors decided upon are the following—Development of traffic and economy in operation.

In view of the present financial situation of the railways, which had a deficit, as shown in the 1920 statement of accounts, of no less than \$500,000,000, more weight was at-

tached to the second factor with the object of encouraging economical management on the railways.

Working on these principles, the management premium is calculated as follows. It has two distinct factors:

(A) Three per cent of any surplus receipts shown in the statement of accounts, with reference to the receipts in the 1920 statement of accounts, which will be taken as a basis. In making this calculation, the receipts resulting from the two increases of rates which came into force during the last few years will not be taken into account. This last condition is made with the object of inducing the railway companies to develop their traffic, which is measured by the bare receipts, and not by increases of rates which would swell the total receipts independently of any increase of traffic.

(B) One per cent of any decrease, with reference to the 1920 statement of accounts, in the deficiency of the receipts as compared with the expenses, and further, when the receipts exceed the expenses, one per cent of the total excess. On the other hand, if the statement of accounts shows an increased deficit compared with the 1920 statement, a penalty of two per cent of such increase will be exacted.

Taking into account the fact that the results for 1920 were adversely affected by the price of coal, the decrease in which is already making itself felt, and that the fact of this decrease in price alone will show better results without much credit being due to the companies, the agreement has made certain alterations in the 1920 results. According to expectations the premium will vary round about \$1 per share and may increase later to some extent as regards the first statements of accounts.

#### Employees' Premium

It was desired to interest the employees also in the efficient running of the railways and the agreement provides that they shall receive a premium in the same way as the companies. It will be calculated according to the formula which we have just quoted. The factors will, however, be doubled until the total attains a maximum per railway of 1.50 per cent of the receipts forming the basis of the first factor, namely, the bare receipts.

The premium will be divided among the employees in accordance with the rules which the State Council draws up for the application of the act. At first each employee will receive a share of the premium amounting to about \$20.

#### New Capital Bonds

The new agreement has altered the system with regard to bonds issued by the companies. Formerly they were obliged to redeem all bonds before they were due. This responsibility became heavier as the date of redemption drew near and even before the war there had been some idea of altering the agreements in this respect. The new convention has decided that the bonds issued under the new system will be redeemable in 60 years and that, when they fall due, the government will be responsible for bonds which are not yet redeemed. This is one of the most interesting financial arrangements made by the new convention.

#### Repurchase

Finally, the agreement modifies the terms on which the concessions will eventually be repurchased. We have seen that the government reserved to itself the right of repurchasing the concessions at any time on the following terms:

Payment of an annuity based on the net yield of the last few years, and an indemnity equal to the replacement value of the rolling stock and stores.

The method of arriving at the value of rolling stock has been changed under the agreement. Henceforth value is to be considered original cost less depreciation at 2.5 per cent for each year of service. The stores will be paid for at cost price.

The agreement provides further that when two of the existing companies have turned over their properties to the government on account of the normal expiration of their concession the other companies can also claim their repurchase. The companies could not consent to remain in a combination in which the government would be in the majority.

## President Believes Railroads Recuperating

WASHINGTON, D. C.

THE PRESIDENT believes that the railroad situation is now very greatly improved, it was said at the White House on December 27, in response to a question as to the prospects for improved business conditions for 1922 as shown by the reports of government departments. In spite of the failure of the railroad securities bill in the Senate, it was stated that the administration has been able to so handle its railroad securities as to be able to carry out settlements with the railroads and to fund such of the indebtedness of the roads for capital improvements as it desired without asking Congress for any money, and that with the funds available it will be possible to meet the funding situation so as to cover all necessities without asking for additional authority or additional funds. The President looks for a marked recuperation of the railroad condition and is confident that that is likely to result in a recuperation of business generally.

The statement regarding the settlements refers to the fact that the cash resources of the Railroad Administration have been increased by the sale of equipment trust certificates. This has not placed at the disposal of the administration funds enough to do as much funding as was contemplated when the bill to authorize the War Finance Corporation to take over some of the railroad securities up to \$500,000,000 was proposed, but it is understood that many of the railroads are now in a better position to make settlements without funding or by funding less of their indebtedness than they were last summer. The plan as proposed then was to give the railroads additional cash with which to carry out maintenance work and place money in circulation in the hope that it would improve business conditions.

PAYMENT OF EMPLOYEES by check instead of in cash is to be the rule henceforth on the New York, Ontario & Western. Hitherto the pay car has made regular trips over the road twice a month.



Photo by Keystone

Railway Station, Leipzig, Germany

# Ferry Cradle at St. Louis Embodies New Features

Missouri Pacific Builds Barge Transfer for Heavy Loads  
and Wide Range in River Level

By F. E. Bates  
Assistant Bridge Engineer, Missouri Pacific

UNLIKE the other roads which operate lines across the Mississippi river at St. Louis, the Missouri Pacific handles a large part of its traffic by means of a car ferry. As shown on the track diagram (Fig. 1) of the St. Louis terminals of that road, the freight traffic of the Missouri Pacific between St. Louis and points in Arkansas and Louisiana, which is handled on the east side of the Mississippi river to Dupo, may enter and leave St. Louis by way of the ferry transfer without the use of other than Missouri

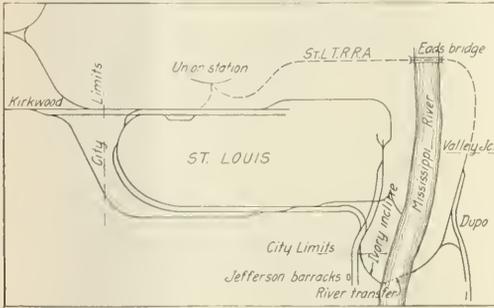


Fig. 1—Sketch Showing St. Louis Terminals of the Missouri Pacific

Pacific rails. The traffic handled in this manner amounts to as much as 600 cars a day, including a considerable number of hopper-bottom coal cars of 55 to 70 tons capacity. The marine equipment consists of a four-track 26-car steel barge operated by a stern wheel tow boat.

Owing to the wide variation in the stage of water in the Mississippi river, one troublesome detail in the handling of

and shocks of the barge landing against the cradles. Accordingly, Coopers E-55 was used for live loading to provide for an 0-6-0 switch engine with 65,000 lb. on each pair of drivers, the axles being spaced 6 ft. 6 in. center to center. Both cradles are of similar construction and the description will be confined to the west cradle at West Ivory.

The profile in Fig. 3 shows the grades on the cradle and the incline. The incline tracks are carried on a timber trestle with panels 10 to 12 ft. center to center and three ply 8-in. by 16-in. chords. The design and spacing of cradle supports were made to reduce the stresses in the incline trestle as much as possible. The main portion of the cradle is of timber construction with 24-ft. cast steel feather rails at the shore end and a 38-ft. hinged steel apron girder at the river end.

The details of the timber portion of the cradle are shown in Fig. 2. Special attention was given to the reduction of the unit bearing stresses as considerable trouble was experienced in the previous cradle with bearing failures. Caps and sills 16 in. wide were used throughout. Wheels were spaced 7 ft. center to center except at the low end where special construction was required. All wheels are standard solid cast wheels mounted on 5½ in. by 10 in. car axles. The cradle tracks are carried on two-ply 8-in. by 16-in. stringers and sawed oak cross ties with tie plates. Oak ties were used in place of pine on account of occasional derailments, and 4-in. blocks are provided for separators to supplement the notching of the outside guard timber. No drift bolts or dowels were used in assembling the cradle. Threaded bolts were used throughout and these were placed to permit replacing any timber members without disturbing the structure as a whole. In order to provide a certain amount of flexibility in the higher portion of the cradle to accommodate the slight changes in grade of the incline track, the 12-in. by 14-in. wheel timbers were cut and pinned together and the longitudinal bracing omitted in each second panel.

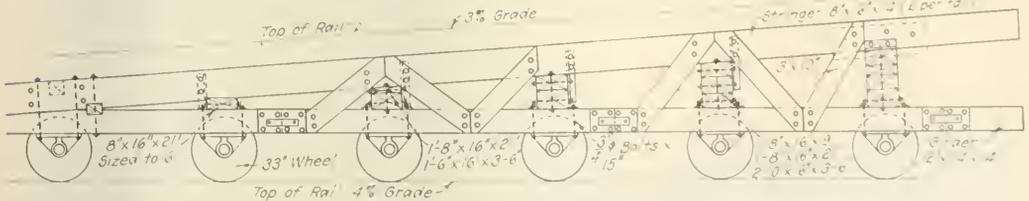


Fig. 2—Part Elevation of the Timber Portion of the Cradle

the ferry traffic concerns the method provided for transferring the cars from the tracks on the river bank to the ferry. This is commonly accomplished with the aid of a cradle consisting of an inclined trestle mounted on wheels that roll on an inclined track laid on the grade of the river bank.

When the Missouri Pacific cradles were renewed in 1920 and 1921, the increase in car loading and power required to handle traffic on the incline grades of from 2.5 to 4 per cent made it necessary to use heavier construction throughout and to provide additional rigidity against the heavy traction

Fig. 3 also shows the special construction of apron girders and supports. To increase the car capacity of the outside or wing tracks on the barge the turnout is placed on the cradle with the frog point at the river end of the apron girders. Additional wing girders are required to support the turnouts. The rear ends of the apron girders are hinged to a heavy steel shoe supported on a six-wheel truck to distribute the loads on the incline. The pin acts only as a guide as the hole is made ⅛ in. large, and all vertical loads are carried by the rocker bearing. The pin is placed as high as possible to

reduce the gap in the rails for variations of tilt of the apron girders.

The difference between light and loaded draft of the barge is four feet and during loading and unloading the barge has a maximum list of approximately two feet. To provide for these variations and an allowance for inaccuracy of spotting the cradle, provision is made for a maximum vertical travel of the river end of the apron girders of five feet. The barge is guided to the cradle by cluster piles on the bank side and as it is very hard to maintain these clusters at the proper location provision was made for a lateral movement of two feet in either direction. Lateral movement is provided for by

front of the barge serve as guides to line the cradle and barge accurately.

The counterweight towers are carried on two steel trucks and the load is equalized on the four rails by the use of larger shims under the carrying beams over the inside wheels than over the outside wheels. The connection at the bottom of the towers was made on a slight level so that the towers will stand vertical when the carrying beam is deflected under load. The barge, when landed against the cradle, supports the river end of the cradle beams and relieves the counterweights and jacks of all live load.

The adjustment of the cradle to proper elevation is made

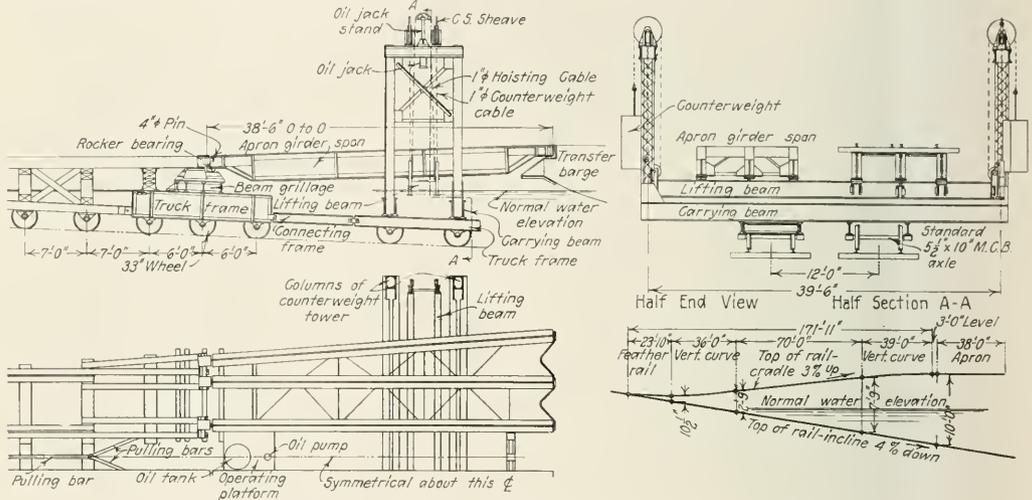


Fig. 3—Half Plan, Elevation and Section of the Apron and Its Supports

slotting the pin holes at the shore end in the outside girders of each set.

The apron girders are partially counterweighted from two towers as shown in Fig. 1. They are adjusted by means of one hydraulic oil jack at the top of each tower operated by a small hand force pump. By manipulating the two jacks separately it is possible for the operator to tilt the girders as necessary to line up with barge as it comes in. The "Vs" between the rails on the cradle and corresponding ones at the

by pulling or pushing the cradle up or down the incline. The steel truck frame under the apron girders is provided with heavy lateral bracing, and pulling bars, consisting of old bridge eye bars. These are connected to the two inside girders and are carried to the shore end of the cradle, where double and treble blocks and 1 1/4 in. steel cable are provided with anchorage to dead men for pulling the cradle up the incline. The power is furnished by switch engines. The cradles are pushed down the incline with a push pole.

.. .. .



Rock Island Yard and Shop, Silvis, Ill.

# Annual Report of the Bureau of Finance I. C. C.

Enormous Variety of Detail Dealt with by New Bureau;  
Seven Hundred Miles of Road Abandoned

WASHINGTON, D. C.

THE ANNUAL REPORT of the Interstate Commerce Commission, noticed in our issue of December 10, page 1157, includes the reports of the three new bureaus created by the commission in 1920 in connection with the expansion of its organization which was necessitated by the new functions conferred upon it by the provisions of the transportation act. These are the Bureau of Finance, of which W. A. Colston is director; the Bureau of Traffic, of which W. V. Hardie is director, and the Bureau of Service, F. G. Robbins, director. While these bureaus were organized last year, the report for this year is the first to cover a full year of their activities. The commission's report also includes the usual reports of the work of the older bureaus, which follows the same lines as in previous years.

The work of the Bureau of Finance represents the most distinctively new phase of the commission's increased authority under the new law. The report deals with the work under the provisions of the transportation act relating to the issuance of certificates of public convenience and necessity, applications for authority for the acquisition of control or for the consolidation of carriers, the regulation of security issues, the six-months guaranty following the termination of federal control, the administration of the \$300,000,000 loan fund and similar matters. It refers to several points on which important questions as to the interpretation of the act have arisen and suggests modifications. An abstract of the report of this bureau is given herewith; and the others will be noticed as available space is found.

## Certificates of Public Convenience and Necessity

During the year ended October 31, 1921, 79 applications for certificates of public convenience and necessity were filed. Fifty-one certificates have been issued, and 10 applications have been withdrawn. Of the total applications filed, 39

were for permission to construct new lines of railroad or to extend existing lines, and 40 were for permission to abandon lines of road. The authorization issued during the year covered about 405 miles of new construction and 702 miles of abandonment.

Pursuant to the provisions of section 13 of the act, we have availed ourselves of the co-

operation, services, records, and facilities of the state commissions in disposing of applications for certificates. At our request these commissions have held hearings in 15 such cases, transmitting to us the records thereof together with their recommendations, which, in 13 of the cases, were followed by us.

During the year questions have arisen respecting the proper construction of paragraphs (18) to (22), inclusive, of section 1 as affecting our jurisdiction thereunder.

The question has also arisen whether the provisions in paragraphs (4) to (8) inclusive of section 5 as to consolidation of the railway properties into a limited number of systems are intended to prevent the voluntary consolidation of two or more of such carriers pending ultimate adoption by us of a complete plan of consolidation, as provided in paragraph (5), or whether in the meantime they may effect such voluntary consolidation, either with or without our approval.

The statute does not expressly provide for such consolidations during the interval which must elapse before adoption by us of the complete plan. An interpretation of these provisions which would prohibit all consolidations in the meantime might work hardship and fail to meet the underlying intent of the Congress. It seems desirable that the uncertainty should be resolved by appropriate amendment.

In six cases in which we have authorized the construction of new lines of railroad, permission has been granted under paragraph (18) of section 15a to retain the excess earnings derived from the operation of such new lines.

The cases in which certificates of public convenience and necessity were issued during the year are shown in the double-column table.

## Acquisition of Control and the Consolidation of Carriers

Under the provisions of paragraph (2) of section 5 of the amended interstate commerce act we are authorized to approve, by order, the acquisition by one carrier of control of one or more other carriers, whether by lease, or by purchase of stock, or in any other manner not involving the consolidation of such carriers into a single system. During the year, 25 applications have been filed under this paragraph, and 19 orders have been issued, in each case granting majority requested.

Three applications were filed for authority to effect consolidation, but in each case the applicant was advised that its application could not be considered in advance of the adoption of a complete plan of consolidation as authorized by paragraphs (4) and (5) of section 5.

## Recovery of Excess Net Railway Operating Income

Under the provisions of paragraphs (1) to (16) inclusive, of section 15a of the act, we are required to receive one-half of the annual net railway operating income received by any carrier for any year in excess of 6 per cent of the value of the railway property held for and used

Name of applicant	CONSTRUCTION		Mileage
	Location of line		
Ahukini Terminal & Railway	District of Pana, Kauai, Hawaii		16
Alabama, Florida & Gulf	Houston County, Ala.; Jackson County, Fla.		13
Bufofo, Kochester & Pittsburgh	Indiana County, Pa.		6.78
Central of Georgia	Jefferson County, Ala.		1
Central of New Jersey	Cumberland County, N. J.		1
Detroit & Ironton	Wayne County, Mich.		8.25
Flint Belt	Genesee County, Mich.		90
Idaho Central	Twin Falls County, Idaho; Elko County, Nev.		25
Interstate	Wise and Scott counties, Va.		61
Jackson & Eastern	Scott, Leake, Rankin, and Hinds counties, Miss.		1.75
Kentucky & Tennessee	McCreary County, Ky.		20
Kentucky & Arkansas	Delaware and Mayes counties, Okla.		3.2
Pittsburgh & West Virginia	Brooke County, W. Va.; Washington County, Pa.		2.22
Potato Creek	Potter and McKeen counties, Pa.		6
Tennessee	Campbell and Anderson counties, Tenn.		14
Texas Midland	Hunt County, Tex.		24.965
Union Pacific	Utah County, Utah		43.4
Union Pacific	Scotts Bluff County, Neb.; Goshen County, Wyo.		44
Wichita Falls & Southern	Stephens and Young counties, Tex.		7.17
Wisconsin & Michigan	Dickinson County, Mich.		
Total miles of construction			404.705
ABANDONMENT			
Atchison, Topeka & Santa Fe	Yavapai County, Ariz.		5.9
Atchison, Topeka & Santa Fe	San Bernardino County, Calif.		15.18
Atchison, Topeka & Santa Fe	Kala County, Okla.		4.67
Bennettsville & Cheraw	Marlboro, Dillon and Marion counties, S. C.		10.44
E. R. Bernstein, receiver of Louisiana & Northwest	Natchitoches Parish, La.		22
Boston & Maine	Coches County, N. H.		3.39
Boston & Maine	Grafton County, N. H.		9.47
Central New England	Hampden County, Mass.		1.87
Delta Southern	Washington, Bolivar, Sharkey, Leflore, and Humbreya counties, Miss.		52.11
Duluth & Northern Minnesota	St. Louis, Lake and Le Sueur counties, Minn.		20.2
Eastern Texas	Angelina, Trinity, and Houston counties, Tex.		6.6
Gulf, Mobile & Northern	Jones County, Miss.		13.21
Kentwood, Greensburg & Southwestern	Fangirbino and St. Helena Parishes, La.		11
Kinder & Northwestern	Allen Parish, La.		21.2
Liberty White	Ike and Avate counties, Miss.		11.74
Mississippi Central	Fresst County, Miss.		1.87
Northern Pacific	Richland County, N. Dakota		17.7
Ocean Shore	San Francisco, San Mateo, and Santa Cruz counties, Cal.		23.6
Orangeburg	Orangeburg County, S. C.		17.2
Patterson & Western	Stanislaus County, Calif.		17.2
R. B. Peggam, receiver of Hawkinsville & Florida Southern	Pulaski, Wilcox, Turner, Worth, and Mitchell counties, Ga.		92.97
Pere Marquette	Kalkaska County, Mich.		11.47
Pere Marquette	Genesee County, Mich.		4.45
Pere Marquette	Clare County, Mich.		9.88
Potato Creek	Potter and McKeen counties, Pa.		13.49
Seaboard Air Line	Nassau County, Fla.		1.39
Seaboard Air Line	Manatee County, Fla.		.66
Spokane & British Columbia	Ferry County, Wash.		36.30
Sugar Pine	Inoulemune County, Calif.		14.15
R. V. Taylor, receiver of the Alabama & Mississippi	Washington County, Ala.; Green, Georgia and Jackson counties, Miss.		22.5
Wisconsin-Northwestern	Marquette County, Wis.		18.3
Total miles abandoned			701.938

by it in the service of transportation. Forms of questionnaire and return, together with rules and regulations for the determination and recovery of excess income under this section, are in preparation.

**Issuance of Securities  
—Assumption of Obligations**

Since our last annual report 283 applications under section 20a have been received, and the issue of securities in the following aggregate amounts, largely for refunding purposes, has been authorized:

Stocks .....	\$242,657,500
Bonds .....	1,276,761,616
Notes .....	98,402,195
Miscellaneous .....	97,780,313
Total.....	1,715,601,624

Under the provisions of paragraph (9) of section 20a, certificates of notification of the issuance of notes maturing within two years or less in the aggregate sum of \$137,502,723 were filed.

Some difficulty has arisen in the construction of section 20a in its application to electric lines. Under the law as it now stands, we have no jurisdiction over the issuance of securities of a "street, suburban, or interurban electric railway which is not operated as a part of a general steam railroad system of transportation." Certain electric railways independently operated are engaged in the general transportation of freight in interstate commerce in addition to the transportation of passengers. Some electric lines correspond substantially to steam roads in all important particulars except that of motive power. Under section 15a of the act we are given authority to include in groups of carriers for rate-making purposes such interurban electric lines as are engaged in the general transportation of freight. It seems desirable that section 20a of the interstate commerce act be so amended as to include definitely the classes of electric railway companies subject to that section.

Three applications requesting authority to issue shares of capital stock without nominal or par value have been filed with us. One of them, filed by the El Paso & Southwestern Company, involved the exchange of stock without par value for stock having a par value; authority upon this application was granted. The other two applications involved the issue of stock without par value under reorganization plans for railroads previously in receivership. Authority upon one of these, filed by the Denver & Rio Grande Western Railroad Company, was granted. The other is pending.

**Reimbursement of Deficits  
During Federal Control**

In the administration of section 204 of the transportation act, 1920, we have encountered some difference of opinion as to the proper interpretation of the term "deficit" as used in the statute. Paragraph (a) provides that "when used in this section, the term 'carrier' means a carrier by railroad which, during any part of the period of federal control, engaged as a common carrier in general transportation, and competed for traffic, or connected, with a railroad under federal control, and which sustained a deficit in its railway operating income for that portion (as a whole) of the period of federal control during which it operated its own railroad or system of transportation," etc. Paragraph (b) provides that "for the purposes of this section, railway operating income or any deficit therein for the period of federal control shall be computed in a manner similar to that provided in section 209 with respect to such income or deficit for the guaranty period," etc. We have construed this language to limit the application of section 204 to carriers which, in the portion of the period of federal control (as a whole) during which they operated their own lines of railway, sustained actual deficits in railway operating income without reference to the results for any other period, and to limit the extent to which such deficits may be reimbursed to the amounts remaining after the adjustments specified in paragraphs (1) to (5) of subdivision (f) of section 209.

Of 279 claims for reimbursement of deficits filed with us, no less than 93 fall without this construction of the law in that no actual deficits

were sustained in the portion of the period of federal control during which the respective carriers operated their own lines. Protests against our interpretation of the statute have been lodged by a considerable number of carriers thus excluded from the benefits of the section, who contend that the word "deficit" as used in section 204 means a decrease or falling off in railway operating income for the federal control period, as compared with that of the test period.

The claims of the carriers which are entitled to reimbursements of deficit, under our construction of that word, aggregate \$14,128,455. Owing to necessary corrections and adjustments, it is estimated that the amount to be certified in respect of these claims will be \$11,079,800. Partial payments under section 212 of the transportation act, added February 26, 1921, and final settlements thus far certified, with the estimated amount remaining to be certified, are summarized in the following table, where the amounts payable under paragraphs (f) and (g) of section 204, deductions therefrom on account of traffic balances and other indebtedness due the President, as operator of transportation systems under federal control, and the net amounts actually payable to these carriers are set out in the order mentioned:

Status	Amounts payable under paragraphs (f) and (g)		Deductions	Net payments
Certified:				
Final settlements (20 carriers).....	\$992,529		\$230,880	\$761,650
Partial payments.....	2,177,651		820,345	1,357,305
	3,170,180		1,051,225	2,118,955
Remaining to be certified.....	*7,909,619		*3,203,062	*4,706,557
Total.....	*11,079,799		*4,254,287	*6,825,512

\*Estimated.

**Six Months' Guaranty**

In our last report we stated that 666 carriers filed acceptances of the provisions of section 209 of the transportation act, 1920 on or before March 15, 1920, as prescribed by law. It has been ascertained that one other "small carrier" has filed an acceptance of the act within the time specified and that the total number of carriers accepting is therefore 667. Of this number, 547 have filed returns, showing an aggregate amount of \$18,400,185 as due them under the provisions of the act. Included in this number are the returns of 59 carriers not having a separate status under section 209, although filing separate acceptances. Of the corporations that have not filed returns it has been decided by us that 8 were not carriers as defined in section 209 and that 32 were operated as joint facilities and will not be entitled to any benefits under the provisions of section 209, their revenues and expenses being cleared through the accounts of the operating carriers. The remaining 80 carriers either had excess incomes or are short line carriers, the amount of whose claims will be relatively small.

The addition of section 212 to the transportation act, effective February 26, 1921, authorizes partial payments under section 209, and permits us, in case of deferred debits and credits to railway operating income which cannot at that time be definitely determined, to make a reasonable estimate thereof, and when agreed to by the carrier, to use such estimate in certifying the amount of the final settlement of the guaranty. Since that date, 447 requests for partial payments under subdivision (g) of section 209, as amended by section 212, have been filed by carriers. Returns to our orders of October 18, 1920, and January 5, 1921, after making certain adjustments, have been used as a basis in certifying partial payments, and on the basis of such returns we have certified approximately \$166,000,000 for payment.

We estimate the total amount payable under the guaranty at about \$536,000,000. Of this amount there have been certified to the carriers:

As advances under section 209(h).....	\$263,935,874
As partial payments under section 209(g) as amended by section 212.....	165,862,775
In final settlement under section 209(g).....	721,658
Total.....	\$430,520,307

Leaving an estimated amount still payable to the carriers under section 209 about \$105,500,000.

Final settlements have been made with 5 carriers, as follows:

Name of carrier	Amount certified
Alabama & Mississippi.....	\$16,543
Ann Arbor.....	75,261
Electric Short Line.....	14,993
Electric Short Line Terminal.....	3,158
Norfolk Southern.....	611,700

**Loans to Carriers**

Because of the general depression in business during the year and the resulting decline in the costs of materials and labor, some carriers, considering it sound business discretion to defer expenditures of the proceeds of loans certified to them, requested us to cancel our certificates and to consider their applications as withdrawn. Other carriers have requested us to authorize them to expend a portion of the proceeds of their loans for purposes other than those for which the loans were originally made. We have generally approved this policy and have thus been able to extend the benefits of the revolving fund to other carriers more urgently in need of financial help, particularly in respect of matur-

ing indebtedness. Several changes are therefore necessary in the previous statement of loans made.

The amendment to section 210 effected by section 5 of the sundry civil appropriations act, approved June 5, 1920, authorized us to make loans for equipment to or through such organization, car trust or other agency as we might determine upon, approve or organize for the purpose "as most appropriate in the public interest," subject to the provisions of the act. The National Railway Service Corporation, a corporation of the state of Maryland, organized under the auspices of the National Association of Owners of Railroad Securities, has been approved by us as an agency for this purpose, and we have certified to this corporation the following loans for the benefit of carriers named:

Baltimore & Ohio.....	\$5,200,000
New Orleans, Texas & Mexico.....	926,000
Bangor & Aroostook.....	53,106
Chicago, Rock Island & Pacific.....	1,568,540
Minneapolis & St. Louis.....	386,150
Wheeling & Lake Erie.....	3,304,000
Total.....	\$11,437,830

As a condition of the certification of these loans the National Railway Service Corporation and the carriers themselves were required to finance from outside sources \$18,409,765.

Paragraph (a) of section 210, as amended, limits the time within which applications for loans may be filed with us to two years from February 28, 1920. In prescribing this limitation the Congress apparently anticipated that the "transition period" would be of relatively short duration. The progress of readjustment throughout the country has been slower than was generally anticipated.

In addition to the uncertified balance of the revolving fund on October 1, 1921, not including \$40,000,000 tentatively reserved to meet claims, judgments, etc., against the Railroad Administration arising out of federal control, repayments of principal of loans already made, which by their terms require early or serial repayment, and accretions to the fund from semi-annual interest payments during the 2 years following February 28, 1921, are estimated to aggregate \$93,000,000, making an approximate total of \$103,000,000 available for additional loans if the period for filing applications should be extended.

# Does It Pay To Repair Foreign Freight Cars?\*

Some Relations Between Freight Car Repairs, Transportation Expenses and the Income Account

By N. D. Ballantine  
Superintendent Transportation, Union Pacific System

**M**ASTER CAR BUILDER'S Rule No. 1 reads as follows: "Each railroad is responsible for the condition of all cars on its line, and must give to all equal care as to inspection and repairs, regardless of responsibility for expense of repairs." This rule, however, was not followed even under Federal control. In support of the conclusion that the same condition still exists, a brief consideration of the bad order situation may be worth our while.

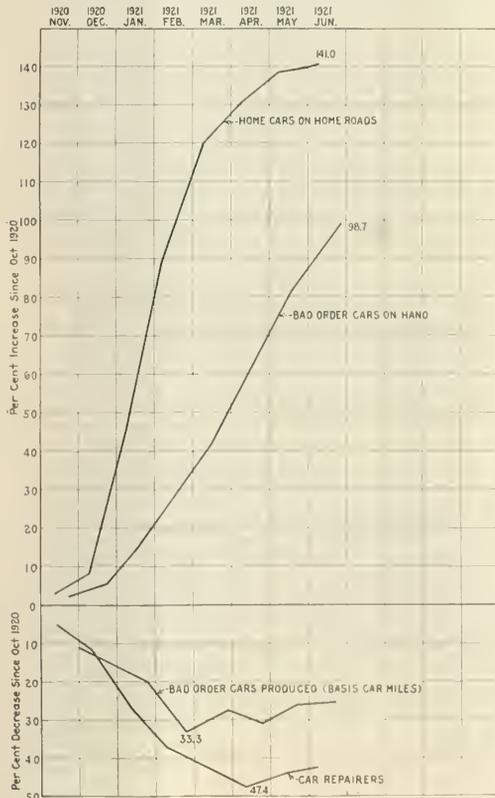
We can doubtless agree that mass figures, involving a large number of items, probably reflect a situation more correctly

Data deduced from some records kept while with the Car Service Division of the U. S. Railroad Administration covering the repairs given to freight cars during the years 1918 and 1919, indicates that with about forty-five billion freight car miles produced during the two years, there were about forty million repairs, heavy and light, given to freight cars. This means that each freight car moved an average of 811 loaded and empty miles before being switched to the repair track for repairs. The same factor obtained in each year. The figures also indicated that of the total cars bad ordered, 9.6 per cent were for heavy repairs in 1918, and 9.4 per cent in 1919, or approximately 10 per cent during the period.

Would it not seem reasonable to assume that unless there has been some fundamental change in the methods of making repairs or reporting bad orders, we could safely continue to use for the country as a whole, 811 miles as the average service which will create a bad order car?

In the table, the total freight car miles has been divided by 811 to obtain the column headed "Bad Order Cars Produced." With this exception, the figures shown are taken from statistics furnished by the Bureau of Railway Economics and Car Service Division of the A. R. A.

It will be agreed that we have no absolute basis with which to measure car repairer's efficiency, but during the period of comparison I believe it will generally be conceded that the output per car repairer increased materially.



Percentage Variations in Car Conditions Since October, 1920

than similar data compiled by an individual carrier. Before proceeding further, however, it may be well to see if we can also agree that there has been no material change in the manner in which roads repair cars or report their bad order situation now, as compared with federal control practices.

FACTORS IN THE BAD ORDER CAR SITUATION OF CLASS I RAILWAYS OF THE UNITED STATES

Month.	Home cars on home roads	Average bad order cars	Bad order cars	Car repairs
1920				
October	731,699	177,655	2,657,471	95,068
November	749,774	181,595	2,397,046	91,188
December	790,933	189,490	2,275,218	84,123
1921				
January	1,074,661	209,667	2,118,640	70,307
February	1,396,048	234,506	1,772,667	60,319
March	1,612,185	260,237	1,923,868	54,537
April	1,689,225	296,233	1,821,176	49,051
May	1,744,907	329,858	1,969,360	52,910
June	1,764,612	351,465	1,980,111	54,410

From time to time we read in the newspapers and lately even in the *Railway Age* reference to the abnormally poor condition of the freight equipment of the country, conclusions generally being drawn, I infer, from a comparison of tabulations made by the Car Service Division as to the bad order cars on hand. The real situation as to condition of freight equipment should not be concealed nor, on the other hand, magnified. However, I feel that the figures for bad order cars on hand, taken alone, are prone to mislead as to the real condition, for the reason that during the period under consideration, a very unusual situation developed in connection with the return of cars to their owners. Had M.C.B. Rule 1 been generally observed in spirit or letter, the effect of relocation of cars to home lines would not have been accompanied by such a substantial increase of bad orders, but surely our mechanical friends who are at all familiar with actual conditions will agree that during the period referred to, and probably up to the present time, their practice was to card a large percentage of system cars "Bad Order," while a foreign car having, as nearly as could be determined, the same defects, but safe to run, was not so carded, but sent home—there to be carded. What really happened, then, is that while there was a substantial decrease in the factors producing bad orders,

\*A paper read before the Western Railway Club, November 21, 1921.

car repairers were decreased somewhat in proportion, slightly more, but their efficiency increased, while bad orders reported mounted at an extremely rapid rate, following the trend of the rapid return of cars to owners.

The chart on the following page, which is self-explanatory, may help to visualize the relations existing, and would seem clearly to indicate that until such time as M.C.B. Rule 1 is generally observed, in proportion as home cars on home roads increase, the bad order reports will show an increasing number of bad orders, although there may be no real difference in the actual physical condition of car conditions as a whole.

Manifestly, M.C.B. Rule 1 will not be observed until such time as allowances for the repairs to foreign cars are equal at least to a sum sufficient to compensate a road for doing such work, including supervision, shop overhead, interest, depreciation, insurance and taxes covering the facilities used in making car repairs, together with the cost for switching and the per diem equivalent while cars are out of revenue service to be repaired. Owing to the widely varying conditions and ideas existing with respect to the cost of overhead and the other items above referred to and lack of sufficiently reliable data covering the matter, this phase of the subject will not be dwelt upon. These factors can only be determined through an actual and careful study of local conditions.

My object will be to point out a basis upon which a study could be made to include some important relations which exist, in order that a proper policy may be adopted, having in mind the best interests of a property as a whole, without regard to departmental lines.

#### Direct and Indirect Expense

Let us define direct expenses as all items affecting freight car repairs which can be, and generally are, charged directly to the particular job, and indirect expenses as all other items affecting freight car repairs which can properly be included in the overhead and other items already referred to and which cannot be directly charged.

Owing to the difficulty of determining the "indirect expense," and for want of a better basis from which to draw conclusions, I shall confine myself to some deductions or comparisons from the item, "direct expense."

The relation between the prices allowed under M.C.B. rules and the direct expense involved in doing that particular piece of work should represent the allowance for the indirect expense. For example, if labor costs 72 cents an hour and M.C.B. rules permit billing for labor at \$1.20 an hour, then 66.6 per cent of the direct labor expense is to apply on the indirect expense. A comparison on the above basis, covering labor and various other items which go to make up the principal material used in car repairs might be of interest and value to any road.

#### Per Diem

While per diem does not directly affect any operating account nor a road's operating ratio, it does affect a road's net income through the "hire of equipment" account. Therefore time is an important element in the matter of repairs to foreign cars in its effect upon that portion of the M.C.B. allowance covering the indirect expense as the following illustration will show.

Assume that an average of \$15 per day direct expense could be economically applied on a foreign car, and that it had been determined through the method above outlined that 33.3 per cent of its direct expense was available to apply on the indirect expense. Then \$5 would represent the indirect portion. As seven days per diem would be paid covering six working days it would be equivalent to \$1.17 per day and would absorb 23 per cent of the indirect allowance. If, however, it should take two days to spend such a sum, then 46 per cent of the indirect allowance would be absorbed by the per diem paid out while undergoing repairs. Therefore, in

proportion as the labor and material applied per day can be increased, the effect of per diem in absorbing the indirect allowance will diminish. With a little carelessness or delay in handling foreign cars, then the indirect portion of the allowance may be wholly absorbed in this one item.

#### Loss of Revenue

During periods of heavy demand for cars, the less time a car spends on the repair track the more time it is available for producing revenue, and its effect upon the net revenue can clearly be shown in the following manner:

Assume that the freight revenue per freight car mile, loaded and empty, is 20 cents, and that the average miles made per car per day is 30. Then such a road would be able to earn on the average a gross freight revenue of \$6 per car per day. If its freight operating ratio was 75 per cent, then \$1.50 per car per day would represent the net revenue from operation. Clearly, then, for every day a car is held out of service in bad order during periods of demand this would be a proper item to consider in the determination of what should or could be done to avoid such delay.

#### Switching

I believe it will readily be conceded that the present day cost of a switch engine, including rental and repairs, will vary from \$10 to \$14 per hour. If it is correct in principle to add a percentage to the direct expense for freight car repairs to cover the overhead and plant facilities, and I believe it to be, the same principle should apply in determining the cost of switching. Regardless of agreement with the principle suggested, take any rate you may see fit and measure it with the service actually performed to determine, if practical, what proportion of the indirect allowance switching may absorb. For the purpose of this illustration, let us use \$10 per hour as the cost of a switch engine. Assume the simplest typical case involved in removing just one bad order car from an inbound train or transfer, which we will say consists of 40 cars. On an average 20 cars will need to be handled in cutting out the bad order to be placed upon a temporary hold track, which operation would consume on an average at least five minutes. It would also easily consume an average of five minutes per car to remove a string of cars from the temporary hold track to the repair track and space them a total of at least 10 minutes to put the car on the repair track, and the same amount of time to remove it, or, say, 20 minutes as a minimum. On the basis of \$10 per hour, the cost for the four switches involved in cutting out a bad order and placing it on the repair track would be \$3.33, or 66.6 per cent of the \$5 to apply on the case previously cited, where \$15 direct expense was applied in one day. Therefore, in proportion as the amount of labor and material applied can be increased for each time a car is switched to the repair track, the effect of switching expense in absorbing the indirect allowance will diminish.

It should be clearly borne in mind that the estimates of time consumed by a switch engine in setting out a bad order car is purposely intended to conservatively cover the simplest case, and does not cover those cases where, due to accumulations of bad orders, the cars are switched to outlying tracks and later culled over from time to time, the lightest repairs, etc., being selected, the cost for which latter method of handling is of course much greater than the above estimate.

#### Empty Car Mileage

A conservative estimate of the average out-of-pocket cost of the movement of an empty freight car per mile on the railroads of the United States at the present time, I should say, would be 5 cents, not including the per diem or mileage payments.

In proportion as the demand for box cars in good physical condition with which to load flour, sugar, grain, etc., in-

creases, with a given number of rough freight box cars circulating upon a road, the empty mileage and switching is bound to increase. A rough freight car may be suitable for loading l.c.l. or merchandise traffic, say to a branch line point where the outbound business is grain. But if such a car is used it must be hauled away empty and a grain car sent in, producing a cross-haul and unnecessary empty mileage. It is impossible definitely to say just what this item would amount to in dollars or cents, but that it is a vital factor at times is a well-known fact to any practical operating man.

M.C.B. Rule 120 provides that a foreign car in general wornout condition shall be reported to the owner with an estimate of the cost of making repairs. The owner has but two options, viz., to authorize the repairs, or the destruction of the car, wherever it may be located. Nevertheless, many roads, under special agreements between their mechanical departments, are moving such cars home for repairs. Unless such movements are authorized or concurred in by the transportation departments, decidedly uneconomical movements are likely to occur if factors other than the purely mechanical are considered. Before a proper decision can be made as to the economics of a case, the principal factor to be determined is, "Could the car, if repaired where located, be given a load in the direction it would otherwise move empty as a bad order?" If the answer is "Yes," then it is proper to double the mileage the bad order car would make to determine the total unnecessary empty mileage involved.

For example, a Pennsylvania box car at Ogden in bad order, if sent to the owner at Chicago would involve 1,500 empty car miles, and if the excess box car loading were eastbound, it would mean the necessity of moving some other box car empty westbound 1,500 miles, involving 3,000 excess

empty car miles as compared with repairing the car at Ogden and loading it to Chicago. At 5 cents per car mile, this would mean an out-of-pocket expense to the carriers involved of at least \$150. On the other hand, if a Southern Pacific car located at Chicago were safe to run, but otherwise would be considered a bad order, and the movement of empty box cars were westbound, it would be more economical to all concerned to send such car home and let the owners repair it, there being no excess empty car miles involved, and the owner could probably make the repairs for 20 per cent less than it would cost a foreign road to do so.

### Loss and Damage

The A.R.A. Freight Claim Division has recently issued a memorandum indicating that practically 10 per cent of all freight claim payments made during the seven months ending March 31, 1921, aggregating \$5,876,056, was paid on account of defective and unfit equipment; and \$3,243,806, or 55 per cent, of the total payments on account of defective equipment was for grain, flour and sugar, grain alone amounting to \$1,818,664, or 31 per cent.

There are, of course, many factors involved, but suffice it to say that the bad order situation appears to me to be vital, and one which can and should be improved.

When it is necessary to switch a car to a repair track and incur the transportation and per diem expense, regardless of the initials on the car, when practical the required work should be done thoroughly and expeditiously.

In other words, the rules should be made so that the signers of the agreement will observe Rule 1, and coincident therewith I feel sure there will follow reduced cost of freight car repairs and transportation expenses, as well as a reduction in the hire of equipment account

## La Follette Warns Against "Special Interests"

### Opposition to Capper Bill Seen by Senator as Danger to "Consuming and Producing Millions"

WASHINGTON, D. C.

SENATOR LA FOLLETTE, in a speech in the Senate on December 22 and in a statement to the press on December 27, has been attacking an agreement said to have been made at a conference at Washington on December 9 attended by representatives of a number of large organizations of shippers and of the railroad executives, at which some sort of understanding was reached that the agricultural organizations, because of rate reductions on agricultural products, would use their influence to oppose or withdraw their support from certain features of proposed legislation adverse to the railroads which they were convinced were also not in the interest of the shippers. Senator La Follette refers to this as a "secret meeting at which high officials of the railroads and the coal, steel and lumber interests attempted to enlist the farmers in an agreement whereby all agitation by the farmer interests for the repeal of section 15-a and for the restoration of state control over intrastate rates should cease." The "special interests," by which he apparently means those other than the farmer or labor interests, he says, were successful. In his speech Senator La Follette said he was reliably informed that an agreement was reached to rewrite the Capper bill so that only the clause directing the commission to make rates to produce as nearly as may be a return of 5½ to 6 per cent should be repealed and the remainder of the rate-making section, directing the commission to try to allow the railroads adequate revenues and to prescribe the percentage of

return after March 1, should be left intact, as well as the provisions under which the commission has power to prevent state discrimination against interstate commerce.

Apparently the La Follette version of the conference reached the Senate before the reversal of the influence of the farm organizations had begun to make itself felt. Senator Capper, the reputed author of the bill which has formed the basis for most of the discussion regarding the proposed changes in the law, asserted that if any attempts were made to rewrite the bill Congress would hear from the farmers of Kansas. In his statement Senator La Follette gave a report of the conference which he called "a conspiracy to betray not only the farmers but the consuming and producing millions of the nation." This report follows in part:

"The great special interests represented at this conference were successful in obtaining the consent of certain of the farm representatives to such an agreement.

"This conference was participated in by the special committee representing the railway executives, of which Mr. Atterbury, of the Pennsylvania railroad, was chairman. It was held at the Racquet Club in Washington on December 9, 1921.

"There had been a previous conference in New York on September 21, of which Mr. J. R. Howard was made chairman. Those present at the Racquet Club meeting were Mr. W. W. Atterbury, of the Pennsylvania railroad; Howard Elliott, of the Northern Pacific; W. J. Harahan, of the

Chesapeake & Ohio; W. R. Storey, of the Atchison; R. S. Binkerd, who is assistant to the chairman of the Association of Railway Executives, New York.

"The iron and steel industries were represented by J. A. Campbell, of the Youngstown Sheet & Tube Company, of Youngstown, Ohio, and C. E. Bement, of Lansing, Mich., representing the Novo Engine Company.

"Railway supply organizations were represented by A. B. Johnson, president of the Railway Business Association, of Philadelphia, Pa., and Frank W. Noxon, secretary of the same association.

"Lumber interests were represented by Charles Hill, of the Southern Pine and Sales Corporation, of New York; A. B. Hammond, of the Hammond Lumber Company, of San Francisco, Calif.; J. H. Browne, of the Pacific Lumber Company, of New York City.

"Construction companies were represented by R. C. Marshall, Munsey Building, Washington, D. C., and E. T. Trigg, of Philadelphia, Pa.

"The National Industrial Traffic League was represented by W. H. Chandler, Boston, Mass., and J. H. Beck, Chicago, Ill.

"The National Association of Manufacturers was represented by J. A. Emery, of Washington, D. C.

"The agricultural interests were represented by J. R. Howard, Gray Silver; H. C. McKenzie, of New York; Ralph Snyder, of Kansas, and O. E. Bradfute, of Chicago. They were all of the American Farm Bureau Federation, the last three named being members of the legislative committee.

"The agricultural interests were also represented by V. I. Drummond, president of the International Farm Congress, and T. C. Atkeson, of the National Grange.

"Mr. Atterbury stated that the railroads desired the help of the interests represented in securing further wage reductions, and in opposing the amendments pending in Congress proposing repeal of section 15-a.

"After a considerable discussion the agricultural representatives, not being disposed to oppose the amendments absolutely, adjournment was taken for lunch, with the understanding that representatives of the carriers and of the agricultural interests would talk the matter out.

"After lunch Mr. Howard reported that the agricultural representatives were prepared to agree that section 15-a should not be amended, except for the removal of the proviso in paragraph 3, relating to the percentage of return for two years following March 1, 1920, which expires by statutory limitation in March next.

"It was left with a committee composed of Mr. Emery, Mr. Atkeson and Mr. Silver to rewrite the Capper bill, one of the measures proposing repeal of section 15-a."

The Senator did not explain which one of the conspirators was the source of his information or whether he got it second-hand. It is understood from other sources that the meeting in September was called for the purpose of promoting a round table discussion of common problems by leading representatives of the railroads and the shippers which resolved itself, however, into such a strenuous demand for lower rates that the railroads finally agreed to the 10 per cent reduction in rates on agricultural products as the best they could do at this time and promised to put into rate reductions, in accordance with the views of the Interstate Commerce Commission, any savings they may be able to make from a further reduction in wages. This was not entirely satisfactory at first to the shippers other than the agricultural group, and even the railroads had difficulty in reaching an agreement among themselves on the 10 per cent reduction.

At the meeting on December 9 the representatives of the farm organizations are said to have expressed appreciation of this action on the part of the roads and a willingness to

do something to help the roads meet their problems, but when they were reminded that they had been supporting the Capper bill to emasculate the Transportation Act they were insistent upon the repeal of the so-called "guaranty rule." It appeared, however, that they were not so insistent upon repealing other provisions of the law.

A denial that there was anything "secret or unholy" about the Washington conference was made at Cleveland, after the issuance of La Follette's statement, by James R. Howard, president of the Farm Bureau Federation.

"Early in the conference an attempt was made to get an agreement to oppose the Capper bill, which repealed the guarantee clause of the Cummins-Esch bill and re-established the powers of the states in interstate matters," Mr. Howard said. "The farm representatives objected to this, standing firm for the repeal of all guaranteed returns and the integrity of state commissioners.

"Matters pertaining to reduced labor and other operating costs were discussed as well as the railway labor board, but no attempt to reach an agreement was made. This conference grew out of a former conference held at New York, September 21. At this meeting I personally made a plea for reduced rates on basic commodities and the direct result of this conference is the 10 per cent reduction on all agricultural products effective January 1.

"The 10 per cent reduction which the railroads voluntarily granted as a result of this conference will save the farmers approximately \$100,000,000 during the next six months. Senator La Follette is reputed to favor government ownership and operation of railroads. The American Farm Bureau Federation has always advocated private ownership and operation."

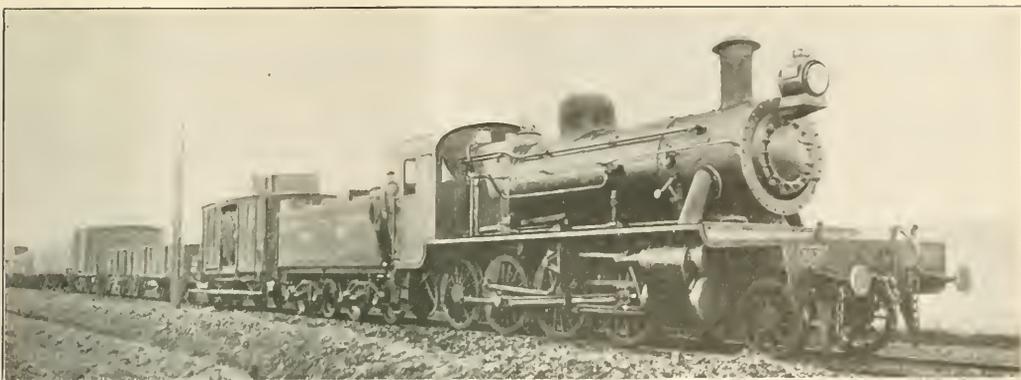
Senator La Follette took the position that some of the representatives of agriculture had been "captured" by the railroads and the trusts, but some others are asking if the farmers were the ones who were captured.

The railroads were unable, following the conference in New York in September and the further conferences between the executive committee of the Association of Railway Executives and the President, Secretary Hoover and the chairman of the Interstate Commerce Commission and various Congressional committees about the first of October, to agree on the 10 per cent reduction. The proposal was turned down at a meeting of the executives in Chicago on October 14, but after the Farm Bureau Federation had joined with the western state commissions in a formal case before the Interstate Commerce Commission and the commission had told the roads to make a more extensive reduction in the rates on grain, hay and grain products in the west the plan for a 10 per cent reduction was agreed upon by the roads on November 16. This was after the executive committee had held a conference with the commission at Washington on November 12. While the roads apparently expected to substitute the more general 10 per cent cut for the commission's order, the commission, under great pressure from the west and from Congress, declined to grant the postponement requested by the carriers and both reductions are now scheduled to go into effect.

At the oral argument before the commission on December 14, at which the roads asked that the grain order be suspended for six months, Clifford Thorne, appearing as counsel for the Farm Bureau Federation, urged that both reductions be made.

W. H. Chandler, president of the National Industrial Traffic League, who was present at the meeting, is said to have declined to be a party to any agreement and to have objected to discussing rate questions except in a public way.

In his statement Senator La Follette "warns the country" that the railroads are seeking to perpetuate the "guaranty" after March 1.



*The Locomotive Is European in Appearance but American in Design*

## Locomotives for the Andaluces Railway of Spain

Consolidation Type of American Design for Use on Heavy Mountain Grades

THE Compania de los Ferrocarril Andaluces, which is the third largest railway in Spain, is located in a very mountainous section of the southern part of the country. Its main shops and the general offices of the director are located at Malaga, a seaport on the Mediterranean

railway. They were designed by the locomotive works along the general lines of a previous lot supplied by a British builder. Spain is dependent on foreign manufacturers for its locomotives, most of which have been made in England, Belgium, France, Italy and Germany. Only a small number



*The Andaluces Railway Runs Through a Picturesque Mountain Country*

Sea. The railway touches on its extremities Belmez on the north, Grenada on the east, Algeciras on the south and Bonanza on the west. It has 1,302 kilometers (810 miles) of track open, having a 5 ft. 5 $\frac{3}{4}$  in. (1.67 m.) gage. Its rolling equipment consists of 198 locomotives, 611 passenger coaches, and 5,170 freight cars. It also operates three steamboats and one motor coach for inspection purposes.

Last year the Baldwin Locomotive Works completed and shipped 15 Consolidation (2-8-0) type locomotives to this

have been furnished by American builders, but, according to reports, these few are giving good service.

The locomotives have copper fireboxes and rocking grates. When the order was placed a plain bar cast iron grate was specified, but on account of the low grade of fuel used, it was later decided to change to the usual American type of rocking grates with a  $\frac{5}{8}$  in. air space between the bar fingers. The wisdom of this decision is borne out by the fact that the railway has reported an unusually low coal consumption

on these locomotives; which is very important as fuel is scarce and expensive. The fuel used is briquettes composed of one-third best English coal, one-third lower grade Spanish coal, the balance of coal dirt and a binder of asphaltum.

The locomotives employ superheated steam. They are equipped with Schlack cylinder lubricators and with Clayton vacuum brakes. The Clayton vacuum brake is manufactured by the Vacuum Brake Company, Ltd., of London and the New York Air Brake Company of New York, which controls the American manufacturing rights. Brakes as made by the two companies are exactly alike and the parts are interchangeable. At the time these Consolidation locomotives were being built, the Vacuum Brake Company of London was unable to furnish their brake apparatus in time for the Baldwin Locomotive Works to put it on and deliver the locomotives at the date specified in the contract so the material was purchased from the New York Air Brake Company. Reports from the railway company indicate their entire satisfaction with Clayton brakes of American manufacture.

Locomotive boilers for Spanish railways are tested under a Spanish law. This law requires the hydraulic test of the boiler to be made at a pressure of 17.25 kilograms per square centimeter (246 lb. per sq. in.) instead of 25 per cent above boiler working pressure as required by the Interstate Commerce Commission of the United States, which latter procedure is the one usually employed by American locomotive manufacturers. These boilers were built according to Baldwin Locomotive Works practice which specifies a test of somewhat greater severity than required by United States law. The Spanish test is most severe and gives testimony to the excellence of the boiler construction. The exact conditions to be met were not known at the time of manufacture and the boilers for these locomotives were given a shop test of 213 lb. per sq. in. The re-test at destination as made under Spanish law was at approximately 245 lb. per sq. in., or an excess of 15 per cent above the manufacturer's test and 22½ per cent above the test necessary under United States laws.

The locomotives were erected in the railway's own shop, which is a combination erecting and boiler shop 65 ft. high, 90 ft. wide, and 425 ft. long. In it are eight erecting pits, each long enough for two engines and served by an electric traveling crane of 30 tons capacity. The minimum erection time for these locomotives was 21 days, the maximum was 41 days and the average was 29.9 days.

The new motive power is now being used on the division between Alora and Gobantes. This route traverses a very

mountainous part of the country, thus making a continuous haul for the locomotives for about 40 miles, several miles of which is a succession of tunnels with the tracks constantly wet from the seepage through the rocks. Most of the steep grades are combined with curves, many occurring in the tunnels where the rails are extremely slippery. In an official test of locomotive No. 467 hauling train No. 201, a load of 270 metric tons (298 short tons) was pulled from Alora to Gobantes, a distance of 19 kilometers (11.8 miles) up a ruling grade of three per cent, gaining 11 minutes on the scheduled time. The train hauled is considered a 15 per cent overload according to the railway company's calculations for tonnage allotment.

The most important dimensions, weights and factors of these locomotives are given in the table herewith.

Locomotive type.....	2-8-0
Service .....	Freight
Gage .....	5 ft. 5¾ in.
Tractive effort (85 per cent).....	23,280 lb.
Cylinders, diameter and stroke.....	19 in. by 26 in.
Valves .....	Piston type
Weights in working order—	
On drivers.....	113,000 lb.
On front truck.....	22,000 lb.
Total engine.....	135,000 lb.
Tender .....	100,000 lb.
Total engine and tender.....	235,000 lb.
Wheel base—	
Driving .....	15 ft. 4 in.
Total engine .....	24 ft. 1 in.
Total engine and tender.....	49 ft. 5½ in.
Wheels and journals—	
Driving wheels, diameter over tires.....	55½ in.
Driving journals, main.....	8 in. by 8½ in.
Driving journals, others.....	7½ in. by 8½ in.
Front truck wheels.....	41 in.
Front truck journals.....	5½ in. by 10 in.
Boiler—	
Style .....	Straight top
Diameter, first ring, outside.....	60 in.
Steam pressure.....	160 lb.
Fuel .....	Briquettes
Firebox material.....	Arsenic copper
Firebox, length and width.....	73¾ in. by 49¾ in.
Grate area.....	25 sq. ft.
Tubes, number and diameter.....	132—1¾ in.
Flues .....	21—3¼ in.
Tubes and flues, length.....	12 ft. 4 in.
Heating surface, firebox.....	126 sq. ft.
Heating surface, flues and tubes.....	1,146 sq. ft.
Heating surface, total.....	1,272 sq. ft.
Superheater surface.....	309 sq. ft.
Equivalent heating surface.....	1,736 sq. ft.
Tender—	
Water capacity.....	3,500 gal.
Coal capacity.....	7 tons
Wheels .....	38 in.
Ratios—	
Weight on drivers ÷ tractive effort.....	4.85
Tractive effort ÷ equivalent heating surface.....	13.4
Firebox surface ÷ evaporative surface, per cent.....	9.9
Tractive effort × dia. drivers ÷ equivalent heating surface.....	745
Equivalent heating surface ÷ grate area.....	69.5
Total weight ÷ equivalent heating surface.....	78
Superheater surface ÷ evaporative surface, per cent.....	24.3

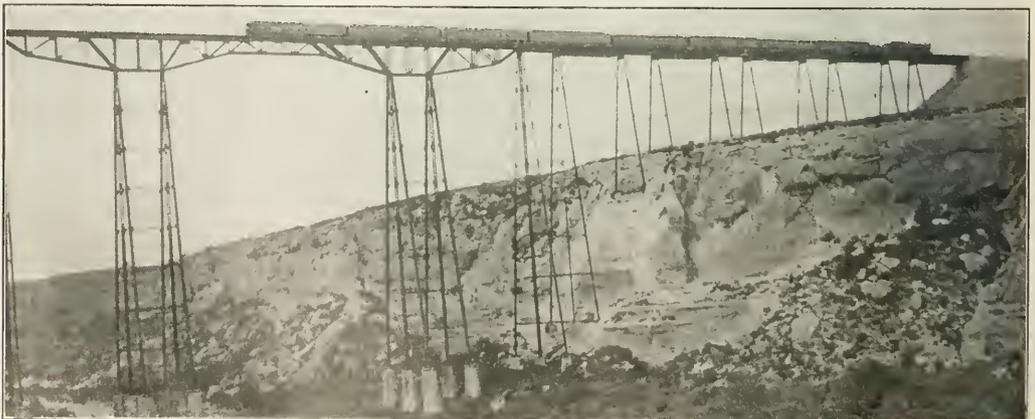


Photo by Underwood & Underwood

The Southern Pacific Crossing the Pecos River, Texas

# Adopts New Methods for Handling Stationery

Describing the System Used by the Chicago, Milwaukee  
& St. Paul at Its Miles City Store

By R. H. Ewry

Stationery Storekeeper, C. M. & St. P., Miles City, Mont.

REORGANIZATION of the stationery department of the Chicago, Milwaukee & St. Paul Railway Company, has been in progress for the past year under the supervision of the general store department, of which stationery is one of the many branches, and has been systematized so that requisitions and supplies will be handled efficiently. There are two stationery supply stores on the system. The stationery storekeeper at Milwaukee Shops, Wis., supplies the points on lines east of Mobridge, S. Dak., and the one at Miles City, Mont., supplies all points west of Mobridge, to the Pacific coast. The Miles City store receives its stock of supplies from Milwaukee Shops, and on direct purchase requisitions.

Forms are arranged on the shelves so that a quick count of stock on hand may be taken at any time. The forms are placed face downward on the shelves as dust and atmospheric changes ruin the top sheets if the latter are exposed for any length of time.

All miscellaneous articles of stationery such as pins, erasers, rubber-bands, pencils, mimeograph ink, etc., are arranged on the shelves around or near the packing counter and are lined up as nearly as possible in the order in which they appear in the stationery stock book.

A stock requisition is placed each month with the general storekeeper by the stationery storekeeper for the supplies for the forthcoming 30 days on Form 1962, when it is a stock



Fig. 1—Wrapping Counter and One of the Stationery Packing Boxes



Fig. 2—An Aisle in the Stationery Stock Room

The stationery stock is arranged on shelves in numerical order according to the stock books. Each bin is tagged. On the tag appears the form number, page and line on which it is listed in the stock book and the price per unit. As a speedy reference to the stock books, for purposes of pricing requisitions, if desired, and in ascertaining all data relative to any form when necessary, this system has proved satisfactory, especially when taking inventory and also when ordering the stock necessary for the next month.

Fig. 1 illustrates the order in which the miscellaneous articles are stored back of the wrapping counter; it also shows one of the stationery packing boxes, in which the larger orders for supplies are shipped. The packing boxes are numbered, and there is a record kept of point of destination. This is important as the box then can be traced and its return to the stationery department thereby assured. Small shipments of stationery are tied up in bundles and a paper placed on the package bears the address of the consignee. Fig. 2 shows an aisle in the stationery stock room.

item, or on Form 1737, when it must be placed direct with the purchasing department. Forms 1962 and 1737 are illustrated in Fig. 3. It will be noticed that whether it is a stock item requisition or a direct purchase requisition, the data listed on these forms gives all the desired information necessary for the general storekeeper to have so that the desired amount can be ordered intelligently.

Form 1737-A (invoice record sheet) and Form 1737-B (receiving record sheet) shown in Fig. 4, are used as a record of invoices and records of shipments of material so that there may be no occasion for an error in passing an invoice. This is the most important part of the storekeeper's work as it prevents the passing of duplicate invoices and avoids passing invoices for material which has never been received.

The stationery storekeeper conducts his department on the same basis as a commercial concern. It is strictly debit and credit business. Nothing is ever delivered without Form 61 or 61-A, as shown in Fig. 5, properly approved, which is the same as cash to the storekeeper. On the return of articles

and forms, a charge-out credit is allowed, as shown in Fig. 5, on Form 1728, which is printed in red, so that disbursements can be made, debiting and crediting the proper accounts.

Requisitions for stationery must be approved by a designated officer of the particular department before they are filled. Form 61 is used by all persons ordering stationery. Form 61A (Fig. 6) has been adopted recently and will be

respective division for approval. This officer signifies his approval of the requisition by entering his name on the last page in the book opposite the name of the month the requisition is placed and forwards it to the traveling auditor of his division for O. K. The traveling auditor after checking, forwards Form 61 and 61-A to the stationer to be filled. The agent cannot order more than what he is allowed for 60 days, as shown in the column marked "Allotment." If an addi-

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY CO.  
**STOCK TRANSFER REQUISITION** REQ. No. \_\_\_\_\_  
 \_\_\_\_\_ Store \_\_\_\_\_ 19\_\_\_\_  
 To STOREKEEPER at \_\_\_\_\_  
 Ship to C. M. & St. P. Ry. Co. Care \_\_\_\_\_  
 At \_\_\_\_\_ and charge \_\_\_\_\_ Store \_\_\_\_\_

Quantity Ordered	DESCRIPTION—CLASS No.	Part	Line	Date	UNITED STATES	PRICE	Low	Quantity	Initials and
					Amount	Per Unit	Price	Ordered	Date
			1						
			2						
			3						
			4						
			5						
			6						
			7						
			8						
			9						
			10						

Storekeeper \_\_\_\_\_

Chicago, Milwaukee & St. Paul Railway Co.  
 Form 1737  
 Requisition No. \_\_\_\_\_  
**REQUISITION FOR MATERIAL**  
 Storekeeper's Office \_\_\_\_\_ 19\_\_\_\_  
 Deliver to \_\_\_\_\_  
 Name and Address of Consignee \_\_\_\_\_

QUANTITY ORDERED	CLASS	DESCRIPTION	Stock Book		On Hand	On Order	Holding Order	SHEETS
			Price	Line				

APPROVED \_\_\_\_\_  
 General Storekeeper \_\_\_\_\_  
 Storekeeper \_\_\_\_\_

Fig. 3—Form 1962 (Left) Stock Transfer Requisition, and Form 1737 (Right) Requisition for Material. Full Size Both Forms 8¼ in. by 10¾ in.

put into effect at an early date. It is called the "Station Agents Stationery Stock Book." Both of these requisitions forms must be filled in complete by the agent before they are accepted to be filled. The agents' stock book is invaluable as a record of stationery disbursements for auditing and accounting purposes. Form 61 is made out by the agent and is enclosed in Form 61A when requisition is made for supplies. Form 61A is a means of assisting those, con-

ditional supply is desired, he must write a letter to the approving officer explaining why the additional amount as shown on the requisition, is needed.

The stock book is considered one of the most important records of the storekeeper, as shown in Fig. 7. In it are listed all the forms and material carried in stock. Each month when an order is placed for supplies, the following data must be shown in spaces provided: "On Hand," "Due

Chicago, Milwaukee & St. Paul Railway Company  
 Requisition No. \_\_\_\_\_  
**REQUISITION FOR MATERIAL**  
 Storekeeper's Office \_\_\_\_\_ 19\_\_\_\_  
 Deliver to \_\_\_\_\_

QUANTITY ORDERED	CLASS	DESCRIPTION	STOCK BOOK REFERENCE	FREIGHT CHARGES				RECEIVING RECORD				INVOICE RECORD						
				AMOUNT	ADD	REPAIR	RATE	EX. NO.	QUANTITY RECEIVED	DATE OF RECEIPT	SUPPLIER	P. & B.	INVOICED BY	DATE	P. & B. NUMBER	QUANTITY	PRICE	AMOUNT

Chicago, Milwaukee & St. Paul Railway Company  
 Requisition No. \_\_\_\_\_  
**REQUISITION FOR MATERIAL**  
 Storekeeper's Office \_\_\_\_\_ 19\_\_\_\_  
 Deliver to \_\_\_\_\_

QUANTITY ORDERED	CLASS	DESCRIPTION	STOCK BOOK REFERENCE	WAY BILL CHECKING						STOREHOUSE CHECKING					
				STATION	DATE	NUMBER	INITIALS	HOURS	NO.	SHIPPER	RECEIVED	REMARKS	ENTERED		

Fig. 4—Form 1737-A (Above) Invoice Record Sheet, and Form 1737-B (Below) Receiving Record Sheet. Full Size 19¼ in. by 10¾ in.

cerned about its use, in the conservation of stationery, as in this book are columns headed, "Form and Number," "Cost; Allotment," and under the caption designating the months of the year are two columns, one headed "On Hand," and the other "Ordered." These two columns are filled in each time a requisition is placed for supplies, which is every other month or approximately every 60 days, and sent to the superintendent of each

on Requisitions"; "Holding Orders For"; "Used Last 30 Days"; and "Surplus." The amount ordered is placed in the column marked, "Ordered." The requisition number is placed opposite the amount ordered in the column provided, and when supply is received the amount ordered is circled and the date on which it was received is placed under the circle. These stock books are lined up to run for one year without new inserts being placed in the books. This system



# General News Department

**Returns of 91 Class I roads to the Interstate Commerce Commission for November show a net railway operating income of \$38,000,000, an increase of 35 per cent as compared with November last year. The operating revenues show a decrease of 22.2 per cent, while the operating expenses were reduced 29.5 per cent.**

## Air Brake Association Convention

In the announcement of the 1922 convention of the Air Brake Association in the issue of December 24, both the Hotel Washington and the Ebbitt Hotel were mentioned, but it was not made clear that the headquarters of the association will be at the Hotel Washington. The new Ebbitt Hotel will be used only to provide accommodation for those who are unable to obtain rooms in the Hotel Washington.

## Rumors of Electrification of the T. & N. O.

The reports which have gained some currency regarding the development of hydro-electric power on the Abitibi river by the Temiskaming & Northern Ontario, are somewhat premature. The extension of this railway will cross the Abitibi river at the Long Sault rapids. It is probable that there will be a development of this water power, but whether it will be as a part of a pulp and paper mill, or simply as a hydro-electric power development is at present uncertain.

The Long Sault has been considered as a source of power in connection with the proposed electrification of the railway. It is not probable that the work of electrification can be commenced under existing financial conditions, but it is probable in any further development of water powers on the Abitibi river, the provincial government will give due regard to the requirements of the pulp and paper, and mining industries, as well as the requirements of the Temiskaming & Northern Ontario for hydro-electric power.

## Wage Statistics for August

The Interstate Commerce Commission has issued the second of its new series of monthly reports of wage statistics giving figures for the month of August, when the number of employees of the Class I steam roads was 1,679,927, as compared with 1,634,872 in July and the total compensation was \$227,745,895, as compared with \$214,339,385. The report says the increase was principally due to an increase in the number of straight time hours per employee, there having been a small decline in the number of overtime hours paid for.

The report gives average earnings for the month, based on the number of employees at the middle of the month, for the various groups of classes of employees as follows:

	Daily Basis	Hourly Basis
Executives, officials and staff assistants.....	\$417	.....
Professional, clerical and general.....	178	\$126
Maintenance of way and structures.....	236	93
Maintenance of equipment and structures.....	248	134
Transportation, other than train engine and yard.....	99	124
Transportation, yardmasters, switch tenders and hostlers.....	258	143
Transportation, train and engine.....	.....	181

## Progress on Contract Standardization

Definite progress is recorded for the two-day conference held at Washington on December 15 and 16 for the standardization of construction contracts. Those present included representatives of associations of railway and highway engineers, architects, contractors and others. The meeting was opened with an address by Herbert Hoover, secretary of commerce, who extended the assistance and co-operation of his department in the fullest measure. The conference elected officers as follows: Chairman, Onward Bates of Chicago,

representing the Western Society of Engineers; vice-chairman, J. W. Cowper of Buffalo, N. Y., representing the Associated General Contractors, and secretary, W. P. Christie of Washington, D. C. After a general discussion of the problem of the universal contract form, a committee was appointed to prepare a tentative form for general contract clauses, this committee consisting of General R. C. Marshall, representing the Associated General Contractors; W. S. Parker, representing the architects, and W. D. Faucette, chief engineer of the Seaboard Air Line, representing the railway engineers.

## Floods Causing Trouble

Heavy rains in the Ohio river valley and the state of California have caused the railroads considerable damage and inconveniences at certain points in these regions. The greatest damage was done at San Diego, Cal., which city was completely isolated for several days as it was necessary to suspend traffic on both the Atchison, Topeka & Santa Fe and the San Diego & Arizona on December 25. The Santa Fe lost 1,000 ft. of track and roadway near Sorrento, and in the Rose Canyon and there were small washouts at several other points, while the bridge over the San Diego river was threatened. In the Ohio region, it was necessary for the Cleveland, Cincinnati, Chicago & St. Louis, the Southern and the Baltimore & Ohio to abandon the Central Union station at Cincinnati temporarily because of high water. Service was not resumed at this station, except for one or two local trains operated on a track above the water line, until December 28. While little damage was done at this point the railroads here and at other points on the river experienced a great deal of inconvenience from the high water.

## Report on Collision at Manhattan Transfer

The Interstate Commerce Commission has issued a report, dated November 21, and signed by W. P. Borland, chief of the Bureau of Safety, on the rear collision of westbound passenger trains which occurred on the Pennsylvania Railroad near Manhattan Transfer, N. J., on the morning of October 28, about 12:30 o'clock, when 38 passengers, four Pullman employees and four railroad employees were injured. There was a dense fog at the time, and express train No. 103, consisting of electric Motor No. 11 and 12 sleeping cars, moving at from 10 to 25 miles an hour, ran into the rear of a preceding train, No. 701, which had been brought to a stop about one mile east of Manhattan Transfer station. Train 103 had run past two automatic block signals set against it, one at caution and the other at stop; a second stop signal 271 ft. in the rear of the standing train; and also past a flagman and fusee and torpedo signals; although the flagman and the fusee and torpedoes were not very far back from the standing train.

The flagman is censured for not affording his train proper protection. If his train had been moving at ordinary speed, he had from seven to 10 minutes in which to go back; while if it had been moving slowly, he ought to have thrown off fusees, which he did not do.

The engineman at fault admitted that he passed the two automatic signals without observing their indications; and he did not make a sufficient reduction of speed. The engineman's helper on train 103 is also held at fault for failure to observe the signals and to warn the engineman that signal locations had been passed without the indications being seen.

The line between Pennsylvania Terminal, New York, and Manhattan Transfer, nine miles, double track, is equipped with automatic block signals for the movement of trains in either direction on either track; and, in addition, automatic

stops are provided on that portion of the line which is in tunnel; at the entrances to the tunnel and at the approaches to a drawbridge, about two miles east of the point of collision. The report indicates that no reason was disclosed why automatic stops had not been installed on the track at every block section throughout this nine miles, all electric motors running over the line being equipped with train-stop apparatus; and "to prevent the recurrence of accidents of this character, it is recommended that the installation of the automatic train stop system be extended" to cover the whole of this line.

All of the cars involved in the collision were of steel; and the report declares that if any one of them had been of wood there probably would have been loss of life.

### Wood Preservers' Convention Program

The following is the program of the convention of the American Wood Preservers' Association to be held on January 24-26, at the Hotel Sherman, Chicago:

TUESDAY, JANUARY 24, 10.30 A. M.

Invocation, address of welcome and opening business.

Effect of Heat on Wood-Destroying Fungi in Mills, by Dr. Walter H. Snell.

2 P. M.

Committee report on Preservatives, A. L. Kammerer, chairman.

A Theory on the Mechanism of the Protection of Wood by Preservatives, by Ernest Bateman, chemist, Forest Products Laboratory, Madison, Wis.

Committee report on Utilization and Service: Economics, Kurt C. Barth, chairman; Track, S. D. Cooper, chairman; Flooring and Paving, L. T. Ericson, chairman.

What Constitutes Reliable Service Records, by M. F. Deutsch, statistician, Forest Products Laboratory, Madison, Wis.

The Economics of Cross Tie Renewals, by V. K. Hendricks, Terre Haute, Ind.

Factors Affecting the Cost of Treated Cross Ties, by E. E. Pershall, vice-president, T. J. Moss Tie Company, St. Louis, Mo. Photography and Wood Preservation, by Henri Strawn, photographer, Atchison, Topeka & Santa Fe, Topeka, Kans.

WEDNESDAY, JANUARY 25, 10 A. M.

Feasibility of Using Tropical Hardwoods for Railroad Ties in this Country, by Nelson C. Brown, American Woods Export Association, New York.

Committee report on Treatments: Ties—Fir, R. H. Rawson, chairman; Lumber—Car, W. J. Smith, chairman; Treated Car Sills and Decking, F. S. Shinn; Poles—Pressure and Non-pressure Treatments, R. P. Hosford, general chairman; Wood Pipe, H. E. Horrocks, chairman; Creosoted Wood Stave Pipe, H. D. Coale, chairman; Inspection, J. R. Keig, chairman.

Should the Increased Cost of Treating Ties be Charged to Maintenance or Capital Account?, by Earl Stinson, chief engineer of maintenance, Baltimore & Ohio, Baltimore, Md.

Lumber Drying by Vacuum, by O. E. Jacobs.

2 P. M.

Growing Need for Preservation of Mine Timbers, by R. R. Ilorner.

Why Preserve Mine Timbers? by George M. Hunt, chemist, Forest Products Laboratory, Madison, Wis.

Decay of Timber in Mines, by C. J. Humphrey, pathologist, Bureau of Plant Industry, Madison, Wis.

Committee report on Plant Operation: Peeling Ties, F. S. Pooler, chairman; Azing, Boring and Performing Layouts, D. W. Edwards, chairman; Car Loading, A. E. Larkin, chairman; Insurance, W. E. Doan, chairman, Pressure Machinery, E. E. Alexander, chairman; Material, Handling, A. H. Onstad, chairman.

THURSDAY, JANUARY 26, 10 A. M.

Confidence in the Industry, by R. S. Manley, president, Creosoted Materials Company, New Orleans, La.

Committee report, on San Francisco Bay Marine Piling, F. D. Mattos, chairman.

Committee report on Gulf Coast Marine Piling Survey, E. F. Boehne, chairman.

American Shipworms, by Paul Bartsch.

Closing business.

## Traffic News

H. A. Jones, formerly traffic manager for the Columbian Steel Tank Company, Kansas City, Mo., has been appointed traffic manager for the Rudy-Patrick Steel Company, Kansas City, Mo.

North Pacific Coast traffic representatives met at Seattle, Wash., on December 23, to confer on reductions and revisions in switching rates at all northwest terminal cities, including Portland. The present switching rates came into effect during the war.

The Senate on December 22 adopted a resolution introduced by Senator Ladd of North Dakota directing the Federal Trade Commission to make an investigation and report regarding the facts relating to the exportation of wheat and other grain, including the freight and other costs of handling.

Reductions of rates on coal from Chicago to Pacific Coast points were announced by the Southern Pacific on December 21, the effective date to be set later. The company has also extended the privilege of fabricating in transit of iron and steel tank plates in shipments originating in Chicago and west when shipments are destined for Pacific Coast points.

J. A. McNaughton, formerly traffic manager for the Cudahy Packing Company, Chicago, has been appointed traffic manager for the Stock Yards Company, Los Angeles, Cal. J. W. Robb, succeeds Mr. McNaughton with the Cudahy company. B. E. Reed, assistant traffic manager of the first named company, has been appointed traffic manager for the California Fruit Growers' Exchange, Los Angeles, and has been succeeded by C. O. Cornwall.

In defending the western sugar rate to Chicago at a hearing conducted by the Interstate Commerce Commission at San Francisco, Cal., on December 14, H. R. Howard, sales manager of the Western Sugar Refinery, San Francisco, testified that the lower price of raw products on the Pacific Coast did not handicap the eastern refineries because the eastern refineries, through subsidiary companies, own plantations. Eastern roads maintain that the present freight rates on sugar from the Pacific Coast to Chicago unduly handicap the shipment of Louisiana, Cuba and Porto Rican sugar to the Chicago market.

### Coal Production

Coal production declined again during the week ended December 17, according to the weekly bulletin of the Geological Survey, and established a new low record for this season of the year. The output of bituminous is estimated at 7,046,000 net tons.

### Senate to Take Up Mileage Book Bill

An effort will be made in the Senate on January 11 to pass a bill to require the railroads to sell interchangeable mileage books at 2½ cents a mile. On motion of Senator Robinson of Arkansas on December 22 the Senate entered into a unanimous consent agreement to discharge the committee on Interstate Commerce from further consideration of the bill S. 848, which provides for the issuance of a mileage book at 2½ cents, by amendment of section 22 of the interstate commerce law, and to take up the consideration of the bill on January 11. A number of similar bills have been introduced in Congress but no action has been taken upon them by the committees. An effort was made to attach one of them to the tax bill as a rider but it failed because it was not germane to the bill and also because several senators expressed themselves as greatly opposed to Congress legislating directly to fix a rate of fare itself. Senator Robinson put into the Congressional Record a statement in which he said that "there is no one thing that contributes more to the high cost of living than the high cost of railroad travel and railroad freight and express rates."

## Commission and Court News

### Interstate Commerce Commission

The commission has suspended until April 26 the operation of schedules published by the Erie and the Pennsylvania which provide reductions in the rates on iron ore from Lorain, Toledo and Cleveland, to various destinations in Official Classification territory. For example the present rate on iron ore from Cleveland to Cumberland, Md., is 174½ cents a ton, and the proposed rate 170½ cents.

The commission has further suspended until February 12 the operation of certain schedules published in supplements issued by R. H. Countiss, agent. The suspended schedules in Supplement No. 1 propose to restrict the routing on lumber and articles taking same rates destined to eastern points so as not to apply via any junction in connection with the Atchison, Topeka & Santa Fe, Gulf, Colorado & Santa Fe or Pan-Handle & Santa Fe, from points in California, Nevada and Utah in the Hawley and Truckee groups, leaving applicable instead combination rates; and Supplement No. 2 proposes to substitute, for the combinations proposed to apply, the Coast group rates from points in the Hawley and Truckee groups, the operation of which was suspended until January 13, 1922, by an order previously entered.

#### Rate for Grain Rate Reduction Postponed

The Interstate Commerce Commission on December 23 authorized the western railroads to make the reduction in rates on grain, grain products and hay effective on January 7 on one day's notice, instead of on December 27, on five days' notice, as provided in the commission's order. This was done because it appeared to the commission that it was physically impossible for many of the carriers to publish the tariffs by that date even on one day's notice.

#### New England Roads Included in

#### Agricultural Rate Cut

The Interstate Commerce Commission on December 22 granted permission to the New England railroads, at their request, to make the general 10 per cent reduction in rates on agricultural products which is to be put into effect on January 1 by the other roads. In the original plan the New England lines were excepted because of their financial condition.

#### Coal Rate Reductions Suspended

The commission has suspended until April 24 the operation of certain schedules published by the Chesapeake & Ohio and the Louisville & Nashville which propose reductions in the rates on bituminous coal from mines to destinations on the Southern Railway in Indiana and Illinois. The following shows the present and proposed rates in cents per net ton on bituminous coal from Chesapeake & Ohio mines in the Kanawha and Big Sandy Districts to destinations indicated:

To—	Present	Proposed
Muen, Ind. ....	364	347
Oakland City, Ind. ....	364	347
Mt. Carmel, Ill. ....	378	347
Centralia, Ill. ....	413	347
East St. Louis, Ill. ....	413	347

#### Bingham & Garfield Hearing Closed

The hearing conducted by H. B. Wilson, examiner for the Interstate Commerce Commission in conjunction with three members of the Public Utilities Commission of Utah, to determine whether the Bingham & Garfield is a plant facility of the Utah Copper Company or a common carrier, closed at Salt Lake City on December 18. The copper company, under a contract with the railroad, guarantees the railroad a return of 6 per cent on its investment. The copper company owns the railroad outright, and claims the contract is legal and regular on the ground that to all intents and purposes the railroad is a plant facility. The company, therefore, seeks to avoid payment of one-half of all

over 6 per cent net profits into a common fund of all the railroads of the country as provided for in the Transportation Act. For all years since that ending June 30, 1912, the net railway operating income has been more than 6 per cent of the book value; and as high as 24.35 of that value in the year ending December 31, 1916.

#### Reduction in Coal Rates by Ford's

#### Railroad Not Permitted by I. C. C.

The Interstate Commerce Commission has issued its decision on the proposed reduction by the Detroit, Toledo & Ironton in the interstate rates on coal in carloads from mines on its line in the Jackson county and Ironton groups in Ohio to Toledo, Detroit and other destinations, ordering that the tariffs be cancelled on the ground that they are unduly preferential of such mines and unduly prejudicial to mines on other lines in the same and other groups in Ohio and other states. The tariffs had been suspended since September 3.

The opinion, by Commissioner Esch, says that the financial condition of the railroad might warrant the proposed reduction, provided the issue could be decided solely upon that basis; but, a proper relationship between competitive groups is in many respects of greater importance to the shipping public than the measure of the rate itself, and the suspended schedules involved not only respondent's local coal rates, which are but a few of the many coal rates interwoven in the rate structure from the mines. Thus viewed, it is said, the commission would not be warranted in permitting the establishment of rates which would disrupt the rate relationship fixed by the commission and which has existed for many years. The report says the reduction contemplated by the suspended tariffs is merely a part of a general reduction in the interstate and intrastate rates of respondent upon all commodities. All other reductions in its interstate rates have been allowed to become effective.

### State Commissions

The Railroad Commission of Tennessee has summoned all the railroads of the state to appear on January 6 and show cause why the commission should not order the discontinuance of the surcharge of 50 per cent on railroad tickets of passengers riding in parlor and sleeping cars.

The Railway Commission of Nebraska on December 17, sent a protest to the Interstate Commerce Commission against the proposed issue of \$73,000,000 of bonds by the Chicago, Burlington & Quincy to reimburse the company's treasury for money spent in improvements in the years 1916 to 1921, and an issue of \$30,000,000 for additions and betterments to be made in 1922.

The Public Service Commission of Alabama has postponed until February 6 the date for its hearing in connection with proposed reductions in freight rates on the railroads of that state. It is said that the Alabama Shippers' Association requested this postponement because hearings are being held, on the same general subject, by the Interstate Commerce Commission.

The California Railroad Commission has ordered that all auto stages engaged in the transportation of passengers in California shall stop between 50 ft. and 75 ft. from steam railroad or interurban electric tracks, before crossing, and the stage driver must then look up or down the track to be sure there is no train approaching. Within municipalities the rule does not apply either at electric or steam railroad tracks.

### Personnel of Commissions

The Senate committee on interstate commerce on December 20 voted to recommend to the Senate confirmation of the nominations of Commissioners Aitchison and Hall for re-appointment to the Interstate Commerce Commission but the Senate failed to act before taking an adjournment to January 3. As the commissioners' terms expire at the end of the year this will leave vacancies until the Senate acts. It is understood that Senator LaFollette and some of the Southern Senators who think a Southern man should have been appointed will make some opposition to the appointment of Mr. Hall.

## Foreign Railway News

### Golfers as Passengers

LONDON

The Great Western is issuing special facilities for the benefit of golfers on their line. Tickets are issued inclusive of hotel accommodations, rail journey and conveyance from station to hotel and from hotel to golf links. This is a new departure in Great Britain and it is believed will be a valuable attraction to traffic.

### General Manager of North

#### Eastern (England) to Retire

LONDON

Sir Alexander Kaye Butterworth, general manager of the North Eastern Railway, is to retire at the end of the present year. Sir Alexander has held this position since 1906. He will, however, remain in the service of the company until the new amalgamation (North Eastern, Eastern and East Scottish Group) is formed in order that he may give his advice and assistance in all matters relating to the amalgamation. R. L. Wedgwood, C. B., C.M.G. is to be appointed general manager as from January 1, 1922. Mr. Wedgwood has held the position of deputy general manager since August, 1919.

### The Great Western's New Mechanical Chief

LONDON

C. B. Collett, who has been appointed as chief mechanical engineer of the Great Western (England) succeeding G. J. Churchward, C. B. E., who is retiring from that position at the end of the present year, served his apprenticeship with Maudslay Son & Field, of London, and entered the service of the Great Western Railway in 1893 at Swindon as draughtsman. He subsequently filled the position of chief draughtsman and was appointed in 1900 technical inspector of the Swindon locomotive works. In 1901 Mr. Collett was appointed assistant works manager and in 1913 was promoted locomotive works manager. He has acted as deputy chief mechanical engineer since May, 1919.

### Railway Electrification in South Africa

The South African Railways have decided to defer electrification of the Durban-Pietermaritzburg section of the main railway from Durban to Johannesburg, and to electrify the track between Pietermaritzburg and Glencoe Junction instead, according to the Times (London) Trade Supplement. The section to be converted consists of 171 miles of single track, and preliminary work has already been begun. The change of plans is doubtless due to the lessened urgency of dealing with the coast section resulting from the recent completion of a new route between Pietermaritzburg and Durban, which, with other improvements, provides two tracks from the provincial capital to the port. Further, there are long and severe gradients against down traffic between the coalfields in Northern Natal and Pietermaritzburg, and this, combined with the fact that only one track exists, renders electrification of the inland section more immediately advantageous. It will also avoid the necessity for hauling fuel 240 miles to the generating station, since under the revised scheme the power plant will be built at Glencoe Junction, in the coal-producing district.

TWO MEN caught by the police in Chicago on December 23—one of them being killed—proved to be bandits who had held up Union Pacific passenger train No. 7, near Clearfield, Utah, on August 31. A reward of \$1,000 had been offered by the railroad company.

PASSENGER TRAIN No. 7, of the Southern Railway, was derailed near Anniston, Ala., on December 19, and the engineer, fireman and one mail clerk were killed. The engineer was Rev. Samuel T. Watkins, he having been a clergyman of the Baptist Church for 37 years, devoting a part of his time to religious work. He had spent much time in visiting prisons in Georgia and Alabama

## Equipment and Supplies

### Locomotives

THE DETROIT & MACKINAC is having repairs made to 1 locomotive at the shops of the Baldwin Locomotive Works.

THE LEHIGH & HUDSON RIVER is having repairs made to 2 Consolidation type locomotives at the shops of the Baldwin Locomotive Works.

### Freight Cars

THE PHILADELPHIA & READING is inquiring for from 500 to 2,000, 70-ton hopper cars.

THE BENGAL & NORTH-WESTERN is inquiring through the car builders for 25 timber trucks.

THE ASSAM BENGAL (India) is inquiring through the car builders for 100 covered goods wagons.

THE BANGOR & AROOSTOOK is applying steel underframes to 250 box cars in its shops at Derby, Me.

THE SOUTH INDIAN RAILWAY is inquiring through the car builders for prices on 100 steel covered goods wagons.

### Iron and Steel

THE ILLINOIS CENTRAL has awarded a contract to the Decatur Bridge Company for 675 tons of steel for the repair shop at McComb, Miss.

THE NORFOLK & WESTERN has placed contracts for 40,000 tons of rail for 1922 requirements. The tonnage was divided between several mills.

### Machinery and Tools

THE VIRGINIAN RAILWAY is asking for bids on a 200-ton wrecking crane.

### Miscellaneous

THE NEW YORK CENTRAL and subsidiary lines are asking for bids until 12 o'clock noon, January 10, 1922, for the requirements of these companies for a minimum of 5,000 and a maximum of 6,000 steel wheels for locomotive, passenger car and tender repairs.

THE CHICAGO & NORTH WESTERN is inquiring for 553 barrels of oil of different grades and 60 cases of Polar cup grease. This company is also inquiring for 55,000 gal. of Fairmile long-time burning and mineral seal oil for the period ending June 30, 1922; also for its requirements of gasoline and kerosene by tank wagon delivery at various stations on the line in the states of Illinois, Wisconsin, Michigan, Minnesota, South Dakota, Iowa and Nebraska for the period ending December 31, 1922, also inquiring for approximately 100,000 gal. of kerosene in steel drums, 110 deg., and approximately 100,000 gal. of kerosene in tank cars, 110 deg., for the period ending June 30, 1922, all bids to be in before noon of January 3, 1922.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, January 10, 1922, for its requirements from January 1, to March 31, 1922, of black, galvanized and blue annealed sheets; driving and truck tires for locomotive service; seamless steel tubes for repairs to locomotive and stationary boilers; wire nails and staples; steel bars, steel shapes and steel plates; steel billets; axles for car and locomotive repairs; and its present requirements of crossing frogs; special frogs; special crossing; spring rail frogs; switch covers; rigid crossing; common movable points; offset splices; rigid manganese frogs; crank stands for double slip, and new metal super-structure for one span complete for one track on bridge No. 22, Western Division.

## Supply Trade News

David E. Hamilton has been appointed resident representative in New York City of **Herbert Morris, Inc.**, Buffalo, N. Y.

The **Keller Pneumatic Tool Company**, Grand Haven, Mich., recently changed its corporate name to **William H. Keller, Inc.**

The **Cutler-Hammer Manufacturing Company**, Milwaukee, Wis., has removed its Boston, Mass., office from the Columbian Life building, to rooms 403 and 404 Harvey building, Chancy street. C. W. Yerger is manager of this office.

E. R. Mason has been appointed eastern and export representative of **Brown & Co., Inc.**—Wayne Iron & Steel Works, Pittsburgh, Pa. Mr. Mason's headquarters are at the New York City offices of Brown & Co., Inc., room 2038 Grand Central Terminal.

R. C. Campbell, formerly vice-president of the Duncan Lumber Company, has been appointed manager of the car and railroad material department of the **Burton-Beebe Lumber Company**, Seattle, Wash., with headquarters at Chicago. Mr. Campbell will also handle long leaf yellow pine for J. H. Burton & Co., Inc., of New York and Mobile, Ala. The Burton-Beebe Lumber Company has moved its Chicago office from 53 West Jackson Boulevard to the Lumber Exchange building.

The **Texas Company**, New York City, has consolidated its traffic and railway sales departments into one department known as the railway traffic and sales department. The headquarters of G. L. Noble, vice-president; Wm. Jervis, manager, and W. E. Greenwood, assistant manager, is at 17 Battery Place, New York City, which will also be the headquarters of J. E. Symons, superintendent of the lubricating division of the department. W. H. Barrows has been appointed district manager at Houston, Texas.

## Obituary

**William J. Armstrong**, assistant treasurer of the Gould Coupler Company, New York City, died suddenly on December 25, at his home in Brooklyn. Mr. Armstrong had been in the service of the Gould Company for the past 25 years.

**Thomas Murray**, assistant secretary and assistant treasurer of the United States Steel Corporation, at New York, died on December 27, at his home in Sparkill, N. Y. Mr. Murray was also a director of the corporation and of a number of its subsidiaries. He was born in Jersey City, N. J., on December 14, 1867. In May, 1894, he became connected with the Federal Steel Company, and was appointed assistant secretary of the United States Steel Corporation upon its organization in April, 1901. On November 11, 1919, he was appointed also assistant treasurer of the corporation.

**Orville C. Mann**, inventor of several railroad appliances, died at Oak Park, Ill., on December 15. Mr. Mann was born at Bath, N. H., on July 22, 1859, and entered railway service with the Chicago, Milwaukee & St. Paul in 1878. In 1901, after serving on the Iowa and Dakota divisions of the above road, he moved to Chicago, where he entered the supply trade business as a manufacturer of smoke jacks. He later became associated with E. McCann, superintendent of bridges and buildings of the Atchison, Topeka & Santa Fe, who had perfected a spreader. Later Mr. Mann took over the entire interests in this device, which he has promoted in recent years.

OF THE TOTAL of 1,739 passenger cars owned by the Pacific system of the Southern Pacific, 890 are all-steel, 812 are wood and 37 are of steel underframe construction. The first steel coach, built as an experiment, was completed in the Sacramento shops of the company in 1906, and no wooden passenger cars have been built by the company since 1910.

## Railway Construction

**BENTON & SALINE COUNTY.**—This company has been chartered to construct a railroad line from Benton, Ark., extending beyond Glenville Park along the Saline river, a distance of about three miles.

**CANADIAN PACIFIC.**—This company is preparing plans and estimates for the construction of a new freight shed and team tracks at Windsor, Ont.

**GILMORE & PITTSBURGH.**—This company contemplates the construction of a line of railroad between Whitehall, Mont., and Dillon, using the tracks of the Oregon Short Line from Dillon to Armistead, Mont., where the present terminus of the road is located.

**GULF, COLORADO & SANTA FE.**—This company will construct a two-story brick station at Brenham, Tex., to cost approximately \$40,000.

**ILLINOIS CENTRAL.**—This company will receive bids until January 4, for the construction of a frame passenger and freight station, 96 ft. by 24 ft., at Belmont, Miss.

**MISSOURI, KANSAS & TEXAS.**—This company contemplates the construction of a roundhouse, power plant, locomotive shop, transfer sheds, oil storage tanks and warehouses at Denison, Tex., estimated to cost more than \$3,000,000.

**MISSOURI PACIFIC.**—This company has awarded a contract to T. S. Leake & Co., Chicago, for the construction of a 25-ft. extension to its roundhouse at Hoisington, Kan.

**MISSOURI PACIFIC.**—This company will accept bids until January 9 for the construction of a frame freight and passenger station at Zeigler, Ill. Bids also will be accepted until the same date for remodeling a brick roundhouse at Coffeyville, Kans.

**NEW YORK CITY.**—The municipal government, which has been ordered by the state legislature to construct a railway tunnel under the Narrows from Staten Island to Brooklyn for freight and passenger traffic, as has been previously noted in these columns, has now prepared a proposal to present to the legislature looking toward the furtherance of the project. The city's proposal calls for authority to acquire all railway lines on Staten Island, including the Baltimore & Ohio's subsidiary, the Staten Island Rapid Transit—by condemnation proceedings if necessary. An additional marginal railway on Staten Island is also provided for. The city's plan was promulgated without consultation with the Transit Commission or port authority and the ideas of these two bodies are at variance with those of the city government. The project is one to provide through freight connection between Long Island and the carriers terminating in New Jersey, as well as rapid transit facilities for one of the city's boroughs now dependent entirely upon ferryboat transportation. The necessary expenditure will approximate \$225,000,000.

**OSAGE RAILWAY COMPANY.**—This company, which was noted in the *Railway Age* of December 3 (page 1121), as applying to the Interstate Commerce Commission for permission to construct approximately 11 miles of railroad, extending from Foraker, Okla., to the Osage County oil field in that state, has received official sanction, and has awarded a contract for the grading of the new road to R. L. Plunkett, Pawhuska, Okla., and a contract for the construction of the bridges, trestles and culverts to J. A. Moore, Foraker.

**SOUTHERN PACIFIC.**—This company has been requested by the Board of State Harbor Commissioners of California to remove its trestle across Channel street, just east of the intersection of Seventh street, San Francisco, Cal., and substitute in the place of the trestle a drawbridge or other like facility. The harbor commission claims that the present trestle prevents full and complete use of the street for commerce and navigation. The matter is now before the State Railroad Commission.

**THOMAS GRAVEL COMPANY.**—This company contemplates the construction of a six-mile railroad line at Alexandria, La.

# Railway Financial News

**ATLANTA, BIRMINGHAM & ATLANTIC RAILWAY.—Bondholders' Committee for A. & B. First Mortgage Bonds.**—Default having been made on the July 1, 1921, interest on the outstanding \$4,000,000 first mortgage five per cent 30-year gold coupon bonds of the Atlantic & Birmingham Railway, the committee named below has been formed to protect their interests. Holders are requested to deposit their bonds with the Old Colony Trust Company, Boston, or with the Farmers' Loan & Trust Company, New York depositories. The committee consists of: Francis R. Hart, chairman; James H. Perkins, Percy R. Payne, 2d.; George Bramwell Baker, Walter F. Wyeth, secretary, 17 Court street, Boston, and Pillsbury, Dana & Young, 53 State street, Boston, counsel.

**ALABAMA GREAT SOUTHERN.—Authorized to Procure Authentication of Bonds.**—This company has been authorized by the Interstate Commerce Commission to procure the authentication and delivery to its treasurer of \$1,232,000 of first consolidated mortgage 5 per cent gold bonds, to be held in the treasury.

**CHICAGO & EASTERN ILLINOIS.—Order Amended.**—The Interstate Commerce Commission has made certain modifications of its order authorizing the issue of securities in connection with the reorganization and has extended the time within which the securities may be issued from January 1 to February 28.

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Protective Committee for Preferred Stock.**—A protective committee composed of Edwin G. Merrill, president, New York Life Insurance & Trust Company; George E. Roosevelt and Willis D. Wood has announced to the holders of preferred stock that they consider the offer of the New York Central Railroad to purchase the stock in exchange for equal amounts of New York Central stock inadequate. The committee believes that if the holders act together it will be possible to obtain substantial recognition of the stock's intrinsic value. Holders of preferred stock who are willing to be represented by the committee are requested to communicate promptly with the secretary of the committee, Charles Eldridge, 52 Wall street.

See also New York Central below.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.—Authorized to Issue Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue \$3,493,000 of first and general mortgage gold bonds, series B, in exchange for an equal amount of 5 per cent gold bonds, series A; \$3,000,000 to be sold at not less than 90 and the balance to be pledged as security for short term notes.

**FORT SMITH & WESTERN.—Authorized to Issue Securities.**—This company, recently organized as the Ft. Smith & Western Railway, has been authorized by the Interstate Commerce Commission to issue 62,400 shares of common stock without par value, \$1,500,000 of first mortgage bonds and \$3,744,000 of second mortgage bonds to be exchanged for first mortgage bonds of the Ft. Smith & Western Railroad and to use the last mentioned bonds for the purpose of acquiring at a foreclosure sale the property of the old company.

**GREAT NORTHERN.—Common Officers and Directors Authorized.**—The Interstate Commerce Commission has issued an order authorizing officers and directors of this company to retain their offices while also retaining positions with subsidiary and affiliated companies.

**NEW YORK CENTRAL.—Asks Authority to Lease Roads.**—The Cleveland, Cincinnati, Chicago & St. Louis has filed an application with the Interstate Commerce Commission for authority to acquire the balance of the stock and some bonds of the Peoria & Eastern; and the New York Central, the Toledo & Ohio Central, and the Kanawha & Michigan have applied for authority to enter into leases by which the properties of the Zanesville & Western, Kanawha & Michigan, Kanawha & West Virginia, and Toledo & Ohio Central will be held by the New York Central under lease.

The stockholders, at a special session to follow their annual meeting in Albany, N. Y., on January 27, will be asked to approve the proposals of the directors to lease the Toledo & Ohio Central and the above-mentioned railroads.

**PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—Dividend Passed.**—The directors have decided that, in view of the financial results for the past year, no dividend would be declared. On June 22, last, the directors postponed action on the 2 per cent semi-annual dividend which had been previously paid.

All of the Panhandle stock except about 1 per cent is now owned by the Pennsylvania Company.

**RIO GRANDE SOUTHERN.—Not to Pay Interest.**—The directors have announced that the interest due January 1 on the first mortgage bonds would not be paid because of inability to meet it.

**ROCK ISLAND SOUTHERN.—Returned to Owners.**—After 22 months' litigation, the United States District Court at Peoria, Ill., on December 23, ordered that the Rock Island Southern be returned to its owners. The road passed into receivership on March 17, 1920, following a complaint heard by the Interstate Commerce Commission.

**ST. LOUIS-SAN FRANCISCO.—Authorized to Issue Bonds.**—The Interstate Commerce Commission has authorized an issue of \$2,122,000 of prior lien mortgage bonds to be pledged and repledged from time to time as collateral security for short term notes.

**WESTERN MARYLAND.—Annual Report.**—See article on another page of this issue entitled "Western Maryland, 1921 Net in Sharp Contrast."

**WICHITA FALLS, RANGER & FORT WORTH.—Receivership Is Asked.**—J. W. Meany has made application in the United States Northern District Court of Texas for the appointment of a receiver for this railway. His claim is for more than \$100,000 in connection with the construction of the line, which extends between Dublin, Tex., and Breckenridge, 67 miles.

## Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Colorado & Southern	\$1,775,000
Ft. Worth & Denver City	235,000
Copper Range	130,000
Evansville & Indianapolis	235,000
Chicago, Terre Haute & Southeastern	35,000
North Charleston Terminal Co.	20,028.87
Atlantic & Yadkin	120,000
Yadkin	115,000

### SHORT LINE RAILROADS

Towanda Railway & Industrial Co.	500
----------------------------------	-----

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

## Dividends Declared

- Central of New Jersey—Special, 2 per cent, payable December 31 to holders of record December 30.
- Elmira & Williamsport—3/26 per cent, payable January 3 to holders of record December 31.
- Kansas City Southern—Preferred, 1 per cent, quarterly, payable January 16 to holders of record December 31.
- Mohile & Ohio—4 per cent, payable December 31 to holders of record December 23.
- New London Northern—2 1/4 per cent, quarterly, payable January 2 to holders of record December 16.
- Norfolk & Western—Preferred, 1 per cent, quarterly, payable February 18 to holders of record January 31.
- Northern Railroad of New Hampshire—1 1/2 per cent, quarterly, payable January 3 to holders of record December 12.
- Norwich & Worcester—Preferred, 2 per cent, quarterly, payable January 2 to holders of record December 15.
- Old Colony—1 1/2 per cent, quarterly, payable January 2 to holders of record December 16.
- Philadelphia & Trenton—2 1/2 per cent, quarterly, payable January 10 to holders of record January 31.
- Providence & Worcester—2 1/2 per cent, quarterly, payable January 10 to holders of record December 14.
- Reading Company—Common, 1 per cent, quarterly, payable February 9 to holders of record January 17; second preferred, 1 per cent, quarterly, payable January 12 to holders of record December 31.
- Richmond, Fredericksburg & Potomac—Common stock and bonded obligations—4 1/2 per cent, payable December 31 to holders of record December 24.
- Rome & Clinton—2 3/4 per cent, payable January 1 to holders of record December 22.
- Troy Union—6 per cent, payable January 16 to holders of record December 30.

## Railway Officers

### Financial, Legal and Accounting

**Hugh Clement** has been appointed assistant treasurer of the Virginian with headquarters at Norfolk, Virginia, to succeed F. W. Russell, resigned to engage in other business.

### Operating

**C. N. Clark** has been appointed superintendent of the Montour with headquarters at Coraopolis, Pa., effective January 1. The position of assistant superintendent has been abolished.

**A. G. Whittington**, formerly general manager of the International & Great Northern, with headquarters at Palestine, Tex., has been appointed general superintendent of the Trinity & Brazos Valley, with headquarters at Teague, Tex.

**John H. McKay**, division superintendent of the Texas & Pacific, with headquarters at Marshall, Tex., will, in addition to his present duties, assume charge of the Louisiana division, with jurisdiction over the line extending from Marshall, Tex., to New Orleans, La., succeeding W. H. DeFrance, superintendent of that division, who has resigned.

### Traffic

**A. L. Burnet**, city freight agent of the Louisville & Nashville with headquarters at Atlanta, Ga., has been promoted to commercial agent with headquarters at Macon, Ga., succeeding J. C. Willis, transferred.

**W. E. Renneker** has been appointed assistant general freight agent of the Atlantic Coast Line, with headquarters at Rocky Mount, N. C. **W. C. Ragin** has been appointed to a similar position at Wilmington, N. C. and **Hansford Sams** to a similar position at Savannah, Ga.

**E. S. LeGette** has been appointed general agent of the Atlantic Coast Line, with headquarters at Atlanta, Ga. **P. J. Lee** has been appointed commercial agent with headquarters at Nashville, Tenn. **W. G. Dixon** has been appointed commercial agent with headquarters at New York.

**T. A. Matthews**, division freight agent of the Chicago, Rock Island & Pacific with headquarters at Minneapolis, Minn., has been promoted to assistant general freight agent with the same headquarters. **D. O. Leary**, division freight agent with headquarters at Ft. Worth, Tex., has been promoted to general agent with headquarters at San Antonio, Tex. He will be succeeded by A. L. Talkington, freight agent at North Ft. Worth. **F. H. Faus**, division freight agent with headquarters at Colorado Springs, Col., has been promoted to general agent with the same headquarters. These appointments are effective January 1.

### Mechanical

**Roy Skidmore**, erecting foreman of the Kansas City Southern, with headquarters at Pittsburg, Kan., has been promoted to shop superintendent with the same headquarters, succeeding **Charles E. Oakes**, deceased.

**J. C. Rae**, general foreman of the Ann Arbor, with headquarters at Owosso, Mich., has been appointed acting master mechanic, with the same headquarters, assuming charge of the mechanical department, which action was necessitated by the resignation of **J. E. Osmer**, superintendent of motive power and the car department.

### Purchasing and Stores

**I. S. Fairchild** has been appointed storekeeper of the New Orleans Terminal division of the Illinois Central with headquarters at New Orleans, La.

**F. G. Prest**, whose appointment as director of purchases of the Northern Pacific, with headquarters at St. Paul, Minn., was announced in the *Railway Age* of November 26 (page 1072), was born on a farm near Queenston, Ont., on January 5, 1854. He entered railroad service on August 1, 1880, as a clerk in the purchasing department of the Northern Pacific at St. Paul. One year later he was appointed chief clerk of that department, which position he held until 1891, when he was promoted to assistant purchasing agent, with headquarters at St. Paul. In 1896 he was promoted to purchasing agent with the same headquarters and continued in that capacity until his promotion.



F. G. Prest

### Obituary

**John J. Byrne**, assistant passenger traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., died suddenly from heart disease on December 26, at his home in that city. Mr. Byrne was born on January 16, 1859, at Hamilton, Ont.



J. J. Byrne

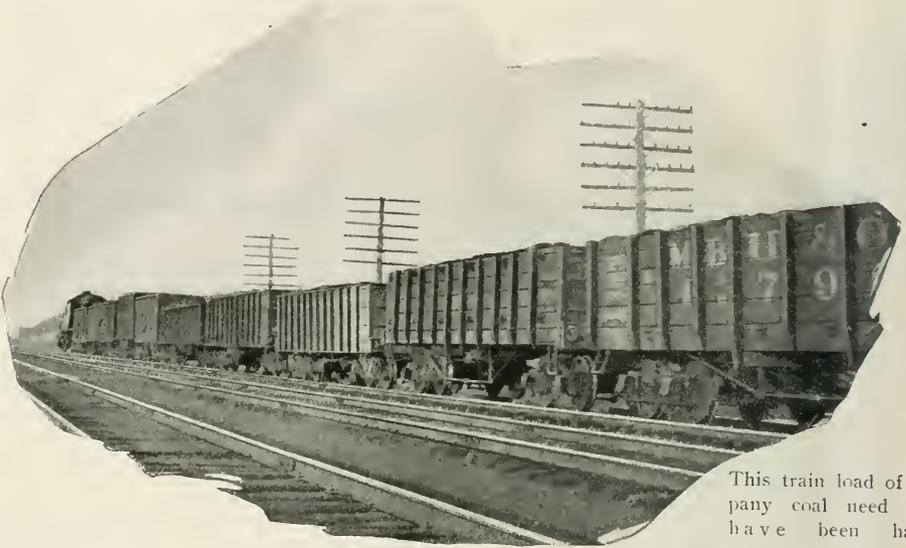
He entered railroad service on April 16, 1873, as a clerk in the auditor's office of the Great Western (Grand Trunk), at Hamilton, since which time he has been consecutively, clerk in the general passenger agent's office of the Chicago & Alton, at Chicago, from December 19, 1877, to October 14, 1880; rate clerk in the general passenger department of the St. Louis, Iron Mountain & Southern (Missouri Pacific), from October 15, 1880, to October 15, 1881; rate clerk in the general passenger departments of the Missouri Pacific and the Michigan Central, respectively, from the latter date until March, 1883, during which period he became chief rate clerk in the passenger department of the latter company; from March, 1883, to March 31, 1885, he was secretary of the Chicago Railroad Association; from April 1, 1885, to July 1, 1887, he was general passenger and ticket agent of the Oregon Railway & Navigation Company; from August 1, 1887, to December 1, of the same year, he was passenger agent of the Atlantic & Pacific (Atchison, Topeka & Santa Fe), at San Francisco; from December 1, 1887, to September, 1888, he was chief clerk in the passenger department of the Chicago, Santa Fe & California (Atchison, Topeka & Santa Fe), at Chicago; from September, 1888, to December 31, 1889, he was assistant general passenger agent for the same road, working in the same capacity after its amalgamation with the Atchison, Topeka & Santa Fe, until January 1, 1892. He was promoted to assistant passenger traffic manager on January 1, 1892, which position he held until January 31, 1895, when he was made general passenger agent of the Atchison, Topeka & Santa Fe, lines west of Albuquerque, N. M. On October 10, 1905, he again became assistant passenger traffic manager.

## Big Results From Small Investments

Of the total investment of railroads, only eight per cent is in locomotives. In proportion to their cost they are of maximum importance as, upon locomotives, depends the earning power of every rail, bridge, yard switch, station and every individual item necessary on a railroad.

This, therefore, suggests the importance of every factor that increases the working capacity or the potential ton mileage of every locomotive. The capital expense of making it possible for every locomotive to exert its utmost effect upon ton mileage by giving it every capacity increasing improvement known is relatively small. While the investment in equipment is relatively small consider the fact that the cost of power, everything included, is not far from two billions a year. What are a few dollars per engine compared with the effect on the greater cost of the operation of the power.

G. M. BASFORD COMPANY



This train load of company coal need never have been hauled.

## Arches release engines for revenue producing service

Hauling company freight never paid dividends.

By saving 10% of the fuel burned by 70 locomotives, a carload of arch brick reduces their fuel consumption by 2100 tons in a month.

Result:—a locomotive released for revenue freight hauling, a train of coal saved, the cost of hauling a train of company material avoided.

With the Arch on every engine there will be less company coal going over the road.



For your fuel record—have an arch in every engine you run.

AMERICAN ARCH COMPANY, INC.

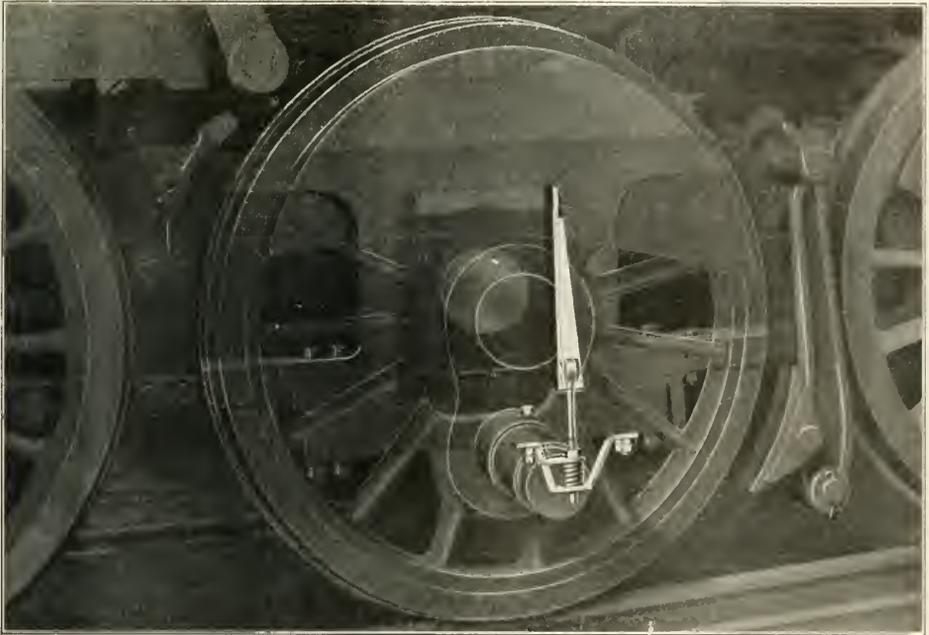
*Locomotive Combustion Engineers*

McCormick Building  
CHICAGO



17 East 42nd Street  
NEW YORK

# Security Sectional Arch



Franklin Automatic Wedges adjust themselves with every revolution of the drivers

## Stops slack before it starts

Every bearing wears as fast as the wedges.

When slack is noticeable enough to be reported by the engineer it's too late to save the bearings.

But by adjusting itself automatically as wear occurs the Franklin Automatic Wedge takes up the microscopic slack before damage is done by pounding boxes.

That is why Franklin Wedges soon pay for themselves many times over in brass saving alone.

## Franklin Railway Supply Company, Inc.

17 EAST 42<sup>ND</sup> STREET, NEW YORK.

332 50. MICHIGAN AVENUE,  
CHICAGO, ILL.

1112 PRAETORIAN BLDG.,  
DALLAS, TEXAS.

724 MONADNOCK BLDG.,  
SAN FRANCISCO, CAL.

Franklin Railway Supply Company of Canada, Limited, Montreal  
Export Department—International Railway Supply Co.—30 Church St.

---

# LIMA LOCOMOTIVES

---



## A LOOK AHEAD

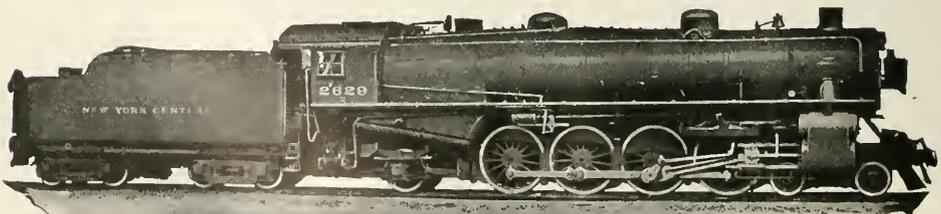
In considering new locomotives it is well to have in mind the reduction in the cost of transportation that more powerful engines will effect. Increased power without increase in fuel consumption is what we mean. By careful design, including the best use of capacity increasing factors, the maximum of pulling capacity or the minimum fuel consumption may be obtained. The roads that go most thoroughly into the details of their new engines before they are ordered will get the most out of their new power. Lima is prepared to co-operate with you.

Building an engine exactly suited to conditions may mean five or ten more cars per train.

## Lima Locomotive Works, Incorporated

Lima, Ohio

17 East 42nd Street, N. Y.





Slow travel over the cooling table gives a beneficial annealing—and a stronger, ductile tube



## Which tube would You use?

A road on which Parkesburg Charcoal Iron Boiler Tubes are now standard formerly used tubes of another material.

Nine months was considered good service from a tube on this road, which has very poor water conditions.

In an effort to reduce flue costs, the road tried Parkesburg Charcoal Iron Boiler Tubes at a slightly higher price per foot.

They use Parkesburg tubes now. Some of them have been in service four years and are good for several more safe ends.

If you were responsible for locomotive maintenance on that road would you go back to the kind of tube that pitted in nine months? Or would you continue to use Parkesburg Charcoal Iron Boiler Tubes which have given four years' service under the same conditions, and are still good?

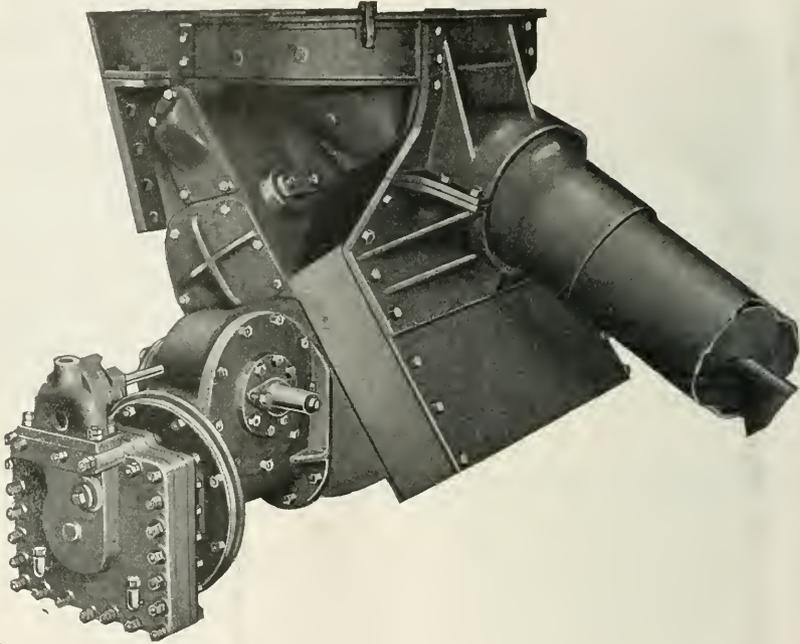
## THE PARKESBURG IRON COMPANY PARKESBURG, PA.

### BRANCH OFFICES

New York, 30 Church Street—Boston, Oliver Building—Chicago, Fisher Building  
Philadelphia, Commercial Trust Building—St. Louis, Security Building—San Francisco, Rialto Bldg.—St. Paul, Merchants Nat'l. Bank Bldg.—Montreal, New Birks Bldg.

### EXPORT AGENTS

Wonham, Bates & Goode Trading Corporation, New York



## LESS WEIGHT

is carried on the trailer wheels of stoker fired locomotives equipped with ELVIN MECHANICAL STOKERS.

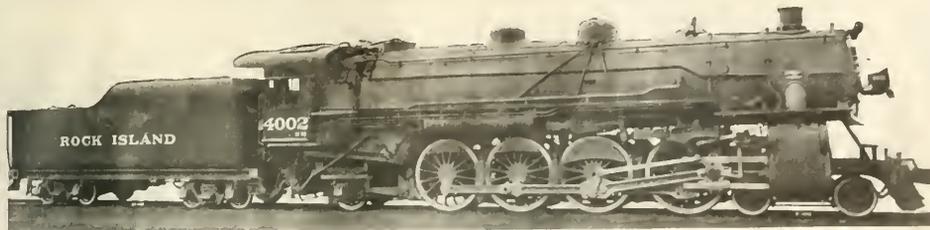
The illustration shows the complete stoker unit as applied to the locomotive and it weighs but 2900 lbs.

The feeder and coal breaker on the tender weigh 2400 lbs. No sacrifice of strength, capacity or durability has been made in attaining these weights.

Sounds interesting, doesn't it?

*Why not investigate?*

**The Elvin Mechanical Stoker Company**  
50 Church Street  
New York City



## Showing the Way

**A**MONG the many notable examples of Alco supremacy in recent years, none has surpassed the Rock Island's Mountain type locomotives in successful operation and sustained performance.

Some idea of their efficiency may be gained from the following data on the **Golden State Limited**, and other famous Rock Island trains:

These Mountain type locomotives have averaged 5,000 miles per month each. There has not been one delay on account of hot bearings or rod bushings, and steam failures are unknown even under the most trying conditions.

On the Missouri Division, they are assigned to the *Golden State Limited*, making an average schedule of 45 miles per hour, including stops, with 12 to 16 solid steel cars, weight of train ranging from 830 to 1,200 tons.

On the Iowa Division between Valley Junction and Rock Island, a distance of 181 miles, they handle the *Rocky Mountain Limited*, usually a 13 car train scheduled at 39 miles per hour. On different occasions they have made up an average of 45 minutes on this running time.

In one instance engine 4004 between Valley Junction and Omaha, handled twelve 16-compartment stateroom Pullmans and a buffet in less than three hours' running time, an average of 46.6 miles per hour. This trip includes several one per cent grades.

There is a vast difference between the mere purchase of locomotives, and really buying locomotive service.

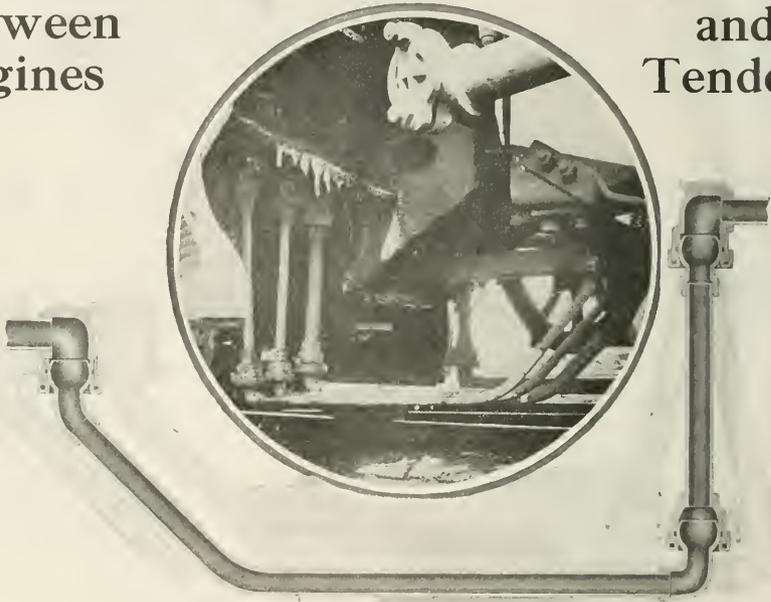
*When you specify Alco—you get both*

**American Locomotive Company**  
30 Church Street New York, N. Y.

# BARCO 3V CONNECTIONS

Between  
Engines

and  
Tenders



## Safeguard Your Train Service

**B**ARCO All Metal 3V Connections provide that absolutely dependable construction so essential at the most vital point in your train lines—the connections between engine and tender.

It is here that Barco Engine Tender Connections safeguard your train service by eliminating a common cause of delays and failures—defective or burst hose.

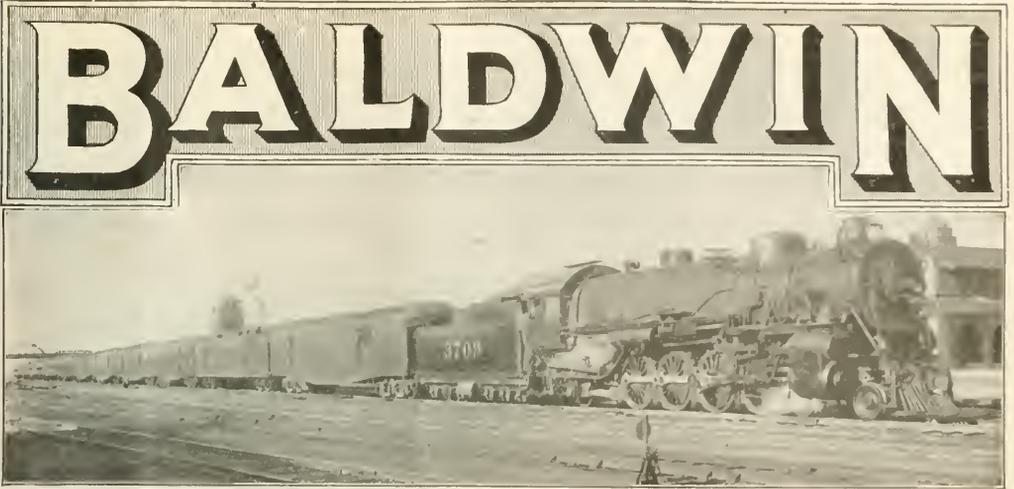
Practically indestructible because of their all metal construction, and perfectly flexible under all conditions, Barco 3V Connections are a positive guarantee of a continuous and unobstructed flow of steam and air.

When you equip your locomotives with Barco 3V Connections, you not only safeguard your train service but you are also taking decisive action towards cutting your repair costs by eliminating the continual expense of renewing hose.

To insure safe, dependable, train service and to effect large reductions in your maintenance expense, specify Barco 3V Engine Tender Connections.

# Barco Manufacturing Company

IN CANADA  
MONTREAL-TORONTO CHICAGO, ILL.  
THE HOLDEN CO., LTD., IN CANADA  
WINNIPEG-VANCOUVER



BALDWIN MOUNTAIN (4-8-2) TYPE LOCOMOTIVE ON THE SANTA FE

## Baldwin Mountain Type Locomotives Meet Requirements on Heaviest Grades

**H**EAVERY passenger traffic on the mountain divisions of the Santa Fe System is handled by Baldwin Locomotives of the 4-8-2 type. These locomotives were designed and built in accordance with specifications furnished by the Railway Company and are designated as the 3700 class. They are equipped to burn either coal or oil, according to the district to which they are assigned.

The illustration shows east-bound passenger train No. 10, hauled by Engine No. 3709, a coal burner, ready to leave Albuquerque for Raton, New Mexico, a run of 243 miles. The maximum grade on this section is 158.4 feet per mile. The locomotive is stoker fired, weighs 367,700 pounds and develops a tractive force of 54,100 pounds.

Under the supervision of John Purcell, Assistant to the Vice President, the Motive Power Department of the Santa Fe, co-operating with The Baldwin Locomotive Works, has developed a series of high power passenger and freight locomotives which are successfully meeting the most difficult operating conditions.

*Baldwin Locomotives are Standard on the Santa Fe*

**THE BALDWIN LOCOMOTIVE WORKS  
PHILADELPHIA**

**LOCOMOTIVES**



*One of the Forty-five Mikado type locomotives recently built for the*

*Great Northern Railroad, all of which were fitted with Duplex Stokers*



## Duplex Stoker's New Year Resolutions

- (1) Duplex Stoker will bring out full capacity of locomotive.
- (2) Will haul more tonnage per freight train.
- (3) Will make quicker trip with regular number of cars per train.
- (4) Will make up lost time.
- (5) Will make hard schedules on time.
- (6) Will take an extra car or two on heavy passenger trains without trouble.
- (7) Will enable passenger trains to make extra divisions without fire-cleaning.
- (8) Will carry thin, extra hot fire and keep engine hot.
- (9) Will distribute coal uniformly and economically over entire fire-bed.
- (10) Will maintain the good reputation of—

*Over 4,500 of Our Stokers in Service on 76 Railroads*

## LOCOMOTIVE STOKER COMPANY

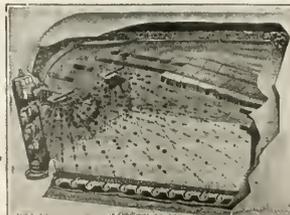
50 CHURCH STREET  
NEW YORK

Main Office and Works  
Pittsburgh, Pa.

RAILWAY EXCHANGE  
CHICAGO, ILL.

MUNSEY BUILDING, WASHINGTON, D. C.

*Duplex Stokers  
distribute the—*



*—Coal uniformly  
and economically*



WILMERDING WORKS

# WESTINGHOUSE AIR BRAKE COMPANY

# 1922

*To our friends, the Railroads, and our esteemed contemporaries in the Railway Supply field.*

## New Year's Greeting

THE Westinghouse Air Brake Company takes this opportunity to extend a courteous New Year's Greeting to its customers and friends in the Railway and the Railway Supply industries.

Present conditions indicate that 1922 will find our common interests advanced as we increase our efforts to serve each other. The splendid co-operation which has existed in the past between the Railroads, the Westinghouse Air Brake Company, and the other Railway Supply Manufacturers, has been a source of mutual satisfaction to all concerned, and stands now as a staunch foundation on which to build for future progress and prosperity.

Service and Co-operation have always been associated with Westinghouse traditions; they remain the keywords of our business creed for 1922.

PRESIDENT



# WESTINGHOUSE AIR BRAKE CO.

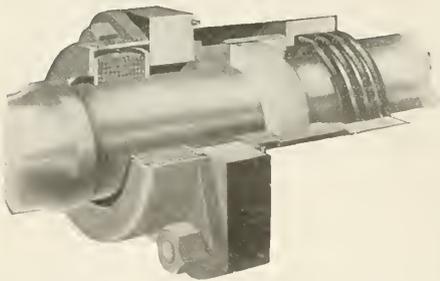
GENERAL OFFICES AND WORKS, WILMERDING, PA.

NEW YORK      WASHINGTON      CHICAGO      ST. LOUIS      SAN FRANCISCO





## When You Figure Temperature Tonnage Ratings



In cold weather when you are forced to reduce locomotive tonnage because friction is greater and it is more difficult to keep up steam, it is well to be able to depend on a good, reliable packing to prevent leaks at the piston rod and valve stem. If these vital parts are not steam-tight, the locomotive would be placed at a greater disadvantage and unable to handle even the lower tonnage efficiency.

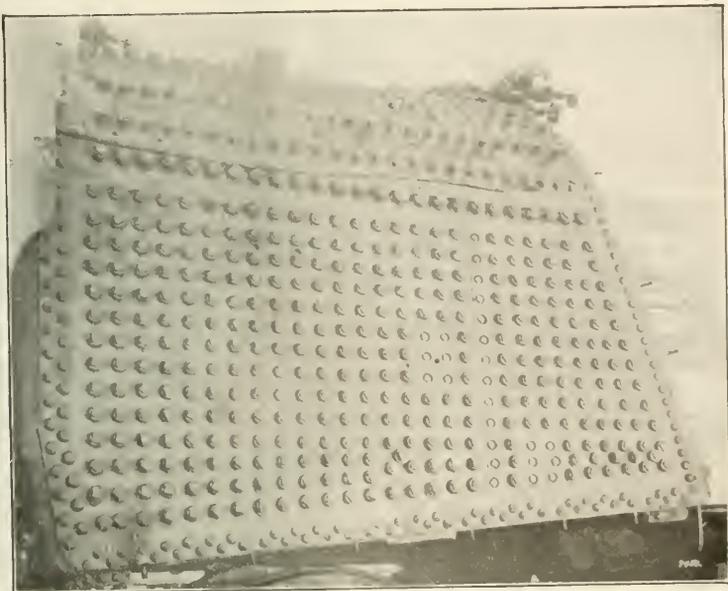
The application of King Metallic Packing is a precautionary measure in the interest of better locomotive performance, lower fuel consumption, and safety.

**The United States Metallic**  
PHILADELPHIA

**Packing Co.**  
PENNSYLVANIA



# F.B.C. Welded Flexible Staybolts



This illustration of a complete installation of the

## “F. B. C.” WELDED FLEXIBLE STAYBOLT

recently completed in a set of ten locomotive boilers for one of the large railroad systems and the reports received to date indicate that the locomotives are giving exceptional service without the necessity of expending any money for minor repairs, and not a leaky staybolt.

The cost of application was reduced more than 40%.

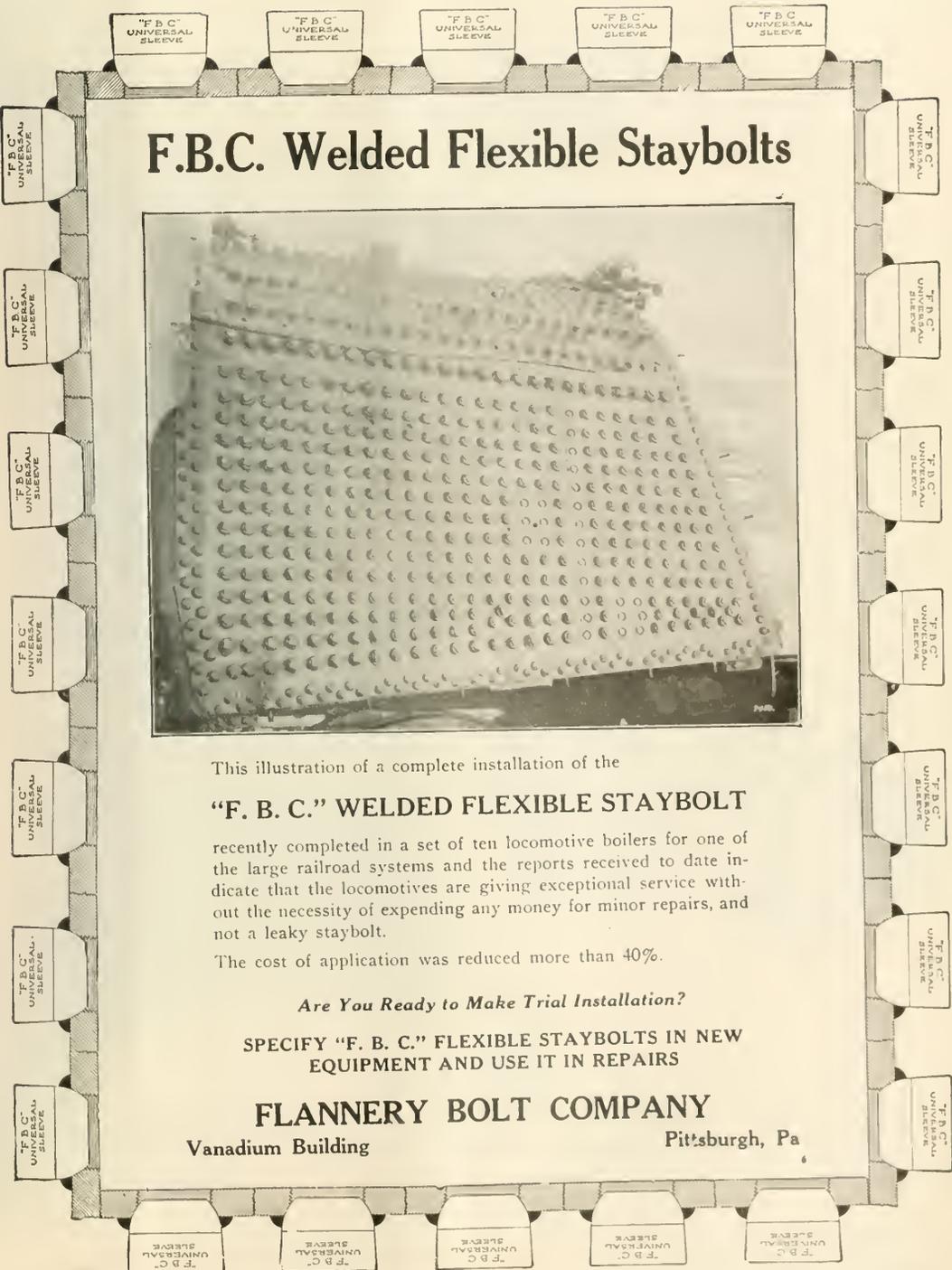
*Are You Ready to Make Trial Installation?*

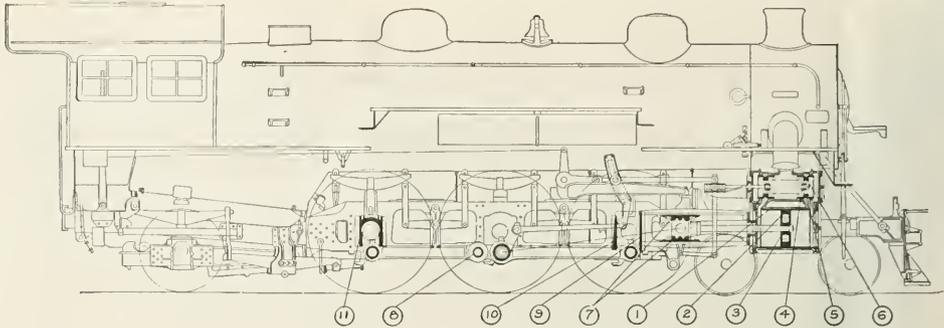
**SPECIFY “F. B. C.” FLEXIBLE STAYBOLTS IN NEW EQUIPMENT AND USE IT IN REPAIRS**

### FLANNERY BOLT COMPANY

Vanadium Building

Pittsburgh, Pa



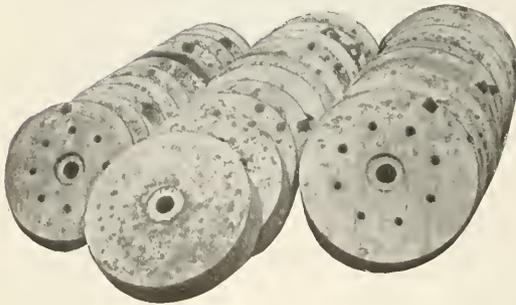


③

# PISTONS

SHOULD BE

## HUNT-SPILLER GUN IRON



Piston heads stand the brunt of locomotive power. The tractive effort is directly in proportion to the pressure applied to them. They must be strong and tough to stand the high temperature and pressure.

Hunt-Spiller Gun Iron will meet these requirements plus the wear resisting qualities which insure long service with freedom from breakage and minimum amount of wear.

*Made Only by*

**HUNT-SPILLER MFG. CORPORATION**  
 W. B. Leach Pres. & Gen. Mgr. J. G. Platt, Vice-Pres. & Sales Mgr.

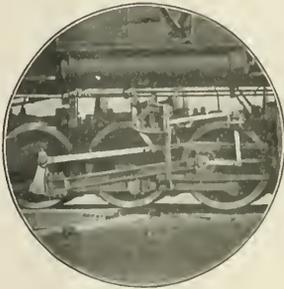
*Office and Works*

**383 Dorchester Ave.**

**South Boston, 27, Mass.**

# 116,000 MILES- and not a Penny for Repairs

**N**O failures, no delays, no repairs, not even a bushing in 14 months—such is the report on the valve gear mechanism of the locomotive pulling a famous Eastern passenger express covering 400 miles daily and 116,000 miles between shoppings. Not one penny was spent to maintain



## THE BAKER VALVE GEAR

This performance however is not unusual but typical of Baker Service which controls the "Spending" of the coal money in the cylinders.

Beside this great reduction in maintenance charges, the Baker Valve Gear provides for the quick and sharp opening of valve which gives full boiler pressure from admission to cut off. The great advantage of this feature is the fact that quick snappy port openings prevent wire drawing of the steam and loss of effective pressure on the cylinders.

*Apply the Baker Valve Gear  
now—the Savings will follow.*

**THE PILLIOD COMPANY**

**30 Church St., New York**

**Railway Exchange Bldg., Chicago**

**Works: Swanton, Ohio**

# Low Maintenance Means Reduced Expense

**Westinghouse  
Turbine-Generator**

**Locomotive  
Headlighters**

being totally enclosed, are not affected by weather conditions, or by dirt and dust to which they are subjected on top of a locomotive.

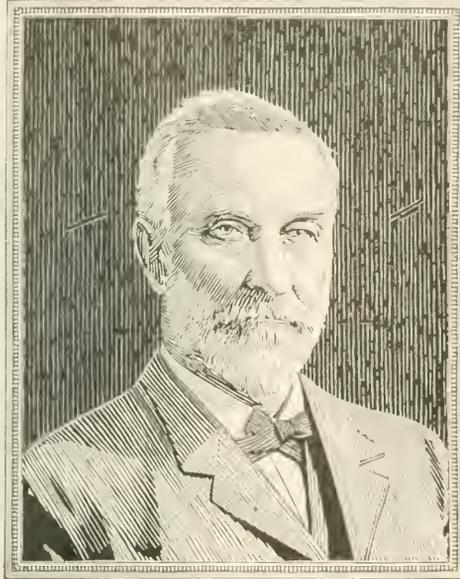
Their weight and size allow easy handling to and from a locomotive, while their construction will withstand the shocks and strains met with in service.

Operating records on many steam roads show the Westinghouse Headlighter to be most reliable and economical. A solid rotor with milled slots serving as blades, ball bearings, and many other advantages make the unit most desirable. For detailed information write to our nearest office or to the Railway Department.

Westinghouse Electric & Manufacturing Company  
East Pittsburgh, Pa.

# Westinghouse

# GREAT BUILDERS



PORTRAIT BY COURTESY OF THE LOUISVILLE HERALD

## Milton H. Smith

The romance of the life of Milton Hannibal Smith was the doctrine of singleness of purpose—work. His dream of a united South—an industrial empire—doubtless inspired by the chaotic conditions resulting from the Civil War, became a reality, before his death, through the developmental stimulus of the Louisville and Nashville Railroad.

During his association with this road its 185 miles of single track between Louisville and Nashville grew into a system of over 5000 miles dominating the southeastern quarter of the United States. His breadth of vision enabled his road to aid in releasing and developing the coal and iron of Tennessee, Kentucky and Alabama, to which fact may be attributed the virtual creation of the Birmingham district.

*The love of accuracy in the smallest details, for which Milton H. Smith was noted, is representative of the painstaking care which has been used for over three-quarters of a century in the manufacture of Tennessee Charcoal Bloom Staybolt Iron.*

**EWALD IRON COMPANY**  
LOUISVILLE

CHICAGO NEW YORK ST. PAUL



*"In Use Since 1844"*

# SAFETY

is of maximum importance when buying railroad wheels.

Specify

**Gary STEEL Wheels**

Manufactured by

## Illinois Steel Company

General Offices, 208 S. La Salle Street  
CHICAGO, ILLINOIS



## An Efficient Pipe Covering must not contain Combustible Material



The combustible or inflammable element in some pipe coverings runs as high as 20 to 22 per cent. Under low temperatures such coverings may possibly remain a long time unimpaired but high temperatures will soon char the inner zone or layers. Bulk having been reduced, the covering will sag, air currents will run along the under side of the pipe and a continual loss of heat will take place.

85% Magnesia possesses, in addition to other essential qualities, the virtue of heat-resistance without impairment. There is nothing combustible in 85% Magnesia. Even tests with temperatures from 700 to 900 deg. F., continued for months, show only a calcina-

tion, which actually increased the efficiency of the covering about three per cent.

85% Magnesia taken from pipes after twenty years' use may be placed on other heated surfaces, and will keep on doing its good work.

**Magnesia Association of America**  
765 Bulletin Building, Philadelphia, Pa.

Executive Committee, William A. Macan, Chairman

- George D. Crabbs ..... The Philip Carey Company ..... Cincinnati, Ohio.
- Alvin M. Ehret ..... Ehret Magnesia Mfg. Co. .... Valley Forge, Pa.
- J. R. Swift ..... The Franklin Mfg. Co. .... Franklin, Pa.
- R. V. Mattison, Jr. .... Kestbey & Mattison Co. .... Ambler, Pa.

Copyright 1921 Magnesia Association of America

*"The Standard for Rubber Insulation"*



## VARNISHED CAMBRIC WIRES and CABLES

are made with the same care and high regard for quality which distinguishes the production of Okonite rubber insulation.

We are prepared to handle any high grade proposition, and solicit your inquiries.

"Manson" Tape (Friction)—"Okonite" Tape (Splicing Compound).

THE OKONITE COMPANY, PASSAIC, N. J.

Incorporated 1884

Central Electric Co., Chicago, Ill., Gen. Western Agents

F. D. Lawrence Electric Co., Cincinnati, O. Novelty Electric Co., Philadelphia, Pa.  
Pettingell-Andrews Co., Boston, Mass.



## RAILWAY CARS OF ALL TYPES

*Complete Facilities for Repairing and Rebuilding Cars*

REPAIR PARTS—BOLSTERS—TRUCKS—CASTINGS—FORGINGS—GREY IRON WHEELS

# PRESSED STEEL CAR CO.

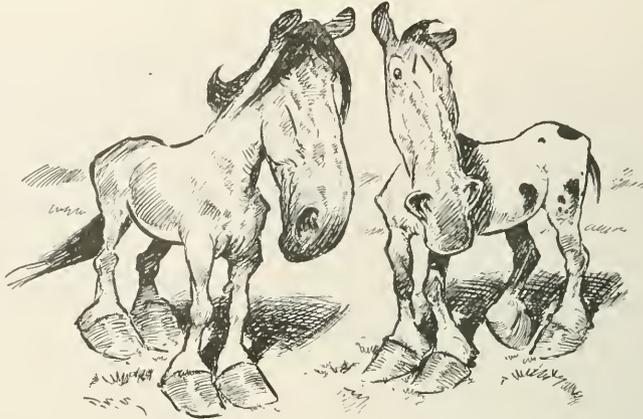
NEW YORK

PITTSBURGH

CHICAGO

ST. PAUL

WASHINGTON, D. C.



GREASE

WASHOUT

**PRIME'S PLUGS**

**THE PRIME MANUFACTURING COMPANY**  
MILWAUKEE, WISCONSIN

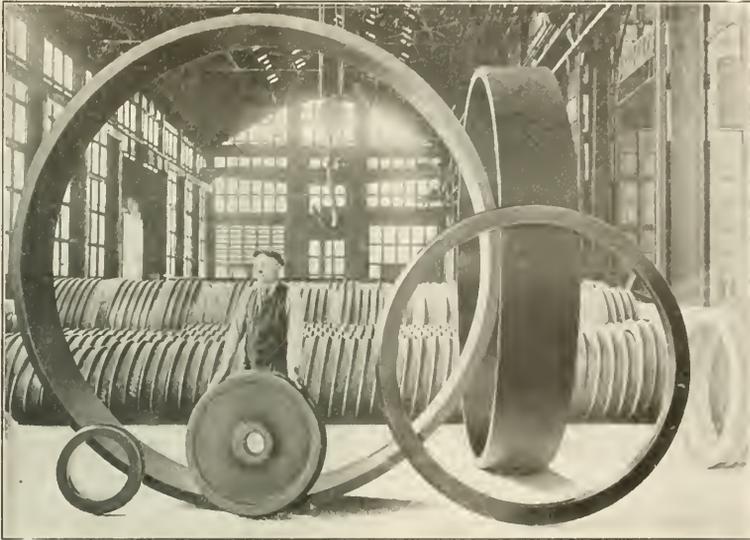
# **The Ralston Steel Car Company**

**COLUMBUS, OHIO**

**Design, Build and Repair  
All Classes of Freight Cars  
And Steel Underframes**

# EDGEWATER STEEL COMPANY

Works and General Offices: PITTSBURGH, PA.



**SALES OFFICES**

McCormick Bldg. . . . . Chicago, Ill.  
 Finance Bldg. . . . . Philadelphia, Pa.  
 Munsey Bldg. . . . . Washington, D. C.  
 Sparks Bldg. . . . . Louisville, Ky.  
 53 Oliver St. . . . . Boston, Mass.  
 Title Insurance Bldg. . . . . Los Angeles, Cal.

All the above were rolled on the same mills at the plant of Edgewater Steel Co., Pittsburgh. The small ring is 14 $\frac{1}{2}$ " inside diameter. The large rings are 133 $\frac{1}{2}$ " inside diameter, 21 $\frac{1}{2}$ " wide and weigh 7000 lbs. each. The 72" locomotive driving tire and the 36" passenger car wheel show the versatility of the mills.

**SALES OFFICES**

Merchants Bank Bldg. . . . . St. Paul, Minn.  
 Railway Exchange . . . . . St. Louis, Mo.  
 Hebart Bldg. . . . . San Francisco  
 Henry Bldg. . . . . Portland, Ore.  
 Kearns Bldg. . . . . Salt Lake City  
 50 Church St. . . . . New York  
 Fourth National Bank Bldg. . . . . Atlanta, Ga.

# The Jordan Spreader Ditcher

Bringing  
 the dirt  
 outside  
 the cut.

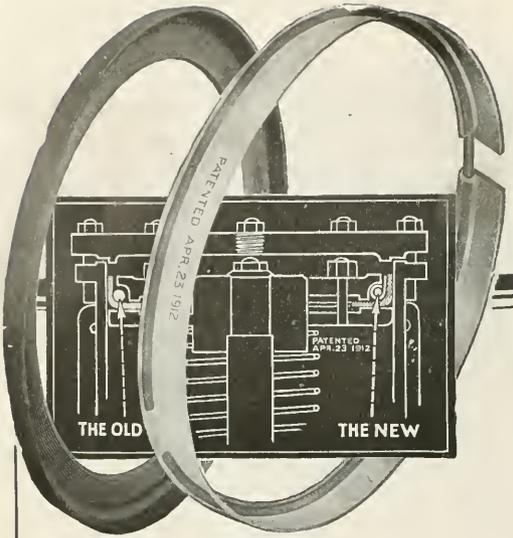


Note the  
 uniform  
 shoulder  
 and ditch.

Wire or write to-day for further information

O. F. JORDAN COMPANY

EAST CHICAGO, INDIANA



**Which Lasts Longer—  
Shoe Leather or Stone Pavements?**

The answer is obvious. Likewise the superiority of Asbestos Brake Cylinder Packing Cups over the old leather cups is just as self-evident. For asbestos is rock—a mineral that gives unequalled wearing qualities to a packing cup, and makes it highly resistant to heat, pressure and condensate, and free from the porosity of leather packing cups.

**The Johns-Manville  
Brake Cylinder Packing Set**

which is made up of this impregnated, non-porous Packing Cup and Slip-type Expander Ring, has proved under all service conditions that it reduces brake cylinder leakage to a minimum.

Write for booklet on Brake Cylinder Leakage.

**JOHNS-MANVILLE  
INCORPORATED**

Madison Ave. at 41st Street New York City  
10 Factories—Branch in 60 Large Cities  
For Canada, Canadian Johns-Manville Co., Ltd., Toronto

Through—  
**Asbestos**  
and its allied products  
JOHNS-MANVILLE  
Serves in Conservation

Heat Insulations, High Temperature Cements, Asbestos Roofings, Packings, Brake Linings, Fire Prevention Products

**JOHNS-MANVILLE**  
Railroad Products



**It Digs More Lineal Feet  
of Ditch for Less Money**

The "AMERICAN" Railroad Ditcher will dig more lineal feet of ditch for a much lower cost per yard than the best hand crew ever mustered. It plugs along steadily and consistently, unaffected by conditions which would put a hand crew out of action.

Ditches full of icy water or sticky gumbo have no terrors for the "AMERICAN;" the plunger—exclusive "AMERICAN" feature—instantly clears the dipper of the stickiest clay.

Where train service is frequent the "AMERICAN" can dig until the last minute and then "clear" at train speed, scuttling back to the job as soon as the train has passed.

The "AMERICAN" digs a uniform ditch with a smooth, well rounded bottom.

If you are not acquainted with the achievements and capacity of the "AMERICAN" Railroad Ditcher ask us for all the facts.

*"Give me where I may stand and I will move the world"*

**American Hoist & Derrick Co.**  
St. Paul Minnesota

Builders of "AMERICAN"

- |                   |                       |             |
|-------------------|-----------------------|-------------|
| Hoisting Engines  | Sugar Cane Machinery  |             |
| Electric Hoists   | Marine Deck Machinery |             |
| Derricks          | and Tackle            |             |
| Locomotive Cranes | The Genuine "CROSBY"  |             |
| Railroad Ditchers | Wire Rope Clip        |             |
| Logging Equipment |                       |             |
| New York          | Pittsburgh            | New Orleans |
| Chicago           | Seattle               | Detroit     |





**PRODUCTS**

Oxygen  
Acetylene  
Welding and Cutting  
Apparatus and  
Supplies  
Acetylene Generators  
Carbide  
Nitrogen  
Argon

"Airco Oxygen and  
Acetylene Service is  
Good Service"

**AIRCO DISTRICT OFFICES  
& DISTRIBUTING STATIONS**

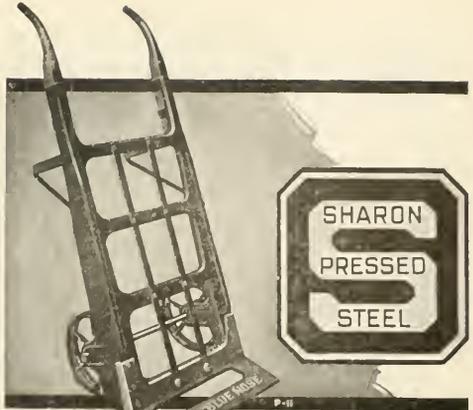
An Airco Distributing Station is located in each of the following cities. District Offices are located in cities indicated by a (\*).

- |                      |                       |
|----------------------|-----------------------|
| Albany, N. Y.        | Lebanon, Pa.          |
| *Atlanta, Ga.        | Louisville, Ky.       |
| 558 Marietta St.     | Madison, Ill.         |
| Boston, Mass.        | Milwaukee, Wis.       |
| 122 Mt. Vernon St.   | *Minneapolis, Minn.   |
| Dorchester,          | 327 25th St. S. E.    |
| Baltimore, Md.       | New Haven, Conn.      |
| Bethlehem, Pa.       | New York, N. Y.       |
| Bridgeport, Conn.    | *Jersey City, N. J.   |
| Brooklyn, N. Y.      | (Metropolitan Dis-    |
| *Bronx, N. Y.        | trict)                |
| *Buffalo, N. Y.      | 181 Pacific Ave.      |
| 750 Grant St.        | Brooklyn, N. Y.       |
| Canton, O.           | Brunx, N. Y.          |
| *Chicago, Ill.       | Norfolk, Va.          |
| 2238 So. Lumber St.  | *Oklahoma City, Okla. |
| *Cleveland, O.       | P. O. Box 1838        |
| 1210 W. 69th St.     | Omaha, Nebr.          |
| Cincinnati, O.       | Paterson, N. J.       |
| Coatesville, Pa.     | Peoria, Ill.          |
| Columbus, O.         | *Philadelphia, Pa.    |
| DePue, O.            | Germanstown and       |
| Des Moines, Iowa     | Allegheny Avms.       |
| *Detroit, Mich.      | *Pittsburgh, Pa.      |
| 7991 Hartwick St.    | 2515 Liberty Ave.     |
| Duluth, Minn.        | Portland, Ore.        |
| East Chicago, Ind.   | *Richmond, Va.        |
| East St. Louis, Ill. | P. O. Box 1192        |
| *Emeryville, Calif.  | San Francisco, Cal.   |
| Park Ave. and Hal-   | *Seattle, Wash.       |
| lock St.             | 3623 E. Marginal      |
| Erie, Pa.            | Way                   |
| Fort Wayne, Ind.     | Sharon, Pa.           |
| Gloicester, N. J.    | Springfield, O.       |
| Grand Rapids, Mich.  | *St. Louis, Mo.       |
| Hartford, Conn.      | 115 Plum St.          |
| Indianapolis, Ind.   | Tacoma, Wash.         |
| *Jersey City, N. J.  | Terre Haute, Ind.     |
| 181 Pacific Ave.     | Toledo, O.            |
| Johnstown, Pa.       | Tulsa, Okla.          |
| Joplin, Mo.          | Warren, O.            |
| Kansas City, Mo.     | Youngstown, O.        |

**AIR REDUCTION SALES CO.**

Mfrs. of Airco Oxygen, Airco Acetylene, Airco Welding and Cutting Apparatus and other Airco Products.

Home Office:  
342 Madison Ave., New York, N. Y.



**Sharon  
"BLUENOSE"  
Hand Truck**

Here's a hand truck built for a life-time of service—a truck you can depend upon to carry more, over a longer period, than any you've had experience with.

The frame, including wheel lugs, is pressed from one piece of 3/8-inch hot rolled open hearth steel—the "Bluenose" is pressed from 1/4-inch stock of the same material. Note how each wheel is enclosed and supported with two lugs with stiffening beads—no weakness here.

You can have the "Bluenose" in two sizes—54 inches, 65 lbs., and 64 1/2 inches, 120 lbs.; with straight or curved wood handles; with straight or depressed cross-bars; with square or round nose; with plain wheels, with either plain or roller bearings, or with cushion wheels.

Measure truck values in terms of ton-hour-mileage. Send for specifications of the Sharon "Bluenose" Truck and the Sharon "Brute" Trailer.

**SHARON PRESSED STEEL CO.**

MAIN OFFICE AND WORKS, SHARON, PENNA.

**OHIO LOCOMOTIVE  
CRANES**

**90% Steel Castings**

An investment is an expenditure for profit or future benefit. The Ohio Crane will do the work of approximately 30 men, loading cars, transferring heavy castings, cooling engines, breaking scrap with very low maintenance charges. For that reason, it is considered to be a High Grade Railroad Investment.

*Good Service Is Foremost. Price Is Secondary.*



**Ohio Locomotive Crane Company**  
BUCYRUS SPRING ST. OHIO

**KERITE**

Out of the experienced past,  
into the exacting present,  
**KERITE** through more than  
a half-century of success-  
ful service, continues  
as the standard by which  
engineering judgment  
measures insulating value



**KERITE INSULATED COMPANY**  
WIRE & CABLE  
NEW YORK CHICAGO

## Air Driven Wire Brush

for removing dirt, rust, paint and  
scale from steel cars, tanks,  
bridges and all metal surfaces.



"Little David" Wire Brush

A rugged and reliable air tool  
for general cleaning work.

*Descriptive literature on request.*

## Ingersoll-Rand Company

General Offices, 11 Broadway, New York

220-PT

**H. H. HEWITT**  
President

**W. H. CROFT**  
First Vice-President

# MAGNUS COMPANY

(INCORPORATED)

## Journal Bearings

AND

## Brass Engine Castings

New York

Chicago

## Dearborn Service Saves Dollars in Locomotive Operation

It is a case of *real saving*, accomplished on a scale the extent of which it is difficult to compute, when it is remembered that the savings relate to such matters as fuel, lubrication, boiler washing, time of the locomotive in service, life of boiler tubes, and repair outlay, all items that enter into the *daily operating expense*.

Dearborn methods of Water Treatment are scientific, yet simple, practical, and inexpensive. Send samples of your bad water supplies for analysis, and let us advise regarding treatment. There is no charge for the analytical work.



## Dearborn Chemical Company

332 So. Michigan Ave.

CHICAGO

# Cools Off Hot Boxes Instantly

The Mohawk Lubricating Compound is giving highly satisfactory results in each instance. This compound has been furnished several conductors and all report exceptionally good results.

(Signed).....G. F.

**MOHAWK LUBRICATING CO.**  
2002 Plum Street, Cincinnati, O.

**MOHAWK COOLING  
...COMPOUND...**

## Pitt, Penn and Janney X Couplers

A. R. A. STANDARD "D" COUPLERS  
for Cars and Locomotives

## PITT PIVOTED COUPLERS

*Designed on Proper Principles  
Especially for*

Passenger Train Cars

Acid Open Hearth Forging Billets  
and Ingots

Rolled Steel Bars

---

**THE McCONWAY & TORLEY COMPANY**  
Pittsburgh, Pa.

## Woods' Anti-Friction Side and Center Bearings



Flat Sided Ball  
Anti-Friction Center Plate

**EDWIN S. WOODS & CO.**

Transportation Bldg.  
Montreal

McCormick Bldg.  
CHICAGO, ILL.

Penobscot Bldg  
Detroit

## American RAILROAD Fence and

## American STEEL FENCE Posts

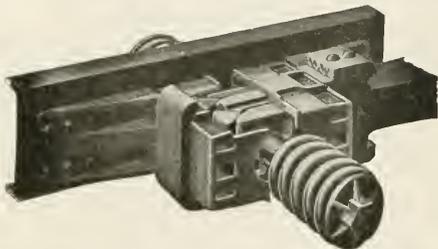
Absolute Right-of-Way  
Protection

*Illustrated Catalogue Free*

---

**American Steel & Wire  
Company**  
CHICAGO-NEW YORK

## Cardwell Friction Draft Gear



### Union Draft Gear Company

Chicago Office  
McCormick Bldg.

Canadian Office  
1023 Transportation Bldg., Montreal

## FINISHED STAYBOLTS

Are you one of those suffering from high labor costs for machining staybolts? Why not let us do it and **SAVE 100 PERCENT?** Our finished bolt department is perhaps one of the best equipped in the country. Any diameter 1/2" to 2" finished bolt, hollow or solid, furnished on short notice, etc.

AT ONCE FROM STOCK



Owing to large production, we thread bolts more cheaply than you and save you the waste, as every bolt is guaranteed perfect. Stick to us and you will always get the

HIGHEST QUALITY      LOWEST PRICES      QUICKEST SERVICE

Bars in the rough, finished stays, hollow or solid.

**FALLS HOLLOW STAYBOLT CO.**  
CUYAHOGA FALLS, OHIO



Patented April 23, 1918

## Schaefer Truck Lever Connections

for Freight Car, Passenger Car and Engine Tender Equipment.

In use on 38 Railroads, including the largest Railroads in the Country.

Schaefer Truck Lever Connections are made from one-piece open hearth Steel; Jaws drop forged; no welds.

We carry in stock lengths from 2 ft. 6 in. to 3 ft. 6 in., progressing by 1/2 in. changes.

Write for Descriptive Literature.

**SCHAEFER EQUIPMENT CO.**

General Offices  
Oliver Building, Pittsburgh, Pa.

## O. S. Dependable Locomotive Cranes and Buckets

Manufactured in sizes ranging from 7 to 60 tons capacity.

7 and 12 ton sizes mounted upon crawling treads or traction wheels for handling materials which are not located near a right-of-way or side track.

Cranes can be equipped to handle magnet, clam shell or drag line bucket. Catalog No. 18 sent upon request.

**ORTON & STEINBRENNER CO.**  
Main Offices, Chicago, Ill.  
Factory, Huntington, Ind.



## CAR HEATING

Vapor Car Heating Co., Inc.

RAILWAY EXCHANGE

CHICAGO

NEW YORK, 30 Church St.  
BOSTON, 53 State St.  
ST. PAUL, Merchant Nat.  
Bank  
WASHINGTON, D. C., Mun-  
sey Bldg.

PHILADELPHIA, Commer-  
cial Trust Bldg.  
SAN FRANCISCO, Hobart  
Bldg.  
MONTREAL, CANADA, 65  
Dalhousie St.

## BARBER LATERAL-MOTION DEVICE 1,000,000 in service on 43 Railroads ROLLER SIDE-BEARINGS

Roller Center Plates

Lessens Wheel Flange Wear  
Reduces Friction on Rails 15%

**STANDARD CAR TRUCK CO.**  
McCORMICK BUILDING      CHICAGO

## BRAKE SHOES

Safety



Economy

The Diamond "S" Reinforced Shoe.

American Brake Shoe and Foundry Co.  
30 Church Street, New York

332 So. Michigan Ave., Chicago      Chattanooga, Tenn.

# STEEL FREIGHT CARS and UNDERFRAMES

*Designed, Built and Repaired  
Pressed Steel Parts of all Descriptions*

## THE YOUNGSTOWN STEEL CAR COMPANY

NILES, OHIO

# CAMEL

Freight Car Door Fixtures,  
All Steel Freight Car Doors,

# CAMEL

Burglar Proof Freight Car Door Locking Arrangement,  
Freight Car Door Starting and Closing Arrangement.

# CAMEL COMPANY

332 So. Michigan Blvd.  
CHICAGO, ILLINOIS.

## The Crosby Pressure Gage TESTER



Designed and Constructed on Scientific Principles.  
It is Mathematically Correct.  
Moderate in Price  
Simple and Durable.  
*It is the Best One on the Market*  
Manufactured and Sold by

**Crosby Steam Gage & Valve Co.**  
Boston New York Chicago San Francisco London

## GRAVER



Water Softeners and Filters That Fully Meet Railway Problems, Steel Tanks and Steel Plate Work of All Kinds

### GRAVER CORPORATION

East Chicago, Ind.

Railroad Dept.,  
Steger Bldg., Chicago

## SPECIALISTS

IN THE  
Design and Manufacture  
OF

Standard-Insulated-Compromise

## Rail Joints

THE RAIL JOINT COMPANY  
61 Broadway, New York City

## Water-Tube Boilers

Babcock & Wilcox—Stirling—Rust

Steam Superheaters

Chain-Grate Stokers

Oil Burners

### THE BABCOCK & WILCOX CO.

85 Liberty St., New York

Branch Offices at Atlanta, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Fort Worth, Havana, Honolulu, Houston, Los Angeles, New Orleans, Philadelphia, Pittsburgh, Salt Lake City, San Francisco, San Juan, Seattle and Tucson



## CRECO SERVICE

BRAKE BEAMS    SIDE BEARINGS    SLACK ADJUSTERS  
BRAKE BEAM SUPPORTS

CHICAGO RAILWAY EQUIPMENT COMPANY, 1420 Mc CORMICK BLDG. CHICAGO.

NEW YORK                      WASHINGTON                      MONTREAL                      SAN FRANCISCO





SECTION CARS



INSPECTION CARS



16' AND 20' WHEELS



PUSH CARS



HAND CARS

Mudge & Company

Factory—On Belt R. R., Chicago    Main Office—Railway Exchange, Chicago    Branch Offices—New York, St. Louis, Denver, San Francisco

## GREENVILLE STEEL CAR CO.

Manufacture Steel Underframes, Pressed Steel Shapes and Forgings  
Rebuild and Repair Steel Freight Cars  
Greenville, Penn'a.

## UNION SPRING & MANUFACTURING CO.

Coil Springs, Elliptic Springs, Steel Castings, Pressed Steel Spring Plates and Pressed Steel Journal Box Lids  
KENSINGTON JOURNAL BOX—All Steel  
WORKS—NEW KENSINGTON, PA.  
PITTSBURGH OFFICE—300 GRANITE BLDG.

59 Church Street, New York, N. Y.  
Flaber Building, Chicago, Ill.

Todd Building, Louisville, Ky.  
Mutual Building, Richmond, Va.



## CAR LIGHTING

THE SAFETY CAR HEATING AND LIGHTING CO.

NEW YORK  
CHICAGO  
PHILADELPHIA  
BOSTON  
ST. LOUIS  
SAN FRANCISCO  
MONTREAL



MADE BY SANFORD MILLS  
SANFORD, ME.

Durable rich appearing upholstery—  
inexpensive and distinctive.

The standard upholstery  
for over a third of a  
century—  
grades for  
all uses.



Goat Brand  
Car Plush

L. C. CHASE & CO., Boston  
NEW YORK    DETROIT    CHICAGO  
SAN FRANCISCO

## Exide

BATTERIES

Because adjustments are not required on the E.S.B. Axle Lighting System, nothing is left to the judgment of the inexperienced.  
Send for your copy of the new bulletin on car lighting No. 186.

1888

**THE ELECTRIC STORAGE BATTERY CO., Philadelphia**    1921

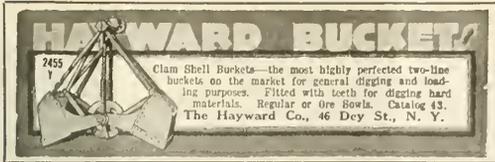
Oldest and largest manufacturers in the world of Storage Batteries for every purpose.  
Branches in seventeen cities.  
Exide Batteries of Canada, Limited, 133-137 Dufferin Street, Toronto

WRIGLEY BUILDING  
CHICAGO

STEEL BACK BRAKE SHOES

SINGER BUILDING  
NEW YORK

## THE RAILWAY MATERIALS CO.



**HAYWARD BUCKET**  
2455  
Clam Shell Buckets—the most highly perfected two-line buckets on the market for general digging and loading purposes. Fitted with teeth for digging hard materials. Regular or Ore Bowls. Catalog 43. The Hayward Co., 46 Dey St., N. Y.

**MACHINE TOOLS**  
For the Locomotive and Car Building Shop  
For Railroad Repair Shops and General  
Repair Shops—Complete equipment including  
Cranes and Steam Hammers  
**NILES-BEMENT-POND CO.**  
111 BROADWAY, NEW YORK

COMPLETE LINE OF  
**ACME VESTIBULE APPLIANCES**  
CONSISTING OF  
Buffing Mechanism—Curtains—Diaphragms, Hoods and Attachments—Flights of Steel Steps—Kass Safety Treads—Steel Door-Step Boxes—Etc.  
*Manufactured and Sold by*  
**MORTON MANUFACTURING COMPANY** CHICAGO

**JOURNAL BOX LIDS** **ASCO PRESSED STEEL** **TRUCK SPRING PLATES**  
**ALLEGHENY STEEL COMPANY**  
Brackenridge, Pa.

**FERALUN** Anti-Slip Treads  
Car Steps Floor Plates  
Station Stairs Door Saddles, etc.  
**AMERICAN ABRASIVE METALS CO.**  
Boston New York Philadelphia Pittsburgh Chicago  
*It's Iron and Emery Cost Together*



**Interstate Iron and Steel Co.**  
Wrought Iron Tie Plates, Steel and Iron Bars, Rivets, Fencing, Wire, Wire Products.  
104 So. Michigan Ave. Chicago

**ROLLED MANGANESE STEEL RAIL**  
Furnished in all standard sections  
Effects great economy in maintenance on all curves for congested traffic  
**MANGANESE STEEL RAIL COMPANY**  
Sales Office HILLBURN NEW YORK



**MULE-HIDE PRODUCTS**  
MULE-HIDE Plastic Car Roofing.  
MULE-HIDE Waterproof Canvas for roofs of Passenger Coaches, Cabovers and Cabs.  
MULE-HIDE Insulating Paper for Refrigerator Cars.  
MULE-HIDE FABRIC, membrane for Waterproofing Concrete Construction.  
MULE-HIDE Roofing for Railroad Building, etc.  
**The Lehon Company, W. 45th Street and Oakley Ave. Chicago**




**SUPER SAFETY HAND BRAKE**  
(Patented)  
*"Named by Service — Praised by all"*  
The efficiency is unusually high  
The renewals are exceptionally low  
The service record is very conclusive  
**Minich Railway Appliance Corporation**  
Finance Building Philadelphia Pa.

FREIGHT CAR, AUTOMOBILE TRACTOR, & SPECIAL  
**FORGINGS**  
**STEEL CAR FORGE CO.**  
NEW YORK PITTSBURGH CHICAGO

**MALLEABLE IRON CASTINGS**  
ANNUAL CAPACITY, 25,000 TONS  
**FORT PITT MALLEABLE IRON CO., Pittsburgh, Pa.**

**MISSISSIPPI WIRE GLASS CO.**  
220 Fifth Ave., New York  
Manufacturers of Rolled Sheet Glass for Skylights and Windows.  
Special Designs Increasing Daylight Illumination  
*Write for Catalogue and Samples.*

STANDARDIZE YOUR PASSENGER CARS WITH  
**NORTH POLE**  
SANITARY DRINKING FOUNTAINS  
**HENRY GIESSEL CO.**  
WASHINGTON 29 SOUTH CLINTON STREET, CHICAGO HOUSTON

For Track and Bridge Insulation  
Continental—Bakelite or Grade E Railroad Fibre  
**THE CONTINENTAL FIBRE COMPANY**  
Factory and Main Office: Newark, Delaware  
New York Office: 233 Broadway Chicago Office: 332 S. Michigan Ave. San Francisco Office: 25 Market St.  
Pittsburgh Office: 501 Fifth Ave. Los Angeles Office: 411 S. Main St. Canadian Office: 89 Wellington St. West, Toronto, Ont., Canada

**DUNER CAR CLOSETS**  
Enameled Iron Wet or Dry Closets  
**DUNER CO.**  
101 S. CLINTON STREET, CHICAGO.

### Kreolite Wood Block Floors

"They outlast the factory"



An excellent investment for machine shops, round houses, engine pits, foundries and other parts of the plant where the floors receive hard wear.  
Write today for our booklet "Factory Floors."  
THE JENNISON-WRIGHT CO.  
65 Kreolite Building, Toledo, O.

### FOR LONGER LIFE

In Railway Buildings Use

# ROBERTSON

## PROCESS METAL

FOR PERMANENT ROOFS, SIDING AND TRIM  
GENERAL OFFICES: PITTSBURGH, PA.

### STEEL SHEETS

KEYSTONE COPPER STEEL

#### BLACK AND GALVANIZED

American Bessemer—American Open Hearth—Keystone Copper Steel  
Black Sheets, Galvanized Sheets, Corrugated Sheets, Automobile Sheets,  
Electrical Sheets, Roofing Products, Tin and Terne Plates, Etc.  
AMERICAN SHEET AND TIN PLATE COMPANY, PITTSBURGH, PA.

### ROUND HOUSE

Heating and Ventilating Systems

*Buffalo*

Write Dept. 60  
BUFFALO FORGE CO.  
Buffalo, N. Y.

### BLAW-KNOX BUCKETS



Single-line, two-line, three-line or four-line—for every type of service—from the heaviest digging to the hardest rehandling.  
WRITE US  
BLAW-KNOX COMPANY  
614 Farmer's Bank Bldg., Pittsburgh, Pa.

### American Steam Jet Cinder Conveyors

Literature on request.

### CONVEYORS CORPORATION OF AMERICA

Formerly  
American Steam Conveyors Corporation  
326 W. Madison St. Chicago

### The Champion Rivet Company

## VICTOR

Boiler—Ship—Structural—Tank Rivets—Knuckle and Air Brake Pins

Main Office & Works  
Cleveland, Ohio

Western Plant  
East Chicago, Ind.

### DURSON

## Brake Regulator

—more than a slack adjuster

HAMILTON & HANSELL, Inc.  
13 Park Row, New York, N. Y.

### BROWNING CRANES

A Giant's Strength with a Wizard's Deftness



The Browning Company  
East 162nd St. & Waterloo Rd., Cleveland, Ohio.

### FAIRBANKS-MORSE

MANUFACTURERS CHICAGO



Hand, Push and Motor Cars—Coaling Stations—Standpipes—Oil Engines—Pumps—Motors—Fairbanks Scales—Light Plants—Water Systems.

### CRANES

RAILWAY SPECIALTIES



### FOUNDRY EQUIPMENT

Send for Catalogs

### THE MEANING OF A WORD

The word QUALITY, through misuse, has lost some of its former prestige, but it is used without fear in describing DES MOINES STEEL PRODUCTS, because the basic material is carefully selected for its quality; the individual design for the quality of engineering skill, and the quality of fabrication and erection.

Write to us today for more information.

Pittsburgh-Des Moines Steel Co.  
879 Curry Bldg., Pittsburgh, Pa.

PLANTS  
Pittsburgh, Pa.  
Des Moines, Ia.  
Chatban, Ont.

### MUMMERT LUMBER & TIE CO.

McCormick Bldg. Chicago

(See advertisement in issue of December 24, page 19)

Grain Doors, Cross Ties, Switch Ties, Piling, Car Oak, Yellow Pine and Fir Lumber

### CRANE

## RAILROAD FITTINGS

### Chicago-Cleveland Car Roofing Company

Manufacturers of

#### Steel Roofs and Carlines for Freight Cars

535 Railway Exchange Bldg., Michigan & Jackson Bldgs., Chicago

### PITTSBURGH SPRING & STEEL CO.

1417 Farmers Bank Building, Pittsburgh, Pa.

Makers of Elliptic and Spiral **SPRINGS** of Every Description

Quality and Workmanship Guaranteed

New York Agencies Chicago  
2836 Grand Central Terminal 1411 Fisher Bldg.

# MASON Safety Treads

Standard for 25 years for car and station steps. Stanwood Steps, Karbolith Flooring Composition.

AMERICAN MASON SAFETY TREAD CO., LOWELL, MASS.  
Branch Offices in New York and Philadelphia  
Joseph T. Ryerson & Son, Chicago, Western Distributors

# Standard Steel Platform

In Use by 281 Companies  
Sessions-Standard Friction Draft Gear  
In Use by 205 Companies

Both Made by the  
Standard Coupler Co., 30 Church St., New York

# DICKINSON DEVICES

Cast Iron Smoke Jacks  
Light Fire-Proof Smoke Jacks  
Roof Ventilators  
Sheet Metal and Cast Iron  
Cast Iron Chimneys for Small Buildings

Prompt Deliveries.  
PAUL DICKINSON, Inc., 3354 South Artesian Ave., Chicago

# MASSACHUSETTS MOHAIR PLUSH CO. Bay State Brand Plush

ALL GRADES FOR CAR SEATS  
PLAIN AND FRIEZE

Main Office: 200 Devonshire St., Boston, Mass. Branch Office: 911 Locust St., St. Louis, Mo.



Ashton High-Grade  
Pop Valves—Steam Gages  
the quality standard for over 40 years  
Exclusive features insuring greatest  
efficiency and durability

THE ASHTON VALVE CO.  
New York, Boston and Chicago




## BOSS LOCK NUTS

UNQUESTIONED  
DEPENDABILITY



BOSS NUT CO. CHICAGO, U.S.A.

# Nichols Transfer Tables Turntable Tractors

Geo. P. Nichols & Bro. 2139 Fulton Street Chicago

# COES



A strong, serviceable  
railway wrench which  
gives dollar for dollar  
the most satisfactory  
service.

Serves,  
Saves and Satisfies

COES WRENCH CO.  
Worcester, Mass.  
And wherever tools are sold

# CAR SEATS

of  
Pressed Steel for all Classes of Passenger Service  
HEYWOOD-WAKEFIELD CO.

Factory at Wakefield, Mass.  
Offices of New York, Chicago, Los Angeles, San Francisco, Houston, Washington,  
Portland, Ore., Toronto and Montreal.



Find out about the  
**OSGOOD**  
Road Ditchers,  
Steam Shovels and  
Locomotive Cranes  
THE OSGOOD CO.  
Marion, Ohio

# National Boiler Washing Company Of Illinois

Railway Exchange Building Chicago  
Engineers and Builders of Locomotive Terminal Facilities



## FRictionless SIDE BEARINGS

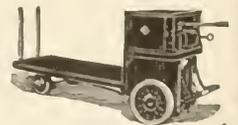
The Wine Railway Appliance Co.  
Toledo, O.

GTD TAPS · DIES  
DRILLS · REAMERS  
SCREW PLATES · GAGES · PIPE TOOLS  
MACHINE TOOLS · MILLING CUTTERS



GREENFIELD  
MASS.

ELWELL-PARKER  
Electric  
TRUCKS AND TRACTORS  
for Freight and Passenger Terminal, Storage  
or Store Warehouse, Baggage and Show Trucks.  
The Elwell-Parker Electric Co.  
"Pioneer Builders Electric Industrial Trucks"  
Cleveland, Ohio, U. S. A.  
Offices in All Principal Cities




# Ramapo

## Automatic Safety Switch Stands

Ramapo Iron Works  
HILLBURN · NEW YORK

NEW YORK OFFICE: 10 Church Street  
HILLBURN, New York, Niagara Falls, New York.

Switches, Frogs, Crossings, Double Shoulder, Solid Bottom, Switch Risers, Adjustable Rail Braces,  
Guard Rail Clamps, Railbound, Solid and Collect, Manganese Tec Rail, Special Work, Industrial Cars, ETC.

## EXTENSION SIDE DUMP CARS

30 cu. yds. Level Full;  
45 cu. yds. Normal Loading;  
10,000 pounds A. R. A. Capacity



## PITTSBURGH CLARK CAR COMPANY

PITTSBURGH, PA.  
Chicago Boston Salt Lake City  
Peoples Gas Bldg. 643 Atlantic Ave. Felt Bldg.

# PROFESSIONAL DIRECTORY

## THE ARNOLD COMPANY

ENGINEERS-CONSTRUCTORS  
Electrical — Civil — Mechanical

Specialists in the planning of railroad properties and their construction. Offering complete service from conception to operation, eliminating hazardous division of responsibility and insuring maximum economy.

105 South La Salle Street  
CHICAGO

**Charles Evan Fowler**  
M. Am. Soc. C. E. M. Eng.  
Inst. Can. Consulting Civil Engineer.

**BRIDGES, FOUNDATIONS**  
Reinforcement of Long  
Spans a Specialty  
New York City, 25 Church St.

**THOMAS N. GILMORE**  
Consulting Engineer

Railroad Shops; Locomotive Terminals and Equipment; Power Plants; Steam Stations and Industrial Plants.  
136 Liberty St., New York City

**JOHN E. MUHLFELD**  
Consulting Engineer

**RAILWAY AND INDUSTRIAL EQUIPMENT, FACILITIES, INVESTIGATIONS AND VALUATIONS**  
25 Broad Street, New York

**C. E. SMITH & CO.**  
Consulting Engineers  
2065-75 Railway Exchange, St. Louis, Mo., Chicago, Kansas City  
Investigations, Reports, Appraisals, Expert Testimony, Bridge and Structural Work, Electrification, Grade Crossing Elimination, Foundations, Docks, Water Supply, River and Flood Protection, Drainage and Sanitation, Vandal Architecture.

A card here is one placed weekly on the desks of nearly every Railway Official.

**STONE & WEBSTER**  
Incorporated

Examinations Reports Valuations  
Industrial and Public Service Properties  
New York Boston Chicago

**J. J. BENNETT**

Efficiency Expert

Yard and Terminal Switching  
Box 319, Railway Age, Transportation Bldg., Chicago, Illinois

**GULICK-HENDERSON CO.**  
Inspecting Engineers. Inspection of Bridges, Building Materials, Railway Equipment, Cement, Pipe Machinery, etc. Examinations, Consultations, Appraisements. Physical and Chemical Laboratories.

General Offices, New York  
Pittsburgh, 525-529 Third Ave.  
Chicago, Ill., 431 South Dearborn St.  
New York, 145 West 36th Street

**Pittsburg Testing Laboratory**

CHICAGO—PITTSBURGH—NEW YORK

Inspection Rails, Bridges and Buildings and All Railway Supplies. CEMENT testing and inspection at Mills before shipment. Chemical and Physical Tests.

**The Watson Engineering Company**

Our complete and experienced organization is at your service for the design and construction of railway structures of every character.

4614 Prospect Ave.  
CLEVELAND

**Bush, Roberts and Schaefer Co.**

Engineers and Contractors  
Wrigley Building, Chicago  
No. 1 Madison Ave., New York  
Col. Lincoln Bush, E.D., Pres.  
Reinforced concrete viaducts, track elevation work, railroad terminals, piers, docks, general civil engineering and construction work.

A little card here is of big value. Why not try it?

**Railway and Industrial Engineers**

Incorporated  
Investigations, Inventories and Valuations  
Specialists in Railway and Industrial Facilities and Equipment  
Reports on Contemplated Improvements  
25 Broad Street, New York  
Cable Address, - - Railindeng

**THE H. K. FERGUSON COMPANY**

ENGINEERS—BUILDERS  
HAROLD K. FERGUSON, Pres.  
Railroad Department, Exam M. Haas, Mgr.

General Offices  
New York Cleveland Chicago  
6523 Euclid Ave.

An organization experienced in laying-out, designing, building and equipping railroad shops and terminals. Specialists in designing steel and reinforced concrete structures.

Exclusive Representatives for  
GAP CRANE ERECTING SHOPS  
and  
MORGAN ENGINEERING CO.'S CRANES

**ARTHUR HALE**  
UNION TRUST BUILDING  
FIFTEENTH AND M STREETS  
WASHINGTON, D. C.  
TELEPHONE MAIN 7888

Agent and attorney for owners before the Interstate Commerce Commission, Railroad Administration, etc. Rates and Distances, Private Cars, Weighting, Per Diem, Reimburse, Demurrage and Valuation Claims under the Federal Control and Transportation Act.

**Locomotive Coaling Plants  
Sand Drying Plants  
Cinder Handling Plants**

**Roberts and Schaefer Co.**  
Engineers and Contractors  
CHICAGO

**A CARD HERE**  
will keep your name  
before Railway Officers

## INVENTORS

If you have an invention and don't want to spend unnecessary money in securing a patent, write to **INVENTORS & ENGINEERS CONSULTING CO.**, P. O. Box 344, Washington, D. C.

**DWIGHT P. ROBINSON & COMPANY**

Incorporated  
Engineers and Contractors  
With which is consolidated  
Westinghouse, Church, Kerr & Co., Inc.  
Railroad Shops & Terminals  
Power Plants Electrification  
Cooling Stacks  
125 East 46th St., New York  
Chicago Youngstown Dallas Los Angeles  
Montreal

**The J. G. White Engineering Corporation**  
Engineers—Constructors  
Industrial Plants, Buildings, Steam Power Plants, Water Powers, Gas Plants, Steam and Electric Railroads, Transmission Systems.  
43 Exchange Place, New York

Robert W. Hunt Jno. J. Cons D. W. McNaugher

**ROBERT W. HUNT & CO., ENGINEERS**  
BUREAU OF  
**INSPECTION TESTS AND CONSULTATION**  
CHEMICAL AND PHYSICAL TESTS  
ESTABLISHED OFFICES IN

CHICAGO NEW YORK PITTSBURGH ST. LOUIS SAN FRANCISCO  
SEATTLE LONDON MONTREAL TORONTO VANCOUVER

Eliminate advertising and you reduce buying to its barest bread-and-butter basis.



**THE WEIERBACH BRAKE SHOE**

M. G. B. Design  
25% longer wear. Do not heat, burn or wear wheels. A trial order sent on request. Write us for quotations.

**WEIERBACH BRAKE SHOE CO.**

Office and Plant

Scranton, Penna.

Western Representative: Al. H. Hoffman,  
315 American Bank Bldg., Los Angeles, Cal.

Exclusive Export Sales Agents: Fox Brothers & Co., 126-130 Lafayette St., New York City.

**U.S. CAST IRON PIPE**  
Unusual Facilities For Prompt Shipment  
UNITED STATES CAST IRON PIPE & FOUNDRY CO.  
General Offices - Burlington, N.J.

**Classified Advertisements—Help and Situations Wanted advertisements appearing in the "Get Together Department," 5c. a word an insertion, including eleven words for address. Minimum charge \$1.00 for each insertion. For Sale advertisements, \$3.00 a column inch (1 1/4" wide). Any number of inches may be used. Copy must be in this office by Saturday noon to insure insertion in the following week's issue.**

**POSITION OPEN**

**EXECUTIVES** qualified for salaries of \$2,500 to \$25,000 and upward are invited to communicate in strict confidence with the undersigned, who will conduct preliminary negotiations for such positions. The procedure used is peculiar to this service, differing essentially from all others and is constructive and initiative; applied individually, and in no way jeopardizing present connections. Established 1910. Send name and address only for particulars. R. W. Bizby, Inc., 302 Lockwood Bldg., Buffalo, N. Y.

**POSITION OPEN**

**WANTED**—Man qualified to act as Traffic Manager on staff of large commercial organization for shippers of community in traffic cases before state and interstate commerce commissions, send recent photo and statement of experience, minimum salary requirements, age and other personal information. Budget limited at start but right man has splendid opportunity to develop field. Address Box 324, Railway Age, Woolworth Bldg., New York, N. Y.

**EDUCATIONAL**

SEND for Free Special Bulletin and learn how to increase your knowledge of practical railroad work and fit yourself for promotion. The Railway Educational Bureau, Omaha, Nebr.

**FOR QUICK RESULTS**

If you are looking for a position, or in need of a man, put your advertisement in the Classified Section.

Rails, all sections in stock, immediate shipment, also quantity of bridge girders.

**M. K. FRANK**  
Frick Bldg. Pittsburgh

**FOR SALE**

5—Ballast Cars, 60,000 lbs. cap., steel undrf. side dump.  
3—Western 16 yd. Air Dump cars.

**Walter A. Zelnicker Supply Co.**  
ST. LOUIS

**AGENCIES WANTED**

Contractors, railroad and warehouse equipment and supplies. Cars, trucks, shovels, cranes, track accessories, etc. St. Louis and South. Twenty years' experience. Well appointed office maintained in St. Louis. Address Box 323, Railway Age, Woolworth Bldg., New York, N. Y.



10—95-ton, 21x28" Consolidation; Piston valve; outside valve gear; 200 lb. pressure

**LOCOMOTIVES**

- 10—95-ton Consolidations; 21x28"; 200 lb. pressure
- 6—85-ton Consolidations; 20x26"; 200 lb. pressure
- 5—80-ton Consolidations; 20x26"; 200 lb. pressure
- 2—60-ton Consolidations; 20x24"; 180 lb. pressure
- 2—75-ton Ten Wheelers; 19x26"; 180 lb. pressure
- 3—70-ton Ten Wheelers; 18x24"; 200 lb. pressure
- 1—80-ton Mogul Type; 19x26"; 180 lb. pressure
- 1—70-ton Atlantic Type; 20x24"; 200 lb. pressure

Other Types and Weights Rebuilt and Ready.

150—100,000 lb. Capacity, All Steel, Double Hopper, Drop Bottom, Self-Cleaning Coal Cars.

Rebuilt in our shops, in first class condition; immediate shipment from stock.

**SOUTHERN IRON & EQUIPMENT CO.**

(Established 1889)

ATLANTA, GEORGIA

The  
**Get-Together  
Department**

is of real value to advertisers who have second-hand equipment to sell.

The annual meeting of the stockholders of the Aldrich Publishing Company, for the election of directors and such other business as may properly come before the meeting, will be held in the executive offices of the company, 233 Broadway, New York, N. Y., on Monday, January 9, 1922, at 12 o'clock noon.

**ROY V. WRIGHT,**  
Secretary

**CAN YOU SECURE R.R. BUSINESS?**

If so you can earn large commissions from a client of ours who has developed a fuel and oil saving device (that's been on the market for 10 years), so that they now lead the world—an unusual opportunity. Our client is highly rated in both Dun's and Bradstreet's and has been doing business with us for 22 years. Address Box 320, Railway Age, Woolworth Building, New York, N. Y.

IT will pay you to take advantage of the classified section, in these columns, when in need of a man or looking for a position.

# BUYERS INDEX

For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last white page.



Acetylene, Dissolved.  
Air Reduction Sales Co.

Air Lifts.  
Ingersoll Rand Co.

Air Reservoir Joints—(See Joints, Air Reservoir).

Angle Bars — (See Joints, Rail).

Angles, Channels and Tees—  
(See Shapes, Structural).

Arch, Locomotive Brick.  
American Arch Co.

Arresters, Lighting.  
General Electric Co.  
Westinghouse Elec. & Mfg. Co.

Axles, Car and Locomotive.  
American Locomotive Co.  
Baldwin Locomotive Works,  
The  
Cambria Steel Co.  
Illinois Steel Co.  
Lima Locomotive Works  
Polak Steel Co.  
Standard Steel Works

Barges, Steel.  
Pittsburgh-Des Moines Steel Co.

Barrels, Tumbling.  
Whiting Corp.

Bars, Concrete Reinforcing.  
American Steel & Wire Co.  
Cambria Steel Co.  
Illinois Steel Co.  
Interstate Iron & Steel Co.  
Midvale Steel Co.  
Polak Steel Co.

Bars, Iron and Steel.  
Cambria Steel Co.  
Ewald Iron Co.  
Falls Hollow Staybolt Co.  
Illinois Steel Co.  
Polak Steel Co.  
Ryerson & Son, Joseph T.

Batteries, Electric Storage.  
Electric Storage Battery Co.  
Safety Car Heating & Lighting Co.

Batteries, Wet Cell.  
Electric Storage Battery Co.

Bearings, Center.  
Chicago Ry. Equipment Co.  
Miner, W. H.  
Pressed Steel Car Co.  
Smylington Co., T. H.  
Woods & Co., Edwin S.

Bearings, Journal.  
Magnus Co., Inc.

Bearings, Side.  
American Steel Foundries  
Chicago Ry. Equipment Co.  
Fort Pitt Malleable Iron Co.  
Miner, W. H.  
Standard Car Truck Co.  
Wine Ry. Appliance Co.  
Woods & Co., Edwin S.

Benders, Rail.  
American Chain Co.

Bending and Straightening Machines.  
Ryerson & Son, Joseph T.

Billets, Steel.  
Cambria Steel Co.  
Illinois Steel Co.  
Midvale Steel & Ordnance Co.

Blanks, Rolled Gear.  
Cambria Steel Co.  
Midvale Steel & Ordnance Co.

Blocks, Crossed.  
Jenkinson Wright Co.

Blower Fittings, Automatic Smokebox.  
Barco Mfg. Co.

Blow Off Line Joints, Roundhouse—(See Joints, Etc.).

Boilers, Locomotive.  
American Locomotive Co.  
Baldwin Locomotive Works  
Lima Locomotive Works

Boilers, Water Tube.  
Inabcock & Wilcox

Bolsters, Steel.  
American Steel Foundries  
Illinois Steel Co.  
Pressed Steel Car Co.  
Sennin Steel Co.

Bolts and Nuts.  
Boss Nut Co.  
Cambria Steel Co.  
Columbia Nut & Bolt Co.  
National Malleable Castings Co.  
Ryerson & Son, Joseph T.

Bolts, Patch.  
Falls Hollow Staybolt Co.

Bolts, Track.  
Illinois Steel Co.

Books.  
Simmons Boardman Pub. Co.

Booster.  
Franklin Ry. Supply Co.

Boths, Telephone.  
Dickinson, Inc., Paul.

Boring and Turning Mills, Vertical.  
Niles-Bement-Pond Co.

Boring and Turning Mills, Horizontal.  
Schlers & Co., Inc., Wm.

Braces, Rail.  
American Chain Co.  
Cambria Steel Co.  
Fort Pitt Malleable Iron Co.  
Midvale Steel & Ordnance Co.  
National Malleable Castings Co.  
Ramapo Iron Works

Brake Beams.  
American Steel Foundries  
Chicago Ry. Equipment Co.  
Pressed Steel Car Co.

Brake Beams—Supports.  
American Steel Foundries  
Chicago Ry. Equipment Co.

Brake Forging, Pins, Levers, Etc.  
American Steel Foundries  
Chicago Steel Co.  
Schaefer Equipment Co.  
Steel Car Forge Co.

Brake Heads.  
American Steel Foundries  
Chicago Ry. Equipment Co.  
National Malleable Castings Co.  
Pressed Steel Car Co.

Brake Jaws.  
National Malleable Castings Co.  
Schaefer Equipment Co.  
Steel Car Forge Co.

Brake Shoes.  
American Brake Shoe & Fly Co.  
Fort Pitt Malleable Iron Co.  
Railway Materials Co.  
Weierbach Brake Shoe Co.

Brakes, Air.  
General Electric Co.  
Westinghouse Air Brake Co.

Brakes, Clasp.  
American Steel Foundries

Brakes, Electric.  
Westinghouse Air Brake Co.

Brakes, Hand.  
Miner, W. H.  
Minich Ry. Appliance Co.  
National Malleable Castings Co.  
Wine Ry. Appliance Co.

Brick Locomotive Arch.  
American Arch Co.

Bridge Builders.  
Arnold Co.  
Fowler, Chas. Evan.  
Pittsburgh-Des Moines Steel Co.

Buckets, Clam Shell.  
Blaw-Knox Co.  
Brown Hoisting Machy. Co.  
Browning Co.  
Industrial Works  
Orton & Steinbrenner Co.

Buckets, Grab.  
American Hoist & Derrick Co.  
Blaw-Knox Co.  
Brown Hoisting Machy. Co.  
Browning Co.  
Hayward Co.  
Industrial Works  
Orton & Steinbrenner Co.

Buffers, Friction.  
Miner, W. H.  
Westinghouse Air Brake Co.

Buffers, Radial.  
Franklin Ry. Supply Co.

Buildings, Iron Steel and Steel Concrete.  
Arnold Co.  
Berguson Co., H. K.  
Pittsburgh-Des Moines Steel Co.  
Robertson Co., H. H.  
Robinson Co., Dwight P.  
Stone & Webster  
White Eng. Corp., J. G.

Buildings, Portable Steel.  
Blaw-Knox Co.

Bulldozers.  
Niles-Bement-Pond Co.  
Ryerson & Son, Joseph T.

Burners, Bunsen, Oxygen, Gas.  
Air Reduction Sales Co.

Cables, Electric.  
American Steel & Wire Co.  
General Electric Co.  
Kerite Insulated Wire & Cable Co.  
Okonite Co.

Cableways—(See Tramways).

Calcium Carbide.  
Air Reduction Sales Co.

Car Ends, Steel.  
Chicago Cleveland Car Roof Co.

Car Lighting Equipment —  
(See Lighting Car Equipment).

Carlines.  
Chicago Cleveland Car Roofing Co.  
General Electric Co.  
Pressed Steel Car Co.  
Standard Ry. Equipment Co.  
Western Ry. Equipment Co.

Car Material, Wood.  
Exchange Sawmills Sales Co.  
Mummet Lumber & Tie Co.

Car Steps, Safety.  
American Abrasive Metals Co.

Carriers, Monorail.  
Conveyors Corp. of America

Cars, Ballast.  
Cambria Steel Co.  
General American Car Co.  
Pressed Steel Car Co.

Cars, Convertible.  
Cambria Steel Co.  
Keith Ry. Equipment Co.

Cars, Dump.  
Cambria Steel Co.  
Clark Car Co.  
General American Car Co.  
Pressed Steel Car Co.

Cars, Freight.  
American Car & Fdy. Co.  
Cambria Steel Co.  
General American Car Co.  
Greenville Steel Car Co.  
Pressed Steel Car Co.  
Ralston Steel Car Co.  
Youngstown Steel Car Co.

Cars, Hand and Push.  
Fairbanks, Morse & Co.  
Mudge & Co.

Cars, Industrial.  
Pressed Steel Car Co.  
Whiting Corp.

Cars, Motor (Section).  
Clark Car Co.  
Fairbanks, Morse & Co.  
Mudge & Co.

Cars, Ore.  
Clark Car Co.  
Pressed Steel Car Co.

Cars, Passenger.  
American Car & Fdy. Co.  
Pressed Steel Car Co.  
Ralston Steel Car Co.

Cars, Rebuilt and Repaired.  
American Car & Fdy. Co.  
General American Car Co.  
General American Tank Car Corp.  
Greenville Steel Car Co.  
Pressed Steel Car Co.  
Ralston Steel Car Co.  
Youngstown Steel Car Co.

Cars, Refrigerator.  
General American Car Co.  
Pressed Steel Car Co.

Cars, Second-Hand.  
Southern Iron & Equip. Co.  
Zelmecker Supply Co., Walter A.

Cars, Self-Propelled Passenger.  
General Electric Co.

Cars, Shapes, Pressed Steel.  
Sharon Pressed Steel Co.

Cars, Spreader.  
Jordan Co., O. F.

Cars, Tank.  
American Car & Fdy. Co.  
General American Tank Car Corp.  
Pressed Steel Car Co.

Castings, Brass and Bronze.  
Magnus Co., Inc.

Castings, Gray Iron.  
American Brake Shoe & Fly Co.  
American Locomotive Co.  
Baldwin Locomotive Works  
Hunt Spiller Mfg. Corp.  
Midvale Steel & Ordnance Co.  
National Malleable Castings Co.  
Ramapo Iron Works

Castings, Malleable Iron.  
Fort Pitt Malleable Iron Co.

McConway & Torley Co.  
National Malleable Castings Co.  
Pressed Steel Car Co.

Castings, Steel.  
American Locomotive Co.  
American Steel Foundries  
Edgewater Steel Co.  
McConway & Torley Co.  
Midvale Steel & Ordnance Co.  
Pressed Steel Car Co.  
Standard Steel Works  
Union Spring & Mfg. Co.

Cement, High Temperature.  
Johns-Manville, Inc.

Center Plate — (See Bearings, Center).

Chain.  
American Chain Co.

Chemicals.  
Dearborn Chemical Co.

Chemists.  
Dearborn Chemical Co.  
Hunt & Co., Robert W.  
Pittsburgh Testing Laboratories

Chimneys, Cast Iron.  
Dickinson, Inc., Paul

Chucks, Drill.  
Chicago Pneumatic Tool Co.

Chucks, Staybolt Driving.  
Chicago Pneumatic Tool Co.

Cinder Handling Plants.  
Conveyors Corp. of America  
Roberts & Schaefer Co.

Circuit Breakers.  
General Electric Co.  
Westinghouse Elec. & Mfg. Co.

Clamps, Flanging.  
Ryerson & Son, Joseph T.

Clamps, Hose.  
National Malleable Castings Co.  
Westinghouse Air Brake Co.

Clamps, Pipe.  
Franklin Ry. Supply Co.  
National Malleable Castings Co.

Cleaners, Flue.  
Ryerson & Son, Joseph T.

Closets, Water.  
Duner Co.

Coach and Coach Yard Steam Joints—(See Joints, Etc.).

For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last page next to cover

# BUYERS INDEX

<p><b>Coal Ore and Ash Handling</b> Machines. Brown Hoisting Machinery Co. Conveyors' Corp. of America Orton &amp; Steinbrenner Co. Roberts &amp; Schaefer Co.</p> <p><b>Coaling Stations.</b> Fairbanks, Morse &amp; Co. Pittsburgh-Des Moines Steel Co. Roberts &amp; Schaefer Co.</p> <p><b>Cooks, Angle.</b> Westinghouse Air Brake Co.</p> <p><b>Cooks, Cylindar.</b> Prime Mfg. Co. U. S. Metallic Packing Co.</p> <p><b>Columns, Cast Iron Building.</b> U. S. Cast Iron Pipe &amp; Fdy. Co.</p> <p><b>Columns, Water.</b> Pittsburgh-Des Moines Steel Co.</p> <p><b>Compounds, Boiler.</b> Deabro Chemical Co.</p> <p><b>Compressors, Air.</b> General Electric Co. Ingersoll Rand Co.</p> <p><b>Conduits, Metallic Flexible.</b> Banco Mfg. Co. Franklin Railway Supply Co.</p> <p><b>Connections, Truck Lever.</b> National Malleable Castings Co. Schaefer Equipment Co.</p> <p><b>Connectors, Automatic T. C. P.</b> —(See Train Pipe Connectors, Automatic).</p> <p><b>Connectors, Electrical.</b> Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Control Devices, Train Speed.</b> Miller Train Control Corp.</p> <p><b>Controllers, Electrical.</b> General Electric Co. Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Converters, Steel.</b> Whiting Corp.</p> <p><b>Conveying Machinery.</b> Conveyors Corp. of America Industrial Works Orton &amp; Steinbrenner Co.</p> <p><b>Conveyor, Ash—(See Coal Ore and Ash Handling Mach.).</b></p> <p><b>Cooling Composites, Journal, Hot Box.</b> Mohawk Lubricating Co.</p> <p><b>Coupler Pockets—(See Draft Yokes).</b></p> <p><b>Couplers.</b> American Steel Foundries. Franklin Railway Supply Co. McConway &amp; Torley Co. National Malleable Castings Co. Standard Coupler Co. Westinghouse Air Brake Co.</p> <p><b>Couplings, Hose.</b> Chicago Pneumatic Tool Co. Port Pitt Malleable Iron Co. Ingersoll Rand Co. Westinghouse Air Brake Co.</p> <p><b>Cranes, Electric Traveling.</b> Brown Hoisting Mch. Co. Ferguson Co., H. K. Niles-Bement-Fond Co. Whiting Corp.</p> <p><b>Cranes, Gantry.</b> Brown Hoisting Mch. Co. Industrial Works Niles-Bement-Fond Co. Orton &amp; Steinbrenner Co. Whiting Corp.</p> <p><b>Crane, Jib.</b> Brown Hoisting Mch. Co. Industrial Works Niles-Bement-Fond Co. Whiting Corp.</p> <p><b>Cranes, Locomotive.</b> American Hoist &amp; Derrick Co.</p>	<p><b>Cranes, Portable.</b> American Hoist &amp; Derrick Co. Brown Hoisting Mch. Co. Industrial Works Orton &amp; Steinbrenner Co.</p> <p><b>Cranes, Wrecking.</b> Brown Hoisting Mch. Co. Browning Co. Industrial Works Orton &amp; Steinbrenner Co.</p> <p><b>Crane &amp; Pines—(See Pines, Crank).</b></p> <p><b>Crosscut.</b> Barrett Co., The Jenkinson Wright Co.</p> <p><b>Cross Arms.</b> American Bridge Co.</p> <p><b>Crossheads and Shoes.</b> Baldwin Locomotive Works, The Banco Mfg. Co.</p> <p><b>Crossings—(See Frogs and Crossings).</b></p> <p><b>Crushers, Coal.</b> Orton &amp; Steinbrenner Co.</p> <p><b>Culverts.</b> American Sheet &amp; Tin Plate Co. Armed Culvert &amp; Flume Mfrs. Assn. U. S. Cast Iron Pipe &amp; Fdy. Co.</p> <p><b>Capulas, Foundry.</b> Whiting Corp.</p> <p><b>Cups, Oil and Grease.</b> Prime Mfg. Co.</p> <p><b>Curtains and Fixtures, Car Window.</b> Morton Mfg. Co.</p> <p><b>Curtains &amp; Fixtures, Car Vestibule.</b> Morton Mfg. Co.</p> <p><b>Cutters, Flue.</b> Ryerson &amp; Son, Joseph T.</p> <p><b>Cutting and Welding Apparatus (Oxy-Acetylene).</b> Air Reduction Sales Co. Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Cutters and Keys (Springs).</b> Columbia Nut &amp; Bolt Co.</p> <p><b>Cyclopedias, Railway.</b> Simmons Boardman Pub. Co.</p> <p><b>Cylinders, Gas, Acetylene, Etc.</b> Air Reduction Sales Co.</p> <p><b>Derricks, Industrial Works</b></p> <p><b>Dialphragms, Bufling, Mechanism.</b> Morton Mfg. Co.</p> <p><b>Diaphragms for Cars, Canvas and Steel.</b> Morton Mfg. Co.</p> <p><b>Dies, Threading.</b> Greenfield Tap &amp; Die Corp.</p> <p><b>Ditching Machinery.</b> American Hoist &amp; Derrick Co. Browning Co. Industrial Works Jensen Co., O. P. Osgood Co., The</p> <p><b>Door Fixtures—(See Fixtures, Car Door).</b></p> <p><b>Door, Locomotive, Fire-Box.</b> Franklin Railway Supply Co.</p> <p><b>Doors, Car.</b> Camel Co. Miner, W. H. Wine Ry. Appliance Co.</p> <p><b>Doors, Grain.</b> Munmerit Lumber &amp; Tie Co.</p> <p><b>Doors, Steel.</b> Morton Mfg. Co.</p> <p><b>Draft Arms.</b> American Steel Foundries Bradford Draft Gear Co.</p> <p><b>Draft Gears.</b> Port Pitt Malleable Iron Co. Keyoke Ry. Equip. Co. Miner, W. H. Standard Coupler Co. Stratton Co., T. H. Union Draft Gear Co. Westinghouse Air Brake Co.</p>	<p><b>Draft Yokes.</b> American Steel Foundries Keyoke Ry. Equip. Co. Miner, W. H. National Malleable Castings Co. Steel Car Forge Co.</p> <p><b>Drawer Centering Device.</b> Miner, W. H.</p> <p><b>Dredging Machinery.</b> Industrial Works Osgood Co., The Pittsburgh-Des Moines Steel Co.</p> <p><b>Drilling Machines, Electric.</b> Chicago Pneumatic Tool Co.</p> <p><b>Drilling Machines, Pneumatic.</b> Chicago Pneumatic Tool Co. Ingersoll Rand Co.</p> <p><b>Drilling Machines, Rock.</b> Chicago Pneumatic Tool Co. General Electric Co. Ingersoll Rand Co.</p> <p><b>Drilling Machines, Upright and Radial.</b> Niles-Bement-Fond Co., W. H. Ryerson &amp; Son, Joseph T.</p> <p><b>Drills, Track and Bonding.</b> Chicago Pneumatic Tool Co. Ingersoll Rand Co.</p> <p><b>Drills, Twist.</b> Greenfield Tap &amp; Die Corp.</p> <p><b>Drinking Fountains.</b> Gessell Co., Henry.</p> <p><b>Driving Boxes (Extended Main).</b> Franklin Railway Supply Co.</p> <p><b>Dryers, Rotary.</b> Whiting Corp.</p> <p><b>Dynamics—(See Generators, Electric, Economizers, Fuel).</b></p> <p><b>Electrical Supplies.</b> General Electric Co. Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Electrification, Railroad.</b> General Electric Co. Robinson Co., Dwight P. Smith &amp; Co., C. E. Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Engineers and Contractors.</b> Roberts &amp; Schaefer Co. Robinson Co., Dwight P. Stone &amp; Webster Watson Engineering Co. White Eng. Corp., J. G.</p> <p><b>Engineers, Construction.</b> Arnold Co. Bush, Roberts &amp; Schaefer Ferguson Co., H. K. Roberts &amp; Schaefer Co. Robinson Co., Dwight P. Stone &amp; Webster Watson Engineering Co. White Eng. Corp., J. G.</p> <p><b>Engineers, Consulting, Civil, Elec., Hydraulic, Mech. Val.</b> Arnold Co. Bush, Roberts &amp; Schaefer Ferguson Co., H. K. Gibbons, Thomas N. Hunt &amp; Co., Robert W. Muhlfield, John E. Railway &amp; Industrial Engrs. Smith &amp; Co., C. E. Stone &amp; Webster Watson Engineering Co. White Eng. Corp., J. G.</p> <p><b>Engineers, Contracting.</b> Arnold Co. Bush, Roberts &amp; Schaefer Ferguson Co., H. K. Hunt &amp; Co., Robert W. Muhlfield, John E. Railway &amp; Industrial Engrs. Smith &amp; Co., C. E. Stone &amp; Webster Watson Engineering Co. White Eng. Corp., J. G.</p> <p><b>Engineers, Inspecting.</b> Arnold Co. Bush, Roberts &amp; Schaefer Ferguson Co., H. K. Gulick, Henderson Hunt &amp; Co., Robert W. Muhlfield, John E.</p>	<p><b>Pittsburgh Testing Laboratory</b> Railway &amp; Industrial Engrs. Smith &amp; Co., C. E.</p> <p><b>Engines, Crude Fuel Oil.</b> Fairbanks, Morse &amp; Co.</p> <p><b>Engines, Gas and Gasoline.</b> Chicago Pneumatic Tool Co. Fairbanks, Morse &amp; Co.</p> <p><b>Engines, Hoisting.</b> American Hoist &amp; Derrick Co. Brown Hoisting Mch. Co. Industrial Works Orton &amp; Steinbrenner Co.</p> <p><b>Expanders, Tube.</b> Hyerson &amp; Son, Joseph T.</p> <p><b>Fans, Exhaust and Ventilating.</b> Buffalo Forge Co. Mudge &amp; Co.</p> <p><b>Fasteners, Car Door.</b> Arnold Co. Camel Co. Port Pitt Malleable Iron Co. Niles-Bement-Fond Co., W. H. National Malleable Castings Co.</p> <p><b>Fencing, Wire—(See Wire Fence).</b></p> <p><b>Fibre and Fibre Products.</b> Continental Fibre Co.</p> <p><b>Filters, Water and Industrial.</b> Graver Corp.</p> <p><b>Filtration Plants (Water).</b> Graver Corp.</p> <p><b>Fireboxes.</b> American Locomotive Co. Baldwin Locomotive Works</p> <p><b>Fire Fighting and Protection Equipment.</b> Johns-Menville, Inc.</p> <p><b>Fittings, Air Brake.</b> National Malleable Castings Co. Westinghouse Air Brake Co.</p> <p><b>Fittings, Flanged Pipe.</b> U. S. Cast Iron Pipe &amp; Fdy. Co.</p> <p><b>Fixtures, Car Door.</b> Camel Co. Miner, W. H. National Malleable Castings Co.</p> <p><b>Flooring.</b> Exchange Sawmills Sales Co. Jenkinson Wright Co.</p> <p><b>Flooring, Composition Car.</b> American Mason Safety Tread Co.</p> <p><b>Flue Cleaners—(See Cleaners, Flue).</b></p> <p><b>Flue Cutters—(See Cutters, Flue).</b></p> <p><b>Flues, Boiler—(See Tubes, Boiler).</b></p> <p><b>Forges.</b> Buffalo Forge Co.</p> <p><b>Forges, Oil Rivet Heating.</b> Ferguson Furnace Co.</p> <p><b>Forges, Rivet Heating.</b> Buffalo Forge Co. Hyerson &amp; Son, Joseph T.</p> <p><b>Forgings.</b> American Steel Foundries Elevators Steel Co. Illinois Steel Co. Midvale Steel &amp; Ordnance Co. Polak Steel Co. Pressed Steel Car Co. Steel Car Forge Co.</p> <p><b>Forgings, Drop.</b> Polak Steel Co. Steel Car Forge Co.</p> <p><b>Forms, Steel, for Concrete Construction.</b> Blaw-Knox Co.</p> <p><b>Foundations.</b> Fowler, Chas. Evans Smith &amp; Co., C. E.</p>	<p><b>Foundry Equipment.</b> Whiting Corp.</p> <p><b>Foundry Supplies.</b> Whiting Corp.</p> <p><b>Frames, Locomotive.</b> American Locomotive Co. American Steel Foundries Baldwin Locomotive Works</p> <p><b>Frames, Truck.</b> American Locomotive Co. American Steel Foundries Baldwin Locomotive Works Franklin Railway Supply Co. Pressed Steel Car Co. Seattle Steel Co.</p> <p><b>Frames, Vanadium.</b> American Locomotive Co. Baldwin Locomotive Works</p> <p><b>Frogs and Crossings.</b> Cambria Steel Co. Itanapo Iron Works</p> <p><b>Fulcrums, Brake Beam.</b> American Steel Foundries Chicago Hy. Equipment Co. National Malleable Castings Co.</p> <p><b>Furnace, Annealing and Case Hardening.</b> Whiting Corp.</p> <p><b>Furnaces, Melting.</b> Whiting Corp.</p> <p><b>Furnaces, Rivet Heating—(See Forges, Rivet Heating).</b></p> <p><b>Gage Testers—(See Testers, Gage).</b></p> <p><b>Gages, Mechanists.</b> Greenfield Tap &amp; Die Corp.</p> <p><b>Gages, Steam.</b> Ashton Valve Co. Crosby Steam Gage &amp; Valve Co.</p> <p><b>Gages, Wheel Press, Recording.</b> Ashton Valve Co.</p> <p><b>Gaskets.</b> Continental Fibre Co.</p> <p><b>Oates, Tail.</b> Morton Mfg. Co.</p> <p><b>Gear Blanks, Rolled Steel.</b> Standard Steel Works</p> <p><b>Gears and Pinions.</b> American Steel Foundries Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Gears, Valve—(See Valve Gears).</b></p> <p><b>Generators, Car Lighting.</b> Safety Car Lighting &amp; Heating Co.</p> <p><b>Generators, Acetylene.</b> Air Reduction Sales Co.</p> <p><b>Generators, Electric.</b> Fairbanks, Morse &amp; Co. General Electric Co. Westinghouse Elec. &amp; Mfg. Co.</p> <p><b>Glass, Wire.</b> Mississippi Wire Glass Co.</p> <p><b>Graphite, Lubricating.</b> Gleason Signal Oil Co.</p> <p><b>Grate Shakers.</b> Franklin Railway Supply Co.</p> <p><b>Gresse Forming Machines.</b> Franklin Railway Supply Co.</p> <p><b>Grinding Machines, Portable.</b> Chicago Pneumatic Tool Co. Ingersoll Rand Co.</p> <p><b>Guards, Bridge.</b> American Cattle Co.</p> <p><b>Guards, Dust.</b> Syrington Co., T. H.</p> <p><b>Hammer, Pneumatic.</b> Chicago Pneumatic Tool Co. Ingersoll Rand Co.</p> <p><b>Hammers, Steam.</b> Industrial Works Ryerson &amp; Son, Joseph T.</p> <p><b>Hand Brakes—(See Brakes, Hand).</b></p>
---	---	---	---	---

# BUYERS INDEX

For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last page next to cover

Hangers, Car Door—(See Fixtures, Car Door).	Iron, Pig. Illinois Steel Co.	Locomotives, Mina. American Locomotive Co. Baldwin Locomotive Works General Electric Co.	Paint. Lebon Co., The	Plush, Mohair. Chase & Co., L. C. Mass. Mohair Plush Co.
Ryerson & Son, Joseph T.	Iron, Refined. Ewald Iron Co. Pittsburgh Forge & Iron Co. Ryerson & Son, Joseph T.	Locomotives, Rebuilt. American Locomotive Co. Frank. M. K.	Paper, Sheathing. Chicago-Cleveland Car Roofing Co. Lebon Co., The	Pneumatic Tools. Chicago Pneumatic Tool Co. Ingersoll Rand Co.
Headlights, Electric. General Electric Co.	Iron Staybolt—(See also Staybolts). Ewald Iron Co. Falls Hollow Staybolt Co. Rome Iron Mills, Inc. Ryerson & Son, Joseph T.	Locomotives, Second-Hand. Southern Iron & Equip. Co. Zelnicker Supply Co., Walter A.	Patents, Attorney, Inventors & Engineers Consulting Co.	Posts, Steel Fence. American Steel & Wire Co.
Heaters, Feed Water. Graver Corp.	Jacke, Smocks. Dickinson, Inc., Paul	Locomotives, Steam. American Locomotive Co. Baldwin Locomotive Works Lima Locomotive Works	Pier Builders. Bush, Roberts & Schaefer	Powder Blasting—(See Explosives).
Heating Systems, Car (Electric and Steam). Safety Car Heating & Lighting Co. Vapor Car Heating Co., Inc. Wine Ry. Appliance Co.	Joints, Air Reservoir. Franco Mfg. Co. Franklin Ry. Supply Co.	Lubricants, Driving Box. Franklin Railway Supply Co.	Pila Drivers. Browning Co. Industrial Works Orton & Steinbrener Co.	Power Plants. Mohr-Hold, John I. Stone & Webster, White Eng. Corp., J. G.
Heating and Ventilating Apparatus. Buffalo Forge Co. Vapor Car Heating Co., Inc.	Joints, Blow Off Line (Round-house). Barco Mfg. Co. Franklin Ry. Supply Co.	Lubricants (Oil and Grease). Galena Signal Oil Co. Mohawk Lubricating Co. Texas Co.	Piling, Wood. Mummert Lumber & Tie Co.	Preservatives, Wood. Barrett Co., The Jenkinson Wright Co.
Hoisting Machinery. Brown Hoisting Mch'y. Co. Industrial Works Orton & Steinbrener Co.	Joints, Coach and Coach Yard. Barco Mfg. Co. Franklin Ry. Supply Co.	Lumber. Exchange Sawmills Sales Co.	Pins, Air Brake. Champion Rivet Co.	Presses, Wheel. Niles-Bement-Pond Co.
Hoists, Chain. Ryerson & Son, Joseph T.	Joints, Flexible. Barco Mfg. Co. Franklin Railway Supply Co.	Lumber, Crocated. Mummert Lumber & Tie Co.	Pins, Air Brake and Clevis. Steel Car Forge Co.	Pulverizers, Coal—(See Crushers, Coal).
Hoists, Coach. Whiting Corp.	Joints, Rail. American Chain Co. American Steel Foundries Cambria Steel Co. Illinois Steel Co. Rail Joint Co.	Magnets, Lifting. Industrial Works Browning Co.	Pine, Center. Miner, W. H.	Pumps and Pumping Machinery. Fairbanks, Morse & Co. Ingersoll Rand Co.
Hoists, Electric. American Hoist & Derrick Co. Brown Hoisting Mch'y. Co. Chicago Pneumatic Tool Co.	Joints, Steam, Air and Liquid. Barco Mfg. Co. Franklin Railway Supply Co.	Mechanical Draft Apparatus—(See Heating and Vent. App.).	Pins, Coupler Knuckle. Steel Car Forge Co. National Malleable Castings Co.	Pumps, Vacuum. Chicago Pneumatic Tool Co. Ingersoll Rand Co.
Hoists, Locomotive. Whiting Corp.	Journal Boxes and Lids. Allegheny Steel Co. American Steel Foundries Hunt Spiller Mfg. Corp. National Malleable Castings Co. Union Spring & Mfg. Co.	Milling Machines, Plain and Universal. Ryerson & Son, Joseph T.	Pins, Crank. American Locomotive Co. Baldwin Locomotive Works Cambria Steel Co. Pollak Steel Co.	Punching and Shearing Machines. Buffalo Forge Co. Ryerson & Son, Joseph T.
Hoists, Pneumatic. Chicago Pneumatic Tool Co. Ingersoll Rand Co. Whiting Corp.	Journal Boxes and Lids. Allegheny Steel Co. American Steel Foundries Hunt Spiller Mfg. Corp. National Malleable Castings Co. Union Spring & Mfg. Co.	Mixing Machines, Conorata. Blaw-Knox Co.	Pipe, Cast Iron. U. S. Cast Iron Pipe & Fdry. Co.	Pushers, Locomotive Coal. Locomotive Stoker Co.
Holders, Angle Cock. Mudge & Co.	Journal Box Wedges—(See Wedges, Journal Box).	Monorail System. Whiting Corp.	Pipe Cutting and Threading Machinery. Gr-welch Tap & Die Corp.	Rail Bonds. American Steel & Wire Co. General Electric Co. Niles-Bement-Pond Co. Westinghouse Elec. & Mfg. Co.
Hooks, Wrecking. National Malleable Castings Co.	Keys, Brake Shoe. Steel Car Forge Co.	Motors, Electric. Fairbanks, Morse & Co. Westinghouse Elec. & Mfg. Co.	Pipe Fittings—(See Fittings, Pipe).	Pushers, Locomotive Coal. Locomotive Stoker Co.
Hoppers, Wet and Dry (Car). Duner Co.	Laboratories, Testing. Hunt & Co., Robert W. Pittsburgh Testing Laboratory	Mouldings, Steel Drawn. Morton Mfg. Co.	Pipe, Metal Vert. American Steel & Tin Plate Co. U. S. Cast Iron Pipe & Fdry. Co.	Rail Brackets—(See Braces, Rail).
Hose, Air, Steam, Etc. Chicago Pneumatic Tool Co. Westinghouse Air Brake Co.	Ladders, Steel Car. Wine Railway Appliance Co.	Nails. American Steel & Wire Co. Cambria Steel Co. Interstate Iron & Steel Co.	Pipe, Riveted Steel. Pittsburgh-Des Moines Steel Co.	Rails. Cambria Steel Co. Illinois Steel Co.
Hose, Clamp Tool. Chicago Pneumatic Tool Co.	Lathes, Axle. Niles-Bement-Pond Co.	Nitrogen. Air Reduction Sales Co.	Planers. Niles-Bement-Pond Co. Ryerson & Son, Joseph T.	Rail (Relaying). Frank, M. K. Southern Iron & Equip. Co. Zelnicker Supply Co., Walter A.
Hydrogen. Air Reduction Sales Co.	Lathes, Engine. Niles-Bement-Pond Co. Ryerson & Son, Joseph T.	Nozzles, Exhaust. Franklin Railway Supply Co.	Plates, Boiler, Firebox—(See Steel Firebox).	Rail Splice Plates—(See Joints, Rail).
Indicators, Steam Engine. Crosby Steam Gage & Valve Co.	Lighting Equipment, Car. Electric Storage Battery Co. General Electric Co. Safety Car Lighting & Heating Co.	Nuts—(See Bolts and Nuts).	Plates, Center—(See Bearings, Center).	Reamers, Expanding. Greenfield Tap & Die Corp.
Ingot. Cambria Steel Co. Edgewater Steel Co. Illinois Steel Co. McDonway & Torley Co. Midvale Steel & Ordnance Co. National Malleable Castings Co.	Locomotive Repair Parts. American Locomotive Co. Baldwin Locomotive Works, The. Pollak Steel Co.	Nut Locks. Ross Nut Co. Columbia Nut & Bolt Co. Franklin Railway Supply Co.	Plates, Follower. Steel Car Forge Co.	Reamers, Solid. Greenfield Tap & Die Corp.
Injectors, Air. Chicago Pneumatic Tool Co.	Locomotives, Contractors'. American Locomotive Co. Baldwin Locomotive Works Lima Locomotive Works	Nuts, Tank Hose. Prime Mfg. Co.	Plates, Iron and Steel. Cambria Steel Co. Illinois Steel Co. Interstate Iron & Steel Co. Midvale Steel & Ordnance Co. Pittsburgh-Des Moines Steel Co. Ryerson & Son, Joseph T.	Records, Speed. Chicago Pneumatic Tool Co.
Injectors, Steam. Crosby Steam Gage & Valve Co.	Locomotives, Electric. American Locomotive Co. Baldwin Locomotive Works General Electric Co. Westinghouse Elec. & Mfg. Co.	Oil Cans. Crane Co. U. S. Metallic Packing Co.	Plates, Tin and Terno. American Sheet & Tin Plate Co.	Refrigerators. Wine Railway Appliance Co.
Inspection of Material and Equipment—(See Engineers, Inspection).	Locomotives, Gasoline. Baldwin Locomotive Works	Oil Filtering and Storage System. Graver Corp.	Platforms, Car. Standard Coupler Co.	Regulators, Gas Pressure. Air Reduction Sales Co.
Insulation, Electrical. Continental Fibre Co. Johns-Manville, Inc.	Locomotives, Geared. Lima Locomotive Works	Oil, Fuel. Texas Co.,	Flows, Snow. American Locomotive Co.	Repair Parts. Baldwin Locomotive Works Co.
Insulation, Heat. Johns-Manville, Inc. Lebon Co., The Magnesia Assn. of America Miner, W. H.	Locomotives, Industrial. Baldwin Locomotive Works General Electric Co.	Oil, Linsseed. National Lead Co.	Plugs, Oil and Grease. Prime Mfg. Co.	Replacers, Car. American Chain Co.
Insulation, Trestle. Continental Fibre Co.	Locomotives, Second-Hand. Southern Iron & Equip. Co. Zelnicker Supply Co., Walter A.	Oils, Lubricating. Galena Signal Oil Co. Texas Co.	Plugs, Washout. Prime Mfg. Co.	Retorts, Crocoting. Graver Corp.
Iron Chain. Falls Hollow Staybolt Co. Pittsburgh Forge & Iron Co.	Locomotives, Steam. American Locomotive Co. Baldwin Locomotive Works Lima Locomotive Works	Oil Plugs, Steam Chest. Franklin Railway Supply Co.	Plates, Tin and Terno. American Sheet & Tin Plate Co.	Reverse Gear, Power. Barco Mfg. Co. Franklin Railway Supply Co.
Iron, Charcoal. Cambria Steel Co. Ewald Iron Co. Falls Hollow Staybolt Co. Midvale Steel & Ordnance Co. Parkersburg Iron Co.	Locomotives, Second-Hand. Southern Iron & Equip. Co. Zelnicker Supply Co., Walter A.	Ovens, Core. Whiting Corp.	Platforms, Car. Standard Coupler Co.	Ringers, Bell. U. S. Metallic Packing Co.
Iron, Hollow Staybolt. Falls Hollow Staybolt Co.	Locomotives, Steam. American Locomotive Co. Baldwin Locomotive Works Lima Locomotive Works	Oxygen. Air Reduction Sales Co.	Flows, Snow. American Locomotive Co.	Rivet Cutters. Chicago Pneumatic Tool Co. Interstate Iron & Steel Co.

For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last page next to cover

# BUYERS INDEX

<b>Rivets.</b> Ross Nut Co. Champion Rivet Co. Pressed Steel Car Co. Hyerson & Son, Joseph T.	<b>Sheets, Corrugated.</b> American Sheet & Tin Plate Co. Robertson Co., H. H.	<b>Steel, Tool.</b> Illinois Steel Co. Midvale Steel & Ordnance Co. Byerson & Son, Joseph T.	<b>Traps, Steam.</b> Crane Co.	<b>Waterproofing Materials.</b> Leloux Co., Tux.
<b>Rods, Piston.</b> Cambria Steel Co. Polak Steel Co.	<b>Sheets, Electrical.</b> American Sheet & Tin Plate Co.	<b>Stokers, Locomotive.</b> Linn Mechanical Stoker Co. Electric Stoker Co.	<b>Treads, Safety.</b> American Abrasive Metals Co. American Mason Safety Tread Co. Morton Mfg. Co.	<b>Water Purifying Materials and Compounds.</b> Dearborn Chemical Co.
<b>Roller Bearings—(See Bearings, Roller).</b>	<b>Sheets, Locomotive Jacket.</b> American Sheet & Tin Plate Co.	<b>Stringers, Bridge.</b> Bunuan Lumber Co.	<b>Treatment, Water—(See Water Softening and Purifying).</b>	<b>Water Softening and Purifying.</b> Dearborn Chemical Co. Graver Corp.
<b>Roofing, Asbestos.</b> Johns-Manville, Inc. Robertson Co., H. H.	<b>Sheets, Polished or Planished Iron.</b> American Sheet & Tin Plate Co.	<b>Superheaters.</b> Babcock & Wilcox.	<b>Truck Frames—(See Frames Truck).</b>	<b>Wedges, Automatic.</b> Franklin B. Supply Co.
<b>Roofing, Car.</b> American Sheet & Tin Plate Co. Durrett Co., The. Chicago-Cleveland Car Roofing Co. Hutchins Car Roofing Co. Lehon Co., The Sharon Pressed Steel Co. Standard Railway Equipment Co.	<b>Sheets, Steel.</b> Cambria Steel Co. Midvale Steel & Ordnance Co. Hyerson & Son, Joseph T.	<b>Switches, Electric.</b> Westinghouse Elec. & Mfg. Co.	<b>Trucks, Car and Locomotive.</b> American Locomotive Co. American Steel Foundries. Baldwin Locomotive Works. Franklin Railway Supply Co. Pressed Steel Car Co. Standard Car Truck Co.	<b>Wedges, Journal Box.</b> American Steel Foundries. National Malleable Castings Co.
<b>Roofing, Corrugated.</b> American Sheet & Tin Plate Co.	<b>Shops, Railroad (See Buildings, Iron, Steel and Steel Concrete).</b>	<b>Switches and Switch Stands.</b> General Electric Co. Rumpan Iron Works.	<b>Trucks, Electric Storage Battery.</b> Elwell Parker Electric Co.	<b>Welding Machines, Electric.</b> Westinghouse Elec. & Mfg. Co.
<b>Roofing, Flat.</b> Chicago-Cleveland Car Roofing Co.	<b>Shovels, Steam.</b> Browning Co. Osgood Co., The	<b>Tacks.</b> Interstate Iron & Steel Co.	<b>Trucks, Industrial.</b> Elwell Parker Electric Co. Sharon Pressed Steel Co. Whiting Corp.	<b>Welding Machines, Flue.</b> Hyerson & Son, Joseph T.
<b>Roofing, for Buildings.</b> Durrett Co., The. Texas Co.	<b>Siding, Corrugated and Plain.</b> American Sheet & Tin Plate Co. Robertson Co., H. H.	<b>Tamping Machines, Tie.</b> Ingersoll Rand Co.	<b>Trucks, Motor.</b> Sharon Pressed Steel Co. Whiting Corp.	<b>Welding and Cutting Apparatus—(See Cutting and Welding Apparatus).</b>
<b>Roofing, Gypsum.</b> Robertson Co., H. H.	<b>Signal Accessories.</b> Electric Storage Battery Co. General Electric Co.	<b>Tanks, Air, Gas and Oil.</b> American Locomotive Co. Babcock & Wilcox. Graver Corp. Pressed Steel Car Co. Westinghouse Air Brake Co.	<b>Trucks, Standard Car Truck Co.</b>	<b>Welding Rods and Wire.</b> Air Reduction Sales Co.
<b>Roofing, Tin.</b> American Sheet & Tin Plate Co.	<b>Signals, Automatic Cab.</b> Miller Train Control Corp.	<b>Tanks, Storage.</b> Convoys Corp. of America	<b>Trucks, Standard Steel Car.</b>	<b>Wheel Centers, Driving.</b> American Locomotive Co. American Steel Foundries. Baldwin Locomotive Works. Edgewater Steel Co. Illinois Steel Co. Lima Locomotive Works. Midvale Steel & Ordnance Co.
<b>Roofing, Wood.</b> Exchange Sawmills Sales Co.	<b>Spikes.</b> American Steel & Wire Co. Illinois Steel Co.	<b>Tanks, Water.</b> American Locomotive Co. Babcock & Wilcox. Graver Corp. Pittsburgh-Des Moines Steel Co.	<b>Trucks, Turbine.</b> Baldwin Locomotive Works. Midvale Steel & Ordnance Co.	<b>Wheels, Car and Locomotive.</b> American Locomotive Co. American Steel Foundries. Baldwin Locomotive Works. Edgewater Steel Co. Illinois Steel Co. Lima Locomotive Works. Midvale Steel & Ordnance Co.
<b>Rope, Wire—(See Wire Rope), Running Boards, Car.</b> Standard Ry. Equipment Co.	<b>Splice Bars, Angle.</b> Illinois Steel Co.	<b>Tape, Insulating.</b> Johns-Manville, Inc. Bionite Co. Westinghouse Elec. & Mfg. Co.	<b>Trucks, Turbine, Boiler.</b> Baldwin Locomotive Works. Midvale Steel & Ordnance Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Railroad Structures—(See Engineers and Contractors; also Buildings).</b>	<b>Spring Plates or Seats.</b> Allegheny Steel Co. National Malleable Castings Co.	<b>Taps, Machinists.</b> Greenfield Tap & Die Corp.	<b>Trucks, Turbine, Generator.</b> General Electric Co. Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Saddles, Running Board.</b> Miner, W. H.	<b>Spring Plates or Seats.</b> Allegheny Steel Co. National Malleable Castings Co.	<b>Taps, Staybolt.</b> Hyerson & Son, Joseph T.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Sand Drying Plants.</b> Roberts and Schaefer Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Terminals, Freight.</b> Ferguson Co., H. K.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Sanders, Locomotive.</b> U. S. Metallic Packing Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Terminals, Railroad.</b> Bush, Roberts & Schaefer Robinson Co., Dwight P.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Sand Rammer.</b> Chicago Pneumatic Tool Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Testers, Gage.</b> Ashton Valve Co. Crosby Steam Gage & Valve Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Saws, High Speed Friction.</b> Hyerson & Son, Joseph T.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Testing Machines, Drop.</b> Whiting Corp.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Saws, Portable, Rail.</b> Industrial Works.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Ties, Crossed.</b> Mummert Lumber & Tie Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Seals.</b> Fairbanks, Morse & Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Ties, Wood.</b> Exchange Sawmills Sales Co. Mummert Lumber & Tie Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Screen, Car Window.</b> Midvale Steel & Ordnance Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Timber, Railway.</b> Exchange Sawmills Sales Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Scrows, Lag.</b> Boas Nut Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Seats, Car.</b> Heywood-Wakefield Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Shafting.</b> Falls Hollow Staybolt Co. Polak Steel Co. Hyerson & Son, Joseph T.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Shapers.</b> Niles-Bennett-Pond Co. Hyerson & Son, Joseph T.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Shapes, Pressed Steel.</b> Green Hill Steel Car Co. Pressed Steel Car Co. Ryan Car Co. Sharon Pressed Steel Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Shapes, Structural.</b> Cambria Steel Co. Illinois Steel Co. Interstate Iron & Steel Co. Midvale Steel & Ordnance Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Shells, Black and Galvanized.</b> American Sheet & Tin Plate Co. Hyerson & Son, Joseph T.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Sheds, Train.</b> Arnold Co.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.
<b>Sheets, Black and Galvanized.</b> American Sheet & Tin Plate Co. Hyerson & Son, Joseph T.	<b>Splices.</b> American Steel Foundries. American Steel & Wire Co. Fort Pitt Spring & Mfg. Co. Pittsburgh Spring & Steel Co.	<b>Tires, Steel.</b> Edgewater Steel Co. Midvale Steel & Ordnance Co.	<b>Turbines, Steam.</b> Westinghouse Elec. & Mfg. Co.	<b>Wheels, Cast Iron.</b> Pressed Steel Car Co.

## ALPHABETICAL INDEX TO ADVERTISEMENTS

<b>A</b>	Elvin Mechanical Stoker Co., The ..... 32	<b>L</b>	Roberts & Schaefer Co..... 58
Air Reduction Sales Co. .... 49	Exchange Sawmills Sales Co. 14	Lehon Co., The..... 55	Robertson Co., H. H..... 56
Allegheny Steel Co..... 55	Ewald Iron Co..... 43	Lima Locomotive Works, Inc. 30	Robinson & Co., Dwight P..... 58
American Abrasive Metals Co. 55	Elwell-Parker Electric Co., The 57	Locomotive Stoker Co..... 36	Ryersoo & Son, Joseph T..... 6
American Arch Co., Inc..... 28	<b>F</b>	<b>M</b>	<b>S</b>
American Brake, Shoe & Fdy. Co. .... 52	Fairbanks-Morse & Co., Inc. 56	Magnus Co. .... 50	Safety Car Heating & Lighting Co., The ..... 54
American Car & Fdy. Co..... 66	Falls Hollow Staybolt Co..... 52	Manganese Steel Rail Co..... 55	Schaefer Equipment Co..... 52
American Chain Co., Inc..... 2	Ferguson Co., F. K., The..... 58	Magnesia Assn. of America... 44	Scullin Steel Co..... 22
American Hoist & Derrick Co. 48	Flannery Bolt Co..... 59	Mass. Mohair Push Co..... 57	Sharon Pressed Steel Co..... 49
American Locomotive Co., The. 33	Fort Pitt Malleable Iron Co... 55	McConway & Torley Co., The. 51	Smith & Co., C. E..... 58
American Mason Safety Tread Co. .... 57	Fowler, Chas. Evan ..... 58	Midvale Steel & Ordnance Co. 13	Southern Iron & Equip. Co.... 59
American Sheet & Tin Plate Co. .... 56	Frank, M. K. .... 59	Miller Train Control Corp.... 9	Standard Car Truck Co..... 52
American Steel Foundries..... 17	Franklin Railway Supply Co., Inc. .... 29	Miner, W. H..... 3	Standard Coupler Co..... 57
American Steel & Wire Co..... 51	<b>G</b>	Minich Ry. Appliance Corp.... 55	Standard Railway Equipment Co. .... 21
Arno Culvert & Flume Mfrs. Assn. .... 8	Galena-Signal Oil Co..... 15	Mississippi Wire Glass Co.... 55	Standard Steel Works Co..... 23
Arnold Co., The..... 58	General American Car Co..... 18	Mohawk Lubricating Co..... 51	Steel Car Forge Co..... 55
Ashton Valve Co., The..... 57	General Electric Co..... 25	Morton Mfg. Co..... 55	Stone & Webster Co..... 58
<b>B</b>	Get Together Department.... 59	Mudge & Co..... 54	Symington Co., T. H., The.... 7
Babcock & Wilcox Co., The... 53	Gissel & Co., Henry..... 55	Muhlfield, John E..... 58	<b>T</b>
Baldwin Locomotive Works, The 53	Gilmore, Thomas N..... 58	Mummert Lumber & Tie Co... 56	Texas Co., The ..... 20
Barco Mfg. Co..... 34	Graver Corp. .... 53	<b>N</b>	<b>U</b>
Barrett Co., The..... 10	Greenfield Tap & Die Corp.... 57	National Boiler Washing Co., of Illinois ..... 57	Union Draft Gear Co..... 52
Basford Co., G. M..... 27	Greenville Steel Car Co..... 54	National Malleable Castings Co., The ..... 19	Union Spring & Mfg. Co..... 54
Bennett, J. J..... 58	Gulick-Henderson Co..... 58	Nichols & Bros., Geo. P..... 37	U. S. Cast Iron Pipe & Fdy. Co. .... 58
Blaw-Knox Co..... 56	<b>H</b>	Niles-Bement-Pond Co..... 55	U. S. Metallic Packing Co., The 38
Boss Nut Co..... 57	Hale, Arthur ..... 58	<b>O</b>	<b>V</b>
Brown Hoisting Machinery Co. 65	Hamilton & Hansell, Inc..... 56	Ohio Locomotive Crane Co.... 49	Vapor Car Heating Co., Inc. . 52
Browning Co., The..... 56	Hayward Co., The..... 55	Okonite Co., The ..... 45	<b>W</b>
Buffalo Forge Co..... 56	Heywood-Wakefield Co..... 57	Orton & Steinbrenner Co..... 52	Watson Engineering Co., The. 58
Bush, Roberts & Schaefer Co. 58	Hunt & Co., Robert W..... 58	Osgood Co., The..... 57	Weierbach Brake Shoe Co... 58
Buyers' Index..... 60, 61, 62, 63	Hunt-Spiller Mfg. Corp..... 40	<b>P</b>	Westinghouse Air Brake Co... 37
<b>C</b>	Hutchins Car Roofing Co..... 26	Parkeburg Iron Co., The.... 31	Westinghouse Elec. & Mfg. Co. 42
Cambria Steel Co..... 13	<b>I</b>	Pilliod Co., The..... 41	White Eng. Corp., J. G., The.. 58
Camel Co..... 53	Illinois Steel Co..... 44	Pittsburgh-Des Moines Steel Co. 56	Whiting Corp. .... 56
Champion Rivet Co., The..... 56	Industrial Works ..... 16	Pittsburgh Spring & Steel Co. 56	Wine Railway Appliance Co., The ..... 57
Chase & Co., L. C..... 54	Ingersoll-Rand Co..... 50	Pittsburgh Testing Laboratory 58	Woods & Co., Edwin S..... 51
Chicago-Cleveland Car Roofing Co. .... 56	Interstate Iron and Steel Co. 55	Pollak Steel Co., The..... 4	<b>Y</b>
Chicago Pneumatic Tool Co... 11	Inventors & Engineers Consult- ing Co..... 58	Pressed Steel Car Co..... 45	Youngstown Steel Car Co..... 53
Chicago Railway Equipment Co. 54	<b>J</b>	Prime Mfg. Co., The..... 46	<b>Z</b>
Clark Car Co..... 57	Jennison-Wright, The..... 56	Professional Directory ..... 58	Zelnicker Supply Co., Walter A. 59
Classified Advertisements.... 59	Johns-Manville, Inc..... 48	<b>R</b>	
Coes Wrench Co..... 57	Jordan Co., O. F..... 47	Rail Joint Co., The..... 53	
Continental Fibre Co., The... 55	<b>K</b>	Railway and Industrial Engrs. 58	
Conveyors Corp. of America... 56	Kerite Insulated Wire & Cable Co. .... 50	Railway Materials Co..... 54	
Crane Co..... 56		Railway Steel Spring Co..... 24	
Crosby Steam Gage & Valve Co. 53		Ralston Steel Car Co., The... 46	
<b>D</b>		Ramapo Iron Works..... 57	
Dearborn Chemical Co..... 50			
Dickinson, Inc., Paul..... 57			
Duner Co..... 55			
<b>E</b>			
Edgewater Steel Co..... 47			
Electric Storage Battery Co., The ..... 54			



100

100

100

TF  
1  
R2  
v.71

Railway age

Physical &  
Applied Sci  
Series

PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

**ENGIN STORAGE**

